

TEST REPORT
EN 50136-1-1
Alarm systems – Alarm transmission systems and equipment
Part 1-1: General requirements for alarm transmission systems

Report Reference No.....: 100803903MIN-007

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Date of issue.....: 2013-February-14

CB Testing Laboratory.....: Intertek Testing Services NA, Inc.

Address.....: 7250 Hudson Blvd, Suite 100
Oakdale, MN 55128 USA

Testing location/procedure: CBTL ☒ SMT ☐ TMP ☐

Address.....: As above

Applicant's name: Paradox Security Systems Ltd.

Address.....: 6 Milton Street
PO Box F-42498
Freeport, Bahamas

Test specification:

Standard: EN 50136-1-1: 1998 + A2:2008, tested in accordance with A2LA accreditation to IEC/ISO 17025:2005, Certificate number 1427.01

Test procedure: IEC Test Report format

Non-standard test method.....: N/A



Test Report Form No......: EN50136_1_1A

TRF Originator.....: Intertek Testing Services NA, Inc

Master TRF.....: Dated 2010-06

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Test item description: Alarm transmission system (internet module)

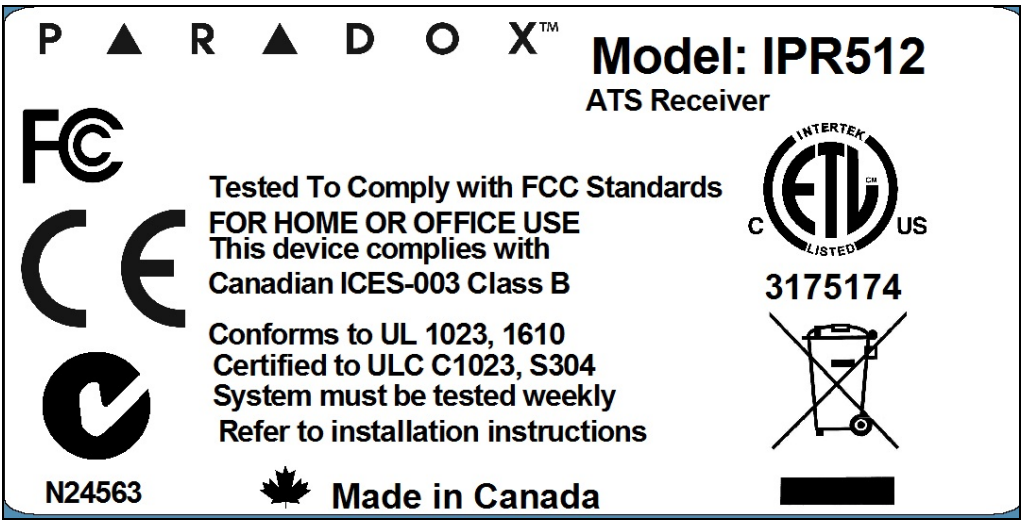
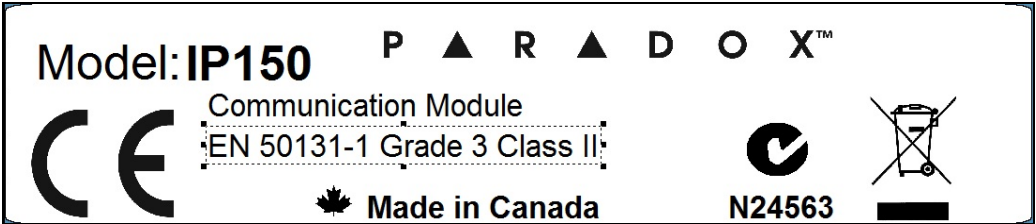
Trade Mark: **P**  **R**  **D O X™**

Manufacturer.....: Paradox

Model/Type reference.....: IP150

Ratings.....: 13.8Vdc, 100mA

Copy of marking plate:



Summary of testing:

- 6.3 - Transmission time
- 6.4 - ATS availability
- 6.5 - Signalling security

Location of Testing:

7250 Hudson Blvd, Suite 100
Oakdale, MN 55128 USA

Test item particulars :		
Classification of installation and use..... : The IP150 has a classification of ATS5 Environmental Class II		
Supply Connection..... : Security panel auxiliary output		
..... :		
..... :		
Possible test case verdicts:		
- test case does not apply to the test object..... : N/A		
- test object does meet the requirement..... : P(Pass)		
- test object does not meet the requirement..... : F(Fail)		
- test object has not been evaluated to this requirement..... N/E(Not evaluated)		
Testing :		
Date of receipt of test item..... : 11/15/2012		
Date (s) of performance of tests : 12/20/2012 – 2/7/2013		
Sample ID	Description/Model Number	Serial Number
1	EVO192 Security Panel	IQ0000494
2	TM50 Touchpad	AT00000E94
3	IP150 Communication Module	V105012145
4	IPRS7 Receiving Software	Version – V1.2.7
5	IPR512 Receiving Center	74000B66

General remarks:

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IEC 60384-14.

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

Following abbreviations are used:

- APS: Alternative Power Source;
- CIE: Control and Indicating Equipment;
- EPS: External Power Source;
- IAS: Intruder Alarm System;
- PPS: Prime Power Source;
- PS: Power Supply;
- PU: Power Unit;
- SD: Storage Device;
- ATS: Alarm Transmission System

General product information:

The IP150 Internet Module is an Internet communication link that enables you to control and monitor a Paradox security system

The IP150 sends alarm and fault signals to Paradox's IPRS7 and IPR512 receiving centers

The IPRS-7 IP/GPRS PC Receiver Software receives reporting events via IP/GPRS and/or SMS. These events are transmitted to the monitoring station's automation software. All of this is achieved between the control panel, reporting devices (IP150), and the IPRS-7 software.

Once the control panel generates an event, the reporting device forwards the event to the IPRS-7 software either via SMS, IP, or GPRS (depending on the device). Reporting devices include the IP100 and PCS series. The IPRS-7 software receives the event, stores and registers it, and then converts the event in the defined output format to the monitoring station's automation software.

Only the monitoring section is evaluated in this report.

EN 50136-1-1			
Clause	Requirement – Test	Result - Remark	Verdict

5	General considerations
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5.3	Transmission characteristics		
	The transmission of the state of the alarm system shall be:	Informative	-
	a) continuous; or		N/A
	b) periodic; and/or		N/A
	c) whenever the state of the alarm system changes.	IP150 sends a signal to the receiving center IPRS7 and IPR512 when there is a change of state in the Alarm System	P
	If transmission is not continuous, the transmission shall be controlled by:	Informative	-
	1) the alarm system; and/or		P
	2) the alarm receiving centre; and/or		N/A
	3) the alarm transmission system		N/A

5.4	Alarm transmission system classification		
	The requirements for each application should be specified and include classes for:	IP150 is class ATS5	-
	- transmission time (table 1);	D3 -20 seconds	P
	- maximum time (table 2);	M3 – 60 seconds	P
	- reporting time (table 3);	T5 – 90 seconds	P
	- availability (table 4);	Not evaluated by Intertek	N/E
	And requirements regarding:		-
	- signalling security;	S2 – Not evaluated by Intertek	N/E
	- remote parameter modification (EN 50136-2-1);		N/A
	- access levels (EN 50136-2-1);		N/A

6	System requirements
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6.1	Transmission facilities shared with other alarm systems		
6.1.1	General		
	The communications between an alarm system and an alarm receiving centre shall continue to meet the requirements of the appropriate class of Table 1 in the presence of any other normal messages carried by the same alarm transmission system.	All multiple messages are received by the alarm receiving center	P

EN 50136-1-1			
Clause	Requirement – Test	Result - Remark	Verdict
	The alarm transmission system shall be such that adding, changing or removing an alarm system does not compromise messages from other alarm systems.	Only one alarm system evaluated.	N/E
6.1.2	Throughput		
	The communications between an alarm system and an alarm receiving centre shall continue to meet the requirements of appropriate transmission time of Table 1 and the maximum transmission time class of Table 2 when alarm or fault messages are generated:		P
	a) at a rate equivalent to one such message per minute from each of a number of supervised premises transceivers representing up to 0.1% of the system capacity; and	Only one alarm system evaluated	N/A
	b) at a rate of at least two alarm messages per minute at the receiving centre transceiver interface to the annunciation equipment	IPRS7 and IPR512 show each alarm signal in the order sent	P
6.1.3	Degradation of performance		
	If the rates of transmission specified in 6.1.2 are exceeded then the degree of degradation of performance of the alarm system shall be gradual (e.g. transmission times shall slowly increase) until a rate equivalent to one such message per minute from supervised premises transceivers representing up to double the throughput specified in 6.1.2 a) or b).	Transmission rates of 6.1.2 not exceeded	N/A
	The transmission time shall return to meeting the requirements of 6.1.2 a) or b) with a period not exceeding 5 minutes		N/A
	The increase of the rate shall be done over a period of not less than 5 minutes and the alarm transmission system shall be in a stable condition before the rate is decreased over a period no longer than 5 minutes		N/A
	Where the alarm transmission system carries other messages in addition to alarm messages, then alarm transmission system shall still meet the requirements of this standard		N/A
6.2	Transmission facilities shared with non-alarm systems		
	Transmission facilities shared with non-alarm systems shall be so arranged that operation and maintenance of the non-alarm systems does not prevent the alarm transmission system from meeting the requirements of this standard.	Non-alarm systems not evaluated by Intertek	N/E

EN 50136-1-1			
Clause	Requirement – Test	Result - Remark	Verdict
6.3	Performance		
6.3.1	General		
	The alarm transmission system shall transmit information concerning the state of the alarm system to its associated alarm receiving centre.	Sent to IPRS7 and IPR512	P
6.3.2	Transmission time		
	The arithmetic mean of the alarm transmission time and 95% of the measurements of transmission time shall not exceed the values specified in Table 1 for the appropriate class, as assessed by the verification method in 7.4	See append table 7.4	P
	Any transmission time exceeding the maximum acceptable transmission time of Table 2 for a specific system shall for each incident be classified as a transmission system fault in accordance with 6.4.3.	No transmissions exceeded Table 2 times See append table 7.4	P
	The transmission time shall be measured from the time that a change of state occurs at the supervised premises transceiver interface to the alarm system to the time that the new state is reported at the receiving centre transceiver interface to the annunciation equipment.		P
	The transmission time applies to all changes of state that are transmitted from the alarm system through the supervised premises transceiver interface to the alarm transmission system.		P
6.3.3	Monitoring of the interconnection with the alarm system		
	In the event of failure of the interconnection between the alarm system and the alarm transmission system an alarm or fault message shall be generated and transmitted to the alarm receiving centre. The arithmetic mean time and the time to transmit 95 % of all transmitted messages shall not exceed the values specified in Table 1 for the appropriate class. The maximum time for all events to generate and transmit such a message shall not exceed the values specified in Table 2 for the appropriate class.	Shorting With communication BUS shorted, a fault signal was sent to the alarm receiving center	P
6.3.4	Monitoring of the alarm transmission system		
	For systems with automatic monitoring, the period from the time a fault develops in the alarm transmission system until the fault information is reported to the alarm receiving centre and/or monitoring centre shall not exceed the value specified in Table 3 for the appropriate class.	See append table 7.4	P

EN 50136-1-1			
Clause	Requirement – Test	Result - Remark	Verdict
	Where, in order to comply with the required class of availability, additional paths or equipment are required, the primary as well as the additional paths and equipment shall be monitored and any fault shall be reported in a time which shall not exceed the value specified in Table 3 for the appropriate class even when, due to redundancy, service is not lost.	No additional paths are required	N/A
	During the period (standby) when a redundant path is not in primary use for alarm transmission, it may have a reporting time classification different from the primary path.	No redundant paths available.	N/A
	Alarm transmission system faults in primary paths or equipment of a short duration need not be reported provided that the requirement of 6.3.2 can still be met. Alarm transmission system faults in redundant paths or equipment of a short duration need not be reported provided that the requirement of 6.3.2 would have been met if all alternate paths or equipment had previously failed. Finite value for the meaning of short duration shall be defined by the alarm transmission system operator to make availability evaluation possible		N/A

6.4	Alarm transmission system availability		
6.4.1	Redundancy/duplication		
	Where several interfaces to the alarm transmission system exist at the supervised premises or at the alarm receiving centre the alarm transmission system shall be considered to be available in the event of a fault affecting one or more such interfaces provided:	No redundant interfaces	N/A
	a) that at least one alarm transmission path exists between one interface at the alarm system and one interface at the alarm receiving centre; and		N/A
	b) that either: 1) messages are normally transmitted and received on all such interfaces; or 2) messages are normally transmitted and received on one primary interface at each end, but that in the event of a failure the system automatically changes to a redundant interface		N/A

EN 50136-1-1			
Clause	Requirement – Test	Result - Remark	Verdict
6.4.2	Alarm transmission assurance		
	A means shall be provided to ensure that each alarm message has been passed correctly to the alarm receiving centre equipment. This can be accomplished e.g. through an acknowledgement message from the receiving centre transceiver at the remote centre.	1.Call and bi-directional 'handshake' is established 2.Transmitter send the message and waits for an acknowledge 3.Receiver check that information received is a valid message and send 'kiss-off' acknowledgement to transmitter if okay 4.If transmitters do not receive the 'kiss-off' a 'Fail to Comm' error will appear on the Keypad	P
6.4.3	Alarm transmission system faults		
	For the purposes of calculating the system availability the following conditions only shall be considered:	Not evaluated by Intertek. Records not made available to review.	N/E
	a) all faults in the alarm transmission system which will prevent an alarm message from being transmitted from any enabled alarm system to its intended alarm receiving centre, even if the alarm message is successfully diverted to an alternative receiving centre;		N/E
	b) all faults which corrupt the transmission of an alarm message so that some or all of the information transmitted is lost, except where the information can be retrieved by automatic retransmission of the alarm message so that it is received within the maximum acceptable time specified in Table 2 for the appropriate class;		N/E
	c) all faults which delay an alarm message so that its total transmission time exceeds the maximum acceptable time specified in Table 2;		N/E
	d) unavailability due to maintenance, unless alternative facilities are provided.		N/E
6.4.4	Duration of faults		
	The time for which the alarm transmission system shall be considered to be unavailable shall be the period from the last time the system was known to be available (i.e. with no faults) until the time when a fault is detected, repaired and the system tested. For each fault the minimum unavailable time shall be considered to be 15 minutes.	Not evaluated by Intertek. Records not made available to review.	N/E
6.4.5	Availability		
	The availability of an alarm transmission system as determined by 7.5 shall not be less than the values specified in Table 4 for the appropriate class.	Not evaluated by Intertek. Records not made available to review.	N/E

EN 50136-1-1			
Clause	Requirement – Test	Result - Remark	Verdict
6.5	Signalling security		
6.5.1	Substitution security		
	Protection against unauthorized substitution of the supervised premises transceiver with a similar equipment along the alarm transmission system shall be provided in one of the following ways:	IP150 requires a S2 rating	P
	S0 - No measures.		N/A
	S1 - Measures to detect substitution of the supervised premises transceiver by addition of an identity or address in all messages transmitted on the alarm transmission path.		N/A
	S2 - Measures to detect substitution of the supervised premises transceiver by: a) encryption of an identity or address in all messages transmitted on the alarm transmission path; or b) authentication of the supervised premises transceiver by the addition of a different and unrevealed code for each connected transceiver; or c) another measure as specified by the manufacturer.	a) is met because all messages, identity, and address are encrypted as described below in clause 6.5.2 b) physical security is provided by tamperproof enclosures (a) Not evaluated by Intertek)	P
	Authentication always requires a sufficient number of keys to provide each connected transceiver with a unique code.		N/A
	The identity range in 82 shall not be less than 250 unique addresses.		N/A
6.5.2	Information security		
	Protection of the information transmitted by the alarm transmission system shall be provided in one of the following ways:	IP150 requires a I3 rating	P
	IO - No measures.		N/A
	I1 - Measures to prevent unauthorized reading of the information transmitted.		N/A
	I2 - Measures to prevent unauthorized modification of the information transmitted.		N/A
	I3 - Measures to prevent unauthorized reading and unauthorized modification of the information transmitted.	IPR512 and IPRS7 Receivers provide 256 bit encrypted, supervised communication for compatible Paradox control panels using external/built-in Paradox IP/GPRS, like the IP150 and PCS250. AES Validation number is 986. This ensure measures to prevent unauthorized reading and/or modification of message Not evaluated by Intertek	P

EN 50136-1-1			
Clause	Requirement – Test	Result - Remark	Verdict
	Encryption algorithms shall be such that for synchronous alarm transmission systems the data pattern of any successive 100 bits shall not be repeated within 10 000 000 successive bits, or for asynchronous systems the data pattern of any successive 100 bytes shall not be repeated within 1 000 000 successive bytes.		N/A
6.6	Signalling security		
	To prevent the loss of messages, messages received by alarm receiving centre transceiver shall be secured (e.g. by the receiving centre transceiver, or by the annunciation equipment).	IPRS7 and IPR512 use a computer for annunciation of signal. Information is automatically saved to hard drive	P
	The manufacturer shall state in its documentation whether or not the receiving centre transceiver is to be used in conjunction with an annunciation equipment to comply with this requirement.	Manuals for IPRS7 and IPR512 show connection to annunciation (automation software) equipment	P
7	Verification of performance		
7.1	General		
	The performance verification of an alarm transmission system shall comprise a number of aspects as listed below:		-
	a) testing to ensure that a properly presented alarm input is accepted by the alarm transmission system;	Signals were correctly sent and received at the alarm receiving center	P
	b) verification that the basic operation of the system conforms to the requirements of this standard and to any related standards; this shall include testing to establish that alarm messages are transmitted through the system to the intended destination and testing of the system monitoring;		P
	c) verification of the alarm transmission time;	See appended table 7.4	P
	d) such additional regular or routine verification as required to establish or confirm the availability of the system.		P
7.2	Shared transmission systems		
	Performance verification shall ensure that, for the system configuration and the anticipated number of connected alarm systems, the alarm transmission system is capable of meeting the requirements of 6.1. This shall be done as applicable either:		P
	a) by practical performance verification of the commissioned system; or	See below	N/A

EN 50136-1-1			
Clause	Requirement – Test	Result - Remark	Verdict
	b) by testing and examination of the equipment when submitted for testing in accordance with EN 50136-2-1; or	See Report 100803903MIN-008	P
	c) by analysis of the equipment and its configuration; or		N/A
	d) by a combination of these.		N/A

7.3	Group of alarm transmission systems		
	For the purposes of performance verification of an alarm transmission system, all the supervised premises transceivers of one type that communicate with a single alarm receiving centre, shall be considered.	Only one transceiver evaluated	N/A
	Where these alarm systems form a number of geographically distinct groups and where these groups communicate with separate receivers within the receiving centre or can otherwise be separately identified, then each group may be verified as a separate alarm transmission system. Where this division is used the verification shall be carried out separately on each of the identified groups.		N/A

7.4	Transmission time		
	For each new alarm system commissioned onto the alarm transmission system the correct transmission of all alarm messages to their intended destination shall be verified, including, where appropriate, the transmission of alarm or fault messages associated with system monitoring. The time taken to transmit an alarm message, e.g. a test alarm message, shall be in accordance with 6.3.2.		P
	For systems providing monitoring, the time taken to recognize and transmit a fault condition as a result of failure of the transmission path from the supervised premises to the alarm receiving centre shall be in accordance with 6.3.4.	See appended table 7.4	P
	Routine verification, which shall include the timing of an alarm and a fault message, shall be repeated at least annually for each connected alarm system or at the regular service interval of the alarm system if this latter period is longer.		P
	Where the alarm transmission system is capable of transmitting different messages with differing priorities or timings the verification shall be carried out for each group separately. In such cases the results on every constituent group shall be determined.	Only alarm and fault groups evaluated.	P

EN 50136-1-1			
Clause	Requirement – Test	Result - Remark	Verdict
	Where the rate of transmission of alarm messages through the system varies predictably with time or where the use of the alarm transmission system by other services using the same equipment varies with time (e.g. systems using a public switched telephone network) then the distribution of times when performance verification is done shall reflect the distribution of times during the day or week that actual messages are expected to occur.	Not evaluated by Intertek System tested on a dedicated network	N/E
	The results of the verification on each connected alarm system shall be analysed for the alarm transmission system over successive periods of 3 months. This does not imply that each connection has been activated and tested in every three months period.	Not evaluated by Intertek	N/E

7.5	Availability		
7.5.1	Records		
	Records of all faults and of all performance verification carried out on the alarm transmission system shall be maintained.	Not evaluated by Intertek Records are not available for verification	N/E
	Records shall be maintained of all system faults, including those affecting redundant paths or equipment, where these are required in order to comply with the specified class of availability and where no service was lost.		N/E
	Records for each fault shall include:		N/E
	a) the time and date when the fault was identified;		N/E
	b) the last time and date, prior to the fault, when the fault was known not to have existed;		N/E
	c) the length of time of each fault;		N/E
	d) the number of connected alarm systems whose service was affected by the fault.		N/E
	Records shall be kept for not less than two years.		N/E
7.5.2	Inspection of records		
	These records shall be open to inspection by a representative from an accredited certification body, or: a representative from some other independent organization (e.g. insurance approvals body). It shall be possible to trace the inclusion of individual system faults in the summarized data required to meet this standard, and to trace published performance figures back to individual performance verifications or: faults.	Not evaluated by Intertek Records are not available for verification	N/E
7.5.3	Analysis		

EN 50136-1-1			
Clause	Requirement – Test	Result - Remark	Verdict
	The records of all performance verification carried out on an alarm transmission system shall be used to determine the availability of the system.	Not evaluated by Intertek Records are not available for verification	N/E
	For each occasion when the system is unavailable (see 6.4.3) the duration of the fault shall be determined and a fault time calculated as follows: $FT = (DF + TR) \times NA$ where FT is the fault time in minutes; DF is the duration of fault in minutes; TR is the maximum fault reporting time in minutes for the appropriate class; NA is the number of connected alarm systems affected.		N/E
	For each month the availability of the system shall be calculated as: $MA = (1 - SF/43800NC) \times 100 \%$ where MA is the monthly availability in per cent; SF is the sum of fault times in minutes; NC is the number of alarm systems connected.		N/E
	The sum of fault times shall be for all faults cleared during a month. The number of connected alarm systems shall be that at midnight on the last day of the month.		N/E
	The 12 month system availability shall be the arithmetic mean of the monthly availabilities for 12 successive months.		N/E
	Where a system is extended then the availability of the new area may be ignored for not more than one month from the date of the extension.		N/E
	The analysis shall be kept for a period not less than two years.		N/E

8	Documentation
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	Documentation shall be sufficient for planning, installation, service and operation of the alarm transmission system. Instructions shall be structured to reflect the access levels of the different type of users. Documentation shall include alarm transmission system classification according to Table 1, Table 2, Table 3, Table 4 and 6.5.		P
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TEST EQUIPMENT

Item	Type	Equipment Number	Calibration Date		Comments
			Last	Due	
1	Temp Humidity gauge	172150	5/9/2012	5/9/2013	
2	Barometer	173939	1/14/2012	1/14/2013	
3	Timer	172029	5/22/2012	5/22/2013	

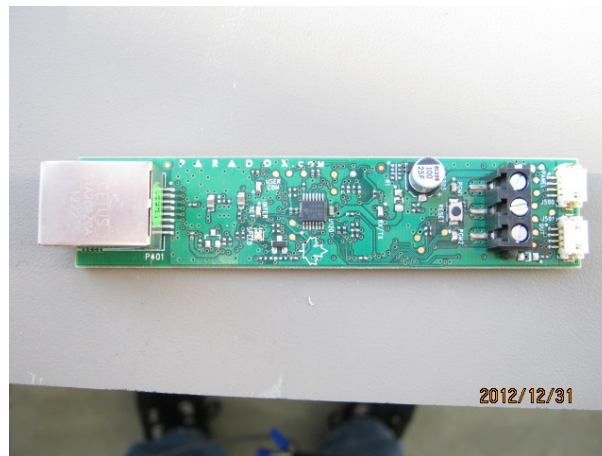
7.4	TABLE: Transmission time (CID) IPRS7			
Alarm Description		Transmission time (sec)	Requirement (sec)	Result
Intruder		10	60	P
Hold up		12	60	P
Tamper		7	60	P
Tamper restored		5	60	P
Battery failure		9	60	P
Battery failure restored		8	60	P
24hr holdup sensor		5	60	P
Follow zone intrusion		3	60	P
Shorting communication BUS		16	180	P
Arithmetic mean of all transmissions		8	20	P
Supplemental information:				

7.4	TABLE: Transmission time (CID) IPR512			
Alarm Description		Transmission time(sec)	Requirement (sec)	Result
Intruder		11	60	P
Hold up		13	60	P
Tamper		7	60	P
Tamper restored		7	60	P
Battery failure		11	60	P
Battery failure restored		11	60	P
24hr holdup sensor		6	60	P
Follow zone intrusion		4	60	P
Shorting communication BUS		22	180	P
Arithmetic mean of all transmissions		7	20	P
Supplemental information:				

PICTURES



IP150 Enclosure



IP150 Board



IPR512