Mastercard
Card Quality Management Overview
September 2020
CQM Introduction

- **Involved companies:**
  - Personalization bureaus
  - Card manufacturers (card vendors)
  - Suppliers of the card vendors (chip, modules, inlays manufacturers)

- **Involved products:**
  - Mastercard EMV cards

- **Requirements:**
  - Quality Management
  - Product Quality (modular structure)

- **Methodology:**
  - Self-assessment controlled by on-site audits
  - Corrective actions plan.

CQM = Mastercard Card Quality Management
CQM Benefits

For the Bank (Card Issuer)

✓ Cardholder satisfaction
✓ Less card replacement
✓ Higher card life time

For the Supplier or Vendor

✓ Cost reduction (less rework, less defects)
✓ Bank tenders compliance
✓ Mastercard rules compliance
✓ Corporate quality tool to both support and control the remote sites
✓ External independent view
✓ Modular approach with suppliers

The Letter of Approval (LoA) or Card Vendor Conformity Statement (CVCS) requires CQM certification.
# Mastercard Card Approval Overview

<table>
<thead>
<tr>
<th>Company Program</th>
<th>Product Program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Global Vendor Certification Program</strong></td>
<td>GVCP</td>
</tr>
<tr>
<td>“Physical and Logical Security”</td>
<td><a href="mailto:GVCP-helpdesk@mastercard.com">GVCP-helpdesk@mastercard.com</a></td>
</tr>
<tr>
<td><strong>Brand and Card Design Rules</strong></td>
<td>Card Design</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:card_design@mastercard.com">card_design@mastercard.com</a></td>
</tr>
<tr>
<td><strong>Card Structure Integrity and security</strong></td>
<td>CSI</td>
</tr>
<tr>
<td>“Innovative form factors or card bodies”</td>
<td><a href="mailto:CSI_Security@mastercard.com">CSI_Security@mastercard.com</a></td>
</tr>
<tr>
<td><strong>Card Quality Management</strong></td>
<td>CQM</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:cqm@smart-consulting.com">cqm@smart-consulting.com</a></td>
</tr>
<tr>
<td><strong>Compliance And Security Testing</strong></td>
<td>CAST</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:cast@mastercard.com">cast@mastercard.com</a></td>
</tr>
<tr>
<td><strong>Interface Security Testing</strong></td>
<td>IAT</td>
</tr>
<tr>
<td>“Functional and RF testing”</td>
<td><a href="mailto:chip_certification_chd@mastercard.com">chip_certification_chd@mastercard.com</a></td>
</tr>
</tbody>
</table>
Chip Card Based Approval Process 1/2

Card Vendor
From full product conception to end-user delivery

GVCP Certification

M/Chip Dev. Agreement and Card Manufacturer Agreement

CQM - Labels

CSI*
For non-ID1 Form Factors, Interactive and Innovative Card bodies or Products

CVCS**
Card Vendor Conformity Statement

Testing Requirements

1. IAT
2. CAST
3. CSI*

TAS

CCN

CSI Letter

LoA

*CSI

**CVCS – Effective since 01st Jan 2020, it allows Card Manufacturers to produce (Embedding and Card Body activities) some products that already got an approval from Mastercard (CCS or LOA). Please refer to the Mastercard Announcement AN_3253
Testing Requirements
When only the Card body is changed on the original approved product

Module Supplier
Chip + Operating System + Payment App

Card Supplier
End-user product manufacturing and delivery based on an approved ‘Module + Inlay’

**CVCS** – Effective since 01st Jan 2020, it allows Card Manufacturers to produce (Embedding and Card Body activities) some products that already got an approval from Mastercard (CCS or LOA). Please refer to the Mastercard Announcement AN_3253

*CSI - For non-ID1 Form Factors, Interactive and Innovative Card bodies or Products
Requirements

Categories

- Interoperability with ATMs and POS terminals:
  Electrical, contactless, magnetic, physical characteristics
- Durability and Reliability:
  Mechanical, Electro-Static Discharges, magnetic, ageing, resistance to chemicals…
- Mastercard Brand
  Design, colors, layout.
- Visual Security Features
  UV print, hologram, signature panel…
- Miscellaneous
  No toxicity for health and environment…

Examples

- Reading distance between the contactless card and a POS
- Resistance to:
  - ESD
  - Card bending or torsion
  - Abrasion
  - Chemicals: sweat, fuel…
  - Temperature and humidity
Labels 1/4
Manufacturing Flow

Classic Card

Integrated Circuit
Integrated Circuit Module
Inlay with Antenna
Plastic Card with Antenna without chip
Chip Embedding
Perso

Interactive Card

Integrated Circuit
Integrated Circuit Module
Inlay For Interactive Card
Plastic Card with Antenna without chip
Perso
CQM labels are identifiers granted to a CQM certified company to cover their certified activities.

CQM label structure is “ACCLTTTTTS”.

- A = Activity of manufacturing
- CC = Company
- LL = Location of the manufacturing site
- TTTT = Interface Technology (Contact, Dual, Contactless)
- S = Status (R: interim label for Recognition, A: label for Approval)

CQM Recognition is a 6 month max interim period aimed - for companies starting the CQM process
- for a new activity started by a CQM certified company

CQM Approval is the step achieved when the audit pass recommendation is accepted.
Labels 3/4
Label first digit

- Classic Card
  - 1 Chip
  - 2 Chip Modules
  - 6 Inlays
  - 3 Card Body
  - 4 Chip Embedding
  - P Chip Card Personalization

- Interactive Card
  - 1 Chip
  - 2 Chip Modules
  - 8 Inlay for Interactive Card
  - 9 Interactive Card Manufacturing
  - P Chip Card Personalization

#8 and #9 are handled as new activities
Card Quality Management
Statement of Quality

Specimen Cards Ltd

Having its principal place of business at
Tokyo bd, 155
9871 Taipei, TAIWAN

has submitted for approval by Mastercard a number of Smart Cards Products and Services in conformity with the Mastercard Card Quality Management (CQM) Requirements. The following CQM labels have been granted.

<table>
<thead>
<tr>
<th>Site's Country</th>
<th>Site's city</th>
<th>IC</th>
<th>IC Module</th>
<th>Inlays</th>
<th>Interactive Card Inlay</th>
<th>Card Body</th>
<th>Interactive Card</th>
<th>IC Card</th>
<th>Card Personalization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mastercard
Enterprise Security Solutions
EMV & Digital Devices

This letter is valid until May 28, 2019

Bruno Parfum
Product Approvals Director
Documents available on line: smart-consulting.com
- Overview presentation (this presentation)
- Registration Form
- CQM Yearly Services Offer
- Assessment Plan (Quality questionnaire)
- Requirements specification
- Non Disclosure Agreement (NDA) template.

Documents available on demand: cqm@smart-consulting.com

Always check online for the last release of the documents.
Your documentation system shall point smart-consulting.com
### Audits 1/3

Accredited Auditors

<table>
<thead>
<tr>
<th>Name</th>
<th>First Name</th>
<th>Company</th>
<th>Tel office</th>
<th>Email</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chen</td>
<td>Luke</td>
<td>陳明乾</td>
<td>+886 228986818</td>
<td><a href="mailto:luke.chen@tuv-sud.tw">luke.chen@tuv-sud.tw</a></td>
<td>Taiwan</td>
</tr>
<tr>
<td>Ferreira</td>
<td>Luis</td>
<td>Agora Consult</td>
<td>+32 470822142</td>
<td><a href="mailto:agoraconsultsprl@skynet.be">agoraconsultsprl@skynet.be</a></td>
<td>Belgium</td>
</tr>
<tr>
<td>Gase</td>
<td>Axel</td>
<td>Kiwa Telefication</td>
<td>31 316 583 114</td>
<td><a href="mailto:agase@telefication.com">agase@telefication.com</a></td>
<td>Netherlands</td>
</tr>
<tr>
<td>Janczek</td>
<td>Thies</td>
<td>Cocaso</td>
<td>+49 170 9127252</td>
<td><a href="mailto:janczek@cocaso.com">janczek@cocaso.com</a></td>
<td>Germany</td>
</tr>
<tr>
<td>Shinmoto</td>
<td>Tamon</td>
<td>真本 多聞</td>
<td>+81 449801675</td>
<td><a href="mailto:tamon.shinmoto@tuv-sud.jp">tamon.shinmoto@tuv-sud.jp</a></td>
<td>Japan</td>
</tr>
<tr>
<td>Trüggelmann</td>
<td>Uwe</td>
<td>TruCert</td>
<td>+1 2504349456</td>
<td><a href="mailto:uwe@trucert.com">uwe@trucert.com</a></td>
<td>Canada</td>
</tr>
<tr>
<td>Van Voorst</td>
<td>Ries</td>
<td>Dekra</td>
<td>+31 263563419</td>
<td><a href="mailto:ries.vanvoorst@dekra.com">ries.vanvoorst@dekra.com</a></td>
<td>Netherlands</td>
</tr>
</tbody>
</table>

The auditors are acting worldwide.
Audit 2/3
Findings

- Major non-conformity
  Product functionality might be compromised

- Minor non-conformity
  Product functionality is not compromised

- Observation
  Identified issue that should be resolved to reduce the risk of NC

- Improvement opportunity
  Auditor leaves the decision to the vendor if the vendor wants to resolve/implement it.
## Audit 3/3
### Quality Grade

<table>
<thead>
<tr>
<th>Grade</th>
<th>Action plan Completion Check</th>
<th>Certificate Validity</th>
<th>Next audit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Pass with limited number of minor NC</td>
<td>12 months</td>
<td>&lt; 3 years</td>
</tr>
<tr>
<td>B</td>
<td>Pass with limited number of major NC</td>
<td>&lt; 6 months</td>
<td>12 months</td>
</tr>
<tr>
<td>C</td>
<td>Interim Pass</td>
<td>&lt; 6 months</td>
<td>6 months</td>
</tr>
<tr>
<td>D</td>
<td>Fail</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Starting from the 3rd audit, C grade will lead to a fail*
# Audits 4/4

## Timeline

<table>
<thead>
<tr>
<th>Owner</th>
<th>Recipients</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditee</td>
<td>to Smart Consulting</td>
<td></td>
</tr>
<tr>
<td><strong>Registration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Audit Agreement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auditee + Auditor</td>
<td>Auditee + Auditor</td>
<td></td>
</tr>
<tr>
<td><strong>Audit Preparation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auditee</td>
<td>to Auditor</td>
<td>2 weeks before the Audit (*)</td>
</tr>
<tr>
<td><strong>Audit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auditor</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Action Plan</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auditee</td>
<td>to Auditor</td>
<td>2 weeks after the Audit (*)</td>
</tr>
<tr>
<td><strong>Final Audit Report</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auditor</td>
<td>to Smart Consulting and Auditee</td>
<td>4 weeks after Audit End</td>
</tr>
<tr>
<td><strong>Audit Report Assessment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smart Consulting</td>
<td>to Auditee and Auditor</td>
<td>5 weeks after Final Audit Report</td>
</tr>
<tr>
<td><strong>Action Plan Completion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auditee</td>
<td>to Auditor</td>
<td>17 weeks after Audit End (*)</td>
</tr>
<tr>
<td><strong>Action Plan Completion Report</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auditor</td>
<td>to Smart Consulting and Auditee</td>
<td>19 weeks after Audit End</td>
</tr>
<tr>
<td><strong>Action Plan Completion Report Assessment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smart Consulting</td>
<td>to Auditee and Auditor</td>
<td>2 weeks after Action Plan Completion Report</td>
</tr>
</tbody>
</table>

(*) Typical values. They shall be defined inside the bilateral Audit Agreement binding on the Auditor and the Auditee.
Process 1/3

1. Registration
   - Recognition
     - Approval audit
       - Next audit: Dead-line?
         - Yes: Renewal
         - No:
           - Services Expired?
             - Yes: Service Extension
               - Certificate
New Comer

- To register immediately for CQM recognition together with Mastercard GVCP registration in order to gain time.
- CQM labels require the related GVCP certification.

Already Certified

- The audit date shall be initiated by the auditee directly with the auditor taken into account
  - The last audit acknowledgement issued by Smart Consulting
  - The certificate birthday (max 60 days before)
  - The auditor availability in the region
- Pay the CQM yearly extension fees 60 days before the certificate expiration date.
- Notify changes in real time:
  - new primary contact
  - new location
  - new workshops

Sooner is better contact: cqm@smart-consulting.com
Process 3/3
Annual certificate is granted after

- All due corrective actions completed
- All due audit(s) report(s) received
- Next audit(s) plan agreed by Smart Consulting
- Annual fees payment notified

Note: All the sites of the Group that are GVCP certified shall also be CQM certified
### Pricing

<table>
<thead>
<tr>
<th></th>
<th>Auditor</th>
<th>Smart Consulting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price</strong></td>
<td>approx 1500€ per day + Travel &amp; Expenses</td>
<td>1000€ annual fees + 560€ per activity</td>
</tr>
<tr>
<td><strong>Payment term</strong></td>
<td>to be defined</td>
<td>60 days after CQM offer date</td>
</tr>
<tr>
<td>(new candidates)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Payment term</strong></td>
<td>to be defined</td>
<td>60 days before certificate birthday</td>
</tr>
<tr>
<td>(already certified)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Negotiable?</strong></td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
Mastercard Outsourcing Letter

Waterloo, August 17, 2009

Note to the attention of: Card Vendors, Subcontractors to Card Vendors and Personalization Bureaus

Dear Vendor,

MasterCard Worldwide has decided to outsource Card Quality Management (CQM) operations to the company Smart Consulting SARL. Starting at the date of this letter Smart Consulting becomes the primary contact for CQM.

Fees will be invoiced directly by Smart Consulting.

Should you have any question, please contact:

Smart Consulting

E-mail: cqm@smart-consulting.com
direct tel. int'l + 33 607 955 441
2 rue Vignol
13600 La Ciotat
France

MasterCard

E-mail: cqm@mastercard.com

Best Regards,

Christian Delporte,
Head of Chip Engineering

MasterCard Worldwide
Innovative Platforms
198a Chaussée de Tervuren
1410 Waterloo BELGIUM

The CQM scheme is owned by Mastercard

The CQM operations are performed by Smart Consulting
CQM Certification Trend

![Chart showing the trend of CQM certification for companies and sites from 2007 to 2019. The x-axis represents the years from 2007 to 2019, and the y-axis represents the number of companies and sites. The chart shows a steady increase in both companies and sites over the years.]
Conclusion

1. Mastercard mandates CQM:
   
   ✓ for all Mastercard EMV chip based products
   ✓ for all countries worldwide
   ✓ for every GVCP certified site belonging to the same group of companies.

2. CQM certified companies list is public

   CQM certified companies are tagged inside the Mastercard GVCP Vendors list

3. Increasing number of bank tenders are mandating CQM

Mastercard Sources: Card Vendor Product Approval Process Guide
GVCP Vendors list monthly update