EMC Test Report

Product Type	:	Smart Meter
Applicant	:	ICP DAS CO., LTD.
Address	:	No. 111, Guangfu N. Rd., Hukou Township, Hsinchu County 30351, Taiwan, R.O.C.
Trade Name	:	ICP DAS
Model Number	:	PM-31zz-xxx-yyyy / PM-31zz-xxxP-yyyy / PM-31zzP-yyyy (zz can be 33 or 12 or 14 ; xxx can be 100 , 160, 240, or 360 ; yyyy can be -CAN,-CPS,-MTCP or blank)
Test Specification	:	EN 55011: 2009 + A1: 2010 CISPR 11: 2009 + A1: 2010
Receive Date	:	Aug. 28, 2014
Test Dates	:	Sep. 01 ~ 22, 2014
Issue Date	:	Sep. 29, 2014

Issue by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade City,
Taoyuan County 334, Taiwan R.O.C.
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Taiwan Accreditation Foundation accreditation number: 1330

Revision History

Rev.	Issue Date	Revisions	Revised By
00	Sep. 29, 2014	Initial Issue	

Verification of Compliance

Issued Date: 09/29/2014

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EUT Rated Voltage	:	AC 100-250V, 50-60Hz, 2.0A
Test Voltage	:	230 Vac / 50 Hz
Applicable Standard	:	EN 55011: 2009 + A1: 2010 CISPR 11: 2009 + A1: 2010
Test Result	:	Complied

Performing Lab. :

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade City,
Taoyuan County 334, Taiwan R.O.C.
Tel：+886-3-2710188 / Fax：+886-3-2710190
Taiwan Accreditation Foundation accreditation number: 1330
http://www.atl-lab.com.tw/e-index.htm

The above equipment has been tested by A Test Lab Techno Corp., and found compliance with the requirements set forth in the Directive 93/42/EEC concerning medical devices and technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved By	:	Roy Chen	Reviewed By	:	Frank Lin
(Manager)		(Roy Chen)	(Testing Engineer)		(Frank Lin)

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1 General Information

1.1 Summary of Test Result

Emission			
Standard	Item	Result	Remark
EN 55011: 2009 + A1: 2010 CISPR 11: 2009 + A1: 2010	Conducted (Main Port)	PASS	Meet Class A limit
	Conducted (Telecommunication port)	PASS	Meet Class A limit
	Radiated	PASS	Meet Class A limit

Note 1: The statements of test result on the above are decided by the request of test standard only; the measurement uncertainties are not factored into this compliance determination.

Note 2: The information of measurement uncertainty is available upon the customer's request.

1.2 Measurement Uncertainty

Test Item	Frequency Range		Uncertainty (dB)
Conducted Emission	9kHz ~ 30MHz		± 2.02
Radiated Emission	30MHz ~ 1000MHz	Horizontal	± 3.98
		Vertical	± 3.62
	1000MHz ~ 6000MHz	Horizontal	± 3.11
		Vertical	± 3.07

2 EUT Description

Product Type	:	Smart Meter
Trade Name	:	ICP DAS
Model Number	:	PM-31zz-xxx-yyyy / PM-31zz-xxxP-yyyy / PM-31zzP-yyyy (zz can be 33 or 12 or 14 ; xxx can be 100 , 160, 240, or 360 ; yyyy can be -CAN,-CPS,-MTCP or blank) (*Those model numbers differ from each other in selling region.)
Applicant	:	ICP DAS CO., LTD. No. 111, Guangfu N. Rd., Hukou Township, Hsinchu County 30351, Taiwan, R.O.C.
Manufacturer	:	ICP DAS CO., LTD. No. 111, Guangfu N. Rd., Hukou Township, Hsinchu County 30351, Taiwan, R.O.C.

I/O Port Description：

I/O Port Types	Q'TY	Test Description
1). LAN Port	1	Connected to PC
2). D-SUB Port	1	Connected to PC
3). USB Port	1	Connected to PC
4). AC Power Port	1	Connected to AC input
5). DC Power Port	1	Connected to EUT
6). Signal Port	1	Connected to EUT

Feature of Equipment under Test：

The model listed below is series model to PM-3133-100.

Main	Software	Diversity	Mode 1
ET-7261	---	Ethernet I/O Module with 2-port Ethernet Switch, with 11-channels Relay	V
PET-7261	---	PoE Ethernet I/O Module with 2-port Ethernet Switch, with 11-channels Relay	
ET-6052D	---	8-channel Digital Output and 14-channel Digital Input	V
ET-6060D	---	8-channel Digital Output and 10-channel Digital Input	V
ET2-6064D	---	24-channel Relay Output	V
GPS-721	---	GPS Receiver and 1 DO, 1 PPS Output Module	
GPS-721-MRTU	---	GPS Receiver and 1 DO, 1 PPS Output Module includes a GPS Active External Antenna (ANT-115-03)	V
I-7014D	---	1-channe Transmitter Input with 7-segment LED Display using the DCON and Modbus Protocols	V
I-7014D-X	---	1-channe Transmitter Input with 7-segment LED Display using the DCON and Modbus Protocols (X：The Cover is mean any color)	
M-7014D	---	M-7014D with 7-segment LED Display	
M-7014D-X	---	M-7014D with 7-segment LED Display (X：The Cover is mean any color)	
I-7522	---	Embedded communication controller with one RS-485 and two RS-232	
I-7522D	---	I-7522 + LED display	V
I-7520U4	---	Isolated RS-232 to 4 Channels RS-485 Active Hub	V
I-7520U4-X	---	Isolated RS-232 to 4 Channels RS-485 Active Hub (X：The Cover is mean any color)	
I-7520U4-CA	---	I-7520U4-G CR with CA-0915 cable x 1	
I-7520U4-CA-X	---	I-7520U4-G CR with CA-0915 cable x 1 (X：The Cover is mean any color)	
I-7065A	---	4-channel Isolated Digital Input and 5-channel AC SSR Output Module using the DCON Protocol	
I-7065AD	---	I-7065A with LED Display	V
I-7066	---	7-channel Photo-Mos Relay Output Module with DCON Protocol	
I-7066-X	---	7-channel Photo-Mos Relay Output Module with DCON Protocol (X：The Cover is mean any color)	
I-7066D	---	I-7066 with LED Display	V
I-7066D-X	---	I-7066 with LED Display (X：The Cover is mean any color)	
M-7066P	---	7-channel Photo-Mos Relay Output Module with DCON and Modbus Protocols	
M-7066P-X	---	7-channel Photo-Mos Relay Output Module with DCON and Modbus Protocols (X：The Cover is mean any color)	
M-7066PD	---	M-7066P with LED Display	
M-7066PD-X	---	M-7066P with LED Display (X：The Cover is mean any color)	
I-7083	---	3-axis, 32 bits encoder counter	
M-7083	---	3-axis, 32 bits encoder counter with DCON and Modbus Protocols	
I-7083D	---	3-axis, 32 bits encoder counter with LED Display	V

Main	Software	Diversity	Mode 1
M-7083D	---	M-7083D with LED Display	
I-7083B	---	3-axis, 32 bits encoder counter	
I-7083BD	---	3-axis, 32 bits encoder counter with LED Display	V
I-7011	---	1-channel Thermocouple Input Module using the DCON Protocol	
I-7011-X	---	1-channel Thermocouple Input Module using the DCON Protocol (X：The Cover is mean any color)	
I-7011D	---	I-7011 with with 7-segment LED Display	
I-7011D-X	---	I-7011 with with 7-segment LED Display (X：The Cover is mean any color)	
I-7011P	---	1-channel Thermocouple Input Module using the DCON Protocol	
I-7011P-X	---	1-channel Thermocouple Input Module using the DCON Protocol (X：The Cover is mean any color)	
I-7011PD	---	I-7011P with 7-segment LED Display	
I-7011PD-X	---	I-7011P with 7-segment LED Display (X：The Cover is mean any color)	
M-7011	---	1-channel Thermocouple Input Module using the DCON and Modbus Protocols	
M-7011-X	---	1-channel Thermocouple Input Module using the DCON and Modbus Protocols (X：The Cover is mean any color)	
M-7011D	---	M-7011 with 7-segment LED Display	V
M-7011D-X	---	M-7011 with 7-segment LED Display (X：The Cover is mean any color)	
M-7019Z	---	10-channel Universal Analog Input Module	V
M-7019Z-X	---	10-channel Universal Analog Input Module (X：The Cover is mean any color)	
M-7019Z-G/S	---	10-channel Universal Analog Input Module Includes the M-7019Z module and a DB-1820 Daughter Board	
M-7019Z-G/S2	---	10-channel Universal Analog Input Module Includes the M-7019Z module, a DN-1822 Daughter Board and a 1.8 m Cable	
M-7026	---	6-channel Analog Input, 2-channel Analog Output, 3-channel Digital Input and 3-channel Digital Output Module using the DCON and Modbus Protocol	V
I-7041P	---	14-channel Isolated Digital Input Module with DCON Protocol	
I-7041P-X	---	14-channel Isolated Digital Input Module with DCON Protocol (X：The Cover is mean any color)	
I-7041PD	---	I-7041P with LED Display	
I-7041PD-X	---	I-7041P with LED Display (X：The Cover is mean any color)	
M-7041P	---	14-channel Isolated Digital Input Module with DCON and Modbus Protocol	
M-7041P-X	---	14-channel Isolated Digital Input Module with DCON and Modbus Protocol (X：The Cover is mean any color)	
M-7041PD	---	M-7041P with LED Display	V
M-7041PD-X	---	M-7041P with LED Display (X：The Cover is mean any color)	
M-7041-A5	---	14-channel High Voltage Isolated Digital Input Module with DCON and Modbus Protocol	

Main	Software	Diversity	Mode 1
M-7041-A5-X	---	14-channel High Voltage Isolated Digital Input Module with DCON and Modbus Protocol (X：The Cover is mean any color)	
M-7041D-A5	---	M-7041-A5 with LED Display	V
M-7041D-A5-X	---	M-7041-A5 with LED Display (X：The Cover is mean any color)	
I-7058	---	8-channel Isolated Digital Input Module using the DCON Protocol	
I-7058D	---	I-7058 with LED Display	
I-7058D-X	---	I-7058 with LED Display (X：The Cover is mean any color)	
M-7058	---	8-channel Isolated Digital Input Module using the DCON and Modbus Protocols	
M-7058D	---	M-7058 with LED Display	V
M-7058D-X	---	M-7058 with LED Display (X：The Cover is mean any color)	
I-7059	---	8-channel Isolated Digital Input Module using the DCON Protocol	
I-7059-X	---	8-channel Isolated Digital Input Module using the DCON Protocol (X：The Cover is mean any color)	
I-7059D	---	I-7059 with LED Display	
I-7059D-X	---	I-7059 with LED Display (X：The Cover is mean any color)	
M-7059	---	8-channel Isolated Digital Input Module using the DCON and Modbus Protocols	
M-7059-X	---	8-channel Isolated Digital Input Module using the DCON and Modbus Protocols (X：The Cover is mean any color)	
M-7059D	---	M-7059 with LED Display	V
M-7059D-X	---	M-7059 with LED Display (X：The Cover is mean any color)	
M-7060P	---	4-channel Isolated Digital Input and 4-channel Relay Output Module using the DCON and Modbus Protocols	
M-7060P-X	---	4-channel Isolated Digital Input and 4-channel Relay Output Module using the DCON and Modbus Protocols (X：The Cover is mean any color)	
M-7060PD	---	M-7060P-G with LED Display	V
M-7060PD-X	---	M-7060P-G with LED Display (X：The Cover is mean any color)	
I-7065B	---	4-channel Isolated Digital Input and 5-channel DC SSR Output Module with 16-bit Counters	
I-7065B-X	---	4-channel Isolated Digital Input and 5-channel DC SSR Output Module with 16-bit Counters (X：The Cover is mean any color)	
I-7065BD	---	I-7065BD with LED Display	
I-7065BD-X	---	I-7065BD with LED Display (X：The Cover is mean any color)	
M-7065B	---	4-channel Isolated Digital Input and 5-channel DC SSR Output Module with 16-bit Counters	
M-7065B-X	---	4-channel Isolated Digital Input and 5-channel DC SSR Output Module with 16-bit Counters (X：The Cover is mean any color)	
M-7065BD	---	M-7065BD with LED Display	V

Main	Software	Diversity	Mode 1
M-7065BD-X	---	M-7065BD with LED Display (X：The Cover is mean any color)	
I-7067	---	7-channel Signal Relay Output Module with DCON Protocol	
I-7067-X	---	7-channel Signal Relay Output Module with DCON Protocol (X：The Cover is mean any color)	
M-7067	---	7-channel Signal Relay Output Module with DCON and Modbus Protocols	
M-7067-X	---	7-channel Signal Relay Output Module with DCON and Modbus Protocols (X：The Cover is mean any color)	
I-7067D	---	I-7067 with LED Display	
I-7067D-X	---	I-7067 with LED Display (X：The Cover is mean any color)	
M-7067D	---	M-7067 with LED Display	V
M-7067D-X	---	M-7067 with LED Display (X：The Cover is mean any color)	
I-7088	---	8-channel PWM Output and 8-channel High-speed Counter Module using the DCON Protocol	
I-7088-X	---	8-channel PWM Output and 8-channel High-speed Counter Module using the DCON Protocol (X：The Cover is mean any color)	
I-7088D	---	I-7088 with 7-segment LED Display	
I-7088D-X	---	I-7088 with 7-segment LED Display (X：The Cover is mean any color)	
I-7088-G/S	---	I-7088 with DN-8P8C-CA External Board	
I-7088D-G/S	---	I-7088D with DN-8P8C-CA External Board	
M-7088	---	8-channel PWM Output and 8-channel High-speed Counter Module using the DCON and Modbus Protocols	
M-7088-X	---	8-channel PWM Output and 8-channel High-speed Counter Module using the DCON and Modbus Protocols (X：The Cover is mean any color)	
M-7088D	---	M-7088 with 7-segment LED Display	V
M-7088D-X	---	M-7088 with 7-segment LED Display (X：The Cover is mean any color)	
M-7088-G/S	---	M-7088 with DN-8P8C-CA External Board	
M-7088D-G/S	---	M-7088D with DN-8P8C-CA External Board	
DN-8P8C	---	8-channel Digital Output and 8-channel Counter Input Board, including two CA-090910-A Cable and two CA-3813 Connector Casing.	
DN-8P8C-CA	---	8-channel Digital Output and 8-channel Counter Input Board, including two CA-090910-A Cable and two CA-3813 Connector Casing.	
DN-8P8C/S	---	8-channel Digital Output and 8-channel Counter Input Board, including DB-8820 Daughterboard and a CA-2520D Cable.	
NS-209FCS	---	Single-mode 30 km, SC Connector, 8-port 10/100 Mbps with 1 fiber port Switch	V
NSM-209FCS	---	Single-mode 30 km, SC Connector, 8-port 10/100 Mbps with 1 fiber port Switch; metal case	
NS-200AFC-T	---	Industrial 10/100 Base-T to 100 Base-FX Media Converter; 1 multi mode, SC connector	V
NS-200AFT-T	---	Industrial 10/100 Base-T to 100 Base-FX Media Converter; 1 multi mode, ST connector	
NS-200WDM-A	---	10/100BaseT(X) to 100BaseFX Single-Strand Media Converter, TX 1310 nm, RX 1550 nm, SC	

Main	Software	Diversity	Mode 1
NS-200WDM-B	---	10/100BaseT(X) to 100BaseFX Single-Strand Media Converter, TX 1550 nm, RX 1310 nm, SC	
NS-200AFCS-T	---	Industrial 10/100 Base-T to 100 Base-FX Media Converter; 1 single mode, SC connector	
NS-200AFCS-60T	---	Industrial 10/100 Base-T to 100 Base-FX Media Converter; 1 (60 km) single mode, SC connector	V
PM-3112-xxx-yyyy	---	2 loops single-phase Power Meter (xxx can be 100 , 160, 240, or 360; yyyy can be -CAN,-CPS,-MTCP or blank	
PM-3112-xxxP-yyyy	---	2 loops single-phase Power Meter with 333mV CT (xxx can be 100 , 160, 240, or 360; yyyy can be -CAN,-CPS,-MTCP or blank)	
PM-3112P-yyyy	---	2 loops single-phase Power Meter without CT (yyyy can be -CAN,-CPS,-MTCP or blank)	
PM-3112-100-MTCP	---	2 loops single-phase Power Meter	V
PM-3114-xxx-yyyy	---	4 loops single-phase Power Meter (xxx can be 100 , 160, 240, or 360; yyyy can be -CAN,-CPS,-MTCP or blank)	
PM-3114-xxxP-yyyy	---	4 loops single-phase Power Meter with 333mV CT (xxx can be 100 , 160, 240, or 360; yyyy can be -CAN,-CPS,-MTCP or blank)	
PM-3114P-yyyy	---	4 loops single-phase Power Meter without CT (yyyy can be -CAN,-CPS,-MTCP or blank)	
PM-3114-100-MTCP	---	4 loops single-phase Power Meter	V
PM-3133-xxx-yyyy	---	3 Phase Compact Smart Meter (xxx can be 100 , 160, 240, or 360; yyyy can be -CAN,-CPS,-MTCP or blank)	
PM-3133-xxxP-yyyy	---	3 Phase Compact Smart Meter with 333mV CT (xxx can be 100 , 160, 240, or 360; yyyy can be -CAN,-CPS,-MTCP or blank)	
PM-3133P-yyyy	---	3 Phase Compact Smart Meter with without CT (yyyy can be -CAN,-CPS,-MTCP or blank)	
PM-3133-100	---	3 Phase Compact Smart Meter	V
PETL-7060	---	Ethernet module with PoE, 6-ch isolated DI and 6-ch form-A power relay	V
PW-3090-5S-R	---	Output Power Voltage +5 V @ 2000 mA (max.) Accuracy : 2%	
PW-3090-5S	---	Output Power Voltage +5 V @ 2000 mA (max.) Accuracy : 2%	V
PW-3090-5D-R	---	Output Power Voltage 5 V @ 1000 mA (max.) Accuracy : 2%	
PW-3090-5D	---	Output Power Voltage 5 V @ 1000 mA (max.) Accuracy : 2%	V
PW-3090-12S-R	---	Output Power Voltage +12 V @ 800 mA (max.) Accuracy : 2%	
PW-3090-12S	---	Output Power Voltage +12 V @ 800 mA (max.) Accuracy : 2%	V
PW-3090-15D-R	---	Output Power Voltage 15 V @ 300 mA (max.) Accuracy : 2%	
PW-3090-15D	---	Output Power Voltage 15 V @ 300 mA (max.) Accuracy : 2%	V
PW-3090-24S-R	---	Output Power Voltage +24 V @ 400 mA (max.) Accuracy : 2%	
PW-3090-24S	---	Output Power Voltage +24 V @ 400 mA (max.) Accuracy : 2%	V
tET-P6	---	Tiny Ethernet module with 6-ch DI (Wet Contact)	
tET-PD6	---	Tiny Ethernet module with 6-ch DI (Dry Contact)	V
tPET-P6	---	Tiny Ethernet module with PoE, and 6-ch DI (Wet Contact)	
tPET-PD6	---	Tiny Ethernet module with PoE, and 6-ch DI (Dry Contact)	

Main	Software	Diversity	Mode 1
tET-P2POR2	---	Tiny Ethernet module with 2-ch DI (Wet Contact) and 2-ch Form-A PhotoMos relay	
tET-PD2POR2	---	Tiny Ethernet module with 2-ch DI (Dry Contact) and 2-ch Form-A PhotoMos relay	V
tET-P2R2	---	Tiny Ethernet module with 2-ch DI (Wet Contact) and 2-ch Form-A relay	
tET-PD2R1	---	Tiny Ethernet module 2-ch DI (Dry Contact) and 1-ch Form-A relay	
tPET-P2POR2	---	Tiny Ethernet module with PoE, 2-ch DI (Wet Contact) and 2-ch Form-A PhotoMos relay	
tPET-PD2POR2	---	Tiny Ethernet module with PoE, 2-ch DI (Dry Contact) and 2-ch Form-A PhotoMos relay	
tPET-P2R2	---	Tiny Ethernet module with PoE, 2-ch DI (Wet Contact) and 2-ch Form-A relay	
tPET-PD2R1	---	Tiny Ethernet module with PoE, 2-ch DI (Dry Contact) and 1-ch Form-A relay	
TP-3080	---	8.4" (800 x 600) resistive touch panel monitor with RS-232 or USB interface Accessories: Power supply, VGA cable, RS-232 cable, USB cable, Mounting clamps and screws	V
TP-3080/NP	---	TP-3080 without Power supply	
WP-5141	---	Standard WinPAC-5000	
WP-5141-EN	Windows CE 5.0	Standard WinPAC-5000 (English Version of OS)	
WP-5141-TC	Windows CE 5.0	Standard WinPAC-5000 (Traditional Version of OS)	
WP-5141-SC	Windows CE 5.0	Standard WinPAC-5000 (Simplified Version of OS)	
WP-5141-XW107	Windows CE 5.0	Standard WinPAC-5000 add XW107	V
WP-5146	Windows CE 5.0	InduSoft and ISaGRAF based WinPAC-5000	
WP-5146-EN	Windows CE 5.0	InduSoft and ISaGRAF based WinPAC-5000 (English Version of OS)	
WP-5146-TC	Windows CE 5.0	InduSoft and ISaGRAF based WinPAC-5000 (Traditional Version of OS)	
WP-5146-SC	Windows CE 5.0	InduSoft and ISaGRAF based WinPAC-5000 (Simplified Version of OS)	
WP-5146-XW107	Windows CE 5.0	InduSoft and ISaGRAF based WinPAC-5000 add XW107	
WP-5147	Windows CE 5.0	ISaGRAF based WinPAC-5000	
WP-5147-EN	Windows CE 5.0	ISaGRAF based WinPAC-5000 (English Version of OS)	
WP-5147-TC	Windows CE 5.0	ISaGRAF based WinPAC-5000 (Traditional Version of OS)	
WP-5147-SC	Windows CE 5.0	ISaGRAF based WinPAC-5000 (Simplified Version of OS)	
WP-5147-XW107	Windows CE 5.0	ISaGRAF based WinPAC-5000 add XW107	
WP-5149	Windows CE 5.0	InduSoft based WinPAC-5149	

Main	Software	Diversity	Mode 1
WP-5149-EN	Windows CE 5.0	InduSoft based WinPAC-5149 (English Version of OS)	
WP-5149-TC	Windows CE 5.0	InduSoft based WinPAC-5149 (Traditional Version of OS)	
WP-5149-SC	Windows CE 5.0	InduSoft based WinPAC-5149 (Simplified Version of OS)	
WP-5149-XW107	Windows CE 5.0	InduSoft based WinPAC-5149 add XW107	
LP-5131-EN	Linux kernel 2.6.19	PAC with Linux kernel 2.6.19 and one LAN port (English Version of OS)	
LP-5141-EN	Linux kernel 2.6.19	PAC with Linux kernel 2.6.19 and two LAN ports (English Version of OS)	
WP-5141-OD	Windows CE 5.0	Standard WinPAC-5000 with Audio	V
WP-5141-OD-EN	Windows CE 5.0	Standard WinPAC-5000 with Audio (English Version of OS)	
WP-5141-OD-TC	Windows CE 5.0	Standard WinPAC-5000 with Audio (Traditional Version of OS)	
WP-5141-OD-SC	Windows CE 5.0	Standard WinPAC-5000 with Audio (Simplified Version of OS)	
WP-5141-OD-XW107	Windows CE 5.0	Standard WinPAC-5000 with Audio add XW107	
WP-5146-OD	Windows CE 5.0	InduSoft and ISaGRAF based WinPAC-5000 with Audio	
WP-5146-OD-EN	Windows CE 5.0	InduSoft and ISaGRAF based WinPAC-5000 with Audio (English Version of OS)	
WP-5146-OD-TC	Windows CE 5.0	InduSoft and ISaGRAF based WinPAC-5000 with Audio (Traditional Version of OS)	
WP-5146-OD-SC	Windows CE 5.0	InduSoft and ISaGRAF based WinPAC-5000 with Audio (Simplified Version of OS)	
WP-5146-OD-XW107	Windows CE 5.0	InduSoft and ISaGRAF based WinPAC-5000 with Audio add XW107	
WP-5147-OD	Windows CE 5.0	ISaGRAF based WinPAC-5000 with Audio	
WP-5147-OD-EN	Windows CE 5.0	ISaGRAF based WinPAC-5000 with Audio (English Version of OS)	
WP-5147-OD-TC	Windows CE 5.0	ISaGRAF based WinPAC-5000 with Audio (Traditional Version of OS)	
WP-5147-OD-SC	Windows CE 5.0	ISaGRAF based WinPAC-5000 with Audio (Simplified Version of OS)	
WP-5147-OD-XW107	Windows CE 5.0	ISaGRAF based WinPAC-5000 with Audio add XW107	
WP-5149-OD	Windows CE 5.0	InduSoft based WinPAC-5149 with Audio	
WP-5149-OD-EN	Windows CE 5.0	InduSoft based WinPAC-5149 with Audio (English Version of OS)	
WP-5149-OD-TC	Windows CE 5.0	InduSoft based WinPAC-5149 with Audio (Traditional Version of OS)	
WP-5149-OD-SC	Windows CE 5.0	InduSoft based WinPAC-5149 with Audio (Simplified Version of OS)	

Main	Software	Diversity	Mode 1
WP-5149-OD-XW107	Windows CE 5.0	InduSoft based WinPAC-5149 with Audio add XW107	
LP-5131-OD-EN	Linux kernel 2.6.19	PAC with Linux kernel 2.6.19 and one LAN port and Audio (English Version of OS)	
LP-5141-OD-EN	Linux kernel 2.6.19	PAC with Linux kernel 2.6.19 and two LAN ports and Audio (English Version of OS)	
XW107	---	8-channel Non-Isolation Digital Input and 8-channel Non-Isolation Digital Output	

3 Test Methodology

3.1. Decision of Test Mode

3.1.1 The following test mode(s) were scanned during the preliminary test:

Pre-Test Mode
Mode 1: Normal Operation Mode

3.1.2 After the preliminary scan, the following test mode was found to produce the highest emission level.

Final Test Mode		
Emission	Conducted Emission	Mode 1
	Radiated Emission	Mode 1

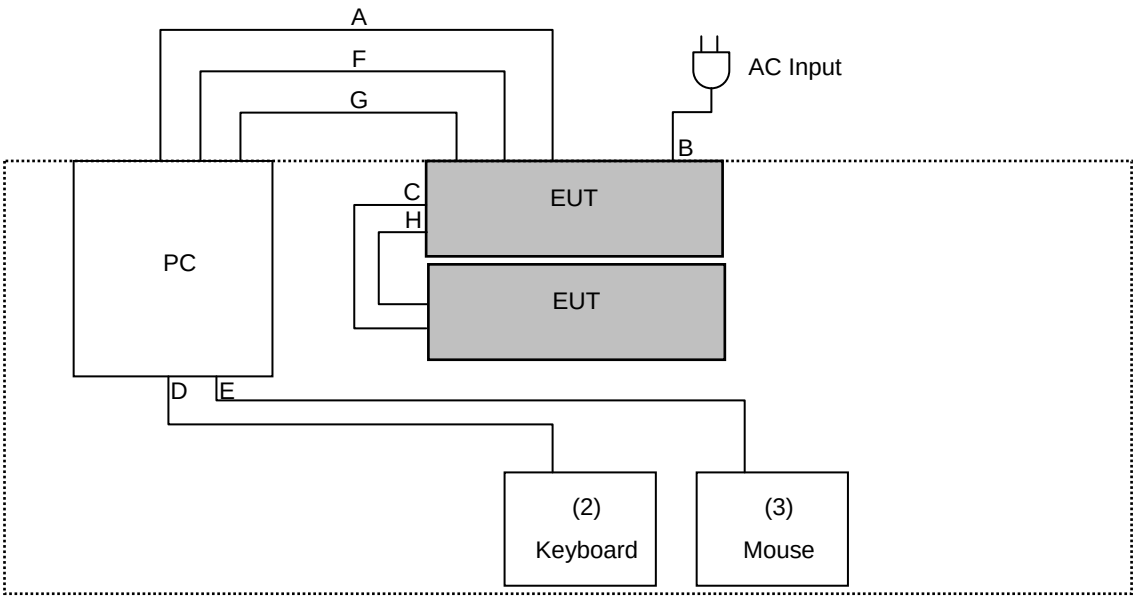
Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.

3.2. EUT Exercise Software

1. Setup the EUT and simulators as shown on 3.3.
2. Turn on the power of all equipment.
3. The EUT will start to operate function.

3.3. Configuration of Test System Details

Mode 1



Signal Cable Type		Signal Cable Description
A	LAN Cable	Non-Shielded, 1.0m with one core
B	AC Power Cable	Non-Shielded, 1.5m
C	DC Power Cable	Non-Shielded, 0.5m with one core
D	PS/2 Cable	Shielded, 1.8m
E	PS/2 Cable	Shielded, 1.8m
F	D-SUB Cable	Shielded, 1.8m with two cores
G	USB Cable	Shielded, 1.0m with one core
H	Signal Cable	Shielded, 0.8m with one core

Devices Description					
Product		Manufacturer	Model Number	Serial Number	Power Cord
(1)	Keyboard	DELL	SK-8110	07N2443884232J7Q39	Power by PC
(2)	Mouse	DELL	MO71KC	511091717	Power by PC
(3)	PC	ICP DAS	VB-115H	N/A	Non-Shielded, 1.7m

※ PC Keypart information

Main		Software	Diversity	Mode 1
(3)-1	VXC-118U	---	Universal PCI, Serial Communication card with 8 RS-232 ports (RoHS) Includes one CA-PC62M D-Sub connector.	V
(3)-2	VXC-118U/D2	---	Universal PCI, Serial Communication card with 8 RS-232 ports (RoHS) Includes one CA-9-6210 cable.	
(3)-3	PIO-D24U	---	Universal PCI bus, 24-channel DIO board	
(3)-4	PIO-D56U	---	Universal PCI bus, 56-channel DIO board	V
(3)-5	PISO-813	---	PCI Bus, 32 channel isolated analog input board. (RoHS) Includes one CA-4002 D-Sub connector.	
(3)-6	PISO-813/S	---	PCI Bus, 32 channel isolated analog input board. (RoHS) Includes one DB-8325 screw terminal board.	
(3)-7	PISO-813U	---	Universal PCI, 32-channel isolated analog input board. (RoHS) Includes one CA-4002 D-Sub connector.	V
(3)-8	PISO-813U/S	---	Universal PCI, 32-channel isolated analog input board. (RoHS) Includes one DB-8325 screw terminal board.	
(3)-9	ISO-P32C32	---	32-channel isolated digital I/O board Includes one CA-4037W cable and two CA-4002 D-Sub connectors.	V
(3)-10	DIO-64/3	---	32-channel Digital Input & 32-channel Digital Output,3 Timer/Counter Board	
(3)-11	DIO-64/6	---	32-channel Digital Input & 32-channel Digital Output,6 Timer/Counter Board	V

Support Unit					
Product		Manufacturer	Model Number	Serial Number	Power Cord
1.	Industrial Power Supply	ICP DAS	DP-1200	N/A	Non-Shielded, 1.7m with one core

3.4. Test Site Environment

Items	Test Item	Required (IEC 60068-1)	Actual
Temperature (°C)	EN 55011 CE	15-35	26
Humidity (%RH)		25-75	60
Barometric pressure (mbar)		860-1060	950
Temperature (°C)	EN 55011 RE	15-35	26
Humidity (%RH)		25-75	60
Barometric pressure (mbar)		860-1060	950

4 Emission Test

4.1. Conducted Emission Measurement

4.1.1. Limit

A.C. Mains Conducted Interference Limit：

Frequency (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTE: (1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases in line with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

Telecommunication Port Conducted Interference Limits:

Requirement (MHz)	Class A Equipment				Class B Equipment			
	Voltage Limit (dBµV)		Current Limit (dBµA)		Voltage Limit (dBµV)		Current Limit (dBµA)	
	QP	Avg.	QP	Avg.	QP	Avg.	QP	Avg.
0.15 to 0.50	97 to 87	84 to 74	53 to 43	40 to 30	84 to 74	74 to 64	40 to 30	30 to 20
0.50 to 30	87	74	43	30	74	64	30	20

4.1.2. Test Instruments

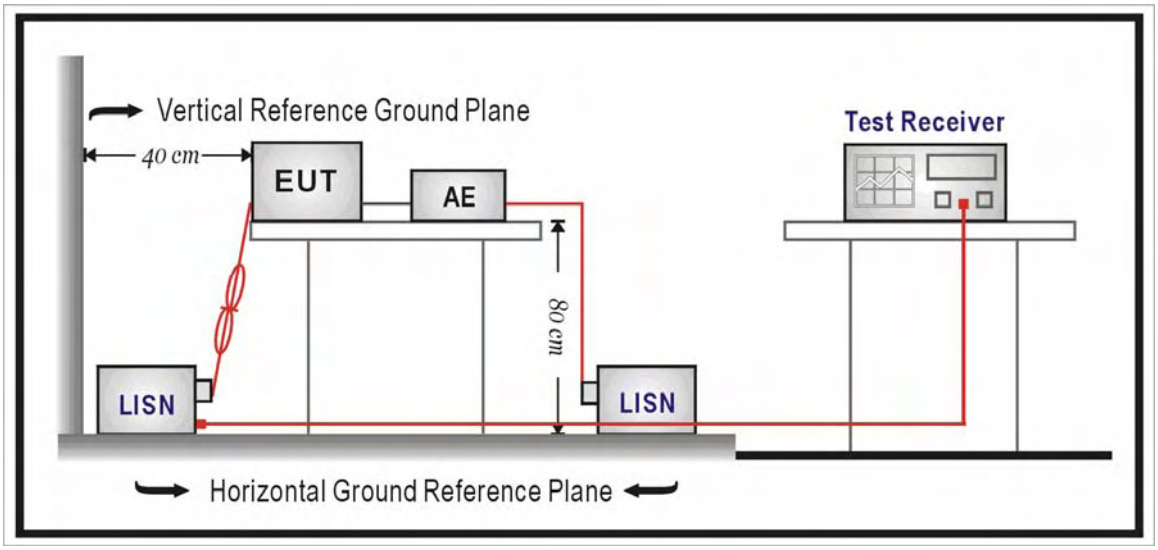
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/12/2014	(1)
LISN	R&S	ENV216	101040	03/07/2014	(1)
LISN	R&S	ENV216	101041	03/07/2014	(1)
T-LISN	FCC	FCC-TLISN-T2-02	20574	04/03/2014	(1)
T-LISN	FCC	FCC-TLISN-T4-02	20529	04/03/2014	(1)
T-LISN	TESEQ	ISN-T8	34413	04/23/2014	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

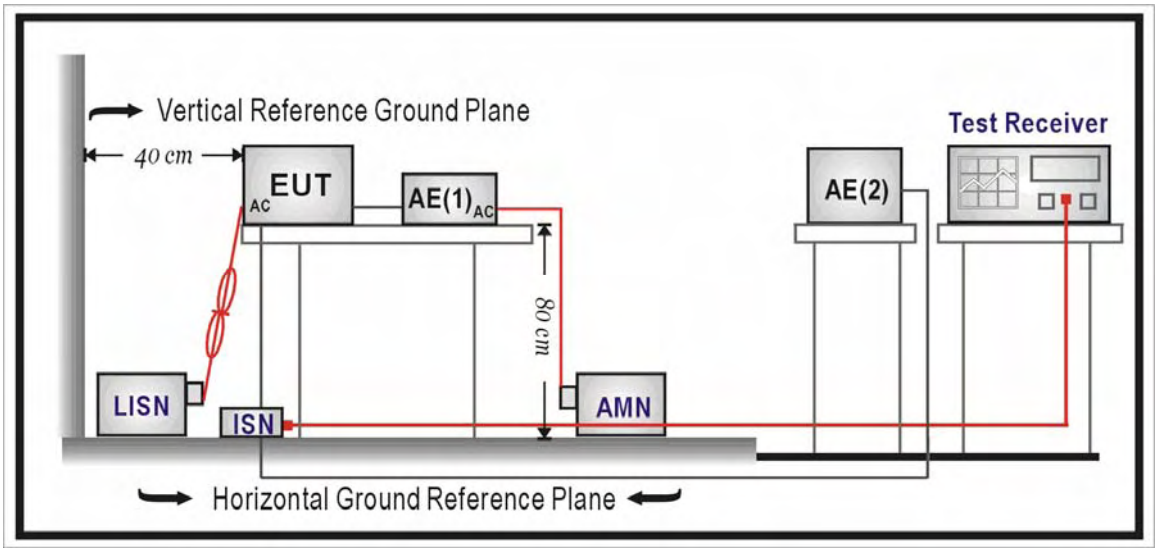
NOTE: N.C.R. = No Calibration Request.

4.1.3. Test Setup

A.C. Mains Setup



Telecommunication Port Setup



4.1.4. Test Procedure

Procedure of Preliminary Test

The EUT was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per EN 55011 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

Support equipment, if needed, was placed as per EN 55011.

All I/O cables were positioned to simulate typical actual usage as per EN 55011.

The test equipment EUT installed received AC power, 230VAC/50Hz, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane.

All support equipment received power from a second LISN.

The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in Item 3.2 were scanned during the preliminary test.

After the preliminary scan, we found the test mode described in Item 3.2 producing the highest emission level.

The worst configuration of EUT and cable of the above highest emission level were recorded for reference of the final test.

Procedure of Final Test

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the Average limit in Q.P. mode, then the emission signal was re-checked using an Average detector.

The test data of the worst-case condition(s) was recorded.

Selecting ISN for unscreened cable or a current probe for screened cable to take measurement.

The port of the EUT was connected to the remote side support equipment through the ISN/Current Probe and communication in normal condition.

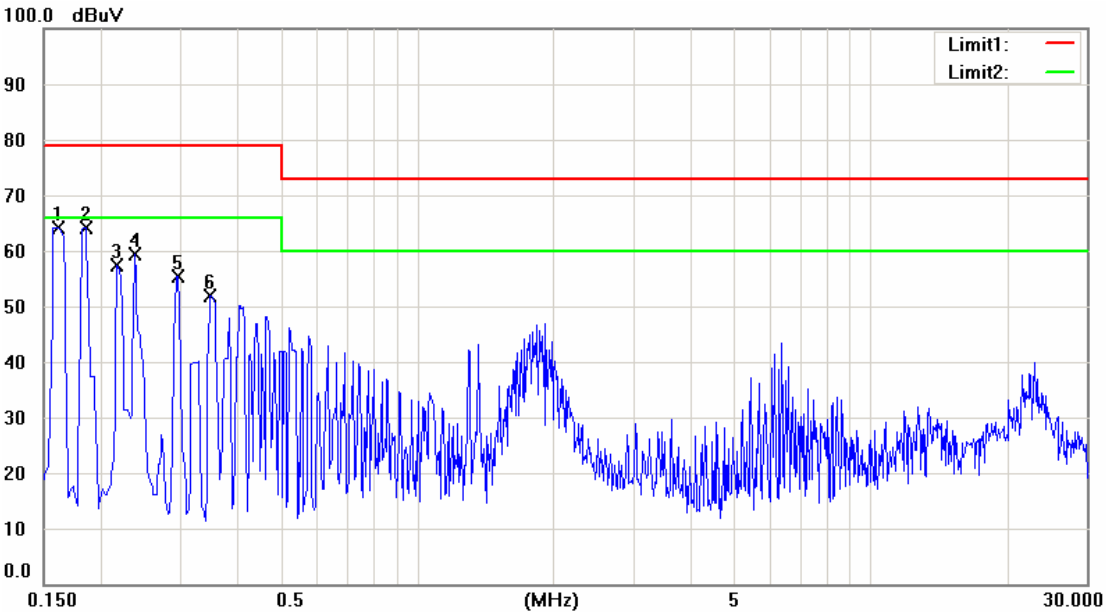
Making a overall range scan by using the test receiver controlled by controller and record at least six highest emissions for showing in the test report.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

In case of measuring on the screened cable, the current limit shall be applied; otherwise the voltage limit should be applied.

4.1.5. Test Result

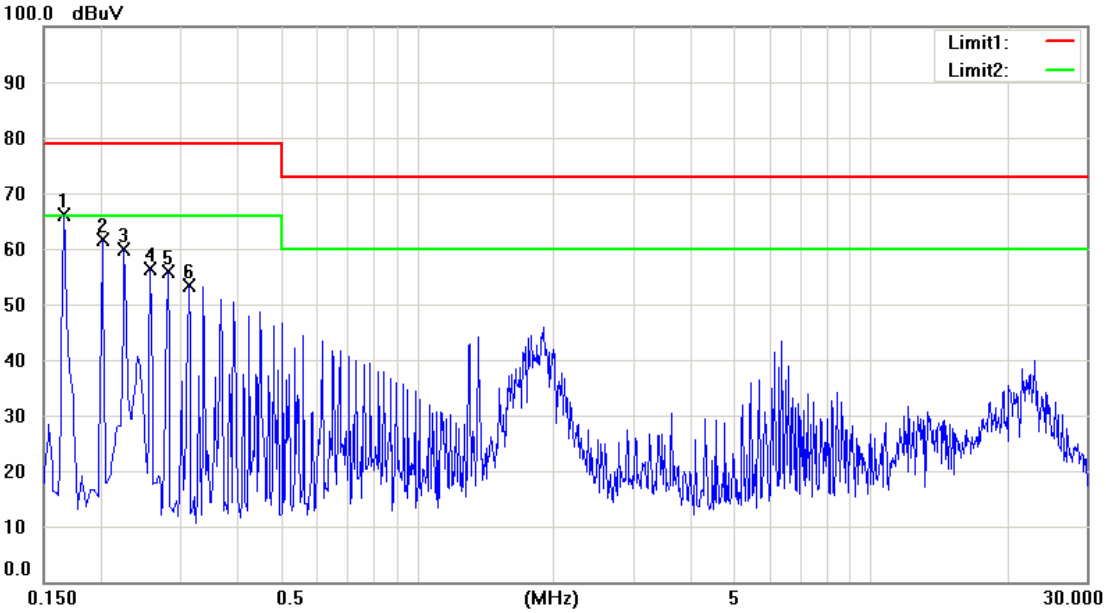
Standard:	EN 55011	Line:	L1
Test item:	Conducted Emission	Power:	AC 230V/50Hz
Model Number:	PM-3133-100	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1	Date:	2014/09/01
		Test By:	Frank Lin
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1620	49.60	17.77	9.60	59.20	27.37	79.00	66.00	-19.80	-38.63	Pass
2	0.1860	46.65	15.30	9.60	56.25	24.90	79.00	66.00	-22.75	-41.10	Pass
3	0.2180	43.54	18.17	9.60	53.14	27.77	79.00	66.00	-25.86	-38.23	Pass
4	0.2380	42.22	29.04	9.60	51.82	38.64	79.00	66.00	-27.18	-27.36	Pass
5	0.2980	38.24	11.87	9.61	47.85	21.48	79.00	66.00	-31.15	-44.52	Pass
6	0.3500	35.20	9.61	9.61	44.81	19.22	79.00	66.00	-34.19	-46.78	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).
2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

Standard:	EN 55011	Line:	N
Test item:	Conducted Emission	Power:	AC 230V/50Hz
Model Number:	PM-3133-100	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1	Date:	2014/09/01
		Test By:	Frank Lin
Description:			

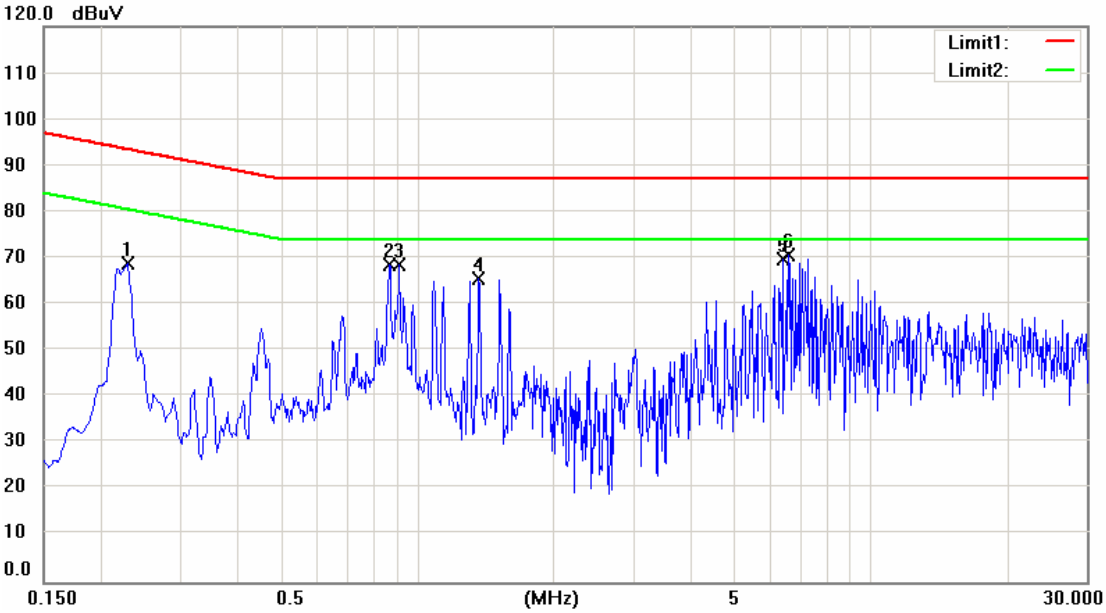


No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1660	49.16	17.49	9.60	58.76	27.09	79.00	66.00	-20.24	-38.91	Pass
2	0.2020	45.33	14.20	9.60	54.93	23.80	79.00	66.00	-24.07	-42.20	Pass
3	0.2260	43.39	21.61	9.60	52.99	31.21	79.00	66.00	-26.01	-34.79	Pass
4	0.2580	40.90	11.87	9.61	50.51	21.48	79.00	66.00	-28.49	-44.52	Pass
5	0.2820	39.24	13.16	9.61	48.85	22.77	79.00	66.00	-30.15	-43.23	Pass
6	0.3140	37.21	9.43	9.61	46.82	19.04	79.00	66.00	-32.18	-46.96	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

Standard:	EN 55011	Line:	N/A
Test item:	Conducted Emission	Power:	AC 230V/50Hz
Model Number:	PM-3133-100	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1 (ISN 100M)	Date:	2014/09/01
		Test By:	Frank Lin
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.2300	57.25	56.39	9.95	67.20	66.34	93.45	80.45	-26.25	-14.11	Pass
2	0.8700	57.61	56.60	9.95	67.56	66.55	87.00	74.00	-19.44	-7.45	Pass
3	0.9140	57.11	56.31	9.95	67.06	66.26	87.00	74.00	-19.94	-7.74	Pass
4	1.3700	55.38	55.59	9.97	65.35	65.56	87.00	74.00	-21.65	-8.44	Pass
5	6.3980	58.94	58.47	10.10	69.04	68.57	87.00	74.00	-17.96	-5.43	Pass
6	6.6260	60.00	60.05	10.11	70.11	70.16	87.00	74.00	-16.89	-3.84	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

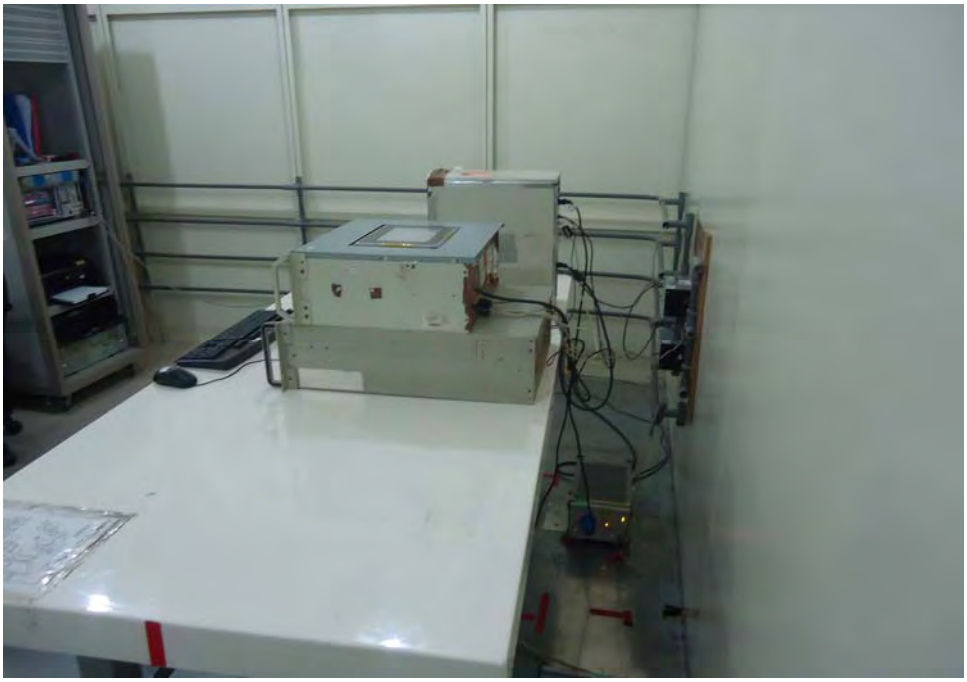
4.1.6. Test Photograph

Test Mode: Mode 1

Description: Front View of Conducted Test

Test Mode: Mode 1

Description: Back View of Conducted Test



4.2. Radiated Interference Measurement

4.2.1. Limit

Frequency (MHz)	dBuV/m (Distance 10m)	
	Class A	Class B
30 ~ 230	40	30
230 ~ 1000	47	37

NOTE: The lower limit shall apply at the transition frequencies.

Frequency (MHz)	dBuV/m (Distance 3m)			
	Class A		Class B	
	Average	Peak	Average	Peak
1000 ~ 3000	56	76	50	70
3000 ~ 6000	60	80	54	74

NOTE: The lower limit shall apply at the transition frequencies.

4.2.2. Test Instruments

10 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Pre Amplifier	Agilent	8447D	2944A11120	01/10/2014	(1)
Pre Amplifier	Agilent	8447D	2944A11119	01/10/2014	(1)
Test Receiver	R&S	ESCI	100722	10/26/2013	(1)
Test Receiver	R&S	ESCI	101000	12/03/2013	(1)
Broadband Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB 9160	9160-3268	06/03/2014	(1)
Broadband Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB 9160	9160-3273	12/13/2013	(1)
Test Site	ATL	TE06	TE06	08/09/2014	(1)

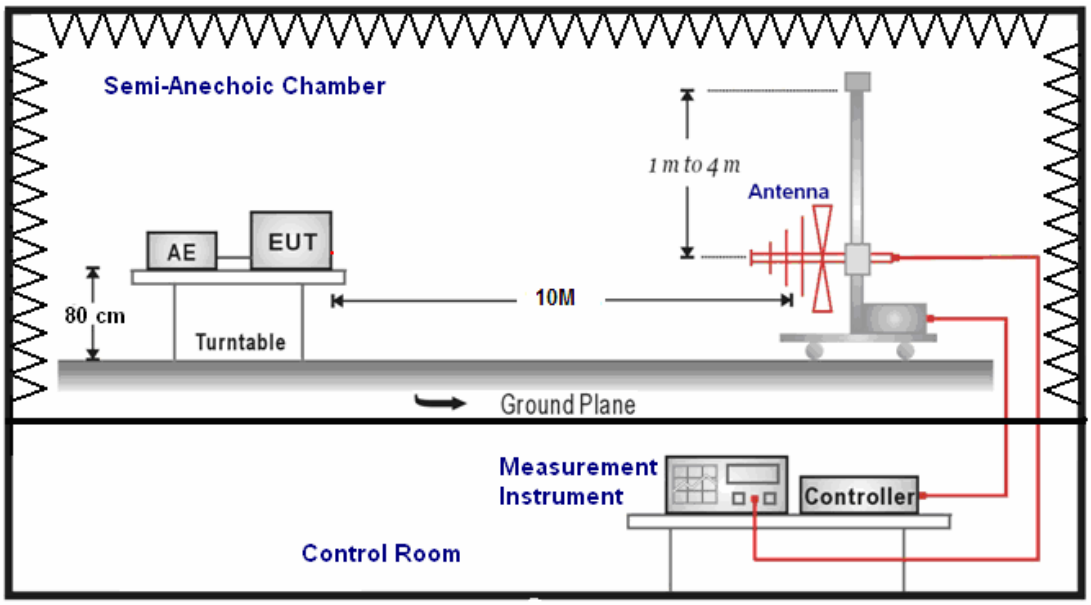
3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/10/2014	(1)
Pre-amplifier	EM	EM330	060545	11/18/2013	(1)
Amplifier	Mini-Circuits	ZVA-213-S+	467900926	05/26/2014	(1)
RF Pre-selector	Agilent	N9039A	MY46520255	05/10/2014	(1)
Horn Antenna (1~18GHz)	ETS-Lindgren	3117	00128055	08/11/2014	(1)
Test Site	ATL	TE09	TE09	05/10/2014	(1)

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

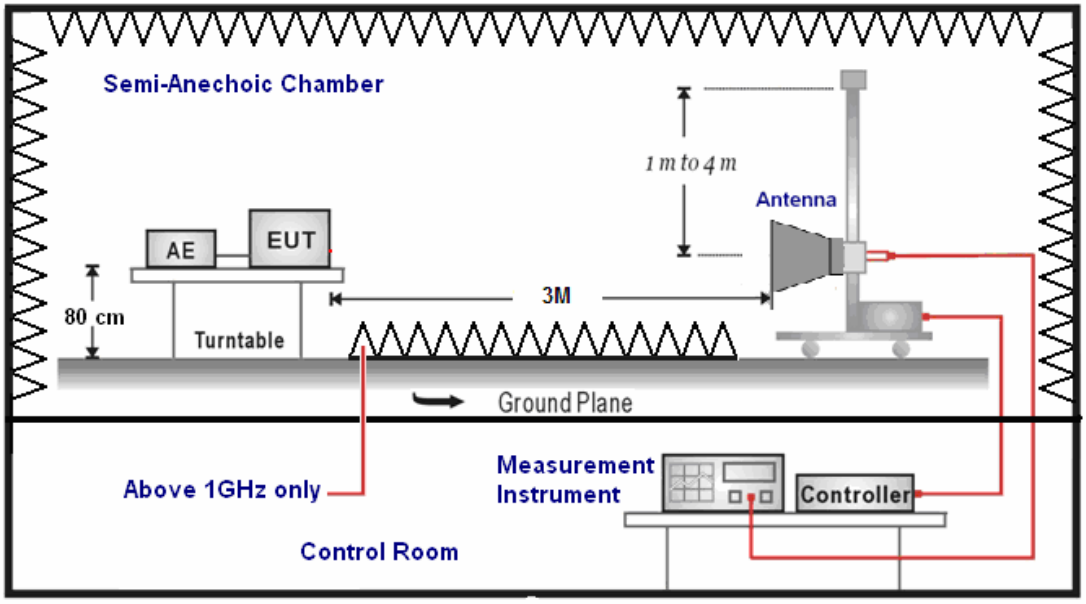
NOTE: N.C.R. = No Calibration Request.

4.2.3. Setup

Below 1GHz



Above 1GHz



4.2.4. Test Procedure

Procedure of Preliminary Test

The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is floor-standing equipment, it is placed on the ground plane that has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

Support equipment, if needed, was placed as per EN 55011.

All I/O cables were positioned to simulate typical usage as per EN 55011.

The EUT received AC power source, 230VAC/50Hz, from the outlet socket under the turntable. All support equipment-received power from another socket under the turntable.

The antenna was placed at 10 meter away from the EUT as stated in EN 55011. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

The test mode(s) described in Item 3.2 were scanned during the preliminary test:

After the preliminary scan, we found the test mode described in Item 3.2 producing the highest emission level.

The worst configuration of EUT and cable, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

Procedure of Final Test

EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.

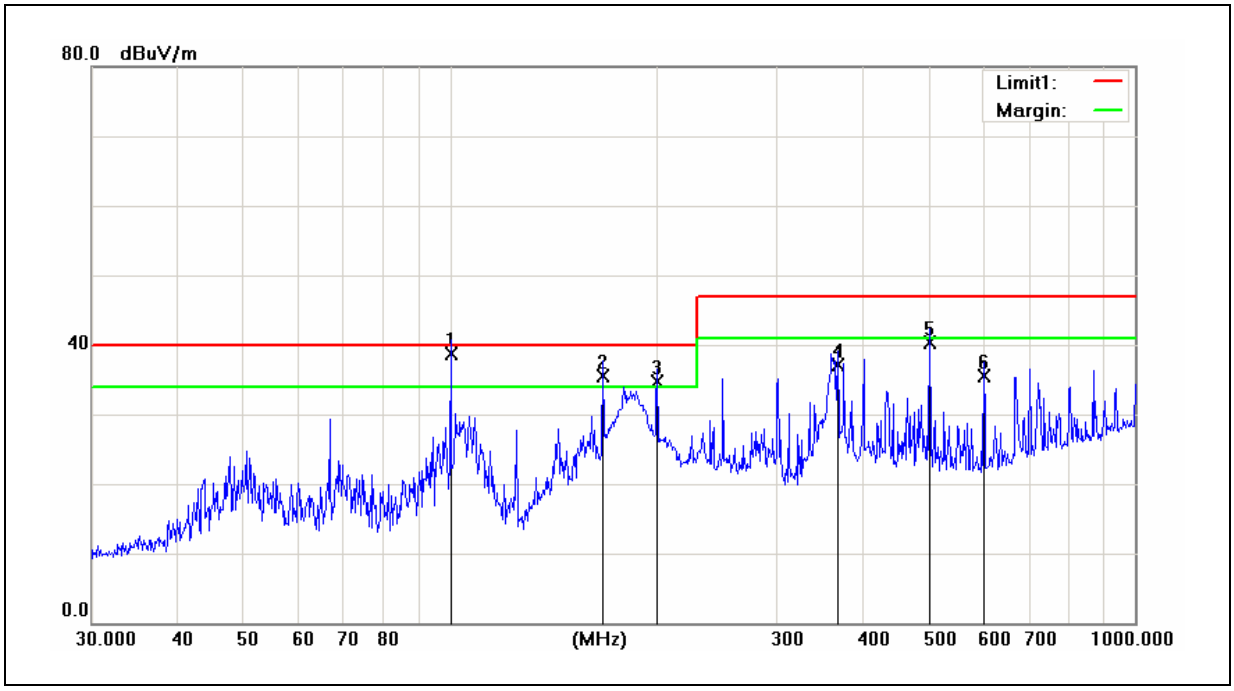
The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.

The test data of the worst-case condition(s) was recorded.

4.2.5. Test result

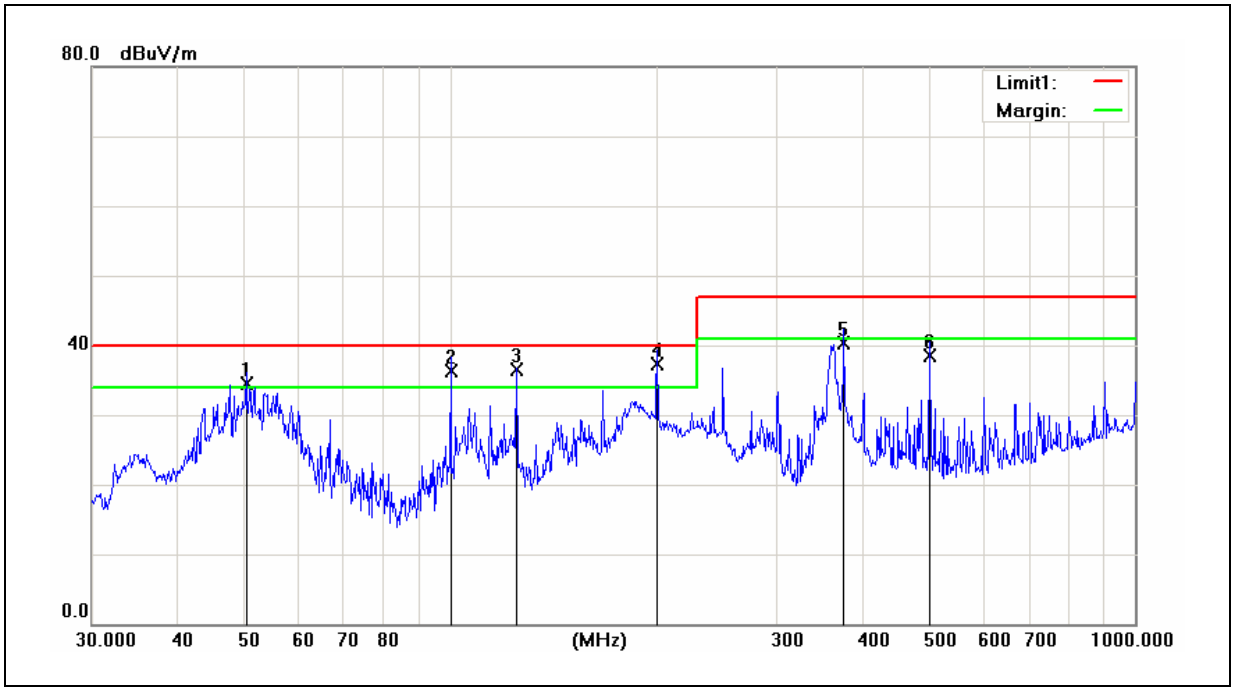
Standard:	EN 55011	Test Distance:	10m
Test item:	Radiated Emission	Power:	AC 230V/50Hz
Model Number:	PM-3133-100	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1	Date:	2014/09/22
Ant.Polar.:	Horizontal	Test By:	Frank Lin



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
1	100.2286	55.84	-17.04	38.80	40.00	-1.20	400	337	QP
2	167.2368	48.12	-12.52	35.60	40.00	-4.40	400	105	QP
3	200.6881	50.26	-15.46	34.80	40.00	-5.20	400	142	QP
4	368.1116	46.48	-9.28	37.20	47.00	-9.80	200	53	QP
5	501.1790	46.62	-6.22	40.40	47.00	-6.60	200	64	QP
6	601.4265	39.51	-3.91	35.60	47.00	-11.40	100	68	QP

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).
2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

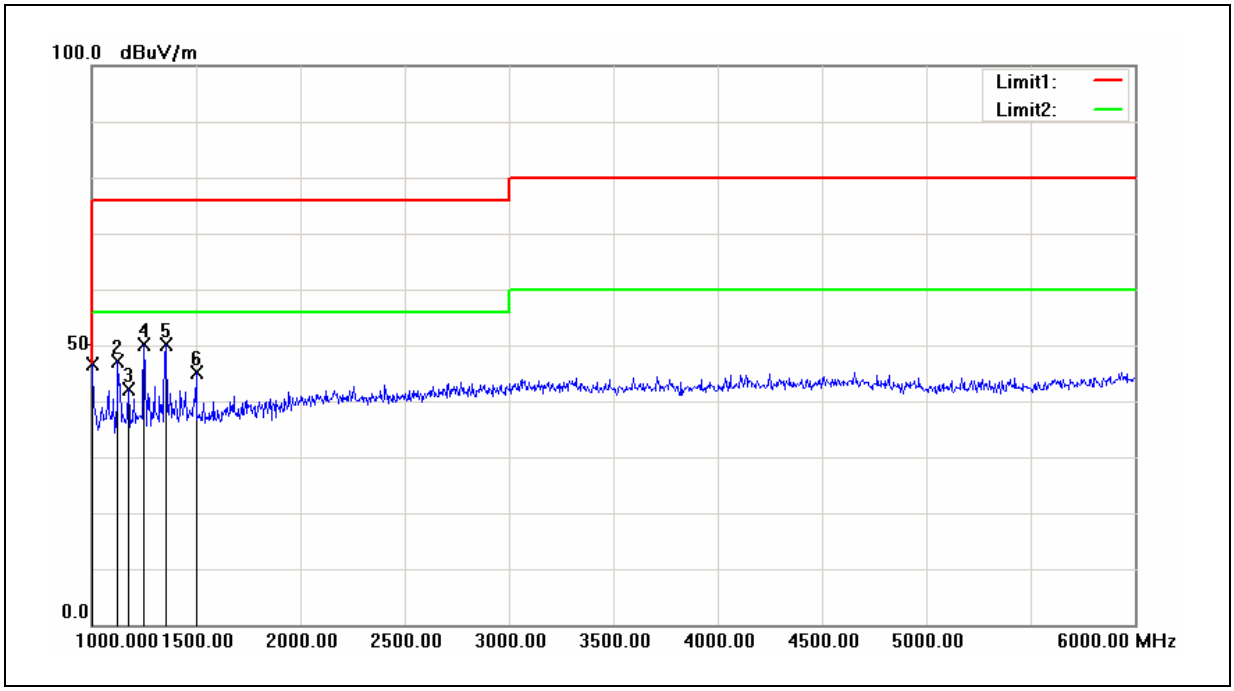
Standard:	EN 55011	Test Distance:	10m
Test item:	Radiated Emission	Power:	AC 230V/50Hz
Model Number:	PM-3133-100	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1	Date:	2014/09/22
Ant.Polar.:	Vertical	Test By:	Frank Lin



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
1	50.4090	48.19	-13.69	34.50	40.00	-5.50	100	47	QP
2	100.2286	52.81	-16.51	36.30	40.00	-3.70	100	290	QP
3	125.0066	49.93	-13.33	36.60	40.00	-3.40	100	37	QP
4	200.6881	52.17	-14.87	37.30	40.00	-2.70	100	73	QP
5	375.9385	48.50	-8.20	40.30	47.00	-6.70	100	2	QP
6	501.1790	43.57	-5.07	38.50	47.00	-8.50	100	145	QP

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).
2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

Standard:	EN 55011	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 230V/50Hz
Model Number:	PM-3133-100	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1 (1GHz~6GHz)	Date:	2014/09/01
Ant.Polar.:	Horizontal	Test By:	Frank Lin

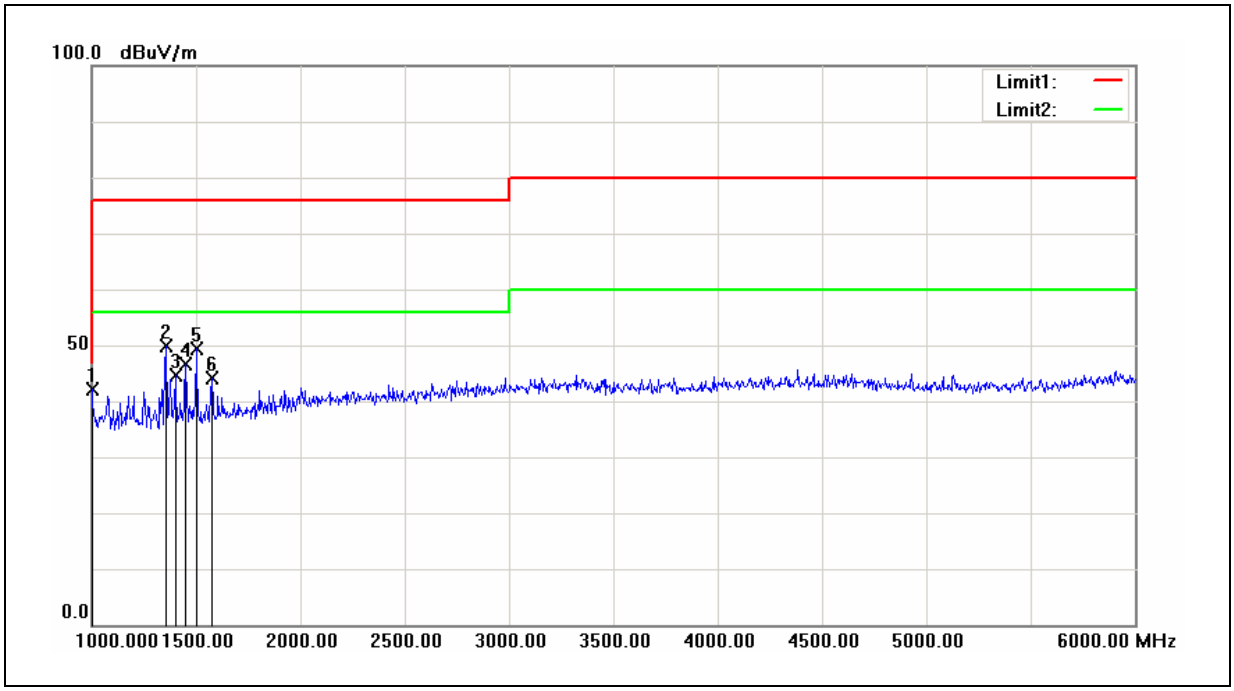


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1000.010	72.65	-26.00	46.65	76.00	-29.35	peak
2	1125.000	72.85	-25.75	47.10	76.00	-28.90	AVG
3	1175.000	67.74	-25.65	42.09	76.00	-33.91	peak
4	1250.000	75.67	-25.50	50.17	76.00	-25.83	peak
5	1355.000	75.54	-25.29	50.25	76.00	-25.75	peak
6	1500.000	70.22	-25.00	45.22	76.00	-30.78	peak

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

Standard:	EN 55011	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 230V/50Hz
Model Number:	PM-3133-100	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1 (1GHz~6GHz)	Date:	2014/09/01
Ant.Polar.:	Vertical	Test By:	Frank Lin



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1000.010	68.13	-26.00	42.13	76.00	-33.87	peak
2	1355.000	75.07	-25.29	49.78	76.00	-26.22	AVG
3	1400.000	69.89	-25.20	44.69	76.00	-31.31	peak
4	1450.000	71.64	-25.10	46.54	76.00	-29.46	peak
5	1500.000	74.33	-25.00	49.33	76.00	-26.67	peak
6	1575.000	68.66	-24.45	44.21	76.00	-31.79	peak

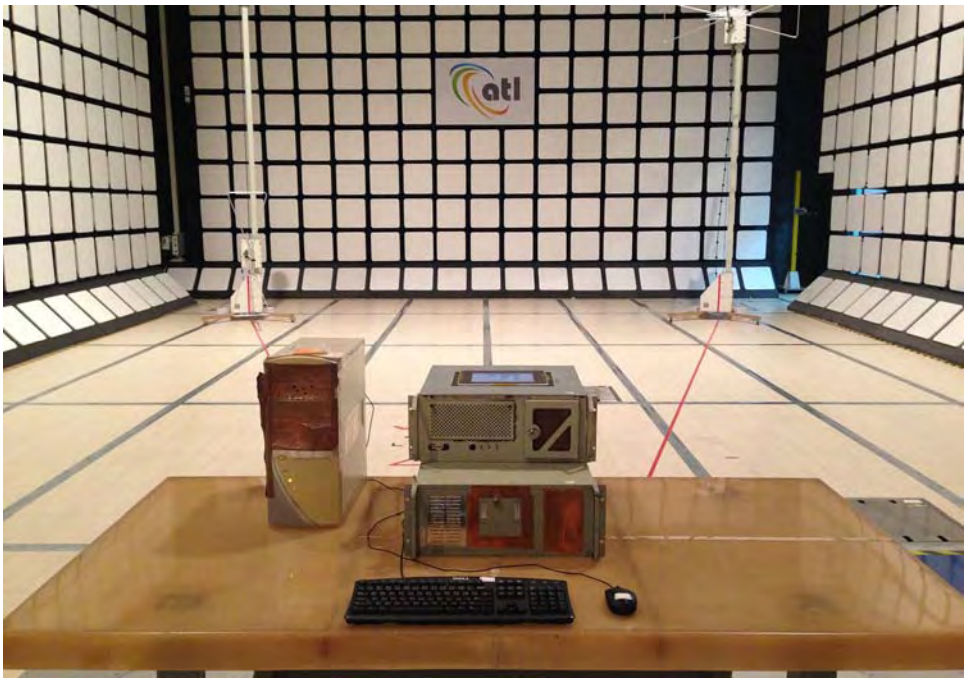
Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

4.2.6. Test Photograph

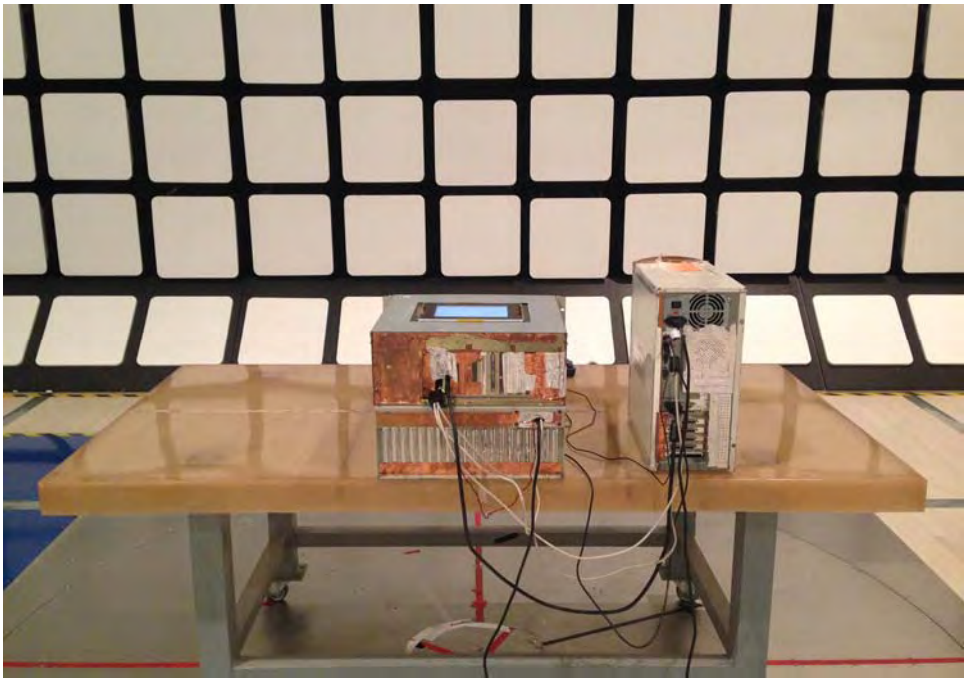
Test Mode: Mode 1

Description: Front View of Radiated Emission Test _ Below 1GHz



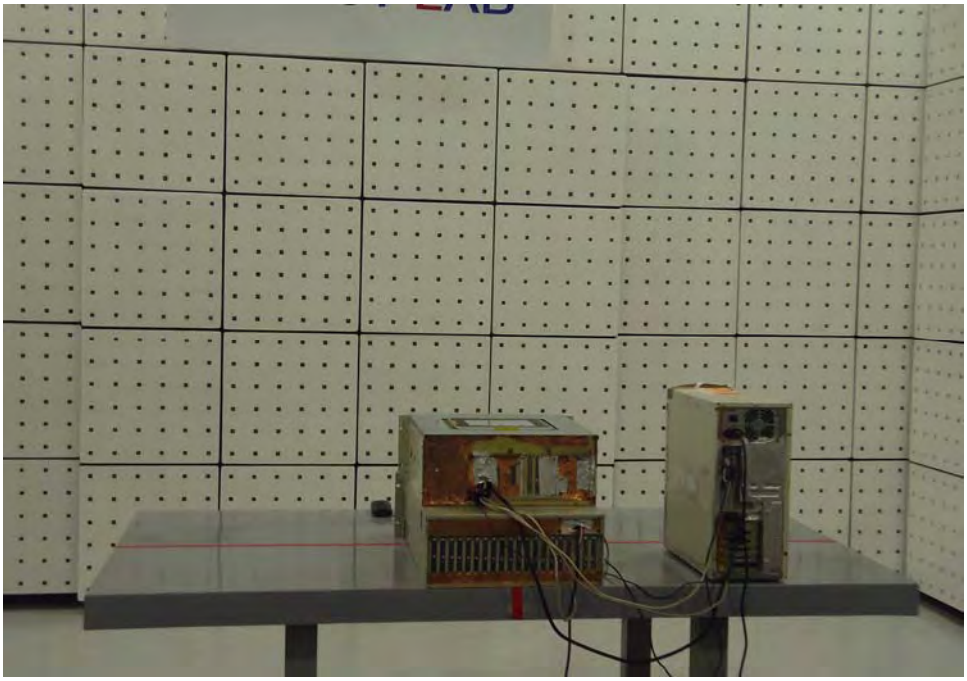
Test Mode: Mode 1

Description: Back View of Radiated Emission Test _ Below 1GHz



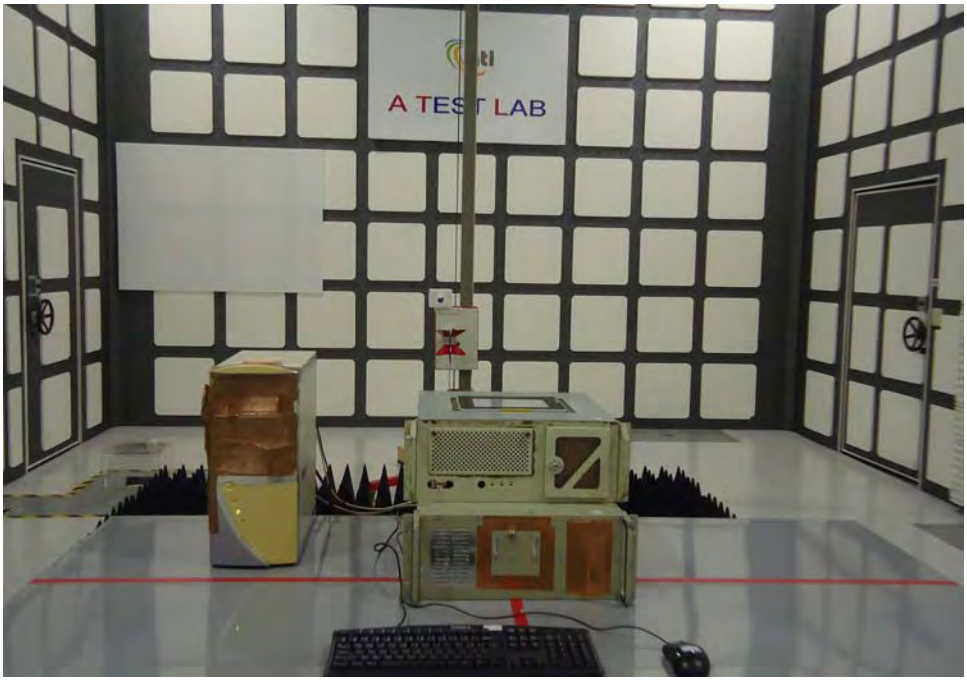
Test Mode: Mode 1

Description: Front View of Radiated Emission Test _ Above 1GHz



Test Mode: Mode 1

Description: Back View of Radiated Emission Test _ Above 1GHz



5 EUT Photograph

(1) EUT Photo

(2) EUT Photo

(3) EUT Photo

(4) EUT Photo

(5) EUT Photo

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(8) EUT Photo

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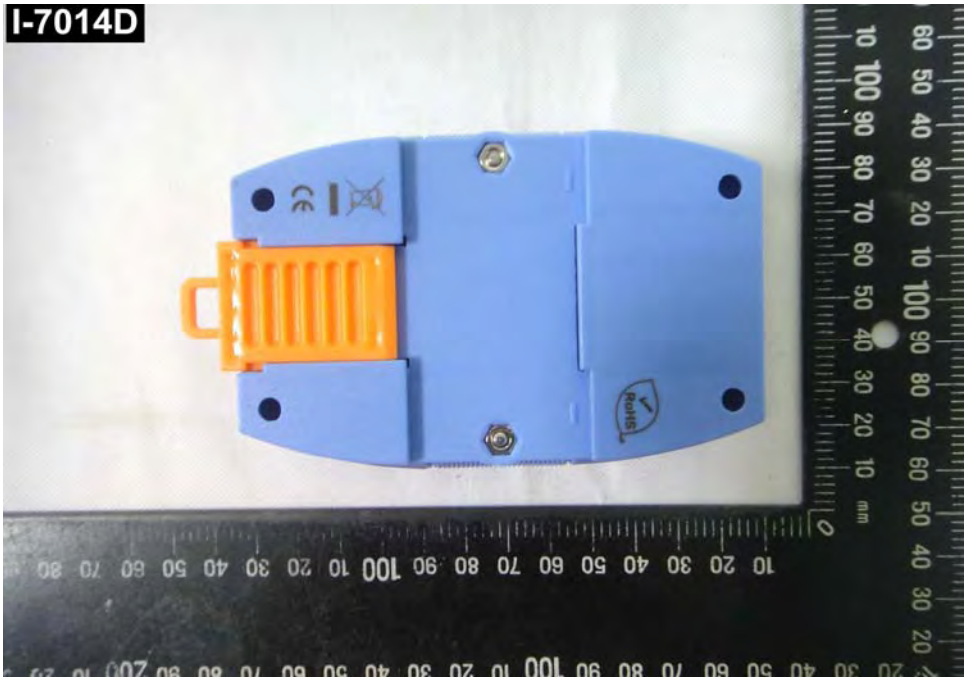
(22)EUT Photo



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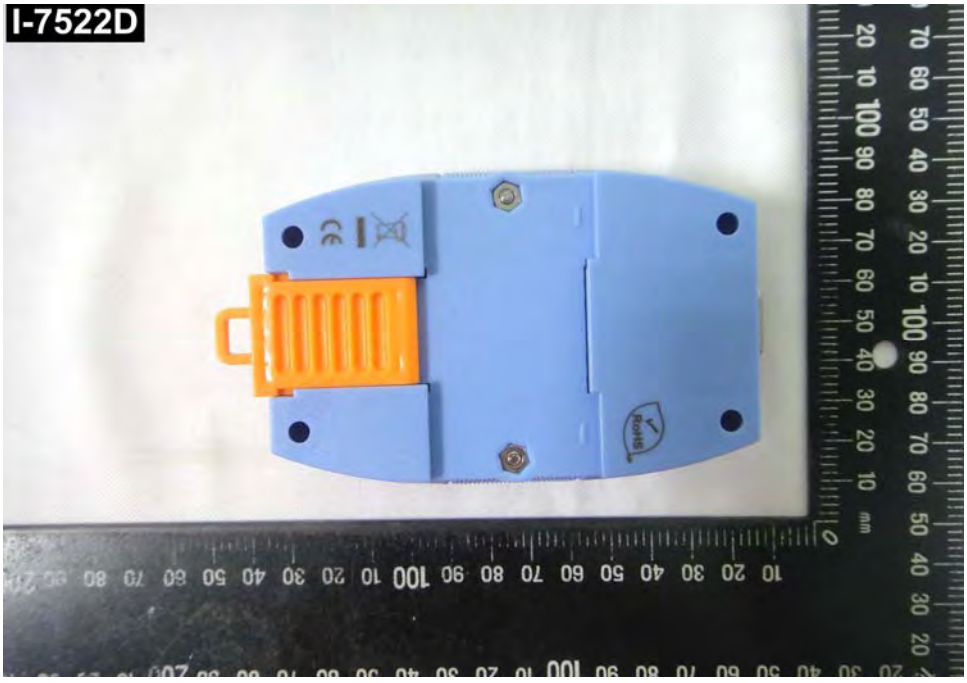
(26)EUT Photo



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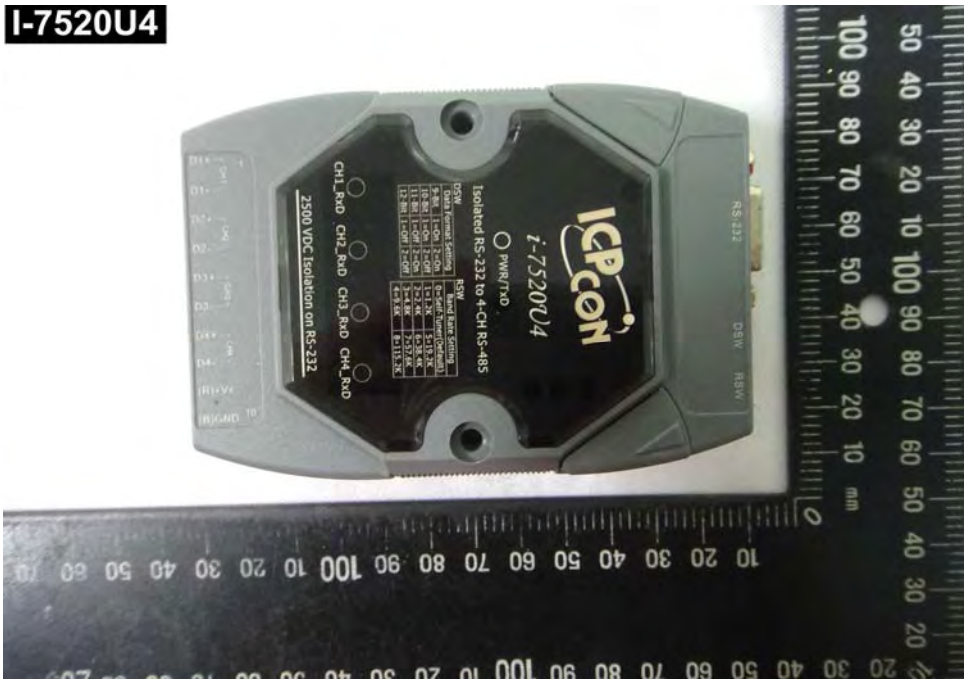
(29)EUT Photo



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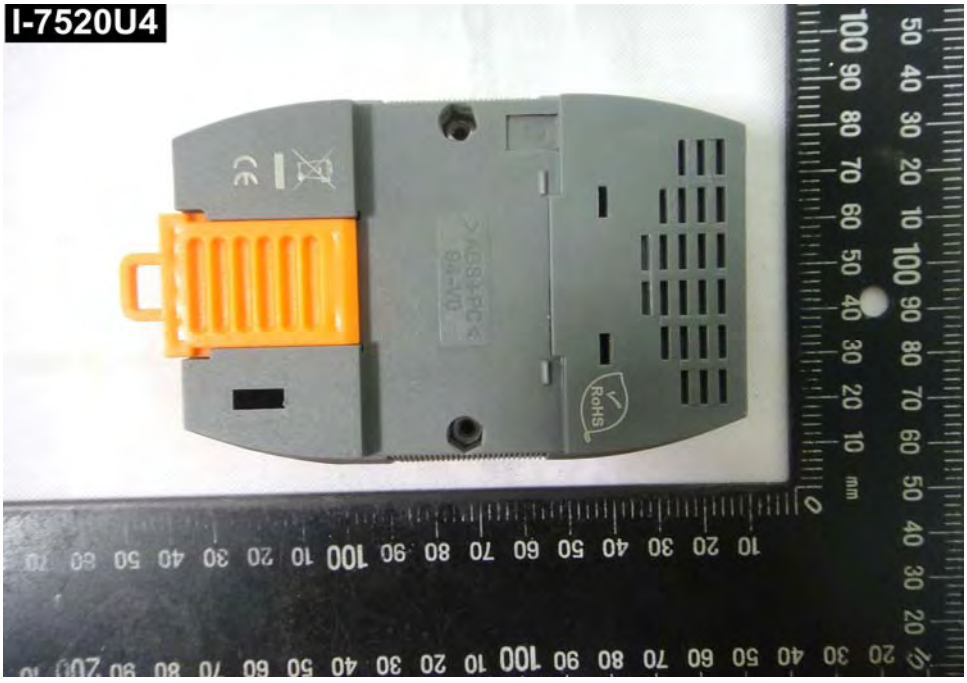
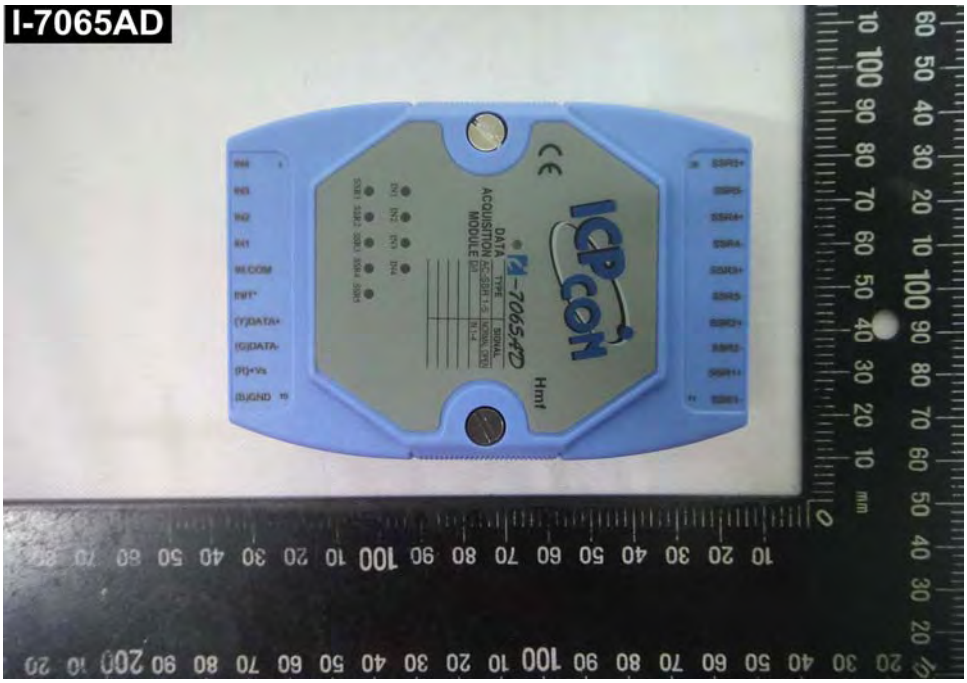


(31)EUT Photo

(32)EUT Photo

(33)EUT Photo



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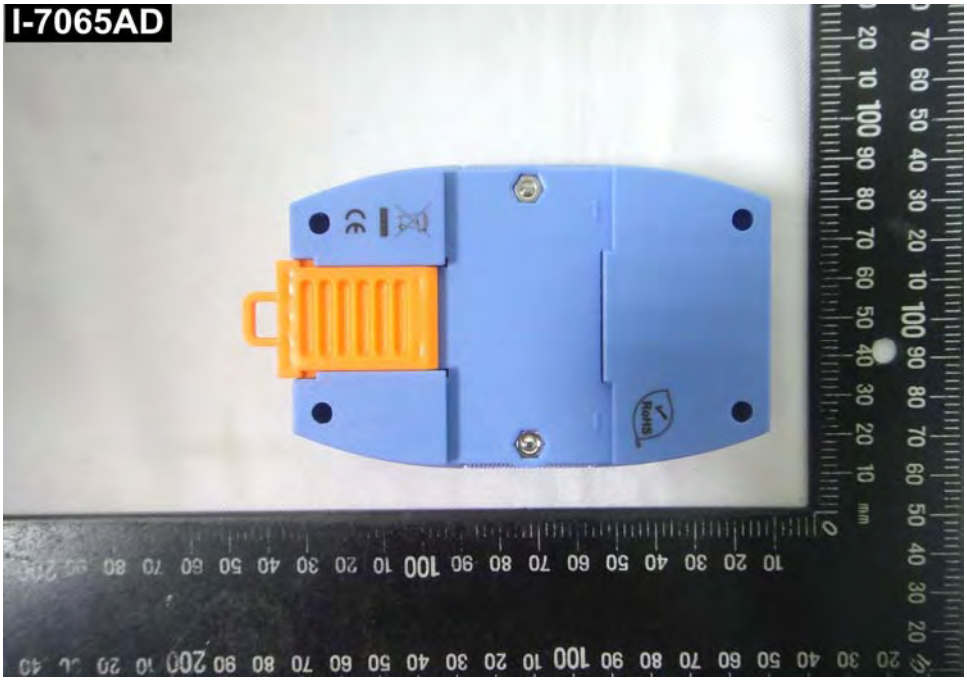

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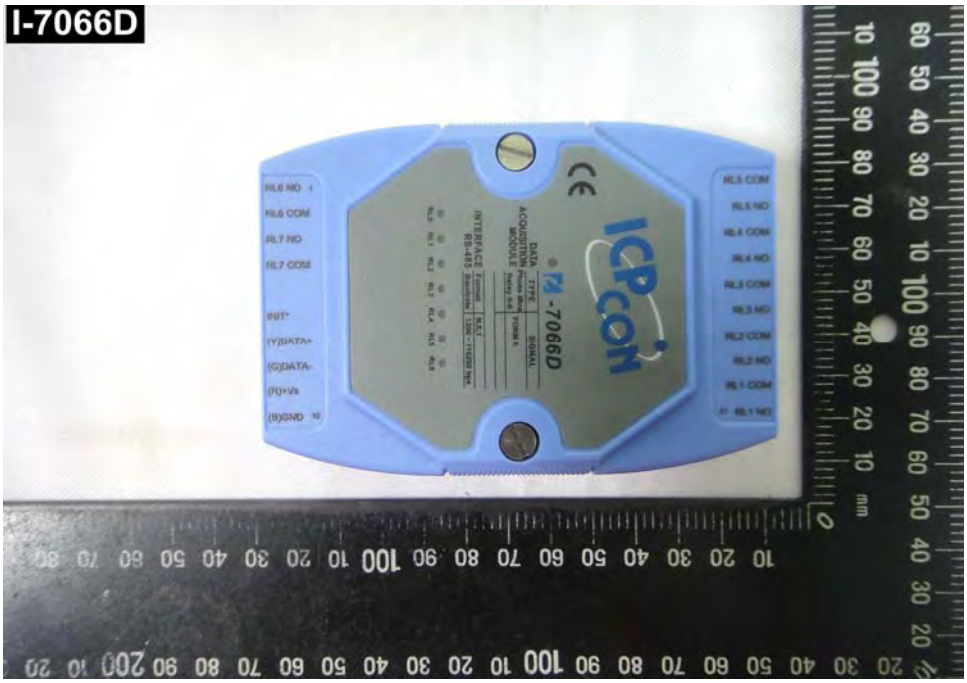

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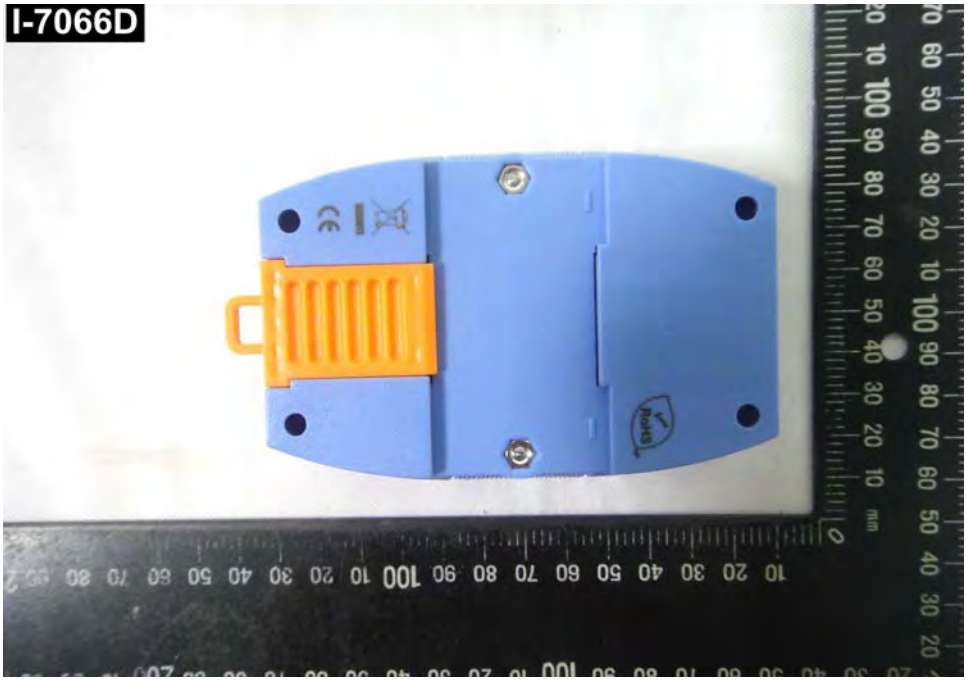

(39)EUT Photo

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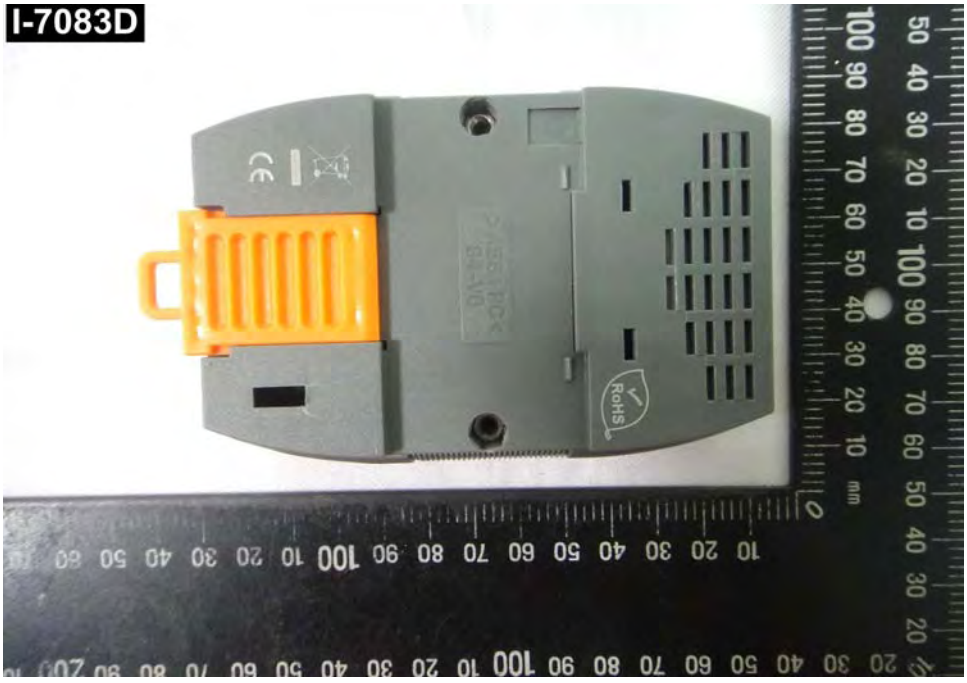
(40)EUT Photo

(41)EUT Photo

(42)EUT Photo



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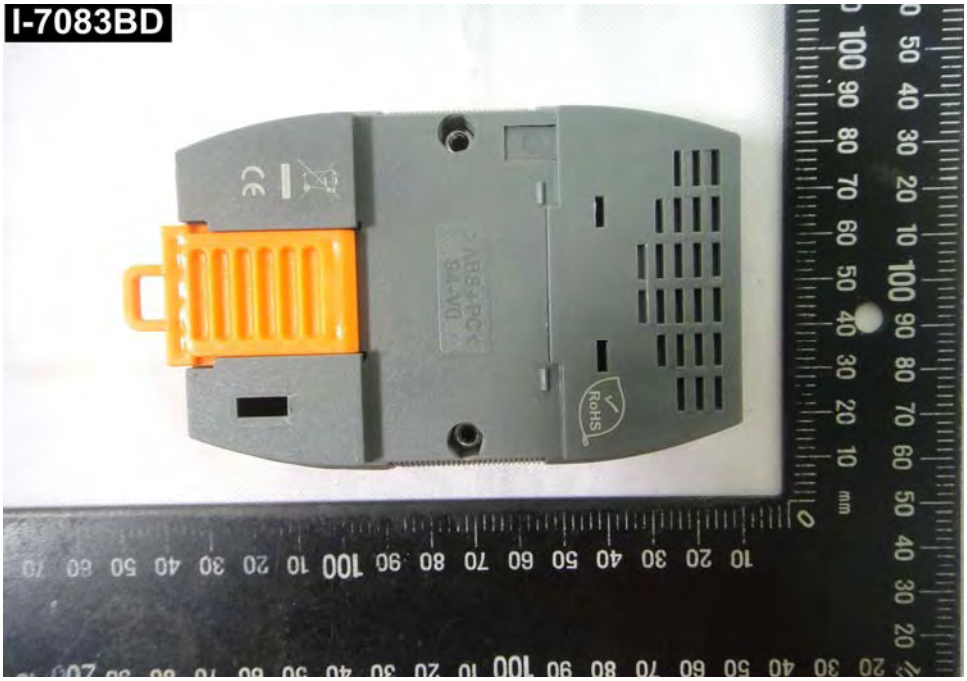
(46)EUT Photo



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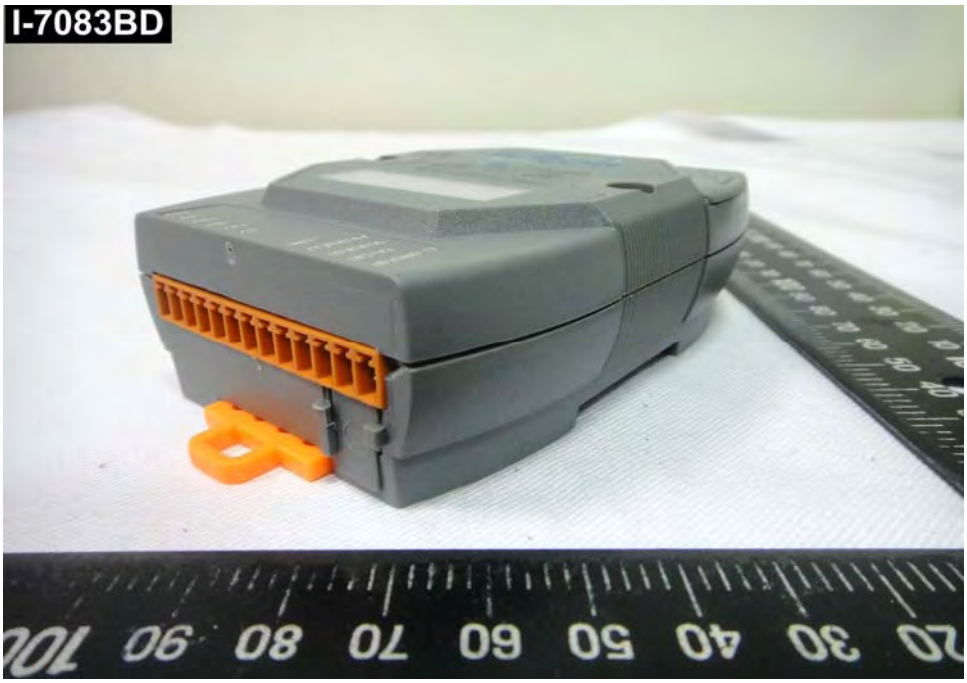

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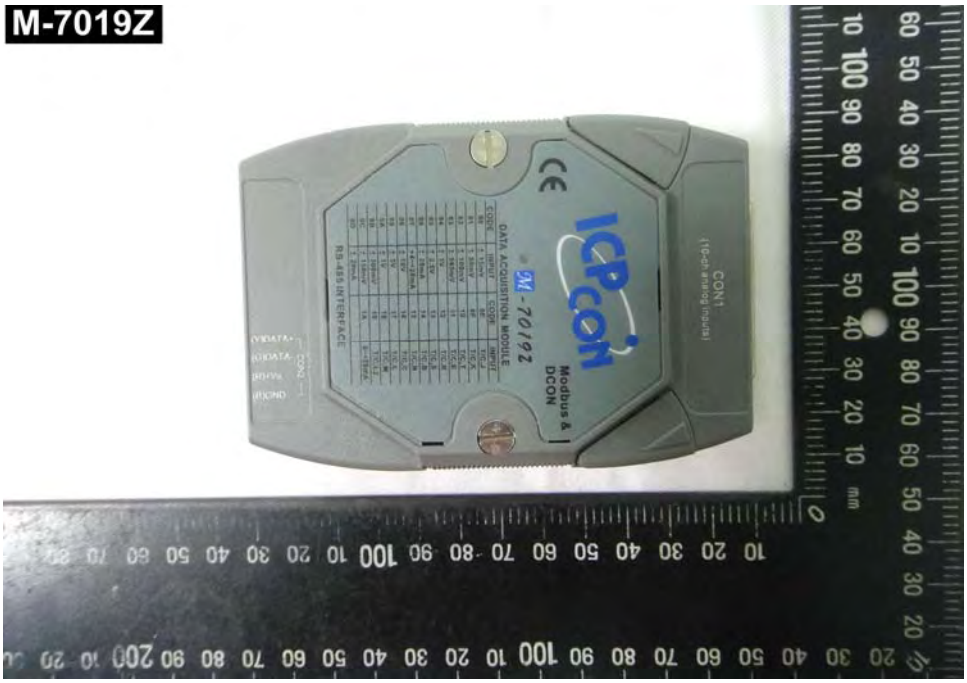
(53)EUT Photo



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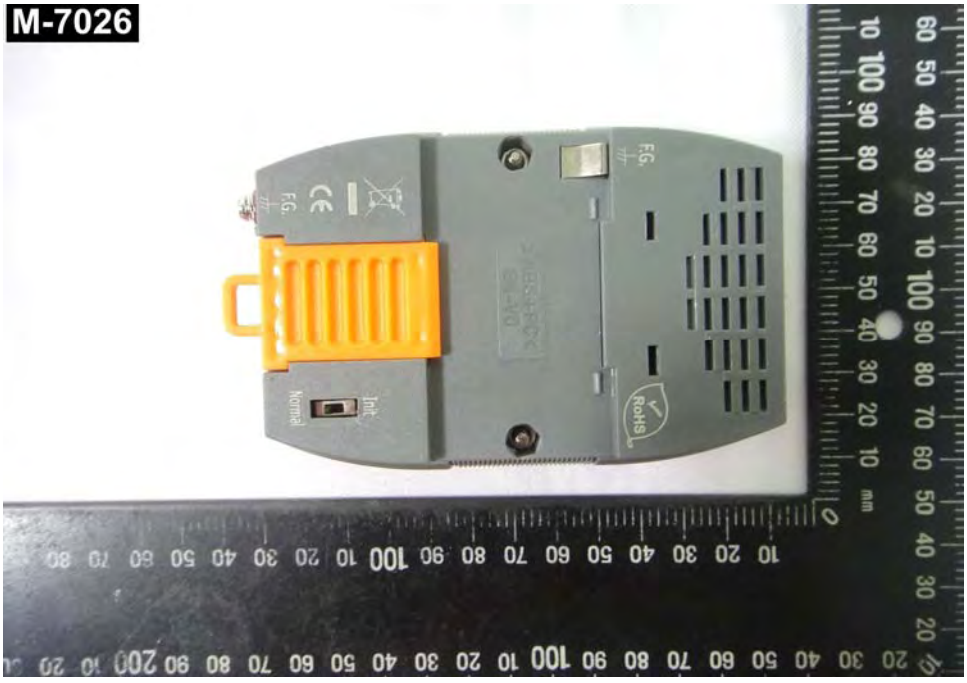
(58)EUT Photo



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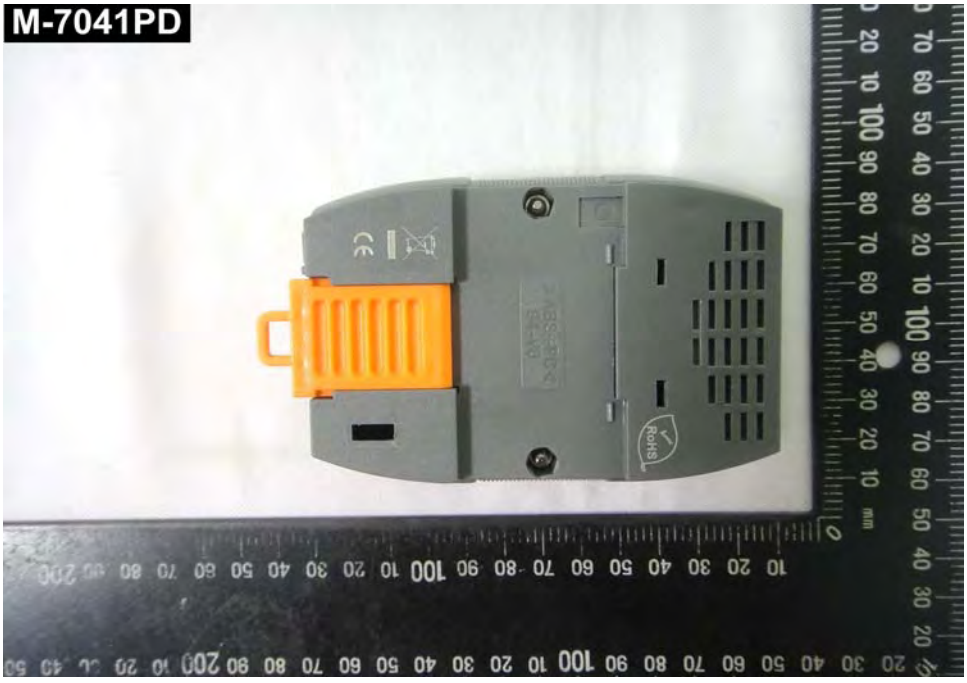
(62)EUT Photo



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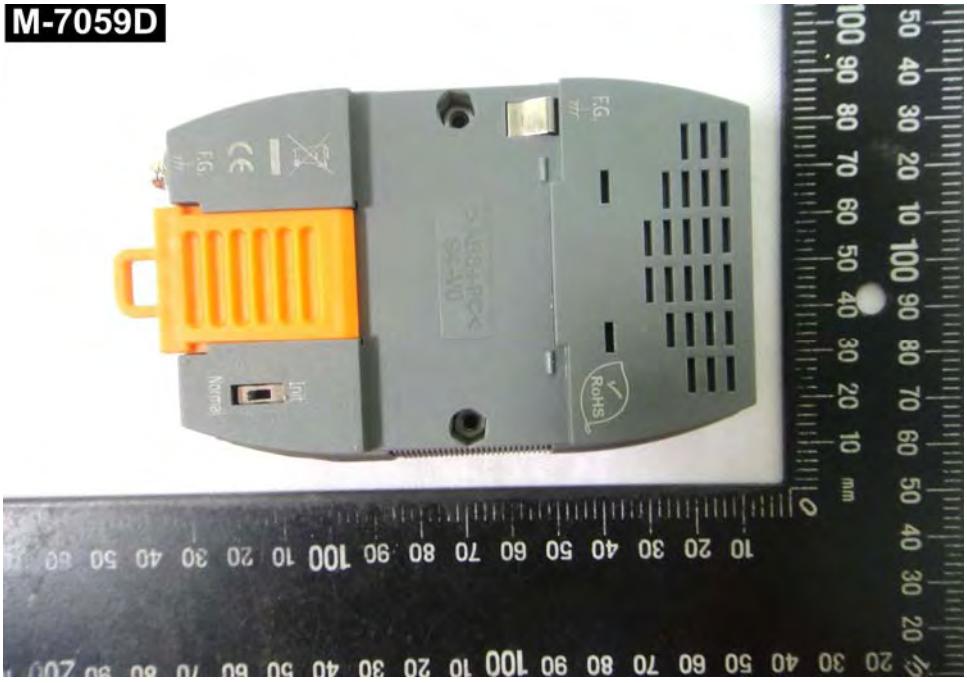

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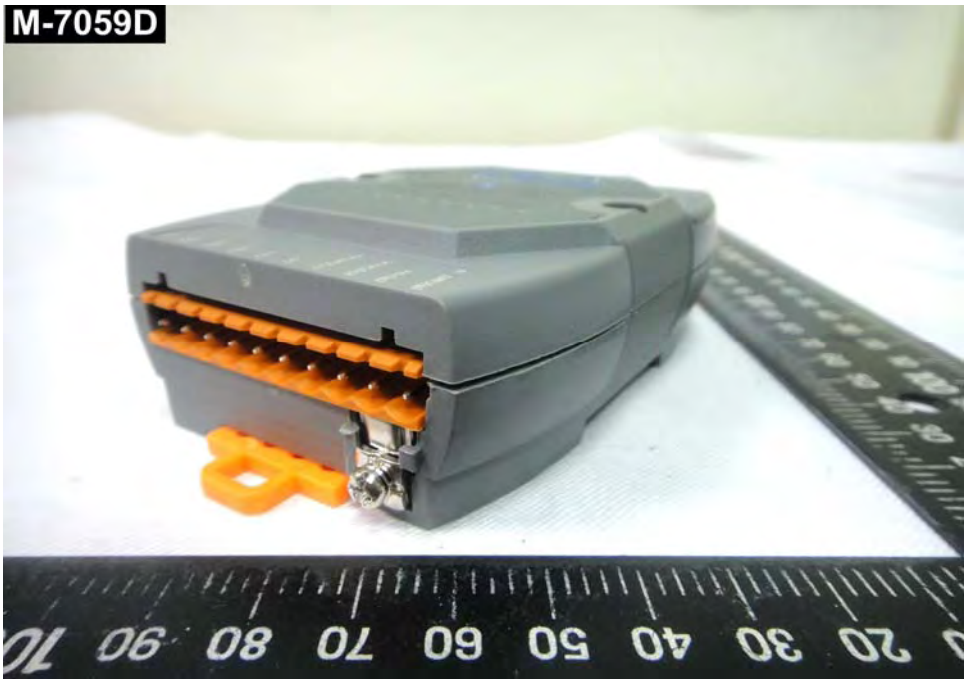

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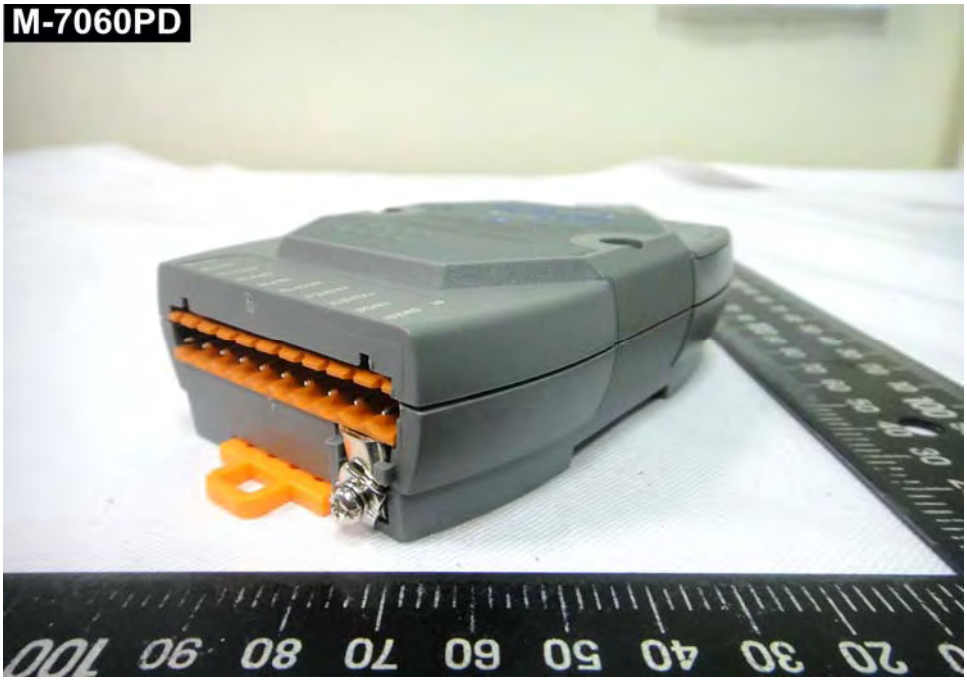

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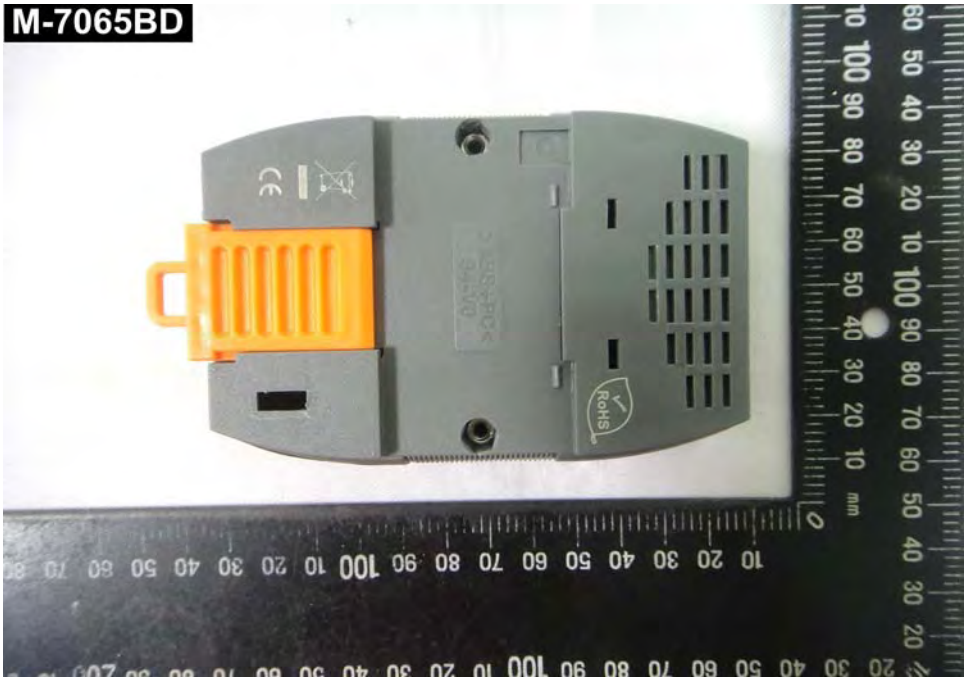

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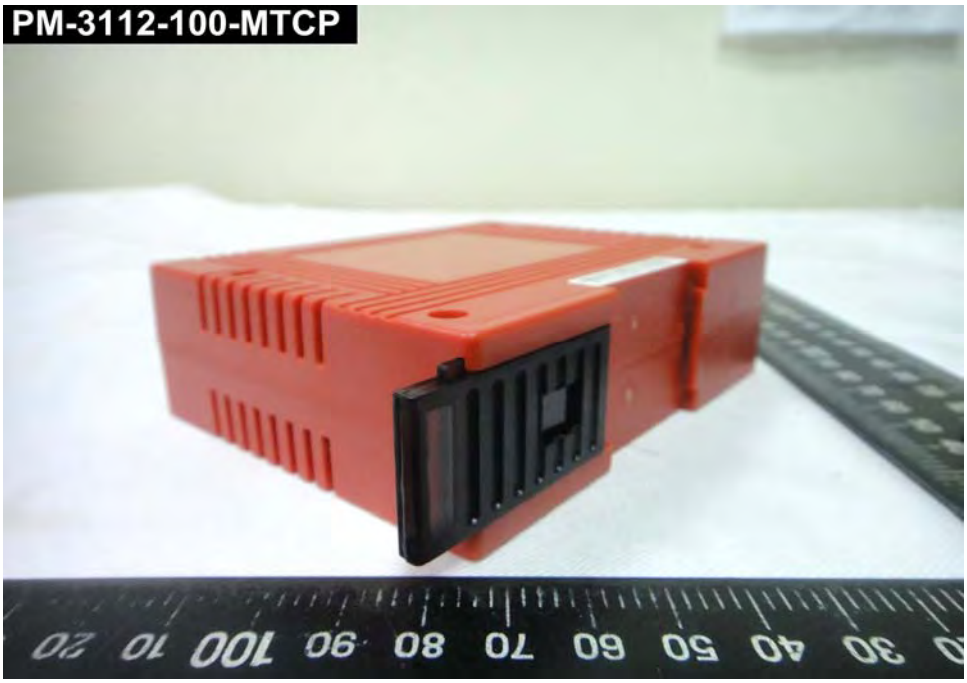

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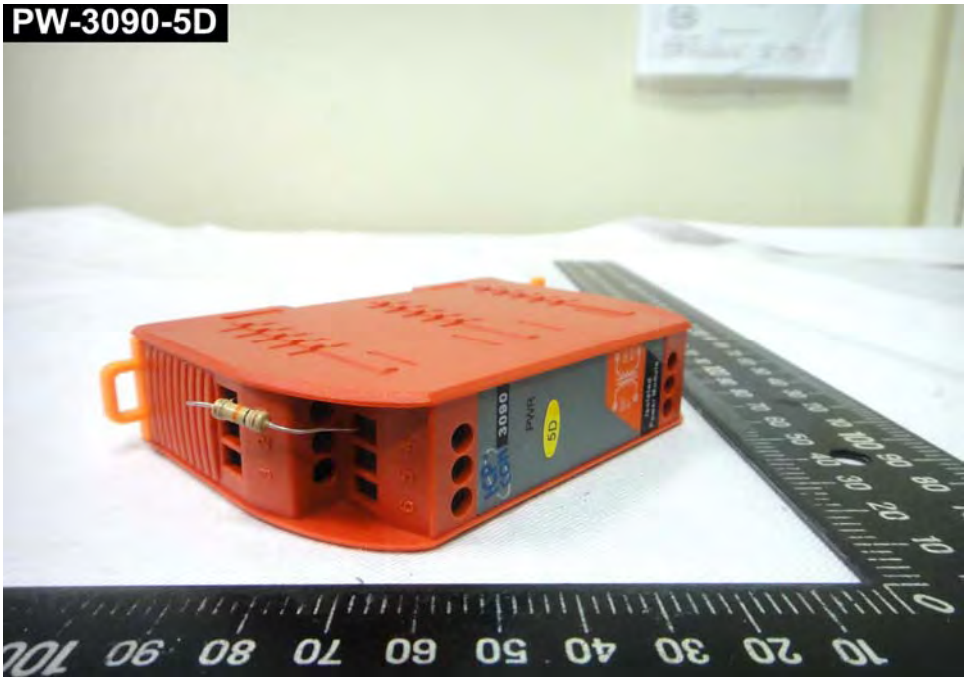

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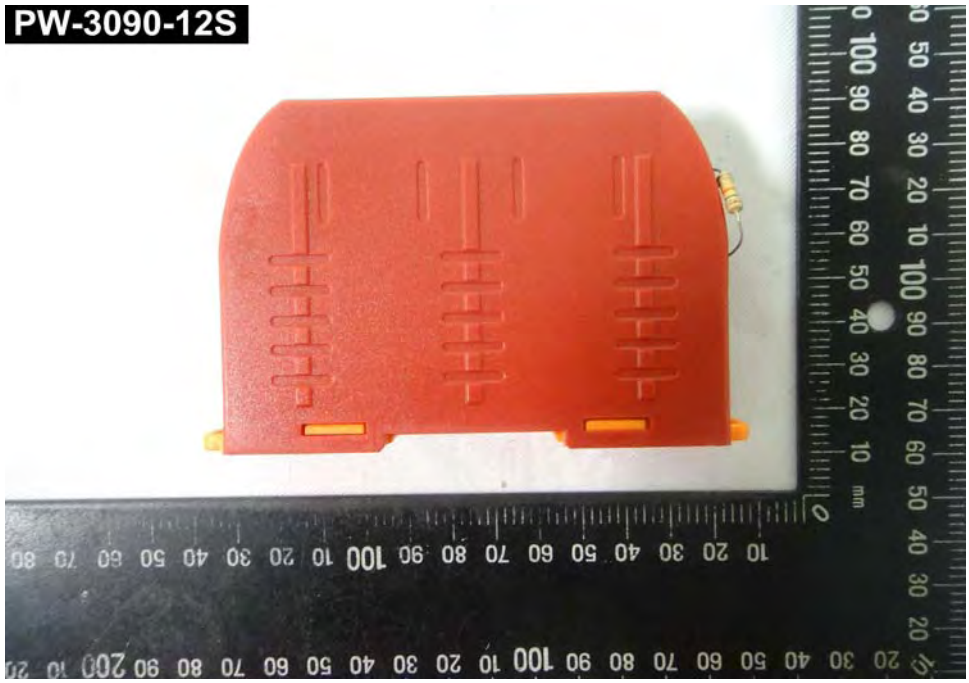
(135) EUT Photo



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(140) EUT Photo

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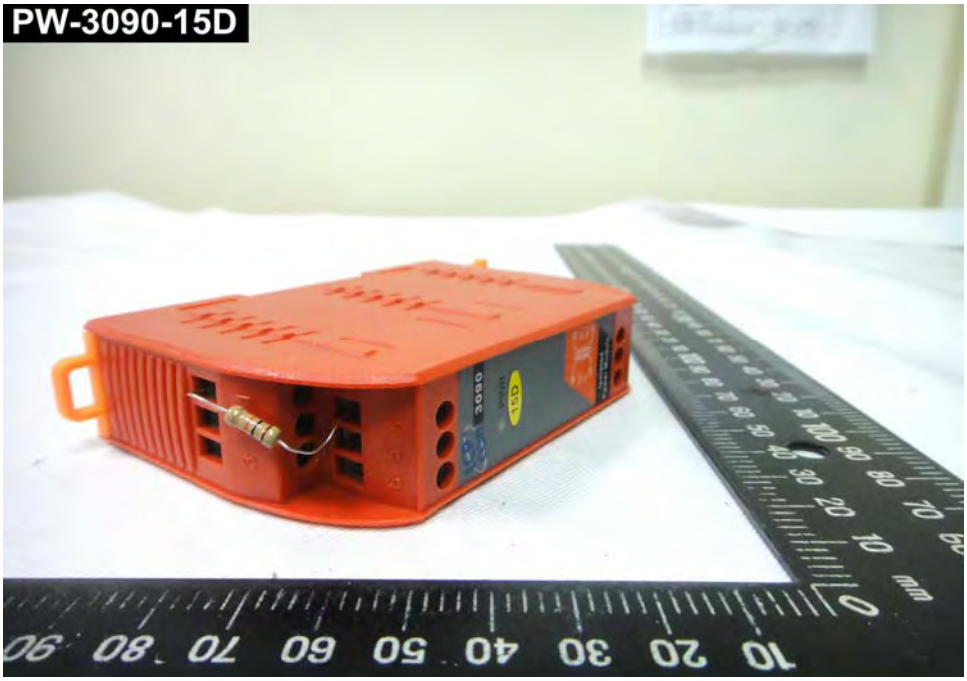

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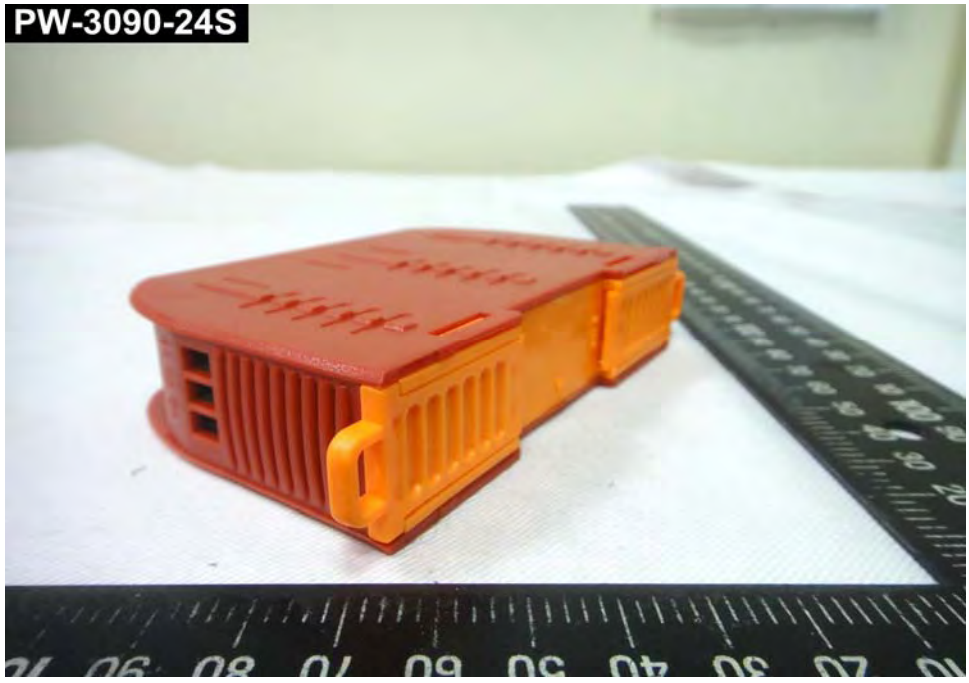
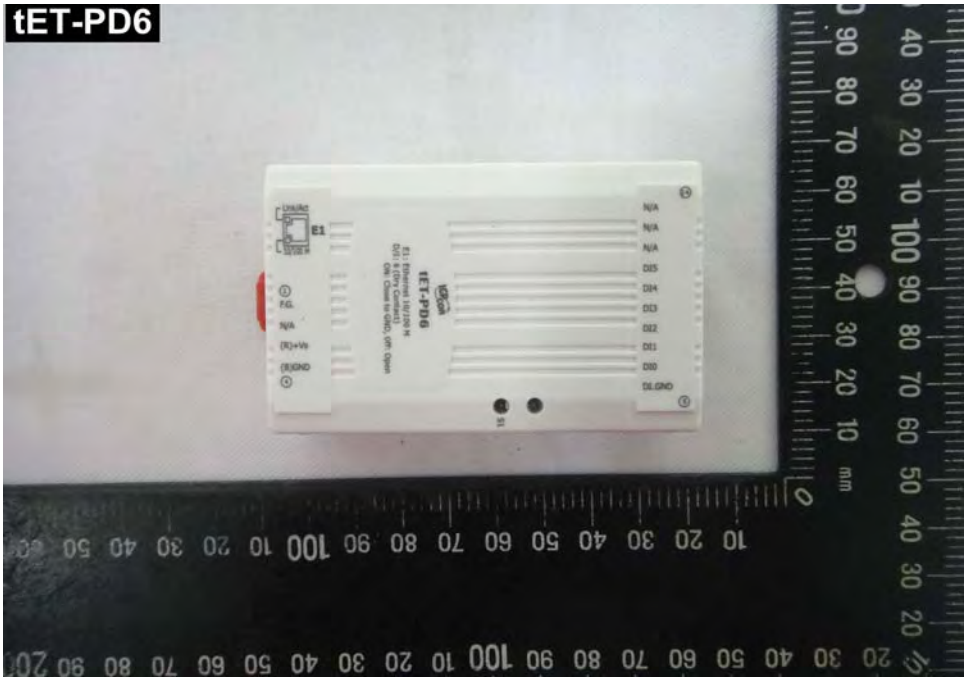


(147) EUT Photo

(148) EUT Photo



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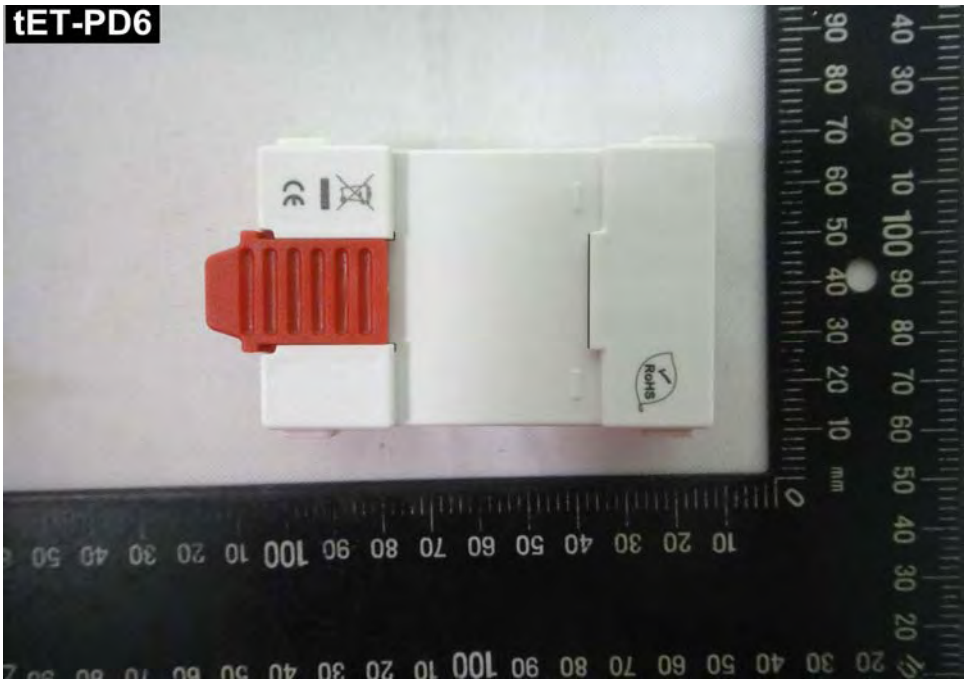
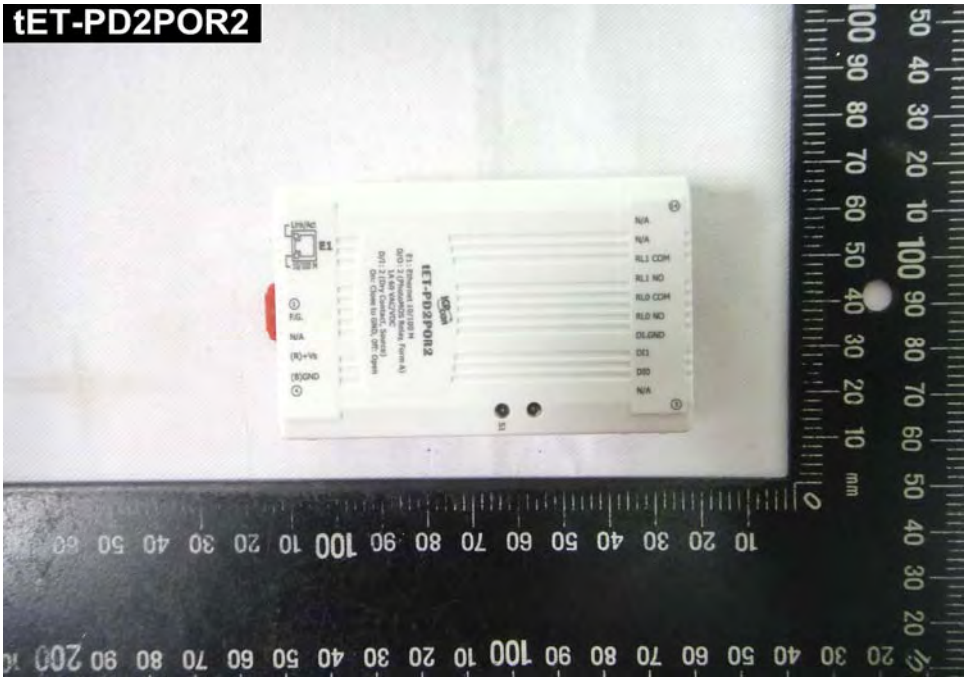


(150) EUT Photo

(151) EUT Photo

(152) EUT Photo



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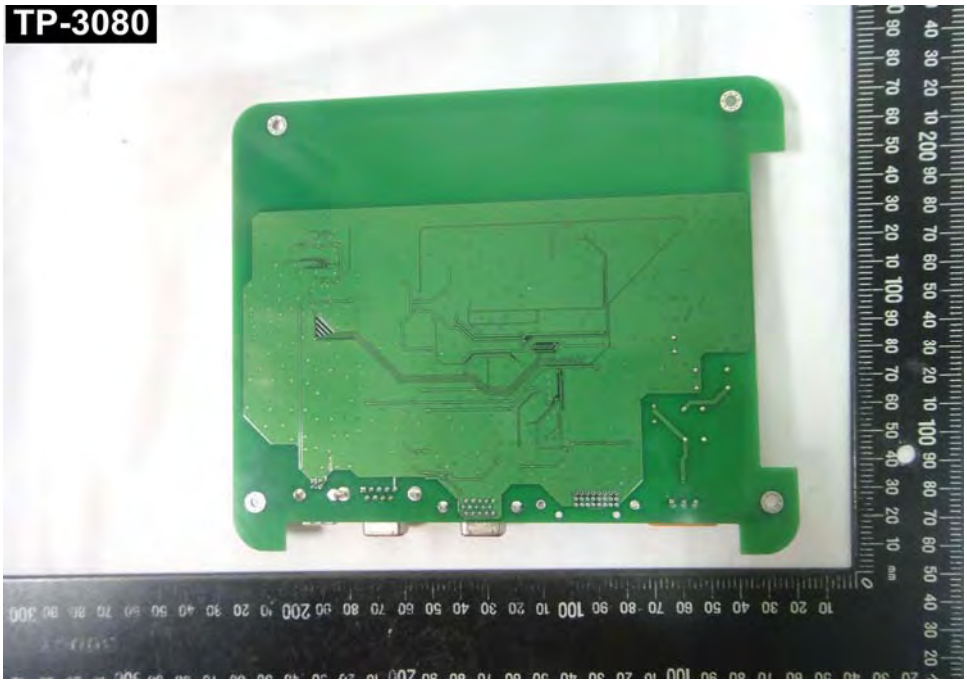

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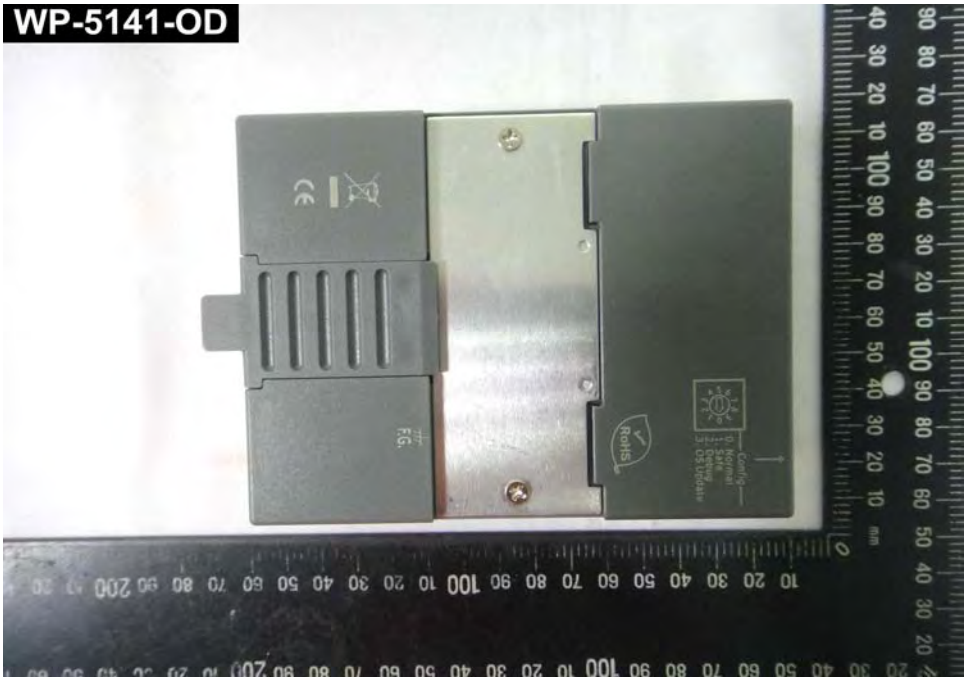

(169) EUT Photo

(170) EUT Photo