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Test Report

EN 1300
Secure storage units
Classification for high security locks according to their resistance to unauthorized opening

REPORT # : WCT 20/0507

CLIENT: *AllCash Technologies (Pty) Ltd*
Postnet Suite #275, Private Bag X11
Halfway House, Midrand
1685

Attention: Keith Heming
Order #: Application Forms
Date of Order: 27 May 2020

SAMPLE: *Electronic High Security Lock*

TEST SPESIFICATION: *EN 1300:2018*

SUMMARY OF RESULTS: *Complied*

DATE STARTED: *2020-05-29*

DATE COMPLETED: *2020-06-29*

DATE OF ISSUE: *2020-06-29*

TESTED: GH Holtzhausen (Test Engineer)

APPROVED: LP Kuisis (Test Engineer)

NOTE:
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Clause	Requirement - Test	Result - Remark	Verdict

1. DESCRIPTION OF SAMPLE

Manufacturer:	AllCash Technologies
Model:	MHO-ALLEGRO-TT
Trade Name:	Allegro High Security Lock
Country of Origin	Republic of South Africa
HSL Class:	Class B
Rated Voltage:	220 V ac

2. ABBREVIATIONS

TEST DOES NOT APPLY:	**N/A**
SAMPLE MEET REQUIREMENTS (COMPLY):	**C**
SAMPLE DOES NOT MEET REQUIREMENTS (FAIL):	**F**
NOT TESTED:	**N/T**

3. GENERAL REMARKS

* Only a brief description of the requirements, measurements, etc. Is given to indicate the nature of these. Consult the specification for details.
* The sections and subsections refer to in this report, are numbered as the test specification.
* This document shall not be reproduced in full unless approved by T.E.S.T. *Africa*.
* For sample identification, please see Appendix 1.

4. TEST CONDITIONS

Climatic conditions that prevailed during tests:

	Maximum	Minimum	Limits
Ambient temperature	24 ºC	19 ºC	25 ºC ± 10 ºC
Relative humidity	56 %	34 %	Below % RH

5. COMMENTS

Complete unit submitted

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5	**REQUIREMENTS**		C
5.1.1	GENERAL REQUIREMENTS		C
	By evaluation according to 8.1.2		C
5.1.2	Requirements for all Classes		C
5.1.2.1	Lock only opened with correct code. The opening codes shall be retained as the only valid apening codes until deliberately reset.		C
5.1.2.2	Where mnemonic codes are used with a HSL these must be able to be changed.		C
5.1.2.3	Any supplementary device (e.g. micro switch) which is fitted by the HSL manufacturer shall not be capable of being used to obtain information abut the code.		C
5.1.2.4	An input is a necessary part of a HSL although one input unit may operate more than one HSL (processing unit).		C
	Each HSL shall have a proccesing uint to accept the correct cotde from the input unit. Each HSL shall also incorporate a blocking feature or be capable of causing movement of a blocking feature. If this feature has to be activated before first use a note to this effect is to be included in the instructions for use of the lock.		C
5.1.2.5	If the blocking feature is not moved manually there shall be a means of indicting whether the HSL has been secured, locked and scrambled		C
5.1.2.6	By evaluation according to 8.1.2 and opening code shall not be capable of being altered or being changed other than by recognised code.		C
5.1.3	Class D HSL		N/A
5.1.3.1	Means shall be provided by which the locking status, locked or unlocked, is made obvious	Class B	N/A
5.1.3.2	A mechanical combination HSL, shall be in a scrambled condition after locking.		N/A
5.1.3.3	A class D HSL shall contain a device which indicates the scrambled condition.		N/A
5.1.4	Mechanical key operated HSL		N/A
5.1.4.1	For all mechanical key operated HSL (see clause 4), the same codes for the key sets shall not be repeated untill 100% of the usable codes have been used. If a manufacturer has mre thatn one manufacturing plant that requirement is tobe applied oer plant. No syncronization between plants is needed. However multiple manufacturing plants shall not start at the same code at the same time.	Electronic	N/A
5.1.4.2	Codes (and sets of code tokens) shall be chosen at random.		N/A

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5.1.4.3	There shall be no number or marking on either token or HSL, which indicates the code. Also no legitimization card shall be used.		N/A
5.1.4.4	It shall no be possible to remove the key from a HSL whilst that HSL is in the open position except for code changing. This requirement is applicable to all classes. Note that it is acceptable for this feature to be activated immediately prior to the first use of the HSL.		N/A
5.1.4.5	The key shall not break under the applied maximum torque of 2,5 Nm. The test to be conducted according to 8.2.1.4		N/A
5.1.4.6	In addition to the foregoing requirements the manufacturer is also to complete declaration set out in Annex C		N/A
5.1.5	Lift heights for mechanical key locks		N/A
5.1.5.1	The maximum allowed number of coding elements (levers) of the same lift shall e calculated by taking 40% of the coding elements . Mathematically round the result Note: If the result would be 2.5 the rounded result is3. If the result is 2,4 the rounded resulte is 2.		N/A
5.1.5.2	Usable codes shall not have more than two neighbouring elements, e.g two levers next to each other, with the same height.		N/A
5.1.5.3	In usable codes, the difference between the highest and lowest height shall be equal or more than 60% of the maximum lift height difference of the HSL. Calculation shall be mathematically rounded.		N/A
5.1.6	Electronic HSL		**C**
5.1.6.1	Electronic HSL shall not require to use of electric power to stay in secured condition.		C
5.1.6.2	Electronic HSL as of class B and with more than 2 opening codes shall retain the records of the opening events used according to Table 1 and shall have the means to retain the record for at least 1 year, even in the event of power failure. The record shall not contain any security relevant information.		C
5.1.6.3	For non-distributed systems all components parts of the input unit shall be fixed to the secure storage unit. With the input unit being fixed to the secure storage unit the cabling from input unit to prcessing unit shall be non accessible.	Error Signal triggered	C
5.1.6.4	In class C and D any manipulation or replacement s of the input unit shall generate an audit entry and automatically display information to the user at each use until it's neutralized by an authorized person.	Class B	N/A
5.1.6.5	If the Penalty Time is activated there shall be a clear indication, in all classes of HSL, to the user.		C

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5.1.6.6	Low Battery Indication: battery powered locks shall be able to operate for at least 3 000 complete lock openings. The battery capacity shall be monitored. In the case of low battery/low batteries an audible or visual signal shall occur during or immediately after an opening process. After the first low battery signal at least ten (10) complete opening and opening and locking processes shall be possible. Where it is possible to connect power from the outside it will not be necessary to meet this requirement.	Battery only for Backup	C
5.1.6.7	The processing unit for code evaluation shall be located inside the secure storage unit.		C
5.1.6.8	Electronic HSL shall stay in secured condition when tested against power loss according to 8.2.5.3 aswell as of class B when manipuled with power supply according to 8.2.2. If electronic HSL are constructed according to E.2.1, Annex E is applicable.		C
5.1.6.9	Any application software generating one time codes shall use authorization methods (e.g password or dongle) to access and operate it and shall use data protection to store any kind of data. The manufacturer shall state which autorization methods and data protection is used for his system to the testing laboratory (see Annex C) The manufacture shall give a statement in this manuals that any application software generating on time codes shall only be installed and operated in a secure enviroment.		C
5.1.7	Electronic tokens		N/A
5.1.7.1	General : The manufacturer shall give a statement in his manual that electronic tokens shall be secured like mechanical keys.	Keypad	n/a
5.1.7.2	Contactless electronic tokens		N/A
5.1.7.2.1	General: The following requirements for contactless electronic tokens are only applicable for near fiels communications devices, where a typical operation range is less than 15 cm, e.g NFC or Mifare. If the typical distance between the electronic token and input unit data transmission is more than 15cm or the electronic token is used for a class D HSL, the requirments of distributed systems as in 5.1.8 shall be met. Note: Optical systems are considered to be distributed systems. An example for a contactless electronic token is RFID card.		N/A

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5.1.7.2.2	Mutual authentication: Mutual authentication according to ISO/IEC9798-2 or ISO/IEC9798-4 shall be used. The time variant parameter such as time stamp, sequence number or random numbers to prevent valid authentication information from being accepted at a later time or more than once (see ISO/IEC 9798-1:2010 Annex B) shall have at least 32 bits. In addition to mutual authentication a valid opening code shall be used to open the HSL.		N/A
5.1.7.2.3	Cryptographic key: The cryptographic key for symmetric algorithms shall have a minimum length of 64 bits for classes A and B and 128 bits for classed C and D and shall be intended only for specific HSL model. (NIST/SP 800-57). The cryptographic key symmetric algorithms or the private key for asymmetric algorithms shall never be sent out of the token. It may be part of the transmitted communication data into the electronic token for initialising purposes. The initialization process shall be done by an authorized person in a secure environment. This shall be stated in the user instructions.		N/A
5.1.7.2.4	Identification number: Each electronic token shall have a unique identification number. The identification number shall have a lenght of at least 32 bits. Normally, the identification number is required for audit purpose only. If the serial number is also used as secutiry relevant information, it shall not be visable on the token.		N/A
5.1.7.3	Contacted electronic tokens: Contracted electronic tokens for locks other than class D may not meet the same additional requirements as contactless electronic tokens. The manufacturer shall give a statement in his manuals if any security relevant information is stored unencrypted. Security relevant information should be stored in the token and there should be a secure authentication.		N/A
5.1.7.4	Multi-use: If the electronic token is designed to be used in applications other than the HSL system, the security relevant information shall not be accessible to the other applications If the electronic token is to protect against multi-use, the following statement shall be included in the manual: *Never use this electronic token in applications other than this HSL model.*		N/A
5.1.8	Requirments for cryptography in distributed security systems		N/A
5.1.8.1	Informations security	Stand Alone	N/A
5.1.8.1.1	General: This clause focuses on confidentiality, authentication, integrity, availability, data transmission information storage, cryptographic keys and their management.		N/A

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5.1.8.1.2	Confidentiality: Security relevant information that is transmitted across a distributed system shall be encrypted to prevent unauthorized reading. For security relevant data transmission processes in distributed systems, symmetric algorithms such as NIST/SP 800-67 and FIPS 197 respectively. The encryption algorythm shall be used in a secure mode of operation such as CBC, CFB of GCM.		N/A
5.1.8.1.3	Authentication: Authenication is required to start communication between devices of a distributed system. The authentication method shall be described by the manufacturer.		N/A
5.1.8.1.4	Integrity: It shall be ensured that data has not been altered in an unathorized manner since it was created, transmitted or stored. This includes the insertion, deletion and substitution of data. Accepted methods for ensuring integraty are MAC algorithms or digital signatures.		N/A
5.1.8.1.5	Availability: Ia a distributed system is temporary not available this condition shall not compromise the level of security		N/A
5.1.8.1.6	Security relevant information storage: For storage of security relevant information in HSL cryptographic concepts mentioned in 5.1.8.1.2 shall be chosen.		N/A
5.1.8.1.7	Cryptographic key management: Cryptographic keys shall be protected against access. The method of storing, creating transmitting ans accessing the cryptographic keys shall be described by the manufacturer. These requirements aslo apply to the manufacturer's initalization process.		N/A
5.1.8.1.8	Cryptographic keys for data transmission: Distributed systems shall be equipped with cryptographic keys generated at random except for presetfactory cryptographic key(s) for all classes. FIPS PUB 140-2:2002, 4.7.1 (random number generators)security requirements shall be considered for the generation of random numbers. The cryptographic keys shall be field changeable. If a new key is confirmed, the new key shall be the only usable one.		N/A
5.1.8.1.9	Cryptographic key modification:		N/A
5.1.8.1.9.1	General: The preset factory cryptographic key(s) shall be changed before putting the distributed system into operation.		N/A

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5.1.8.1.9.2	Key exchange: Key exchanges shall be use asymmetric (based on algorithms such as RSA, ECC) or symmetric methods (such as Kerberos 5). The mechanisms for key change shall provide at least the equivalent security strength as the methods of data transmission. To get an overview of appropriate key sizes and the equivalence between symmetric and asymmetric key lengths, refer to NIST/SP 800-57. When the key exchange is triggered automatically or manually the frequency of the key exchange shall follow NIST/SP 800-57.		N/A
5.1.8.1.9.3	Key change: The manufacturer shall provide a user instruction explaining the procedure and frequency for key changes. Changes shall be done only after input of an authorization code. If the key change is done out of band (outside of previously established communication method), 5.1.8.1.7 shall be followed.		N/A
5.1.8.2	Security of distributed input unit:		N/A
5.1.8.2.1	General: The requirement shall be met only if security relevant information is transmitted.		N/A
5.1.8.2.2	Physical security: In a distributed system any input unit of all HSL classes shall follow 5.1.6.4.		N/A
5.1.8.2.3	Information security: When security relevant information is sent over a distributed system, it shall be entered in trusted and dedicated input units only, following 5.1.8.1. Unauthorized attempts to access those input units shall block the input unit from normal use, e.g. will activate mechanisms that erase or render useless plaintext cryptographic keys (i.e. tamper response). Level 3 physical security requirements according to FIPS PUB 140-2-: 2002; 4.5.1 shall be met at minimum.		N/A

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5.1.9	Firmware updates: Firmware updates shall be sent encrypted following 5.1.8 to the processing unit and/or an input unit. Firmware updates shall be initiated by recognized code. The number of trials per hour for firmware updates shall follow Table 1 (column “Maximum No. of trials per hour for each type of coding means”). If the firmware updates change, add or delete opening codes, this shall be documented in the user instructions. Each firmware update shall be acknowledged at the HSL by an authorized person. The change log of the firmware, the procedure and the encryption shall be noted in a declaration (see Annex F). All devices between input and processing unit shall not create any HSL related security relevant information. The manufacturer shall include this requirement into the operation instruction.		N/A
5.2	Security requirements:		
5.2.1	Usable codes: The minimum number of usable codes when tested in accordance with 8.2.1 for each class and type of HSL shall be as given in Tabel1. Minimum number of 25 000 codes for mechanical key locks of class A shall be sufficient only if the required manipulation resistance as in table 1 is ascertained by 8.2.2. As of 80 000 codes or more and by compliance with Annex B, class A HSL shall not be tested for resistance to manipulation.		C
	HSL with parallel codes: the minimum number of usable codes shall be multiplied by the number of possible parallel codes.		C
	HSL with variable opening code lengths: the smallest number of used figures which the HSL is able to accept for opening code input shall be used for the calculation of usable codes.		N/A
	It shall not be possible to open mechanical key operated HSL with additional keys when tested in accordance with 8.2.1.3.		N/A
	HSL having more than one mode of coding means (for instance mnemonic code and electronic token): at least one of the coding means shall fulfil the security requirements of this standard. If there is a secondary mode of coding means, which does not completely fulfil the security requirements of this standard, it shall only be used in addition to the mode that fulfils the requirements completely.		C
5.2.2	HSL having over ride feature: HSL with an over feature (e.g. an electronic HSL having a mechanical override) shall be classified by the least secure system used.		N/A
5.2.3	Manipulation resistance		C

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5.2.3.1	Limit of trials: The maximum number of trials per hour which can be made shall as shown in Table 1, Note: Mechanical token HSL are not included in Table 1 because the time taken for changing tokens sufficiently the rate of trials.	10	C
5.2.3.2	Manipulation: The minimum resistance values, M gives in Table 1 shall be exceeded by at least two of the three test specimens in the tests for manipulation resistance made according to 8.2.2.	60	C
5.2.4	Destructive burglary resistance: The minimum resistance values gives in Table 1 shall be exceeded in tests which an external for is applied according to 8.2.3		C
5.2.5	Spying resistance:		C
5.2.5.1	Any information entered into an electronic HSL shall be unrecognizable 30s after entry, even if only part of the opening code has been entered.		C
5.2.5.2	For all HSL input units of classes C and D and for remote input units according to 5.1.8.2.3 (and not according to 5.1.6.4) for all classes used in a distributed system the included angle over which code information can optically be observed shall be not more than 30° about the centre-line as defined in 8.2.4.		N/A
5.2.5.3	Direct code input via the keypad using the fixed position of figures is not permitted for class C and D HSL. This does not apply if a one-time code is used.	Class B	N/A
5.2.5.4	Compromising emanation of signals: It shall not be possible to correlate security relevant information with emitted signals from any component part of a distributed system. In connection with compromising radiation, special attention shall be paid to the transmission system because of coupling of radiation and/or wireless transmission.		N/A
5.2.6	Electrical and electromagnetic resistance:		C
5.2.6.1	During testing in accordance with 8.2.5.3 any power loss when an electronic HSL is in its secured HSL condition it shall remain secured. After testing in accordance with 8.2.5.4 mains powered HSL shall be capable secured during a failure of mains supply lasing up to 12 h.		C

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5.2.6.2	After testng in accordance with 8.2.5.6 electronic HSL tested for electrostatic discharge resistance shall meet the requirments of Table 2. During this testing specimens shall not be change form the secured HSL condition for longer than 5 ms.		C
5.2.6.3	During the testing of electronic HSL for resistance to radiated electromagnetic fields in accordance with 8.2.5.9 the requirements of Table 2 shall be met		C
5.2.6.4	Ater testing of a mains powered electronic HSL for resistance to fast transient bursts in according to 8.2.5.7, the requirements of Table 2 shall be met. During this testing specimens shall not change from the secured HSL condition for longer than 5 ms		C
5.2.7	Physical environmental resistance		C
	All HSLs shall be tested according to 8.2.6.1 and 8.2.6.2 for resistance to vibration and shock, accourding to 8.2.6.4 for resistance to corrosion, and all electronic losck shall be tested for immersion accourding to 8.2.6.3		C
5.2.8	Temperature resistance		C
5.2.8.1	Cold		C
	The electronic HSL shall be in its normal condition after test in accordance with 8.2.7.1 for 16 h at -10°C		C
5.2.8.2	Heat		C
	The electronic HSL shall be in its normal condition after the test in accordance with 8.2.7.2 for 16 h at +55°C		C
5.3	RELIABILITY REQUIREMENTS		C
5.3.1	After being subjected to 10 000 cycles according to 8.3.1, the HSL shall be in its normal condition		C
5.3.2	Code input by rotating a dial shall not deviate from the setting by more than 1 % of the total setting range after testing for dynamic code input to 8.3.3		N/A
5.3.3	Code changeable HSL shall be in the normal condition after 100 code changes have been made, according to 8.3.2		N/A

6	**TECHNICAL DOCUMENTATION**		C
6.1	The following technical documentation shall accompany the test specimen		C
	-Detailed construction drawings, with dimensions and tolerances, including characteristics of detaining features, which shall include:		C
	-Dimension of the bolt head or other blocking feature;		C
	-Blocking feature movement (bolt throw);		C

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	-Fitting dimension of the HLS (examples of typical dimensions are shown in Annex D)		C
6.2	The calculation of usable codes and all relevant parameters for the calculation		C
6.3	All dimensional values necessary for linking or connecting the HSL to external devices (e.g. code input device, means by which blocking feature is moves) including size, shape and allowed position of holes needed for keys, spindles, dials and cables.		C
6.4	Detailed description of the means for setting and changing codes any precautions to be observed.		C
6.5	Parameters of installation		C
6.6	Operating instructions		C
6.7	Firmware and hardware documentation of electric HSL including;		C
	-firmware structure;		C
	-circuit diagram;		C
	-program code listing;		C
6.8	Description of the firmware method used to:		C
	-store codes;		C
	-read out codes;		C
	-protect the access to stored data and program;		C
	-operating manual		C
6.8	Description of the software method used to:		C
	-store codes;		C
	-read out codes;		C
	-avoid memory damage;		C
	-manipulation blocking		C
6.9	Statement of the high security lock (HSL) class the HSL is expected to meet		C
7	**TEST SPECIMENS**		C
7.1	A minimum of four test specimens shall be provided		
	For manipulation resistance testing additional 3 specimens shall be provided. These three specimens shall be sealed, will have their opening codes selected at random and these codes shall not be known to the test teams		C
	The applicant shall supply test specimens for manipulation testing mounted on a steel plate with cover according to 8.1.3		C
7.2	Each test specimen shall include all security relevant parts of the HSL, specifically		C
	-the input unit;		C

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	-the processing unit;		C
	-the locking device;		C
	-the blocking feature;		C
	-any override device,		C
	-any other part upon which the security of the specimen depends		C
7.3	When the test specimens are mechanical key locks one specimen shall have two additional keys, as well as the correct key. One additional key shall have one step which is one step increment height higher than the same step of the correct key; the other additional key shall have the same step one step increment height lower that that of the correct key		N/A
8	**TEST METHODS**		C
8.1	General		C
8.1.1	Test specimens are tested for their security and reliability. In security tests the objective is to unlock the test specimen or cause it to fail insecure; in reliability tests the objective is to establish whether the test specimen continues to function without loss of security after exposure to the tests		C
	Specimens of mechanical HSL for the manipulation resistance test (see 8.2.2) may be subject to up to 1 000 cycling operations (see 8.3.1) before the manipulation test. These specimens shall not be subject to any other test prior to the manipulation test		C
	Testing against cryptographic requirements is based on examination of manufacture's description of the system which shall contain a list of the referenced standards		C
8.1.2	Evaluation by inspection		C
	All requirements according to 5.1 shall be evaluated by inspection		C
8.1.3	Simulate the use in a secure storage unit by mounting the test specimens, according to the manufacturer's instructions, on steel mounting plate and cover, both which are free of holes other than those required for mounting in accordance with the technical documentation (see clause 6) and Figure 1, for the following tests; manipulation resistance (see 8.2.2), destructive burglary resistance (see 8.2.3), spying resistance (see 8.2.4), electrical and electromagnetic resistance (see 8.2.5)		C
	Where the dynamic code input is carried out by cycling equipment it shall not be necessary to use a simulated (dummy) Secure Storage Unit		N/A
	Allow access to the specimen in accordance with the technical documentation in Clause 6. When the test specimen is an electronic HSL the cover shall be made of steel and joined to the steel mounting plate by screws spaced at less than 50 mm around all four sides of the steel plate		C

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	Carry out the manipulation resistance test (8.2.2), destructive burglary resistance (see 8.2.3) test and spying resistance test 98.2.4) against only those parts for the test specimen accessible when it is mounted on the steel plate and without forcibly penetrating the steel plate or the cover		C
	The burglary test shall exclude any attack against the lock case or its cap (cover), form inside the lock, which causes any part of the case or cap to be damaged, and/or partly removed or completely removed		C
	When the secured condition of the test specimen has to be monitored it shall be carried out to an accuracy of 5 ms		C
8.2	Security tests		C
8.2.1	Usable codes		C
8.2.1.1	Access the manufacturer's declaration of the numbers of usable codes (see 6.2) to ensure it is correct		C
8.2.1.2	Use the procedure in the following example and the cyclic test device to calculate the number of usable codes mechanical combination HSL		N/A
	-the code wheels, less the last one to be set, are aligned to their opening numbers;		N/A
	-the last code wheel is then set to the test number; starting with its opening number minus 5 digits;		N/A
	-determine whether the lock opens,. If the lock opens the minimum number, N min and the maximum number N max are recorded;		N/A
	-increase the test number by 0,25 digits;		N/A
	-repeat steps until the test number is the opening number plus 5 digits;		NA
8.2.1.3	For mechanical key locks, the keys having one step with one height increment difference (see 7.3) shall be used with a maximum torque of 1.5 Nm to determine whether either will unlock the specimen		NA
8.2.1.4	For testing the key strength, the lock shall be mounted in a stand according to Figure 1. Then the correct key shall be fully inserted in the lock and consistently be increased to a torque of (2,5 $\pm$ 0,1) Nm for period of 5 s. After this, the key shall be capable to be removed from the lock and reused to operate the same lock with a torque not exceeding 1,5 Nm.		N/A
8.2.2	Manipulation resistance		C
8.2.2.1	Principle		C
	Test specimens and technical documentation are examined and the method of assessing manipulation resistance is decided in accordance with the following:		C
	-mechanical HSL in Class A which meet the design requirements of annex B shall not be tested for resistance to manipulation		N/A

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	-mechanical HSL in Class B which meet the design requirements of annex B shall not be rested unless the test house is unsure that the manipulation resistance requirements have been met		N/A
	-electronic HSLs in all classes and mechanical HSLs in Classes C and D shall be tested for resistance to manipulation		C
	-mechanical HSLs in Classes A and B which do not meet the design requirements of annex B, or for which it cannot be shown that these design requirements are met, may be tested for resistance to manipulation at the applicants request		C
8.2.2.2	Equipment		C
8.2.2.2.1	Clock which measures hours, minutes and seconds		C
8.2.2.2.2	Tools according to the criteria in Table 4		C
8.2.2.3	Procedure: examine a sufficient number of test specimens together with the technical documentation and annex B and device a test program of manipulation using tools, which shall be most likely result in the lowest manipulation resistance values.		C
8.2.2.4	Manipulate each of the three sealed test specimens once using the manipulation test procedure in8.2.2.3. measure the time of manipulation with a test being terminated when the resistance to manipulation value M for the Class has been exceeded		C
8.2.2.5	Expression of results		C
	Calculate the resistance to manipulation value, M from the following formula: M = t + B		C
8.2.3	Destructive burglary resistance		C
8.2.3.1	Principle		C
	Test specimens and technical documentation are examined and a method of assessing the destructive burglary resistance is devised and implemented		C
8.2.3.2	Equipment		C
8.2.3.2.1	Clock which measures hours, minutes and seconds		C
8.2.3.2.2	Tools from Category A of EN 1143-1		C
8.2.3.2.3	Tools according to the criteria in Table 4 of EN1300		C
8.2.3.3	Procedure		C
	Examine the unsealed test specimen together with technical documentation and conduct any trails and take any necessary measurements to decide the method and tools which will result in the lowest destructive burglary resistance value		C
	Test one specimen and measure the time of the test. The test may be terminated when the destructive burglary resistance value for the class has be exceeded		C
8.2.3.4	Expression of results		C

EN 1300			
Clause	Requirement - Test	Result - Remark	Verdict
	Calculate the destructive burglary resistance value D from the following formula: D = 5t + ∑BV + B		C
8.2.4	Spying resistance		C
8.2.4.1	Principle		C
	The test specimen is to be mounted in accordance with Figure 1 and held in a vertical position at a height convenient for observing any positions on the HSL and from where the code being input can be seen		C
	Test are made to recognise the information being input		C
	Two screens are positioned against the test specimen to limit the spying angle		C
	Spying trials are made to determine if any information being input can be recognised outside the included angle		C
8.2.4.2	Equipment		C
8.2.4.2.1	Test rig capable of holding the mounted test specimen in a vertical position		C
8.2.4.2.2	Clock which measures hours, minutes and seconds		C
8.2.4.2.3	Two screens capable of defining a limited angle of spying For HSL classes C and D the spying test may need to be made in various lighting conditions.		C
8.2.4.3	Procedure		C
8.2.4.3.1	Take one electronic HSL and input an opening code. Observe whether information input is unrecognisable 30 s after last digit entry. Carry out the test inputting the complete code and then only part of the code		C
8.2.4.3.2	Position two screens in front of the test specimen at an angle of 60° in accordance with figure 1 and 2 and whilst the codes are input assess and record whether any information can be recognised	Only User ID	C
8.2.5	Electrical and electromagnetic resistance		C
8.2.5.1	Principle		C
	Electronic HSL test specimens in their normal condition before each test are tested for electrical and electromagnetic resistance in accordance to EN 50130-4 / EN 6100-1-11 / EN 6100-1-2-11 using the test values in table 2		C
8.2.5.2	Procedure		C
	Test samples in accordance with the requirements of 5.2.6 and assess the AHL after each test to determine if it is in its normal, operating or fail secure condition, as appropriate to the requirements		C
8.2.5.3	Power loss test		C
	Place the test specimen in the secured condition and remove power. Assess whether it remains in the secured condition		C

EN 1300			
Clause	Requirement - Test	Result - Remark	Verdict
	After that, test possible unintentional unlocking at power supply with DC or AC by consistent increase from 0 to 220 V, the lock being connected to external accessible cables.		C
8.2.5.4	Re-securing during power failure		C
	Place a mains powered HSL test specimen in the unsecured condition. Remove the power. Assess whether the HSL can be secured 12 h after the power has been removed		C
8.2.5.5	Electrostatic discharge		C
	Carry out electrostatic discharge tests in accordance with EN 61000-4-2 using the test levels of Table 2 against parts of the HSL test specimen which are touched by the user during any operation, for example code entry, unlocking, code change. The polarity of the mounting plate is + or – therefore both polarities shall be tested.		C
	If the installation instruction is not starting that safe shall be metal, then additional tests may be conducted.		C
8.2.5.6	Surge immunity		C
	Test in accordance with EN 61000-4-5 using test levels of Table 2		C
8.2.5.7	Radiated electromagnetic fields		C
	Test in accordance with EN 50130-4 using pulse modulation		C
8.2.5.8	Expression of results		C
	Assess whether there is any change in the secured condition of the specimen HSL during testing or after, whether it remains in the secured condition during and after the test, according to table 2		C
8.2.6	Physical environmental resistance		C
8.2.6.1	Vibration		C
	Test HSL specimen which are in operational condition, for vibration resistance, in each of the three axes x, y and z according to EN 60068-2-6 using the test values in table 3		C
8.2.6.2	Shock test		C
8.2.6.2.1	General		C
	During the test there shall be continuous mounting whether the secure condition of the test specimen changes for more than 5 ms. Also assess whether the test specimen is in an operating condition after exposure to the test according to 8.2.6.2.4		C
8.2.6.2.2	Principle		C
	Statement of the high security lock (HSL) class the HSL is expected to meet		C
8.2.6.2.3	Equipment		C

EN 1300			
Clause	Requirement - Test	Result - Remark	Verdict
	A test rig which allows the test specimen, when mounted on a rigid mounting plate in accordance with the method in the technical documentation to fall vertically though (1000 ± 5) mm and be decelerated with an appropriate absorber that allows the required decelerations and is located at the point of impact. Deceleration is measured on the mounting plate and only the mounting plate is to contact any part of the test rig. The test equipment shall be able to continuously monitor the secured HSL condition (for example the position of the locking element.) the mounting phase shall begin at the moment equipment shall be capable to measure steps of 1 ms or less.		C
8.2.6.2.4	Procedure		C
	-operate the test specimen so that the blocking element is in the secured HSL position;		C
	-raise the test specimen so that it will fall through 1 000mm ± 5mm;		C
	-make five (5) impacts in the chosen one axis, and direction and assess whether the secured condition is satisfied		C
	-in case a change of condition is visible (for instance a moving of the locking elements), additional shocks with more or less than 50 g to a minimum of 50 shocks shall be conducted.		N/A
8.2.6.2.5	Expression of results		C
	Continuous monitoring to assess whether the secure condition of the test specimen changes for more that 5 ms during the test		C
	If the specimen is not being continuously monitored assess whether the secure condition has changed due to the test		C
	Assess whether the test specimen is in an operational condition after exposure to the test		C
	Record the conditions of the test specimen after the shock test. After and during the exposure of the shocks the HSL shall be at least in fail secure condition		C
8.2.6.3	Immersion test		C
8.2.6.3.1	General		C
	Dissolve NaCl in distilled water with a ratio of 150 ± 20 g per litre 20 ± 5°C		C
8.2.6.3.2	Test without input unit sunk in water		C
	Test the electronic HSL in its normal and operating condition with		C
	-processing unit		C
	-the locking device		C
	-and with the battery, if the battery is not inside of the input unit		N/A
8.2.6.3.3	Test with input unit sunk in water		C
	Test the electronic HSL in its normal and operating condition with		C
	-processing unit		C

EN 1300			
Clause	Requirement - Test	Result - Remark	Verdict
	- the locking device		C
	-the input unit		C
	-and with the battery		N/A
8.2.6.4	Corrosion unit		C
	After testing corrosion resistance by exposure to three cycles in accordance with EN ISO 6988, the HSL shall be in an operating condition. A completely assemble HSL is to be subjected to this test but for electronic HSL batteries shall be excluded. Dummy batteries shall be used		C
8.2.7	Temperature resistance		C
8.2.7.1	Cold		C
	Test the electronic HSL, which is in the normal condition, for 16 h at -10°C in accordance with EN 60068-2-1. Record its condition after the test sample has reached a temperature of at least + 5 °C		C
8.2.7.2	Heat		C
	Test the electronic HSL which is in the normal condition, for 16 h at + 55°C in accordance with EN 60068-2-2. Record its condition directly after the test sample has cooled down to less that 10 °C		C
8.3	Reliability testing		C
8.3.1	Cycling		N/A
8.3.1.1	Principle		N/A
	One HSL test specimen which is in the normal condition before each test, is to be repeatedly subjected to the following test cycle: code input, unsecuring, unlocking, locking, securing		N/A
	For electronic HSL the input may be tested for reliability separately from the processing unit and locking device. If this is done the firmware may be modified by the manufacturer to enable this separate test to take place.		N/A
	For HSL with multiple possible input units shall be submitted to the testing laboratory for assessment or testing		N/A
8.3.1.2	Cycling apparatus		N/A
8.3.1.2.1	Cycling apparatus is specially designed to be able to input an opening code to achieve unlocking, locking and securing. It may also enable code changing to be effected		N/A
8.3.1.3	Procedure		N/A
	Subject to the test specimen to the number of cycles defined in 5.3.1. during the test, the bolt shall be exposed to a load of 2,5 N while 5 000 cycles shall be conducted with the load against bolt extension direction and 5 000 cycles in bolt extension direction		N/A
8.3.1.4	Expression of results		N/A
	Assess and record the conditions of the HSL		N/A
8.3.2	Code changes		C

EN 1300			
Clause	Requirement - Test	Result - Remark	Verdict
8.3.2.1	Principle		N/A
	One HSL specimen in a normal condition is repeatedly subjected to the following code change procedure		N/A
	-entry of valid code;		N/A
	-code changing activity e.g. inserting/turning a change key in a mechanical combination lock;		N/A
	-entry of the new code;		N/A
	-setting the new code, e.g. turning/removing the change key in a mechanical combination lock;		N/A
	-operate the lock with the new code at least three times		N/A
	The code changing sequence may be carried out manually or by using the cycling apparatus		N/A
8.3.2.2	Procedure		N/A
	Subject specimen to the number of code changes defined i 5.3.3		N/A
8.3.2.3	Expression of results		N/A
	Assess and record the condition of the HSL		N/A
8.3.3	Dynamic code input of mechanical combination HSL		N/A
8.3.3.1	Principle		N/A
	The test specimen used in the cycling test and in the normal operating conditions is subjected to repeated acceleration, velocity and deceleration conditions		N/A
8.3.3.2	Equipment		N/A
	Specially designed apparatus for repeated code input by controlled acceleration and velocity		N/A
8.3.3.3	Procedure		N/A
8.3.3.3.1	Take the specimen used for the cycling test, rotate the mechanism for 6 revolutions with 10 rad s^{-1} in one direction		N/A
	If the HSL does not unlock input other codes which are within on percent of the setting range of the original opening code and assess whether the HSL unlocks		N/A
8.3.3.3.2	Take the specimen used in 8.3.3.3.1 and input the opening code with 10 rad per second rotation, decelerated to (800 + 300 /-100) rad s^{-2} to zero speed. Measure the change of code setting in %		N/A
8.3.3.4	Expression of results		N/A
	Assess and record whether the lock was unlock		N/A

9	**TEST REPORT**		C
9.1	Allocate a unique identification number to the test report		C
9.2	Report the following		C

EN 1300			
Clause	Requirement - Test	Result - Remark	Verdict
	- Name of manufacturer and place and year of manufacturer;		C
	- Technical documentation supplied in accordance with clause 6;		C
	- reference to the standard and edition of the standard the HSL is tested against (e.g. EN 1300:2018)		C
	- The manufacturer's identification of the test specimen;		C
	- Date and place of testing		C
	- Results of test including description of methods, tools used and calculations for manipulation and destructive burglary;		C
	- The classification achieved during assessment to this European Standard		C
10	**MARKING**		C
	Each HSL case shall be legibly and permanently marked in a position which is visible when the HSL is attached to a secure storage unit		C
	The marking shall comprise at least the following:		C
	- Identification of the manufacturer		C
	- Model number		C
	- Year of manufacture		C
	- Classification		C
	- Number of this European Standard		C
	If the resistance grade of the HSL varies according to the type and code input unit with which it is associated this information shall be marked on the HSL		N/A

EN 1300			
Clause	Requirement - Test	Result - Remark	Verdict
A	**ANNEX A (INFORMATIVE)** **PARAMETERS FOR INSTALLATION**		C
	The overall security of an HSL depends on the method of installation and all information to assist installation should be provided by the manufacturer		C
B	**ANNEX B (NORMATIVE)** **DETERMINATION OF MANIPULATION RESISTANCE DUE TO THE DESIGN REQUIREMENTS**		C
B.1	Key locks		C
B.1.1	General		C
B.1.2	Gate Clearance		C
B.1.3	Bolt Stomp		C
B.1.4	False Notches		C
B.1.5	Additional design requirements		C
B.2	Mechanical combination locks		N/A
B.2.1	General		N/A
B.2.2	Fence		N/A
B.2.3	Wear Test		N/A
C	**ANNEX C (NORMATIVE)** **MANUFACTURES DECLARATION (APPLIES ONLY TO KEY OPERATED LOCKS)**		N/A

END OF TEST REPORT

Appendix 1

Report number : WCT 20/0507	Page 1 of 7
Trading name : SEE PAGE 2 OF TEST REPORT	
Model number : SEE PAGE 2 OF TEST REPORT	
Figure 1 : FRONT VIEW	
Figure 2 : BATTERY	
Figure 3 : DISPLAY	
Figure 4 : KEYPAD – BATTERY ACCESS	
Figure 5 : KEYPAD – INTERNAL LAYOUT	
Figure 6 : LOCK – CIRCUIT	
Figure 7 : LOCK – INTERNAL LAYOUT	
Figure 8 : LOCK – MECHANISM	
Figure 9 : MARKINGS	
Figure 10 : PSU – INTERNAL LAYOUT	
Figure 11 : REAT VIEW	

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

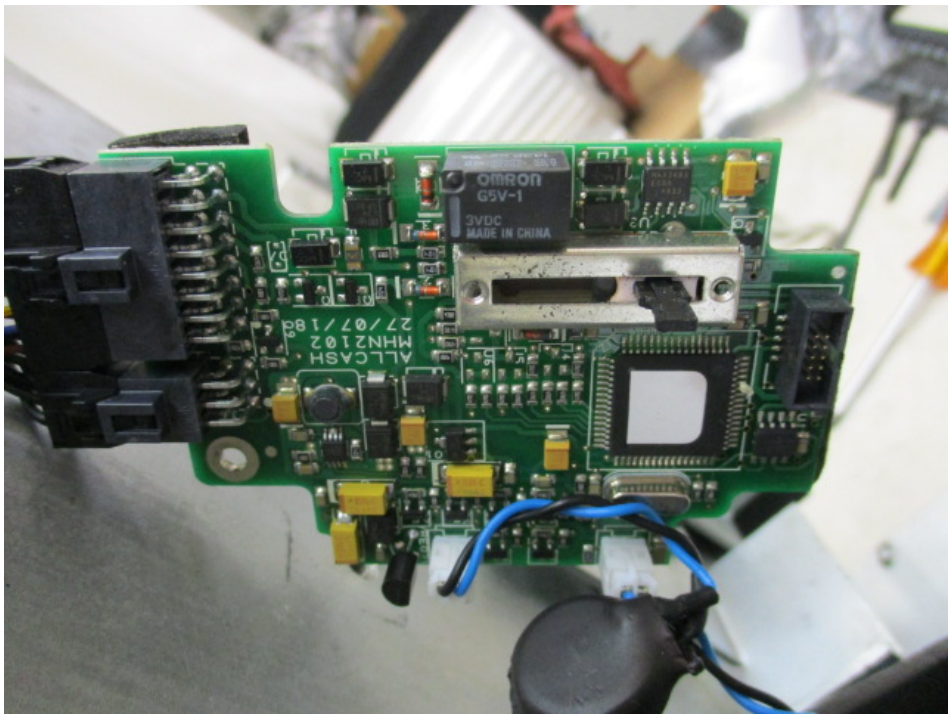

Figure 6

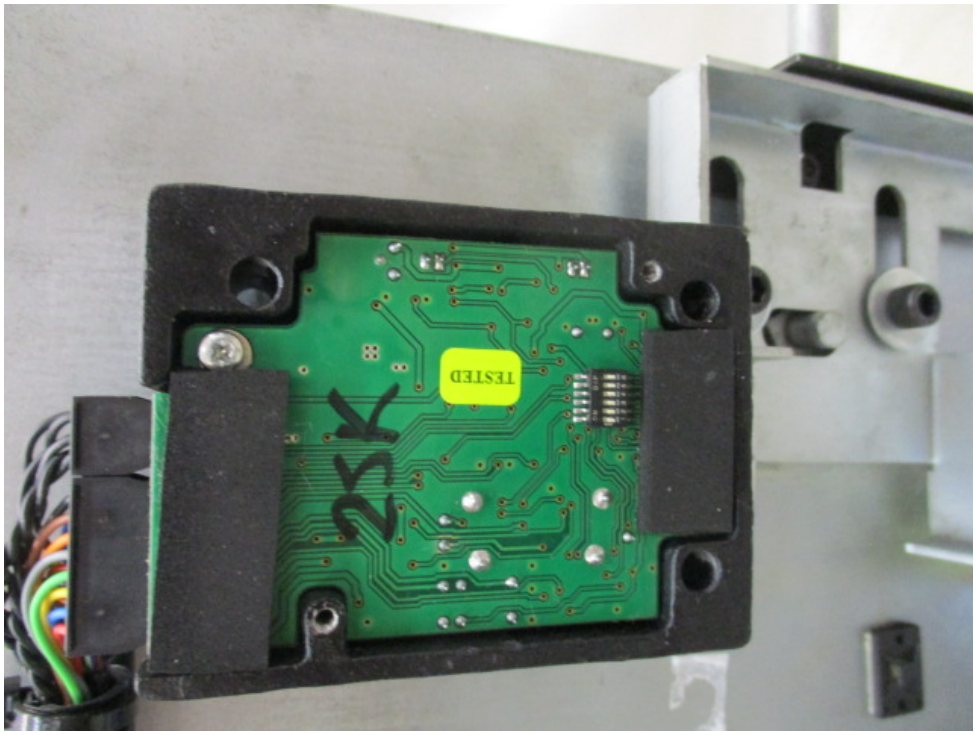

Figure 7

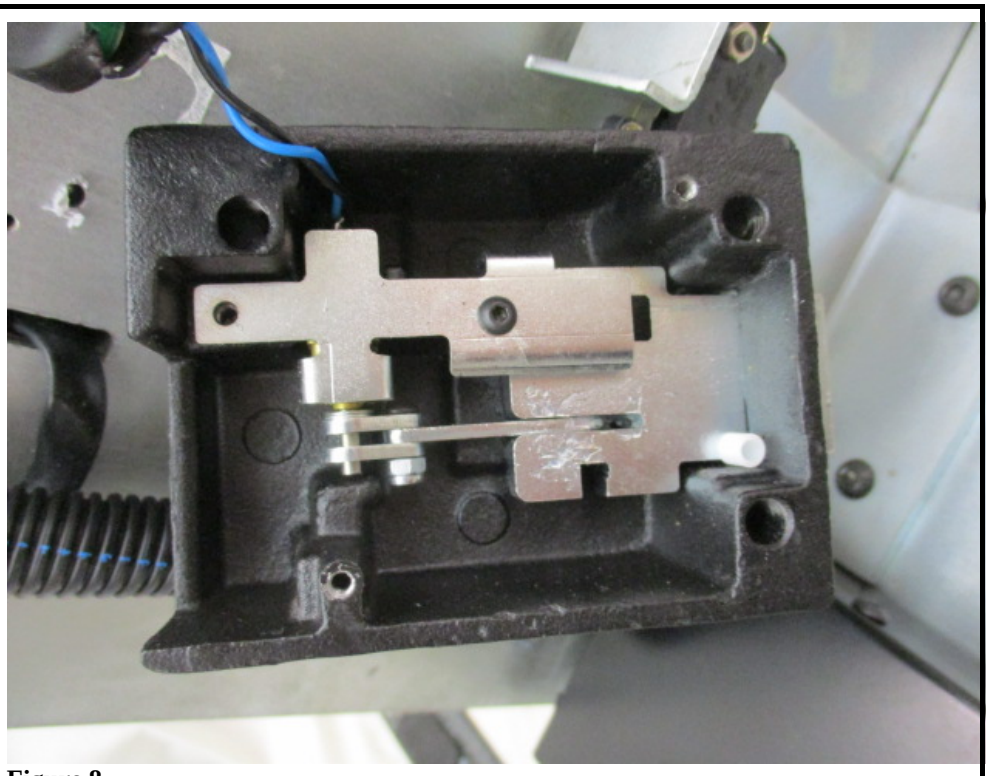

Figure 8

Figure 9

Figure 10

Figure 11