Independent Assurance Report

To the management of the TAIWAN-CA INC.：

Scope

We have been engaged, in a reasonable assurance engagement, to report on TWCA management's assertion that for its Certification Authority (CA) operations at Taipei and Taichung, Taiwan, throughout the period January 1, 2019 to December 31, 2019 for its CAs as enumerated in Appendix for SSL Baseline Requirements and Network Security Requirements, TWCA has:

- Disclosed its SSL certificate lifecycle management business practices in its:
  - TWCA Root Certification Authority Certification Practice Statement V1.3 drafted, effective from 15 May 2019; and
  - TWCA Global Certification Authority Certification Practice Statement V1.4.1 drafted, effective from June 20, 2019; and
  - TWCA Public Key Infrastructure Policy V2.0

  including its commitment to provide SSL certificates in conformity with the CA/Browser Forum Requirements on the TWCA website, and provided such services in accordance with its disclosed practices
- Maintained effective controls to provide reasonable assurance that:

- the integrity of keys and SSL certificates it manages is established and protected throughout their lifecycles; and
- SSL subscriber information is properly authenticated for the registration activities performed by TWCA.

- Maintained effective controls to provide reasonable assurance that:
  - logical and physical access to CA systems and data is restricted to authorized individuals;
  - the continuity of key and certificate management operations is maintained; and
  - CA systems development, maintenance, and operations are properly authorized and performed to maintain CA systems integrity
- maintained effective controls to provide reasonable assurance that it meets the Network and Certificate System Security Requirements as set forth by the CA/Browser Forum

in accordance with the WebTrust Principles and Criteria for Certification Authorities – SSL Baseline with Network Security V2.4.1.

Certification authority's responsibilities

TWCA's management is responsible for its assertion, including the fairness of its presentation, and the provision of its described services in accordance with the WebTrust for Certification Authorities – SSL Baseline with Network Security Version V2.4.1.

Our independence and quality control

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

The firm applies International Standard on Quality Control, and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Auditor's responsibilities

Our responsibility is to express an opinion on management's assertion based on our procedures. We conducted our procedures in accordance with attestation standards established by the American Institute of Certified Public Accountants/CPA Canada. This standard requires that we plan and perform our procedures to obtain reasonable assurance about whether, in all material respects, management's assertion is fairly stated, and, accordingly, included:

(1) obtaining an understanding of TWCA's SSL certificate lifecycle management business practices, including its relevant controls over the issuance, renewal, and revocation of SSL certificates, and obtaining an understanding of TWCA's network and certificate system security to meet the requirements set forth by the CA/Browser Forum;

(2) selectively testing transactions executed in accordance with

disclosed SSL certificate lifecycle management practices;

(3) testing and evaluating the operating effectiveness of the controls; and

(4) performing such other procedures as we considered necessary in the circumstances.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Relative effectiveness of controls

The relative effectiveness and significance of specific controls at TWCA and their effect on assessments of control risk for subscribers and relying parties are dependent on their interaction with the controls, and other factors present at individual subscriber and relying party locations. We have performed no procedures to evaluate the effectiveness of controls at individual subscriber and relying party locations.

Inherent limitations

Because of the nature and inherent limitations of controls, TWCA's ability to meet the aforementioned criteria may be affected. For example, controls may not prevent, or detect and correct, error, fraud, unauthorized access to systems and information, or failure to comply with internal and external policies or requirements. Also, the projection of any conclusions based on our findings to future periods is subject to the risk that changes may alter the validity of such conclusions.

Opinion

In our opinion, throughout the period January 1, 2019 to December 31, 2019, TWCA management's assertion, as referred to above, is fairly

stated, in all material respects, in accordance with the WebTrust Principles and Criteria for Certification Authorities – SSL Baseline with Network Security V2.4.1.

This report does not include any representation as to the quality of TWCA's services beyond those covered by the WebTrust Principles and Criteria for Certification Authorities – SSL Baseline with Network Security V2.4.1, nor the suitability of any of TWCA's services for any customer's intended purpose.

Use of the WebTrust seal

TWCA's use of the WebTrust for Certification Authorities – SSL Baseline with Network Security Seal constitutes a symbolic representation of the contents of this report and it is not intended, nor should it be construed, to update this report or provide any additional assurance.

KPMG

KPMG
Certified Public Accountants
Taipei, Taiwan, ROC
February 24, 2020

Appendix A – List of Root and Subordinate CAs in Scope

TWCA Global Root CA	TWCA Global Root CA
	Subject
	CN = TWCA Global Root CA OU = Root CA O = TAIWAN-CA C = TW
	Certificate Related Information
	Serial Number 0cbe Signature Algorithm: sha256RSA Not Before: 2012-Jun-27 14:28:33 Not After: 2030-Dec-31 23:59:59 Thumbprint Algorithm: sha1 Thumbprint 9cbb4853f6a4f6d352a4e83252556013f5adaf65 Thumbprint Algorithm: sha2 Thumbprint 59769007F7685D0FCD50872F9F95D5755A5B2B457D81F3692B610A98672F0E1B
	Issuer
	CN = TWCA Global Root CA OU = Root CA O = TAIWAN-CA C = TW
	Key Related Information
	Subject Public Key: RSA(4096 bits) Subject Key Identifiers:

TWCA Root Certification Authority	TWCA Root Certification Authority
	Subject
	CN = TWCA Root Certification Authority OU = Root CA O = TAIWAN-CA C = TW
	Certificate Related Information
	Serial Number 01 Signature Algorithm: sha256RSA Not Before: 2008-Aug-28 03:47:13 Not After: 2030-Dec-31 23:59:59 Thumbprint Algorithm: sha1 Thumbprint df646dcb7b0fd3a96aee88c64e2d676711ff9d5f Thumbprint Algorithm: sha2 Thumbprint 632D80BB096D209677D1734E5B35EA9D3019B9C44F8FCB2640C879039AC94EE8
	Issuer
	CN = TWCA Root Certification Authority OU = Root CA O = TAIWAN-CA C = TW
	Key Related Information
	Subject Public Key: RSA(4096 bits) Subject Key Identifiers: c8 44 5a fe 7f fd a9 9b 86 35 be e2 a5 f6 19 fb 5e bf 6f 59 Key Usage: Certificate Signing, Off-line CRL Signing, CRL Signing (06)

TWCA Root Certification Authority	TWCA Root Certification Authority(2048)
	Subject
	CN = TWCA Root Certification Authority OU = Root CA O = TAIWAN-CA C = TW
	Certificate Related Information
	Serial Number 01 Signature Algorithm: sha1RSA Not Before: 2008-Aug-28 15:24:33 Not After: 2030-Dec-31 23:59:59 Thumbprint Algorithm: sha1 Thumbprint cf9e876dd3ebfc422697a3b5a37aa076a9062348 Thumbprint Algorithm: sha2 Thumbprint BFD88FE1101C41AE3E801BF8BE56350EE9BAD1A6B9BD515EDC5C6D5B8711AC44
	Issuer
	CN = TWCA Root Certification Authority OU = Root CA O = TAIWAN-CA C = TW
	Key Related Information
	Subject Public Key: RSA(2048 bits) Subject Key Identifiers: 6a 38 5b 26 8d de 8b 5a f2 4f 7a 54 83 19 18 e3 08 35 a6 ba Basic Constraint: Subject Type=CA Path Length Constraint=None Key Usage: Certificate Signing, Off-line CRL Signing, CRL Signing (06)

TWCA Global Root CA	TWCA Global Root CA(4096)
	Subject
	CN = TWCA Global Root CA OU = Root CA O = TAIWAN-CA C = TW
	Certificate Related Information
	Serial Number 40013353e40000000000000cca5d1b69 Signature Algorithm: sha256RSA Not Before: 2014-Oct-28 15:38:31 Not After: 2030-Dec-31 23:59:59 Thumbprint Algorithm: sha1 Thumbprint fd54e4643b49705a2aaae50653c4f56c2df8083d Thumbprint Algorithm: sha2 Thumbprint 8AD47F6D70A44FA80AF0F931125FFE3A76876FFAD219A4D40A13C038DC85E69E
	Issuer
	CN = TWCA Root Certification Authority OU = Root CA O = TAIWAN-CA C = TW
	Key Related Information
	Subject Public Key: RSA(2048 bits) Subject Key Identifiers: 6a 38 5b 26 8d de 8b 5a f2 4f 7a 54 83 19 18 e3 08 35 a6 ba Basic Constraint: Subject Type=CA Path Length Constraint=None Key Usage: Certificate Signing, Off-line CRL Signing, CRL Signing (06)

TWCA Secure SSL Certification Authority	TWCA Secure SSL Certification Authority
	Subject
	CN = TWCA Secure SSL Certification Authority OU = Secure SSL Sub-CA O = TAIWAN-CA C = TW
	Certificate Related Information
	Serial Number 40013353e40000000000000cc36e888d Signature Algorithm: sha256RSA Not Before: 2014-Oct-28 15:27:56 Not After: 2024-Oct-28 23:59:59 Thumbprint Algorithm: sha1 Thumbprint 0a72efd660fd34f254e66a8595ba81e60a754e68 Thumbprint Algorithm: sha2 Thumbprint 9B16F2F680D7C4BD6A67F609340DA6416ABF9E43F1326B01B988192271D0B5F2
	Issuer
	CN = TWCA Global Root CA OU = Root CA O = TAIWAN-CA C = TW
	Key Related Information
	Subject Public Key: RSA(2048 bits) Authority Key Identifiers: 48 db cd de 8e e9 49 72 5a 88 e8 b1 d8 3d 07 b3 b9 6b 66 50 Subject Key Identifiers: f8 07 c2 68 24 ff 85 95 cb db 1e e3 33 9c 2a 4f 97 20 56 7b Basic Constraint: Subject Type=CA Path Length Constraint=0 Key Usage: Certificate Signing, Off-line CRL Signing, CRL Signing (06)

TWCA Global EVSSL Certification Authority	TWCA Global EVSSL Certification Authority
	Subject
	CN = TWCA Global EVSSL Certification Authority OU = Global EVSSL Sub-CA O = TAIWAN-CA C = TW
	Certificate Related Information
	Serial Number 40013304f70000000000000cc042cd6d Signature Algorithm: sha256RSA Not Before: 2012-Aug-23 17:53:30 Not After: 2030-Aug-23 23:59:59 Thumbprint Algorithm: sha1 Thumbprint 071a25fa76a200da3c53f1ee791e7b627d32c349 Thumbprint Algorithm: sha2 Thumbprint 49695A5F0F7EF6EDF698193D99ED48BAADE20EA457403C11CEAD492C458665DA
	Issuer
	CN = TWCA Global Root CA OU = Root CA O = TAIWAN-CA C = TW
	Key Related Information
	Subject Public Key:RSA(2048 bits) Authority Key Identifiers: 48 db cd de 8e e9 49 72 5a 88 e8 b1 d8 3d 07 b3 b9 6b 66 50 Subject Key Identifiers: e4 6e bd a1 2b ce e4 c2 d5 28 74 5c bd d9 8c 6f 04 72 2a 06 de Basic Constraint: Subject Type=CA Path Length Constraint=0 Key Usage: Certificate Signing, Off-line CRL Signing, CRL Signing (06)

TWCA EVSSL Certification Authority	TWCA EVSSL Certification Authority
	Subject
	CN = TWCA EVSSL Certification Authority OU = EVSSL Sub-CA O = TAIWAN-CA C = TW
	Certificate Related Information
	Serial Number 400132dd120000000000000cc1e1f977 Signature Algorithm: sha1RSA Not Before: 2011-Jun-10 10:49:38 Not After: 2021-Jun-10 23:59:59 Thumbprint Algorithm: sha1 Thumbprint 29429d028287a76c6c236e195e237e2407cd291d Thumbprint Algorithm: sha2 Thumbprint 7F1229B48517F2A66BAE4E2E342500F33B273A5CFCB625481C3783CA1F5366BC
	Issuer
	CN = TWCA Root Certification Authority OU = Root CA O = TAIWAN-CA C = TW
	Key Related Information
	Subject Public Key: RSA(2048 bits) Authority Key Identifiers: 6a 38 5b 26 8d de 8b 5a f2 4f 7a 54 83 19 18 e3 08 35 a6 ba Subject Key Identifiers: b9 2c 09 b5 34 2a f9 fe 5c 0d fd 6f 76 8b d5 92 1a e4 61 56 Basic Constraint: Subject Type=CA Path Length Constraint=0 Key Usage: Certificate Signing, Off-line CRL Signing, CRL Signing (06)

TWCA InfoSec User CA	TWCA InfoSec User CA
	Subject
	CN = TWCA InfoSec User CA OU = User CA O = TAIWAN-CA Inc. C = TW
	Certificate Related Information
	Serial Number 400133042000000000000cc2901d53 Signature Algorithm: sha1RSA Not Before: 2012-Jun-8 09:51:19 Not After: 2022-Jun-8 23:59:59 Thumbprint Algorithm: sha1 Thumbprint a25d976f92d89c9cdd6f57b1b80b51f56e0042f9 Thumbprint Algorithm: sha2 Thumbprint A97CA1375B91953E536A55476B0AC444C7086A951E490A3A3D13630A19F40CD4
	Issuer
	CN = TWCA Root Certification Authority OU = Root CA O = TAIWAN-CA C = TW
	Key Related Information
	Subject Public Key: RSA(2048 bits) Authority Key Identifiers: =6a 38 5b 26 8d de 8b 5a f2 4f 7a 54 83 19 18 e3 08 35 a6 ba Subject Key Identifiers: 21 20 6a 92 e9 69 5b ac c8 63 eb 64 ce 82 c1 51 66 2a 87 e2 Basic Constraint: Subject Type=CA Path Length Constraint=0 Key Usage: Certificate Signing, Off-line CRL Signing, CRL Signing (06)

TWCA InfoSec User CA	Subordinate CA Certificate
	Subject
	CN = TWCA InfoSec User CA OU = User CA O = TAIWAN-CA Inc. C = TW
	Certificate Related Information
	Serial Number 40013353e40000000000000cc97138a0 Signature Algorithm: sha256RSA Not Before: 2014-Oct-28 02:48:11 Not After: 2024-Oct-28 23:59:59 Thumbprint Algorithm: sha1 Thumbprint 58e9110cd66036337f7e0d46cbbe94587fae0e19 Thumbprint Algorithm: sha2 Thumbprint 074840E3A67DCD2600B6B004E1187AC80BDFE896CAF493DF94CC3D9A3CA68814
	Issuer
	CN = TWCA Root Certification Authority OU = Root CA O = TAIWAN-CA C = TW
	Key Related Information
	Subject Public Key: RSA(2048 bits) Authority Key Identifiers: 6a 38 5b 26 8d de 8b 5a f2 4f 7a 54 83 19 18 e3 08 35 a6 ba Subject Key Identifiers: d9 10 f0 de c2 a1 99 f5 7e 4b 93 a2 13 c6 d6 46 73 c2 49 de Basic Constraint: Subject Type=CA Path Length Constraint=0 Key Usage: Certificate Signing, Off-line CRL Signing, CRL Signing (06)

TWCA InfoSec User CA	TWCA InfoSec User CA
	Subject
	CN = TWCA InfoSec User CA OU = User CA O = TAIWAN-CA Inc. C = TW
	Certificate Related Information
	Serial Number 400133f0140000000000000ccfae3cd7 Signature Algorithm: sha1RSA Not Before: 2018-Oct-12 11:03:57 Not After: 2028-Oct-12 23:59:59 Thumbprint Algorithm: sha1 Thumbprint 910a43afdd86271f30dd937ee6ad92b1324434d2 Thumbprint Algorithm: sha2 Thumbprint C00A8183C9865A0847C01158F785A5F35DCB8B596C7BF46FD6497F72F02E5E32
	Issuer
	CN = TWCA Root Certification Authority OU = Root CA O = TAIWAN-CA C = TW
	Key Related Information
	Subject Public Key: RSA(2048 bits) Authority Key Identifiers: 6a 38 5b 26 8d de 8b 5a f2 4f 7a 54 83 19 18 e3 08 35 a6 ba Subject Key Identifiers: 46 6f 16 86 f4 a0 5b 11 41 be 93 6a ec 06 50 ce 8a 55 46 59 Basic Constraint: Subject Type=CA Path Length Constraint=0 Key Usage: Certificate Signing, Off-line CRL Signing, CRL Signing (06)

TWCA InfoSec User CA	TWCA InfoSec User CA
	Subject
	CN = TWCA InfoSec User CA OU = User CA O = TAIWAN-CA Inc. C = TW
	Certificate Related Information
	Serial Number 400133f0140000000000000cc70241af Signature Algorithm: sha256RSA Not Before: 2018-Oct-12 04:45:27 Not After: 2028- Oct-12 23:59:59 Thumbprint Algorithm: sha1 Thumbprint 5bbe8e290dab5c984c154500dd16379cb2704d20 Thumbprint Algorithm: sha2 Thumbprint BFAAF990B98D9168466A9F0757DC2F1614B9F938B3A74511B994A2B858E1490E
	Issuer
	CN = TWCA Global Root CA OU = Root CA O = TAIWAN-CA C = TW
	Key Related Information
	Subject Public Key: RSA(2048 bits) Authority Key Identifiers: 48 db cd de 8e e9 49 72 5a 88 e8 b1 d8 3d 07 b3 b9 6b 66 50 Subject Key Identifiers: 1a 7c e5 e7 6a 1f 61 8e 4b aa b6 fc fb f6 90 85 ee 84 09 fe Basic Constraint: Subject Type=CA Path Length Constraint=0 Key Usage: Certificate Signing, Off-line CRL Signing, CRL Signing (06)