

Type of Document

Test Report

Device / Project Reference

Conformity of Tickets - Augustini

Version / Release

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1 Document History

Version	Date	Changes	Chapter	Proofed
1.00	07.09.2005	Preliminary	1-6	JMH
2.00	21.10.2005	Released Version	1-6	JMH

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3 Test Object and Test Method

The sample tickets are reel stock paper tickets with ISO track magnetic tape manufactured by Augustini d.o.o.

Object of measurement was the conformity of the physical and the magnetic characteristics of the sample tickets with the ISO/IEC standards 7810, 7811-2, 15457-1, 15457-2 and the Ticket Specification TS_2006-4002_all_0100.

At the disposal were three different reels of tickets.

From each reel a sample consisting of 18 tickets was taken and verified concerning their size and position of the punch hole and the magnetic tape.

For the test of the magnetic characteristics the tickets were coded and from each reel two tickets were tested concerning the readback voltage and one ticket from each reel concerning the saturation characteristics.

For the Encoding Test 1500 Tickets were encoded.

3.1 Test Reference Documents

Document Identity	Document Title
ISO/IEC 7810: 1995	Identification cards -Physical characteristics
ISO/IEC 7811-2: 2001	Identification cards - Recording technique - Magnetic Stripe - Low coercivity
ISO/IEC 15457-1: 2001	Identification cards - Thin flexible cards - Physical characteristics
ISO/IEC 15457-2: 2001	Identification cards - Thin flexible cards - Magnetic recording techniques
TS_2006-4002_all_0100	Ticket Specification for CCS 2006 C KGB [®] with CCS 4002/2-HBL KGB [®]

3.2 Test Equipment

Test	Equipment
Ticket Size	Sliding Calliper
Readback Voltage, Saturation Characteristics	RINAS LOCO Universal Analyser
Encoding	Test assembly consisting of CCS 2006 C KGB [®] with CCS 4002/2-HBL KGB [®] and PC



Figure 3.1: Test assembly Encoding Test

4 Test Result

4.1 Size

4.1.1 Ticket Length

Remarks	Result
All lengths correspond to the specified tolerances of $85.6 +1.0/-0.5$ mm	<i>Passed</i>

4.1.2 Ticket Width

Remarks	Result
All widths lie within the specified tolerances of $53.95 +0.05/-0.15$ mm	<i>Passed</i>

4.1.3 Position of Magnetic Tape

Remarks	Result
The distance of the Magnetic Tape to the edge corresponds in all cases to the specified tolerances of $4.2 +0.2$ mm	<i>Passed</i>

4.1.4 Position of Punch Hole

Remarks	Result
The distance of the Punch Hole to the edge corresponds in all cases to the specified tolerances of 5.2 ± 0.1 mm	<i>Passed</i>

4.1.5 Diameter of Punch Hole

Remarks	Result
The diameter of the Punch Hole corresponds in all cases to the specified tolerances of 3.2 ± 0.1 mm	<i>Passed</i>

4.2 Magnetic Characteristics

4.2.1 Readback Voltage

Measurement	Readback Voltage U_m	Result
I ₁	6.087 mV *	Passed
I ₂	6.222 mV	
II ₁	6.197 mV	Passed
II ₂	6.285 mV	
III ₁	6.238 mV	Passed
III ₂	6.237 mV	

* A break-down of the envelope is recognizable (see figure 6.2), although this does not violate the requirements of the standard.

4.2.2 Saturation Characteristic

Measurement	Remarks	Result
I _s	$U_{A1} \geq 0,8 U_R$, $U_{A2} \geq 0,8 U_R$ Slope not positive in ISO-window	Passed
II _s	$U_{A1} \geq 0,8 U_R$, $U_{A2} \geq 0,8 U_R$ Slope not positive in ISO-window	Passed
III _s	$U_{A1} \geq 0,8 U_R$, $U_{A2} = 0,8 U_R$ Slope not positive in ISO-window	Passed*

* The saturation curve reaches the lower limiting value: $U_{A2} = 0.8 U_R$ (see figure 6.7).

4.3 Encoding Test

Number of Specimens	Error Rate	Result
1500	0 %	Passed

4.4 Print Image

The print image is clean and homogeneous
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This Test is not a component neither of the ISO standards nor the Ticket Specification.

5 Conclusion

The tickets fulfil the standards concerning the dimensions.

The measurements of the length and the width of the tickets, the position and the diameter of the punching hole and the position of the magnetic tape correspond to the standards and the specified tolerances respectively.

The standards concerning the magnetic characteristics are fulfilled:

The readback voltage corresponds in all cases to the standard, however a break-down of the envelope is recognizable with the sample I₁ (see figure 6.2).

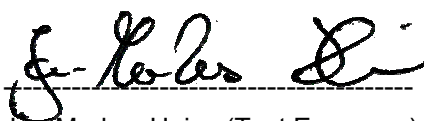
The saturation curves complies with the requirements in each case, even though the saturation curve of sample I_S reaches the lower limiting value ($U_{A2} = 0.8 U_R$).

The examination of the coding ability of the tickets is successful.

The print image is clearly, regular and clear. However, this test is not part of the examination of the conformity.

Summarising the results, the tickets fulfil the requirements to the conformity with the standards and are suitable for the CCS ticketing systems KGB[®] with Dot Matrix Printer.

CCS Challenge Card Systems GmbH



Jan-Markus Heise (Test Engineer)



i.V. Armin Katzewski (CTO)

6 Appendix: Test Values

6.1 Magnetic

6.1.1 Readback Voltage

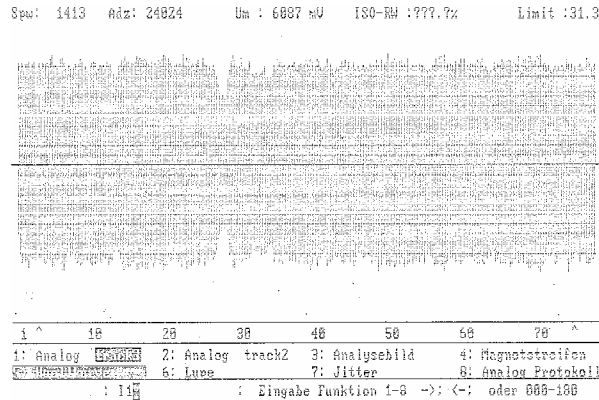


Figure 6.2: Measurement I₁
Readback Voltage $U_m = 6.087 \text{ mV}$

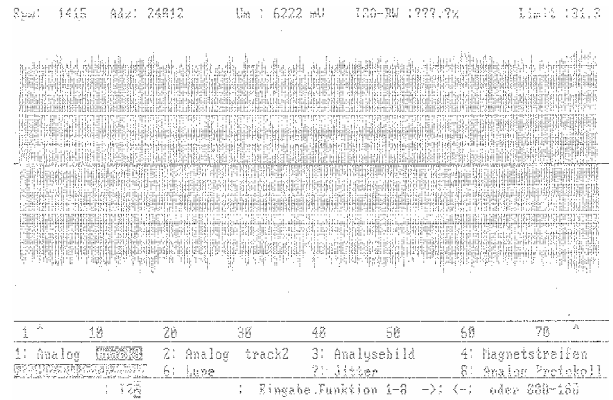


Figure 6.1: Measurement I₂
Readback Voltage $U_m = 6.222 \text{ mV}$

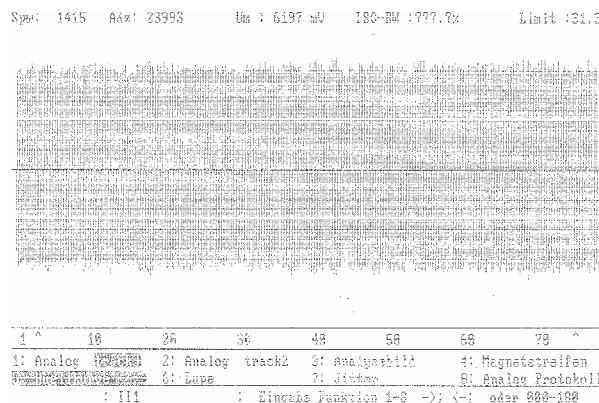


Figure 6.4: Measurement II₁
Readback Voltage $U_m = 6.197 \text{ mV}$

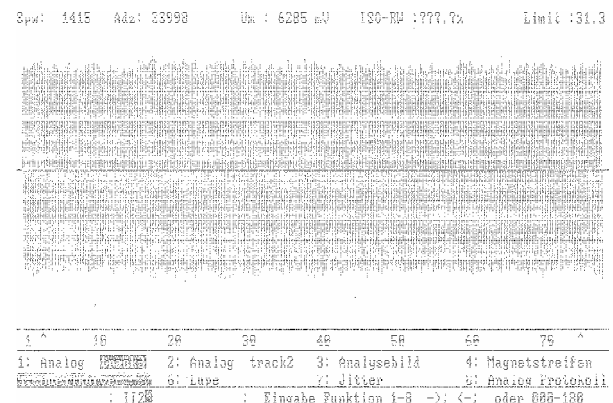


Figure 6.3: Measurement II₂
Readback Voltage $U_m = 6.285 \text{ mV}$

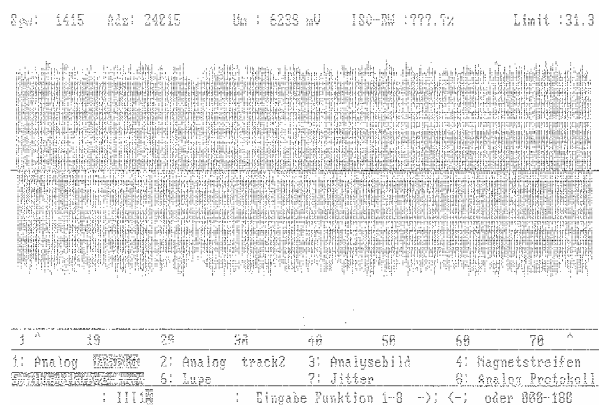


Figure 6.6: Measurement III₁
Readback Voltage $U_m = 6,238 \text{ mV}$

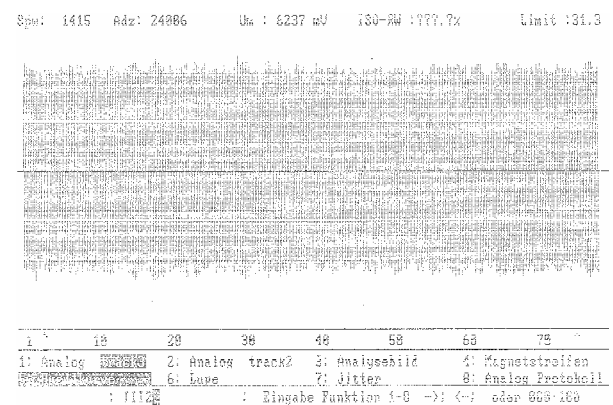


Figure 6.5: Measurement III₂
Readback Voltage $U_m = 6,237 \text{ mV}$

6.1.2 Saturation Characteristics

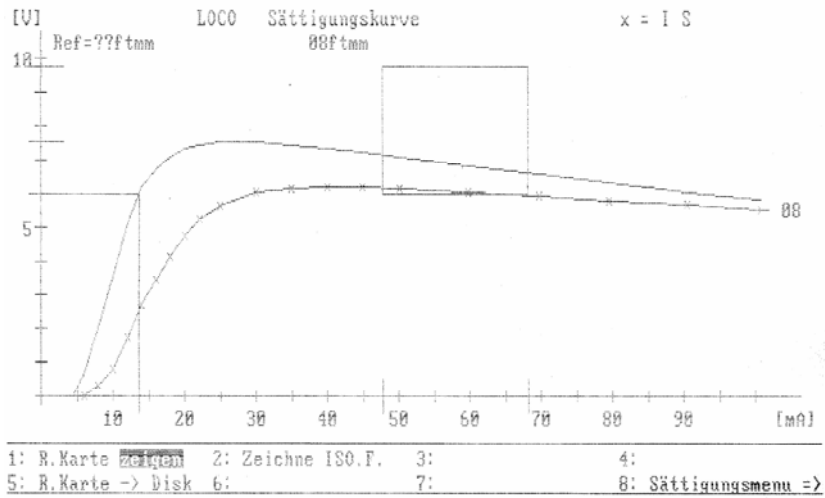


Figure 6.7: Measurement I_S Saturation Characteristic

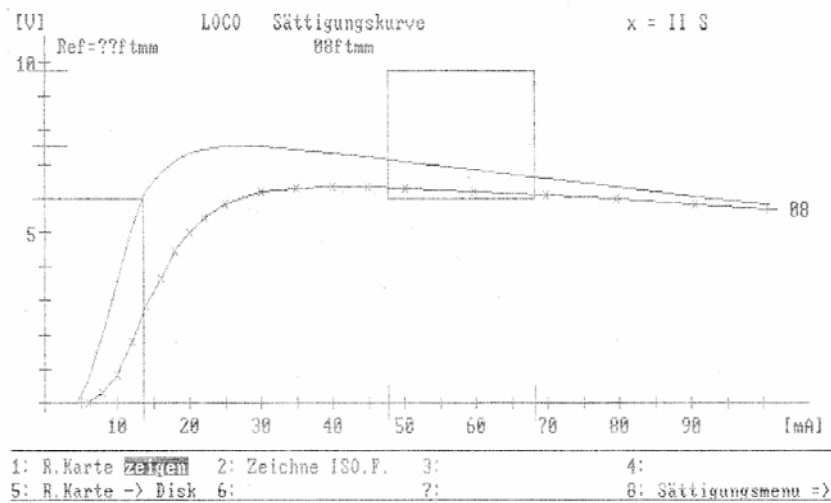


Figure 6.8: Measurement II_S Saturation Characteristic

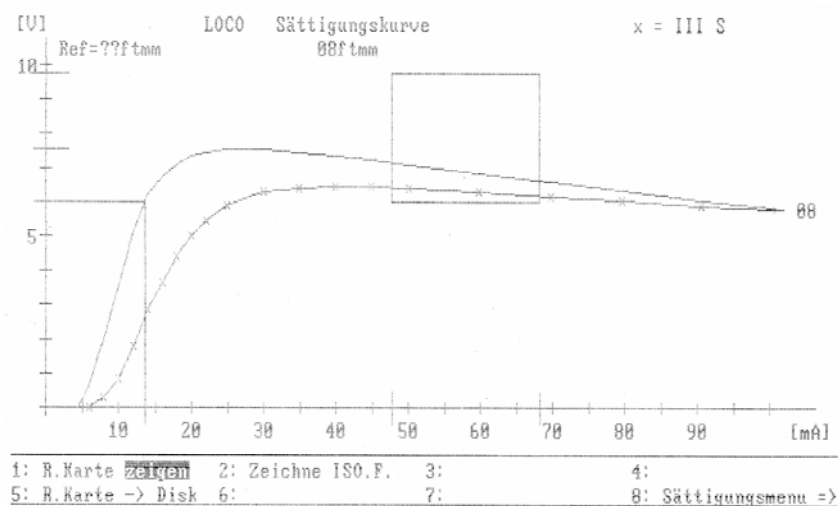


Figure 6.9: Measurement III_S Saturation Characteristic

6.1.3 Reference Ticket

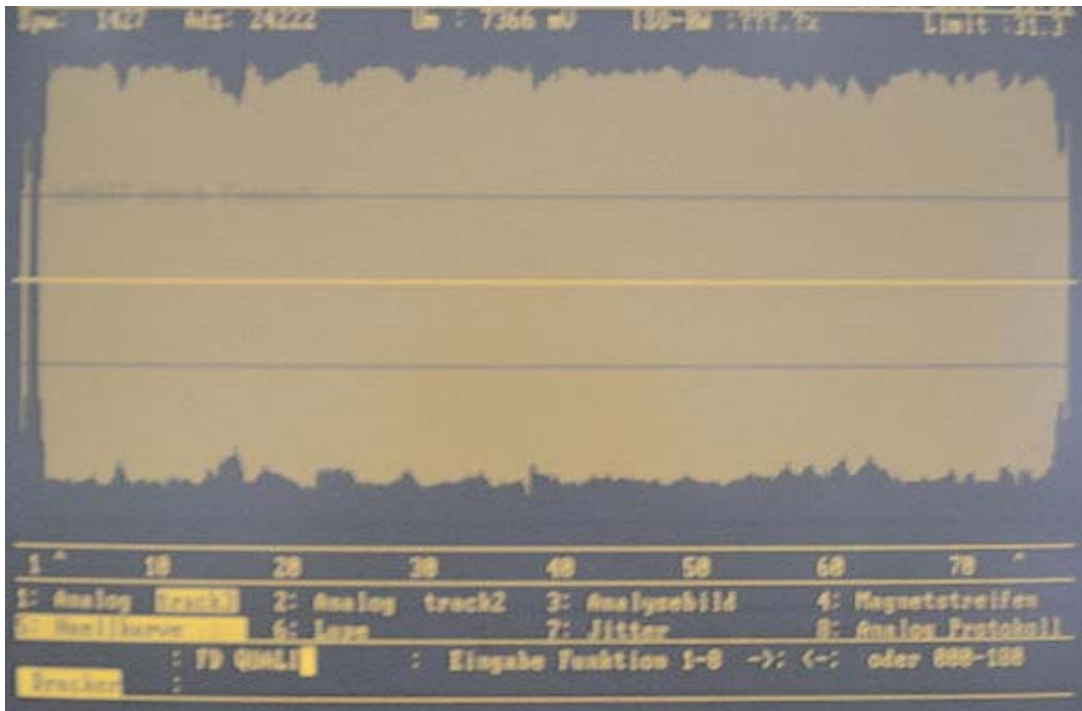


Figure 6.10: Measurement Ref
Readback Voltage $U_m = 7.336 \text{ mV}$

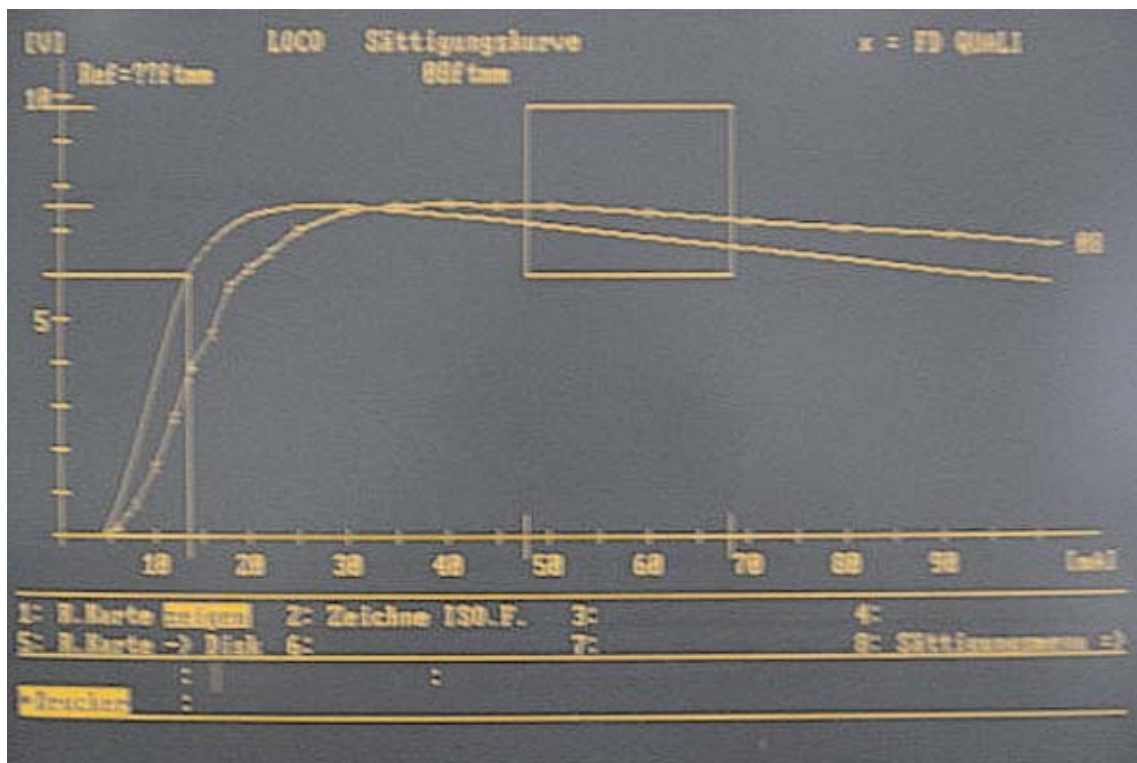


Figure 6.11: Measurement Ref Saturation Characteristic

6.2 Print Image



Figure 6.12: Print Format Samples

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