



## FCC 47 CFR PART 15 SUBPART B

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 : FCC 47 CFR PART 15 SUBPART B: Oct., 2013  
ANSI C63.4: 2009  
CISPR 22: 2008  
Receive Date : Aug. 28, 2014  
Test Period : Sep. 01 ~ 22, 2014  
Issue Date : Sep. 29, 2014

### Issue by

A Test Lab Techno Corp.  
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Taiwan Accreditation Foundation accreditation number: 1330

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**Revision History**

<b>Rev.</b>	<b>Issue Date</b>	<b>Revisions</b>	<b>Revised By</b>
00	Sep. 29, 2014	Initial Issue	

## Verification of Compliance

Issued Date: 2014/09/29

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30351, Taiwan, R.O.C.  
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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 )  
EUT Rated Voltage : AC 100-250V, 50-60Hz, 2.0A  
Test Voltage : 120 Vac / 60 Hz  
Applicable : FCC 47 CFR PART 15 SUBPART B: Oct., 2013  
Standard : ANSI C63.4: 2009  
CISPR 22: 2008  
Test Result : Complied  
Performing Lab. : A Test Lab Techno Corp.

No. 140-1, Changan Street, Bade City,  
Taoyuan County 334, Taiwan R.O.C.

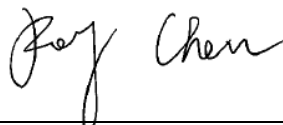
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<http://www.atl-lab.com.tw/e-index.htm>

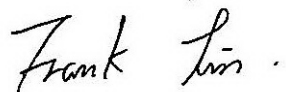


The above equipment has been tested by A Test Lab Techno Corp., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce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

Approved By : 

(Manager)

(Roy Chen)

Reviewed By : 

(Testing Engineer)

(Frank Lin)

## TABLE OF CONTENTS

<b>1</b>	<b>General Information .....</b>	<b>5</b>
<b>2</b>	<b>EUT Description .....</b>	<b>6</b>
<b>3</b>	<b>Test Methodology .....</b>	<b>15</b>
	3.1. Decision of Test Mode .....	15
	3.2. EUT Exercise Software.....	15
	3.3. Configuration of Test System Details .....	16
	3.4. Test Site Environment.....	18
<b>4</b>	<b>Emission Test.....</b>	<b>19</b>
	4.1. Conducted Emission Measurement.....	19
	4.2. Radiated Interference Measurement .....	24
<b>5</b>	<b>EUT Photograph.....</b>	<b>34</b>

## 1 General Information

### 1.1 Summary of Test Result

Emission			
Standard	Item	Result	Remark
FCC 47 CFR PART 15 SUBPART B: ANSI C63.4	Conducted Emission	PASS	Meet Class A limit
FCC 47 CFR PART 15 SUBPART B: ANSI C63.4	Radiated Emission	PASS	Meet Class A limit

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

### 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 ~ 18000MHz	Horizontal	± 3.11
		Vertical	± 3.07
	18000MHz ~ 40000MHz	Horizontal	± 3.66
		Vertical	± 3.54

## 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 operate mode

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

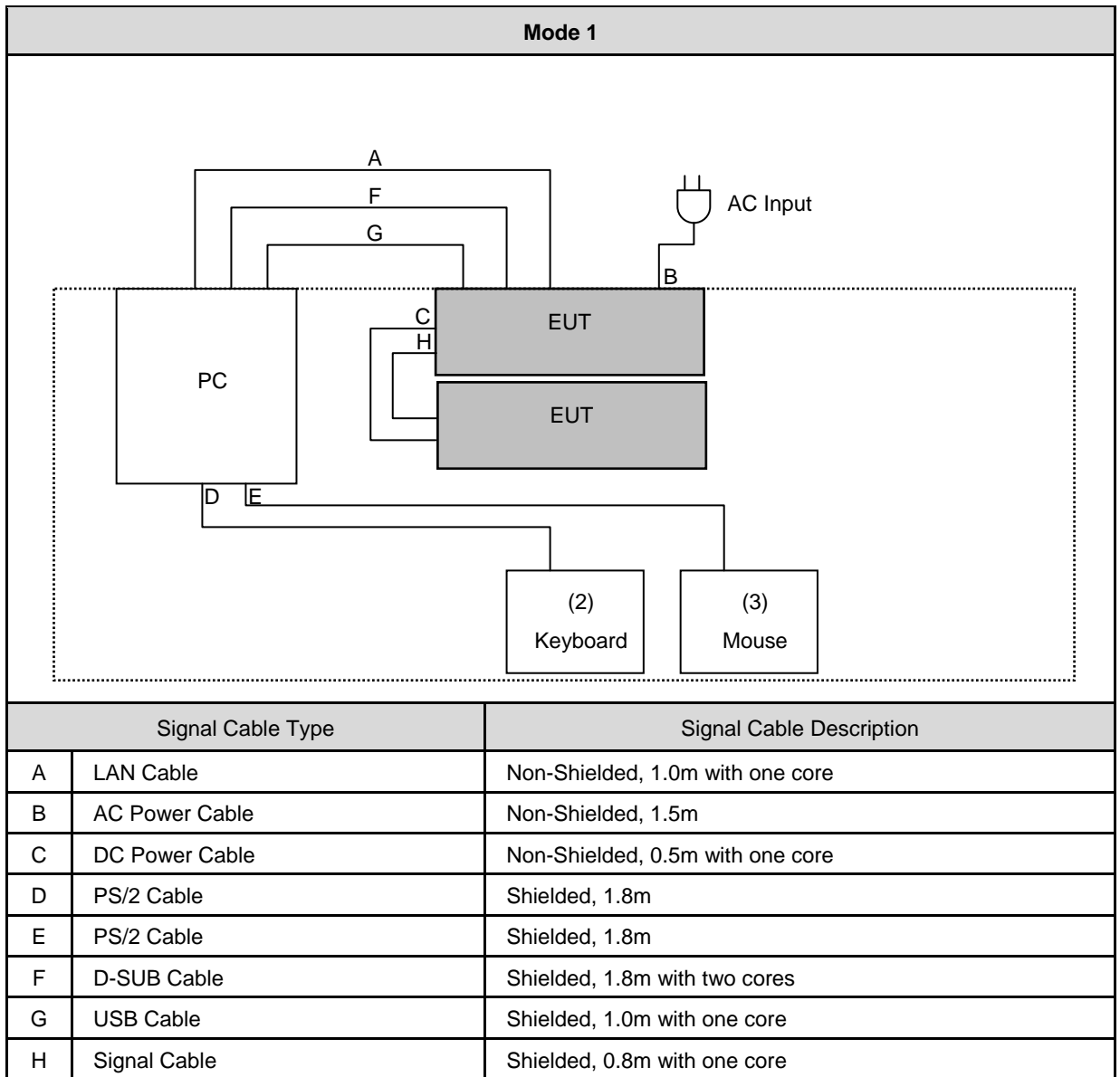
Final Test Mode			
Emission	Conducted Emission		Mode 1
	Radiated Emission	Below 1GHz	Mode 1
		Above 1GHz	Mode 1

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





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)	FCC part 15: 15.107 Conducted Emission	15-35	26
Humidity (%RH)		25-75	60
Barometric pressure (mbar)		860-1060	950
Temperature (°C)	FCC part 15: 15.109 Radiated Emission	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.

#### 4.1.2. Test Instruments

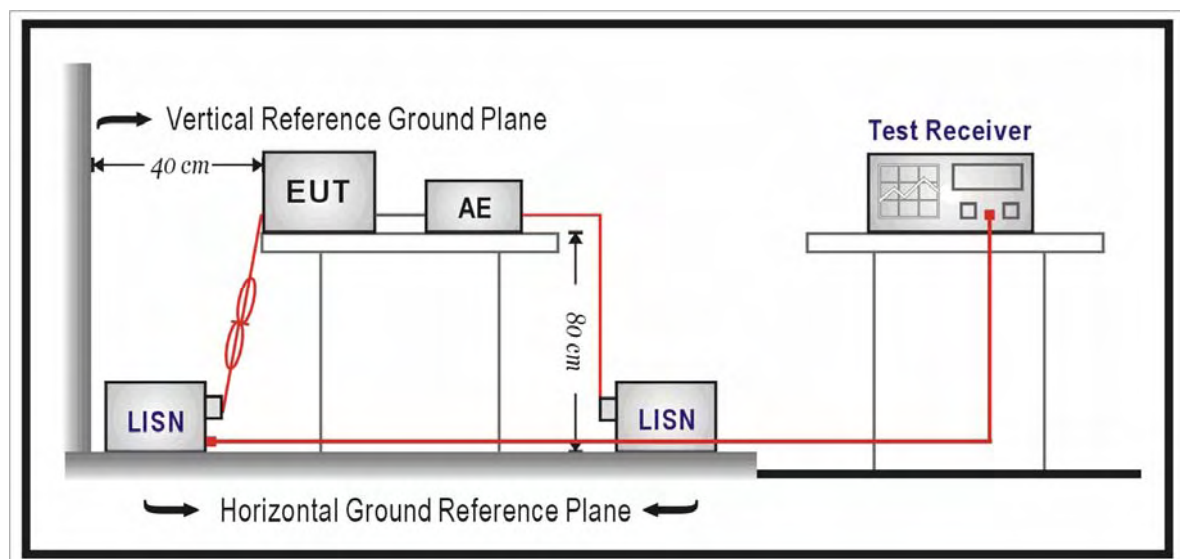
Description	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/12/2014	(1)
LISN	R&S	ENV216	101040	03/07/2014	(1)
LISN	R&S	ENV216	101041	03/07/2014	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

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



#### **4.1.4. Test Procedure**

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.

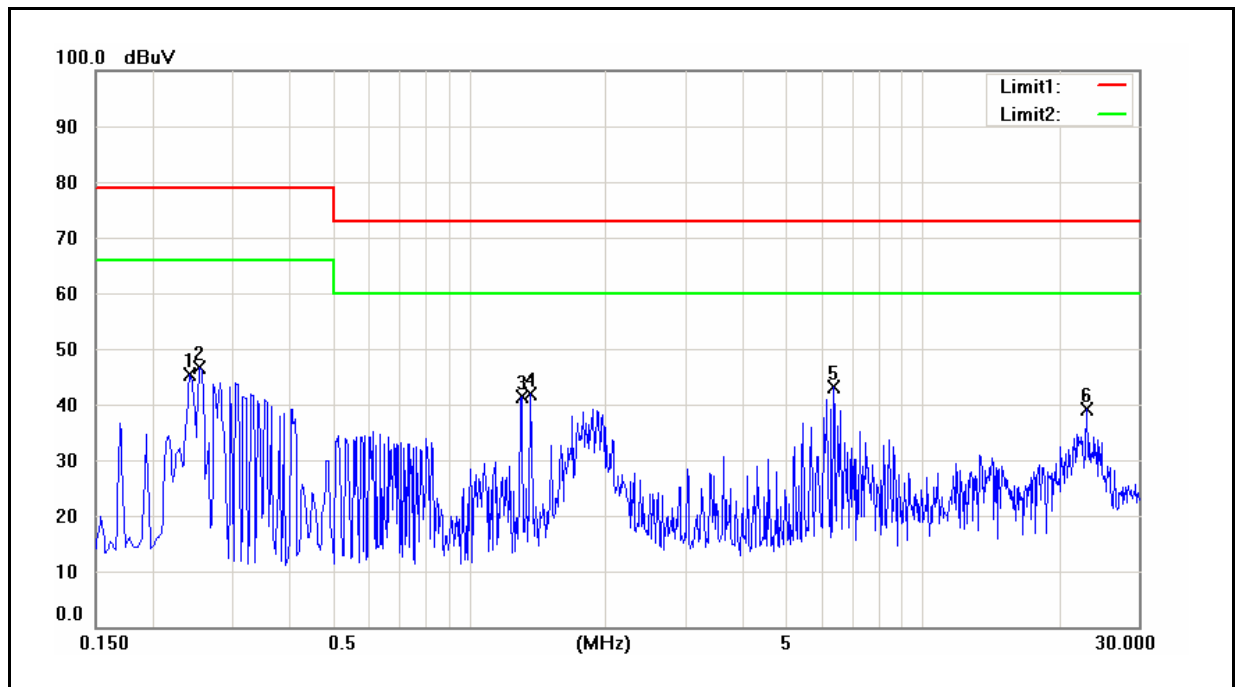
For A.C. mains conducted interference, measured both sides of A.C. lines and carried out using quasi-peak and average detector receivers of maximum conducted interference.

Conducted emissions were investigated over the frequency range from 0.15 MHz to 30 MHz using a receiver bandwidth of 9 kHz. The equipment under test (EUT) shall be meet the limits in section 4.1.1, as applicable, including the average limit and the quasi-peak limit when using respectively, an average detector and quasi-peak detector measured in accordance with the methods described of related standard. The voltage limits shall be met. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the higher reading shall be recorded with the exception of any brief isolated high reading which shall be ignored.

**4.1.5. Test Result**

Standard:	FCC Part 15B	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	PM-3133-100	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	2014/09/01
		Test By:	Frank Lin
Description:			

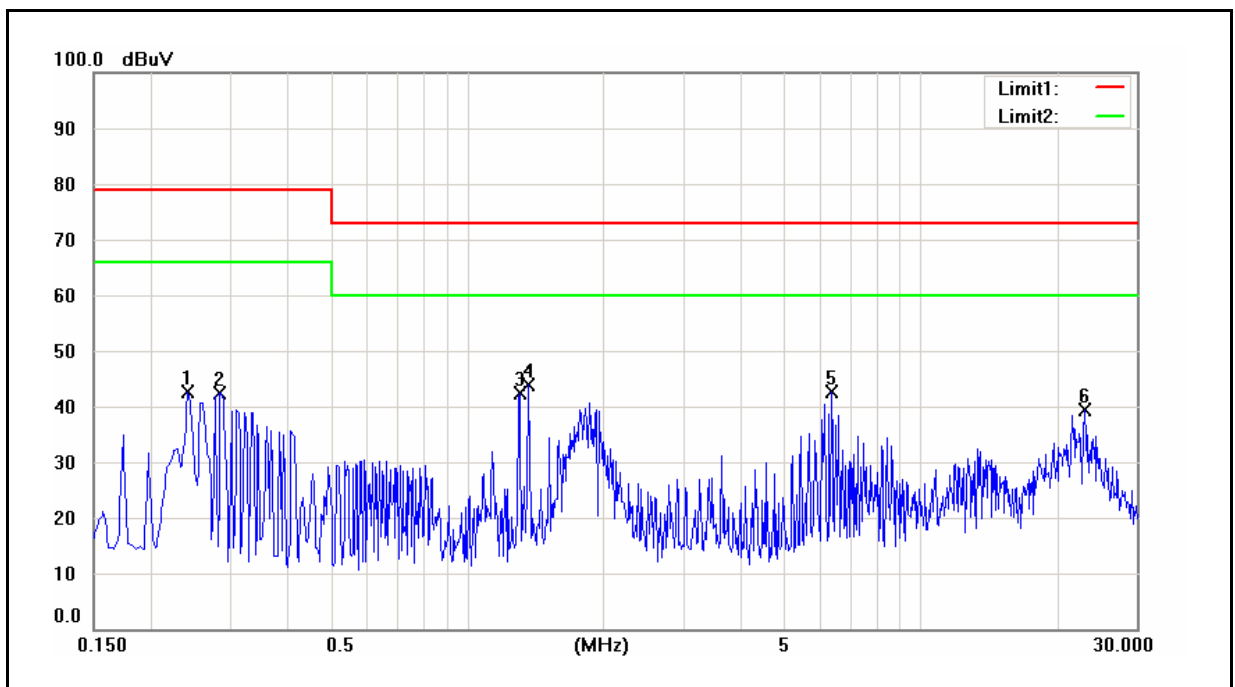


No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.2420	35.77	35.37	9.60	45.37	44.97	79.00	66.00	-33.63	-21.03	Pass
2	0.2540	34.86	19.87	9.61	44.47	29.48	79.00	66.00	-34.53	-36.52	Pass
3	1.3060	30.45	30.01	9.66	40.11	39.67	73.00	60.00	-32.89	-20.33	Pass
4	1.3660	32.01	32.24	9.66	41.67	41.90	73.00	60.00	-31.33	-18.10	Pass
5	6.3820	32.26	32.31	9.84	42.10	42.15	73.00	60.00	-30.90	-17.85	Pass
6	23.1300	27.93	25.94	10.27	38.20	36.21	73.00	60.00	-34.80	-23.79	Pass

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

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

Standard:	FCC Part 15B	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	PM-3133-100	Temp.(°C)/Hum.(%RH):	26(°C)/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	0.2420	31.58	30.68	9.60	41.18	40.28	79.00	66.00	-37.82	-25.72	Pass
2	0.2860	29.32	8.59	9.61	38.93	18.20	79.00	66.00	-40.07	-47.80	Pass
3	1.3060	31.55	31.09	9.66	41.21	40.75	73.00	60.00	-31.79	-19.25	Pass
4	1.3660	33.77	34.01	9.66	43.43	43.67	73.00	60.00	-29.57	-16.33	Pass
5	6.3780	32.74	32.79	9.86	42.60	42.65	73.00	60.00	-30.40	-17.35	Pass
6	23.1260	28.62	26.54	10.28	38.90	36.82	73.00	60.00	-34.10	-23.18	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**

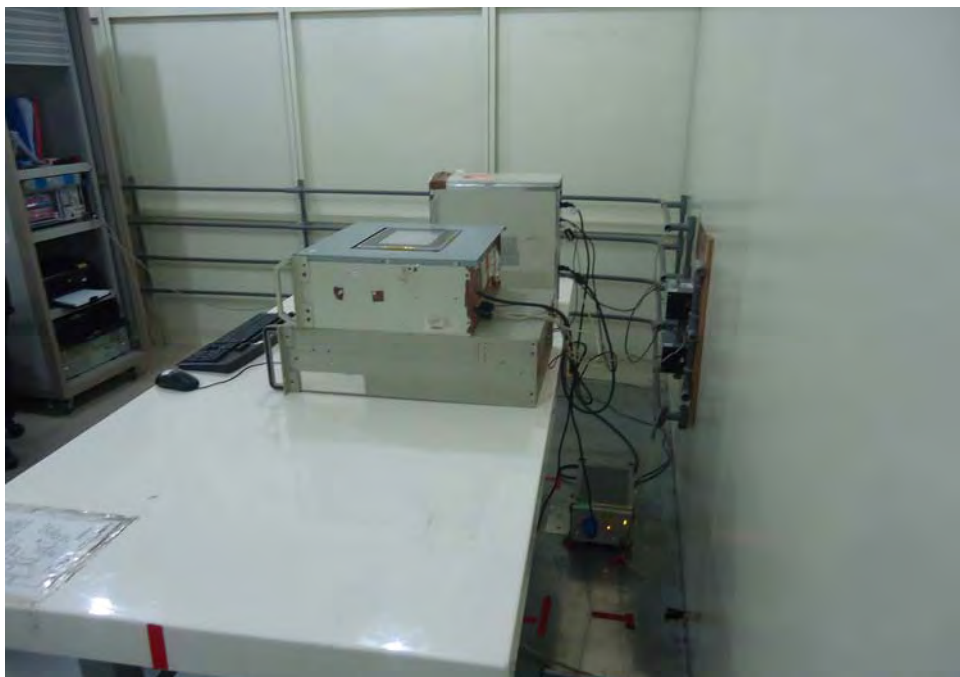
Test Mode: Mode 1

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

Under 1GHz test shall not exceed following value

FCC 47 CFR PART 15 SUBPART B				
Frequency range (MHz)	Class A		Class B	
	Distance (m)	dBuV/m	Distance (m)	dBuV/m
30 to 88	10	39	3	40
88 to 216	10	43.5	3	43.5
216 to 960	10	46.4	3	46
Above 960	10	49.5	3	54

CISPR 22				
Frequency range (MHz)	Class A		Class B	
	Distance (m)	dBuV/m	Distance (m)	dBuV/m
30 to 230	10	40	10	30
230 to 1000	10	47	10	37

Above 1GHz test shall not exceed following value

Frequency (MHz)	dBuV/m (Distance 3m)			
	Class A		Class B	
	Average	Peak	Average	Peak
1000 ~ 40000	60	80	54	74

- Remark:
1. The tighter limit shall apply at the edge between two frequency bands.
  2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
  3. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)
  4. Peak detector limit is corresponding to 20 dB above the maximum permitted average limit.

According to FCC Part 15.33 (b), for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or in which the device operated or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.75	30
1.75-108	1000
108-500	2000
500-1000	5000
Above 1000	5th harmonic of the highest frequency or 40GHz, whichever is lower



**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)

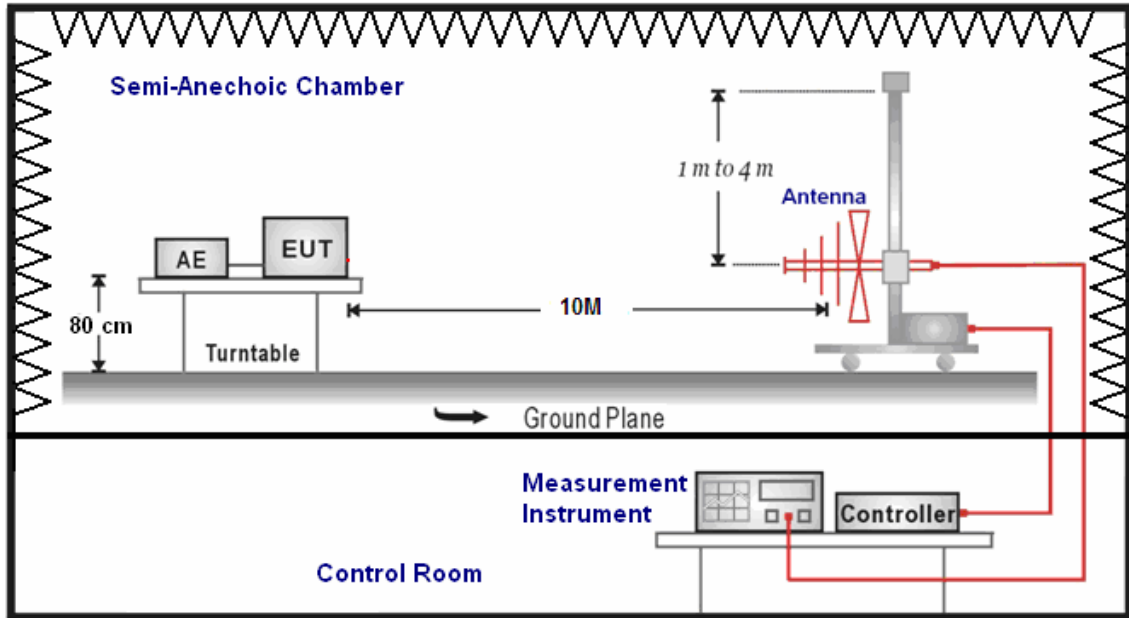
3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/10/2014	(1)
Amplifier	EM	EM330	060545	11/18/2013	(1)
Amplifier	Mini-Circuits	ZVA-213-S+	467900926	05/26/2014	(1)
RF Pre-selector	Agilent	N9039A	MY46520255	05/10/2014	(1)
Horn Antenna (1~18GHz)	ETS-Lindgren	3117	00128055	08/11/2014	(1)
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	07/02/2014	(1)
Test Site	ATL	TE09	TE09	05/10/2014	(1)

Remark: <sup>(1)</sup> Calibration period 1 year. <sup>(2)</sup> Calibration period 2 years.

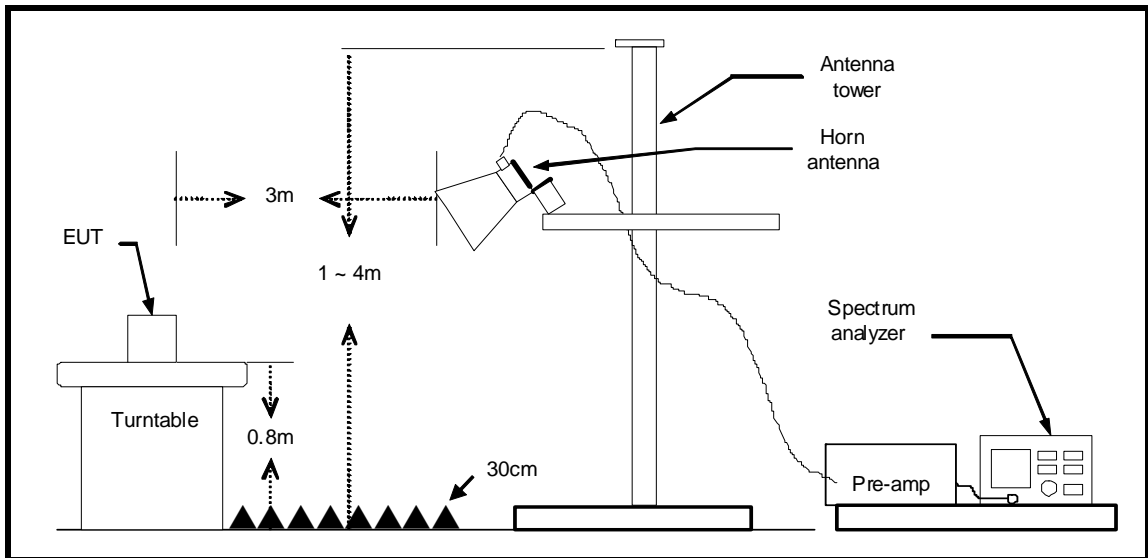
Note: N.C.R. = No Calibration Request.

**4.2.3. Setup**

Below 1GHz



Above 1GHz



#### 4.2.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. When the EUT is 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.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 10 meters for under 1GHz, and 3 meter for above 1GHz, the highest frequency performed according to internal source frequency of the EUT, the specification was below:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 - 108	1000
108 - 500	2000
500 - 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

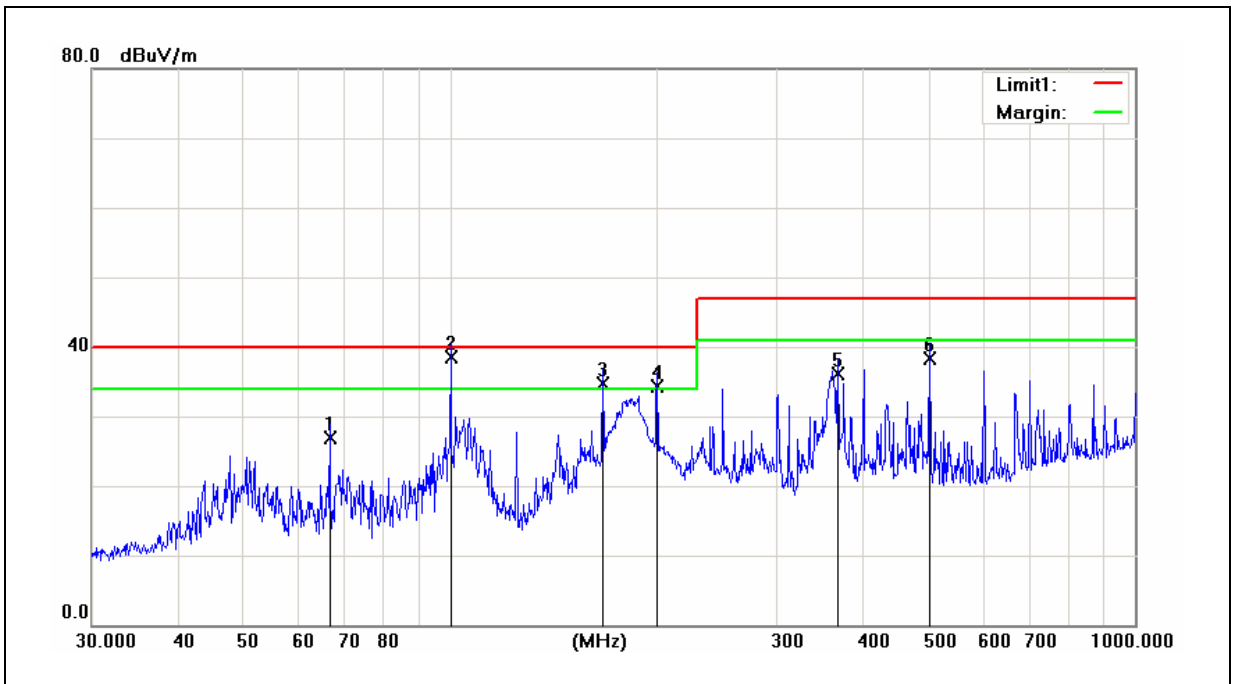
According to this standard paragraph 15.109, as an alternative to the radiated emission limits, digital devices may be shown to comply with the standards contained in Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22, "Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement".

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.

Radiated emissions were investigated over the frequency range from 30MHz to 1GHz using a receiver bandwidth of 120 kHz. Radiated was performed at an antenna to EUT distance of 10 meters.

**4.2.5. Test Result**

Standard:	CISPR 22	Test Distance:	10m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PM-3133-100	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	2014/09/22
Ant.Polar.:	Horizontal	Test By:	Frank Lin

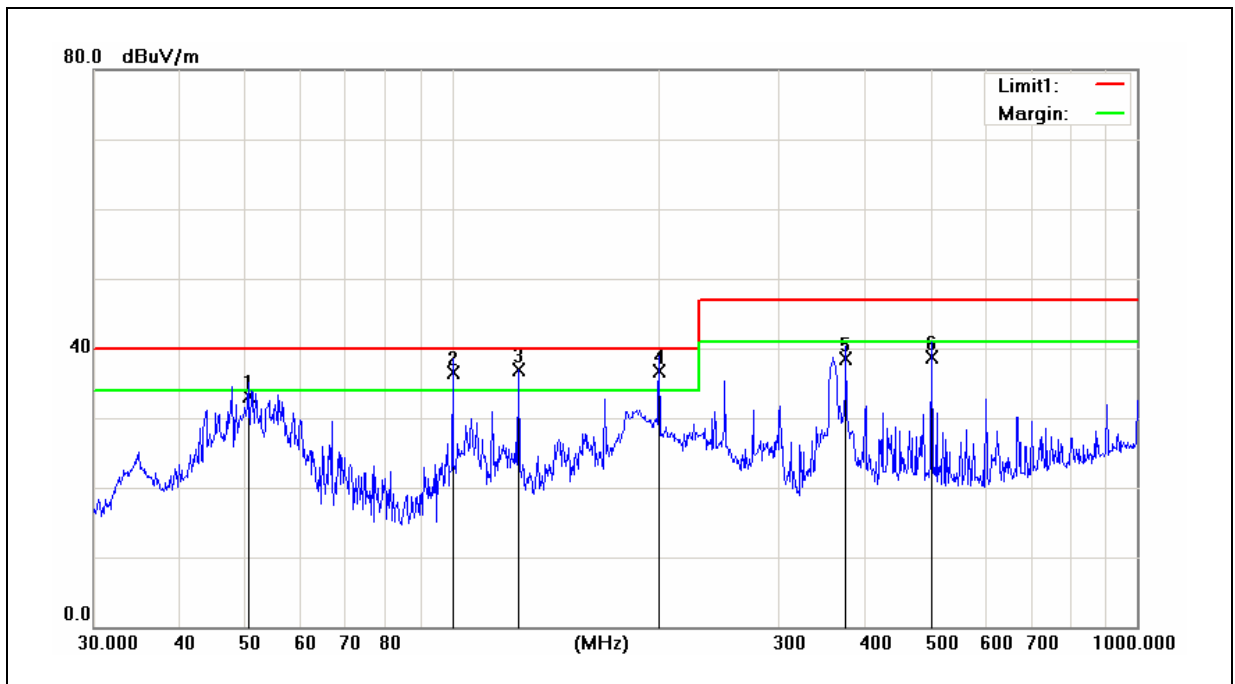


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
1	66.7325	42.68	-15.78	26.90	40.00	-13.10	300	99	QP
2	100.2286	55.77	-17.27	38.50	40.00	-1.50	400	322	QP
3	167.2368	47.61	-12.91	34.70	40.00	-5.30	400	103	QP
4	200.6881	50.24	-15.94	34.30	40.00	-5.70	400	145	QP
5	368.1116	46.50	-10.30	36.20	47.00	-10.80	200	67	QP
6	501.1790	45.98	-7.58	38.40	47.00	-8.60	200	53	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:	CISPR 22	Test Distance:	10m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PM-3133-100	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	2014/09/22
Ant.Polar.:	Vertical	Test By:	Frank Lin

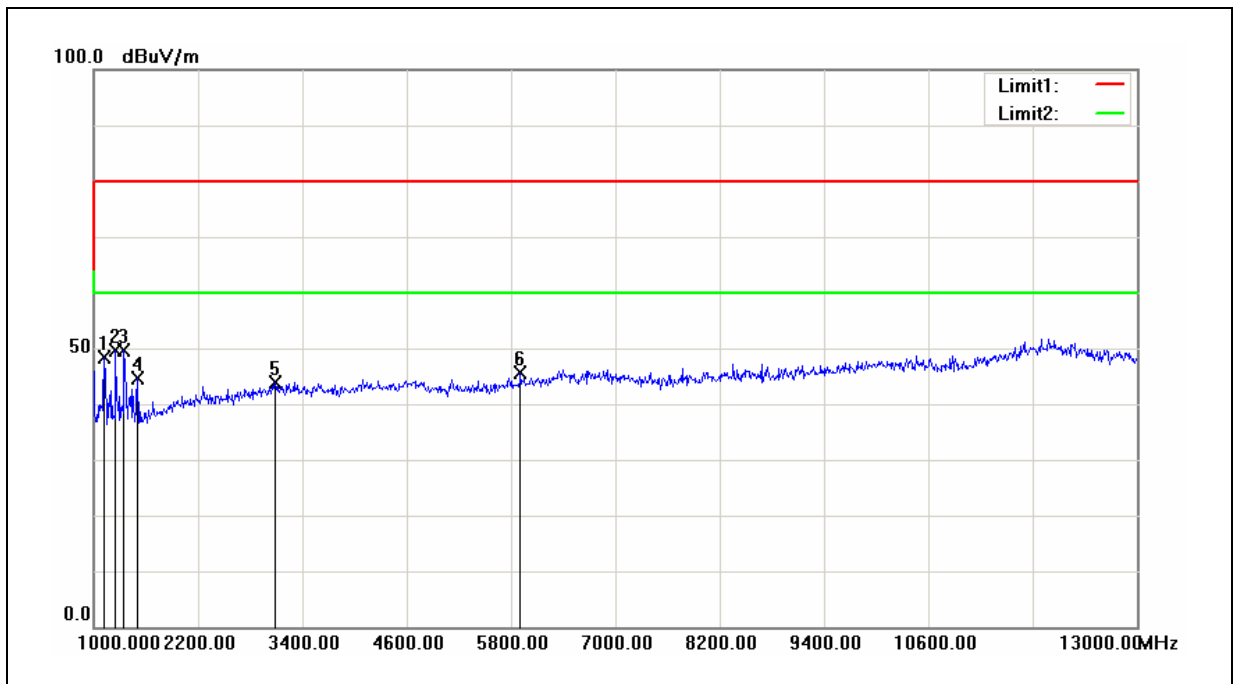


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
1	50.4090	46.97	-13.87	33.10	40.00	-6.90	200	232	QP
2	100.2286	53.25	-16.75	36.50	40.00	-3.50	100	297	QP
3	125.0066	50.50	-13.60	36.90	40.00	-3.10	100	73	QP
4	200.6881	52.11	-15.31	36.80	40.00	-3.20	200	70	QP
5	375.9385	47.59	-8.99	38.60	47.00	-8.40	100	179	QP
6	501.1790	44.99	-6.19	38.80	47.00	-8.20	300	146	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:	FCC Part 15B	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PM-3133-100	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1 (1GHz~13GHz)	Date:	2014/09/01
Ant.Polar.:	Horizontal	Test By:	Frank Lin

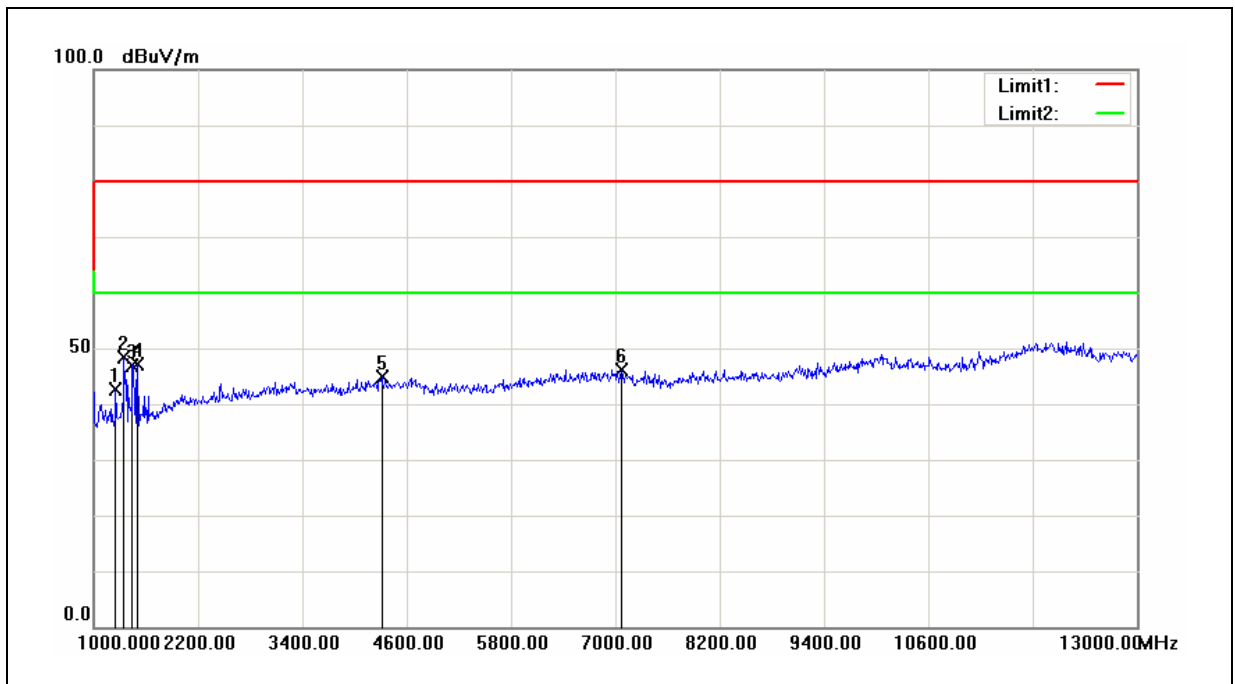


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1120.000	74.04	-25.76	48.28	80.00	-31.72	peak
2	1252.000	75.09	-25.50	49.59	80.00	-30.41	peak
3	1348.000	74.85	-25.31	49.54	80.00	-30.46	peak
4	1504.000	69.64	-24.96	44.68	80.00	-35.32	peak
5	3088.000	62.57	-18.60	43.97	80.00	-36.03	peak
6	5908.000	59.81	-14.22	45.59	80.00	-34.41	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:	FCC Part 15B	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PM-3133-100	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1 (1GHz~13GHz)	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	1252.000	68.14	-25.50	42.64	80.00	-37.36	peak
2	1348.000	73.75	-25.31	48.44	80.00	-31.56	peak
3	1444.000	72.11	-25.11	47.00	80.00	-33.00	peak
4	1504.000	72.06	-24.96	47.10	80.00	-32.90	peak
5	4312.000	61.13	-16.37	44.76	80.00	-35.24	peak
6	7072.000	58.83	-12.70	46.13	80.00	-33.87	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**

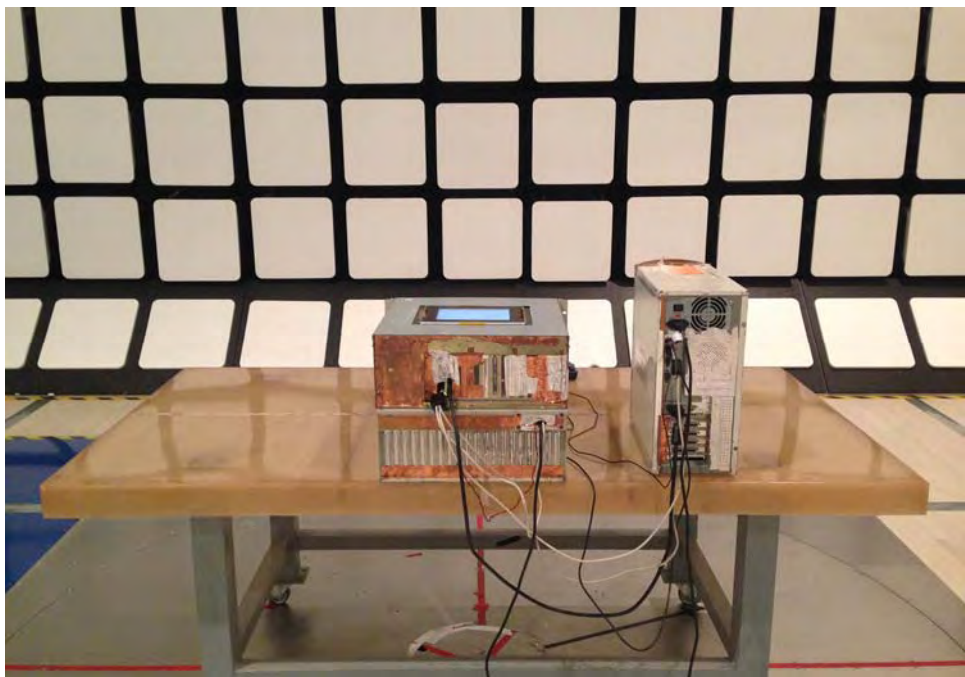
Test Mode: Mode 1

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



Test Mode: Mode 1

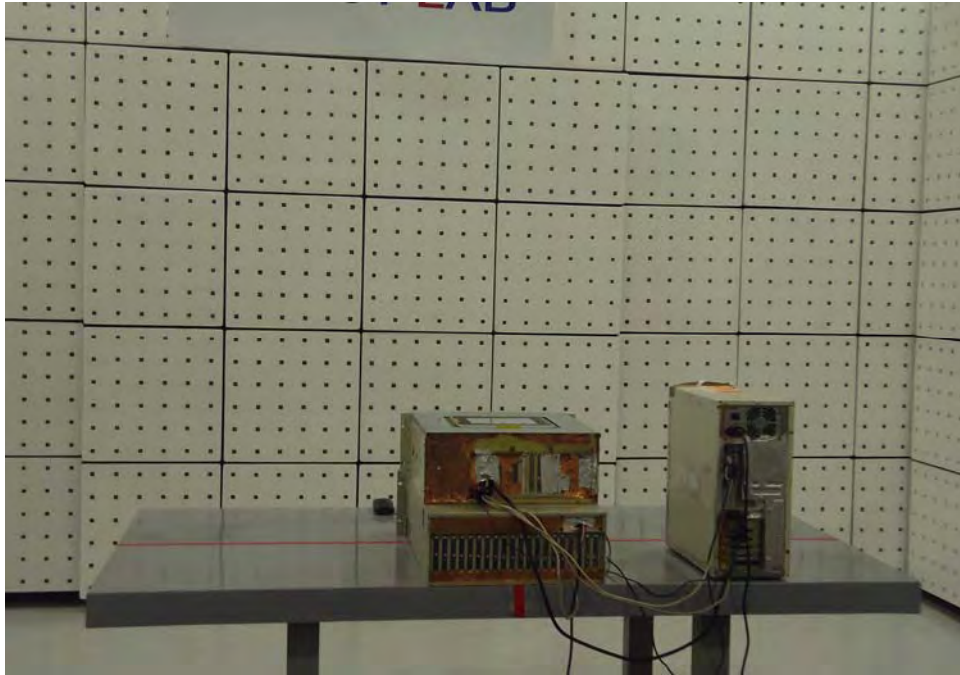
Description: Back View of Radiated Emission Test \_ Below 1GHz





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



(6) EUT Photo



(7) EUT Photo



(8) EUT Photo



(9) EUT Photo



(10) EUT Photo



(11)EUT Photo



(12)EUT Photo



(13)EUT Photo



(14)EUT Photo





(15)EUT Photo



(16)EUT Photo



(17)EUT Photo



(18)EUT Photo



(19)EUT Photo



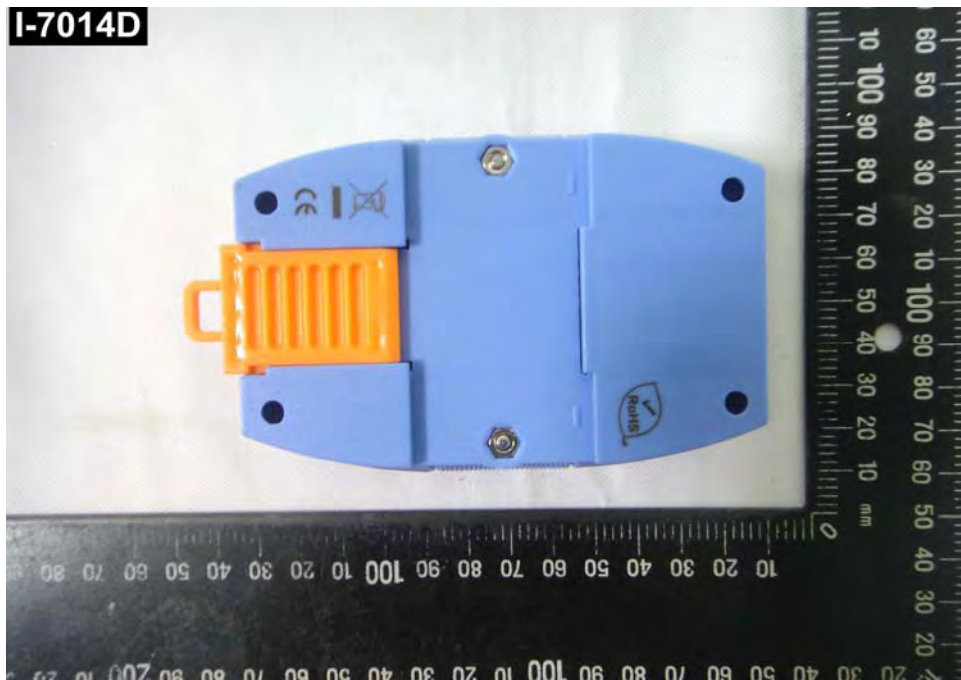
(20)EUT Photo



(21)EUT Photo



(22)EUT Photo

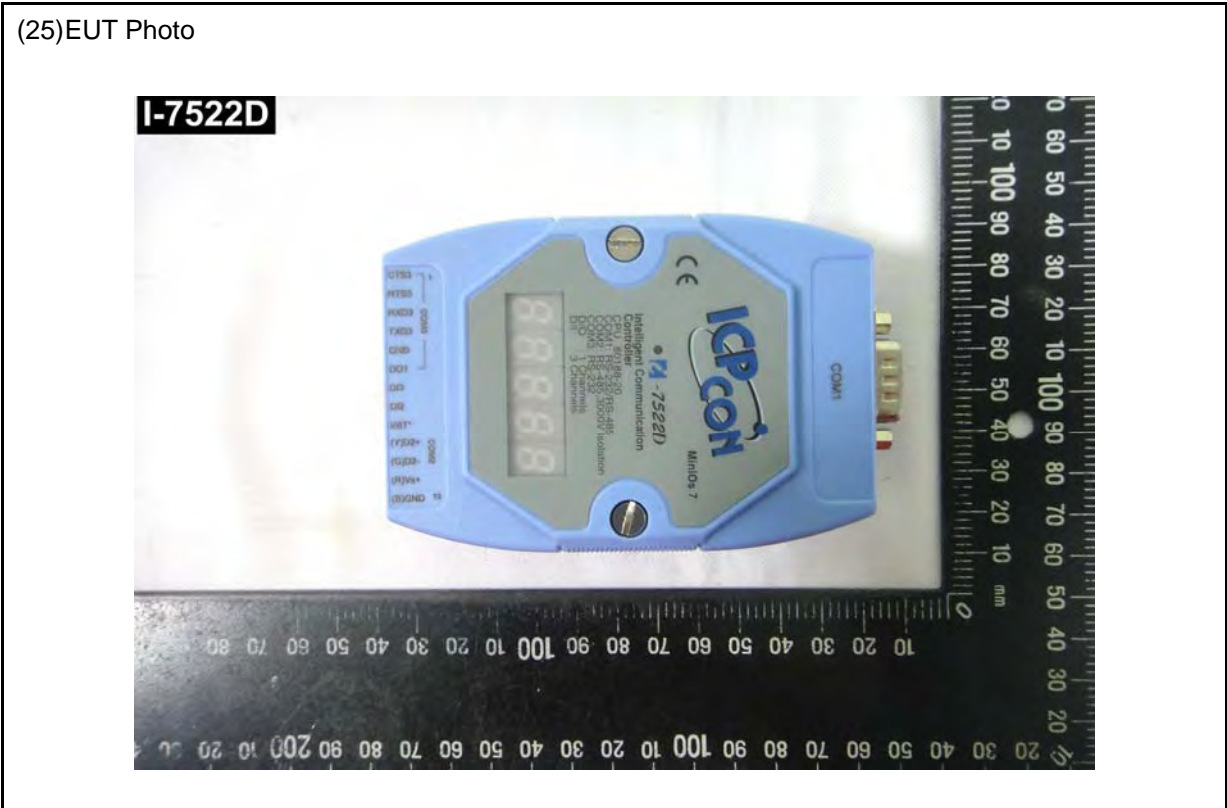


(23)EUT Photo



(24)EUT Photo





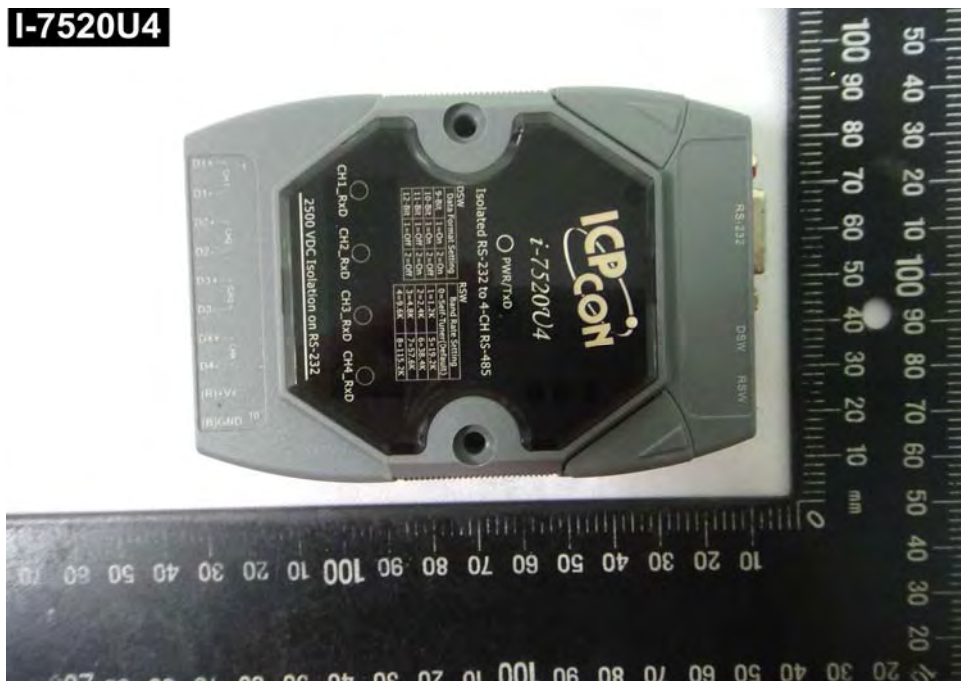
(27)EUT Photo



(28)EUT Photo



(29)EUT Photo



(30)EUT Photo





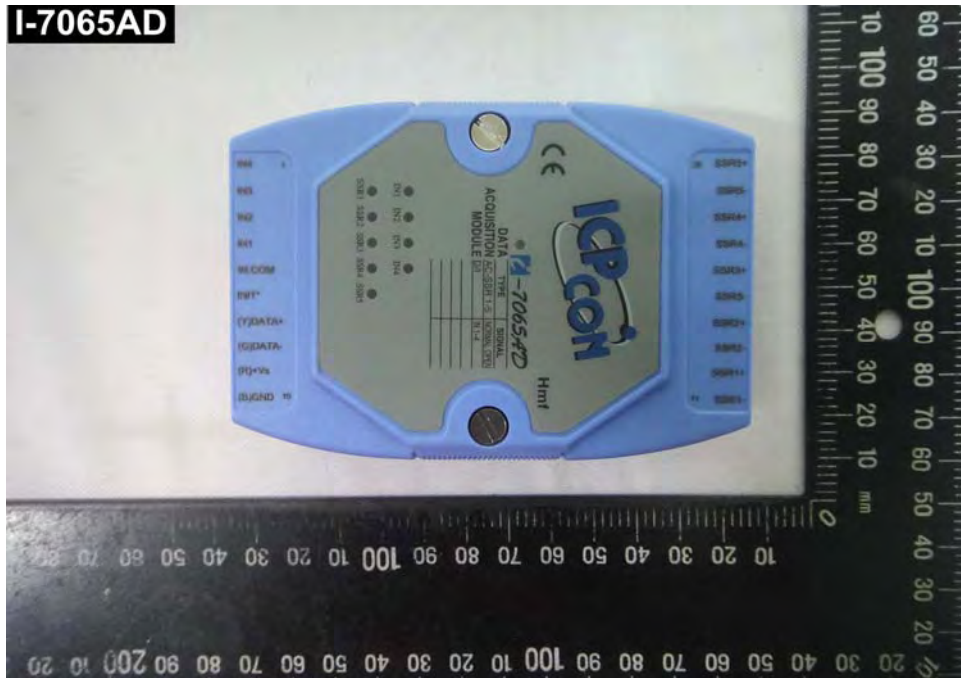
(31)EUT Photo



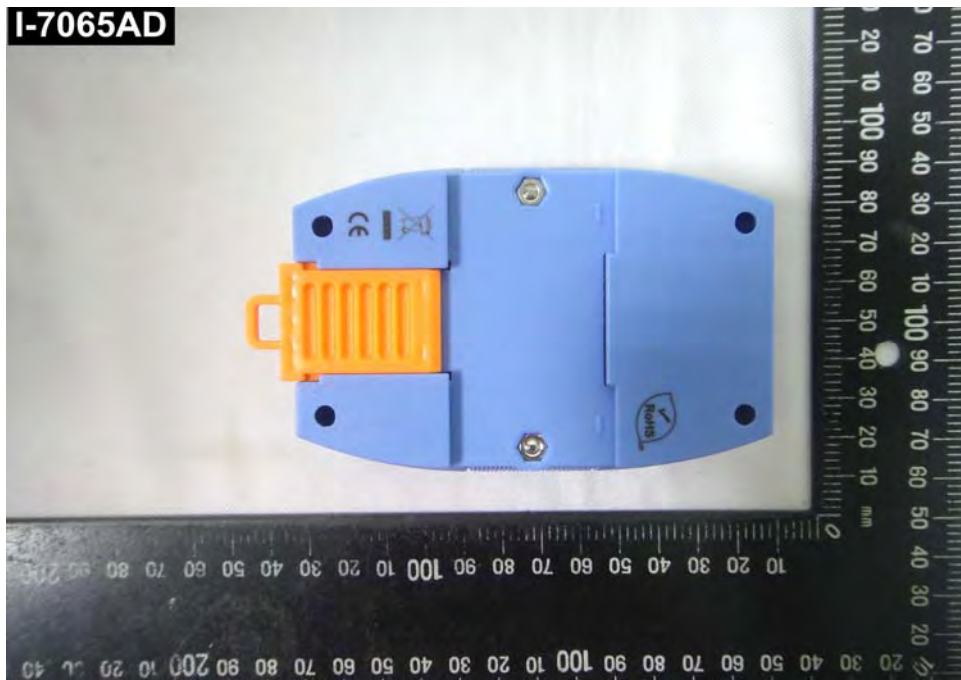
(32)EUT Photo



(33)EUT Photo



(34)EUT Photo



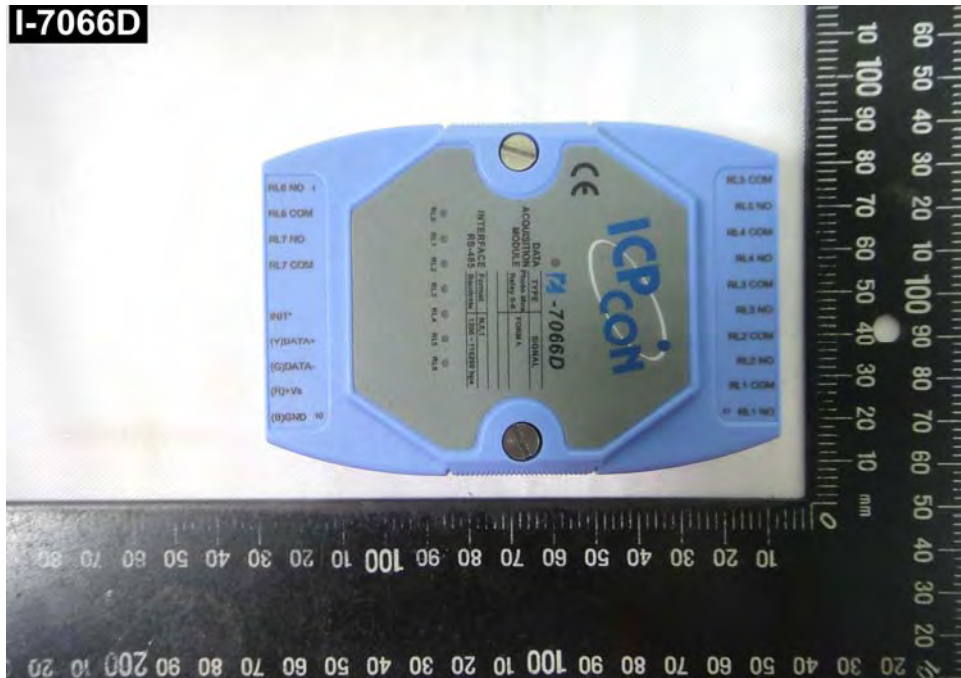
(35)EUT Photo



(36)EUT Photo



(37)EUT Photo



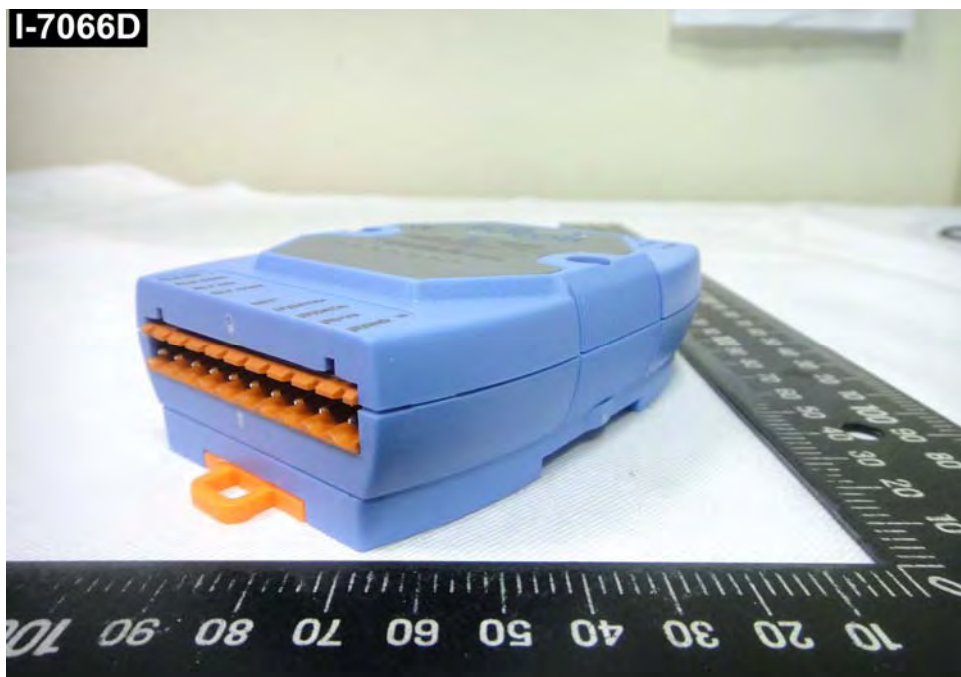
(38)EUT Photo



(39)EUT Photo



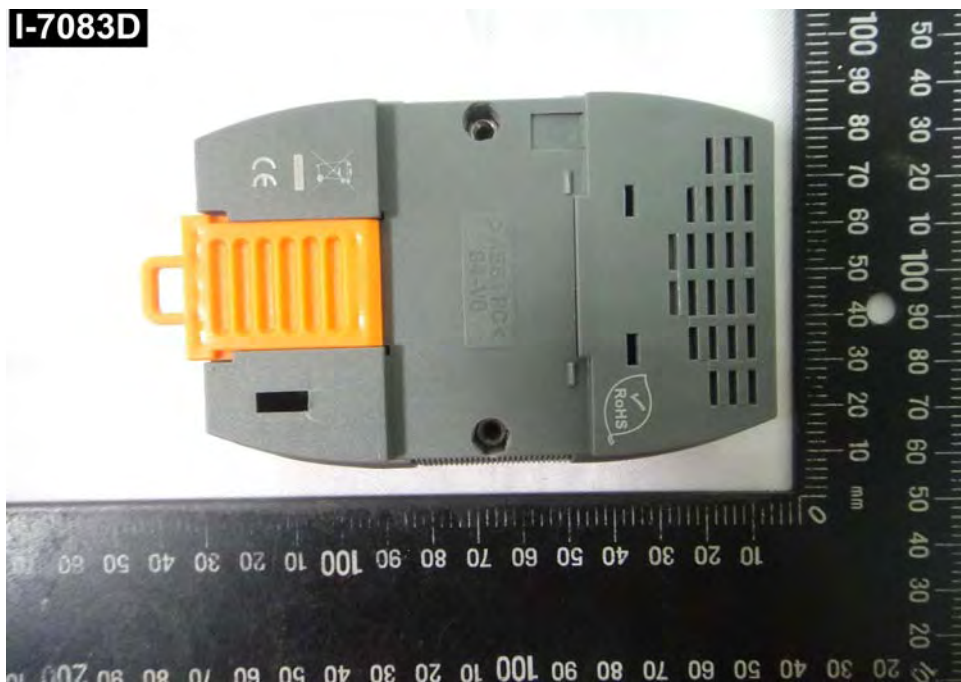
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(41)EUT Photo



(42)EUT Photo



(43)EUT Photo



(44)EUT Photo



(45)EUT Photo

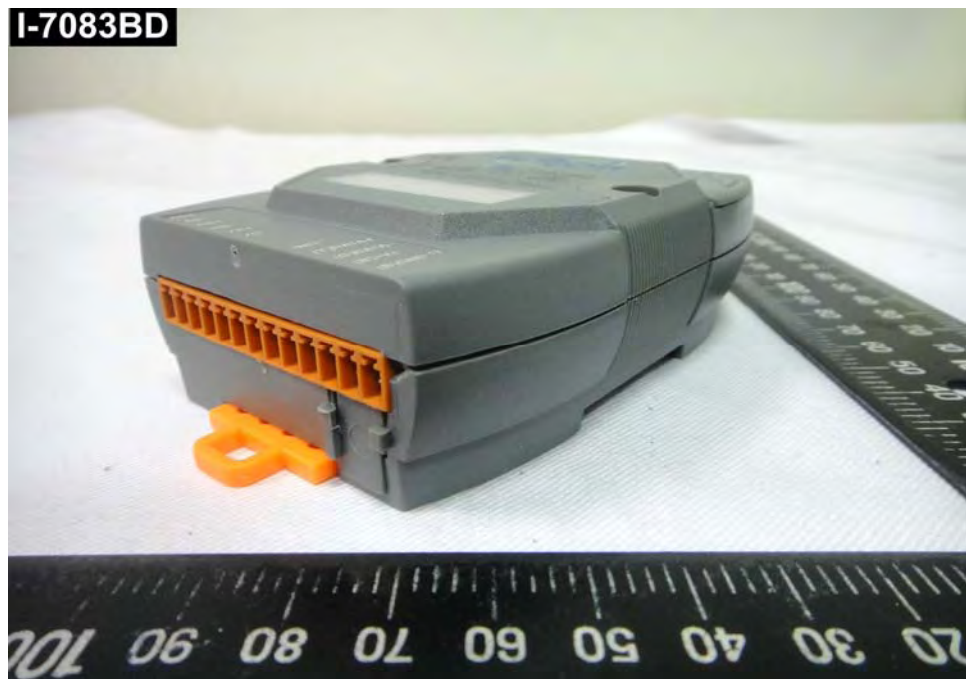


(46)EUT Photo





(47)EUT Photo



(48)EUT Photo



(49)EUT Photo



(50)EUT Photo



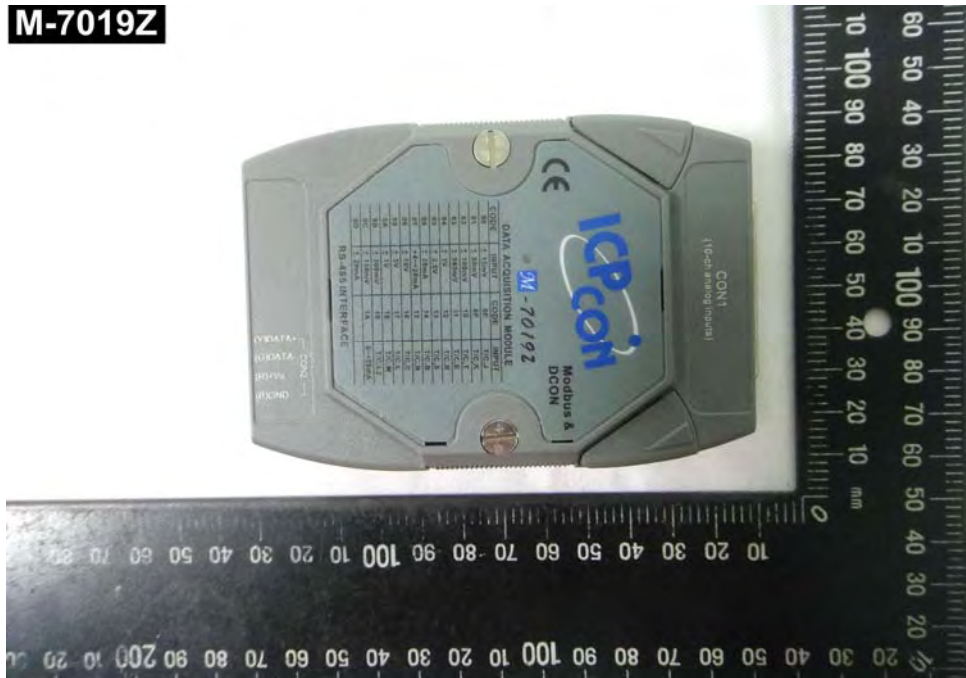
(51)EUT Photo



(52)EUT Photo



(53)EUT Photo



(54)EUT Photo



(55)EUT Photo



(56)EUT Photo



(57)EUT Photo



(58)EUT Photo



(59)EUT Photo



(60)EUT Photo



(61)EUT Photo



(62)EUT Photo





(63)EUT Photo



(64)EUT Photo



(65)EUT Photo



(66)EUT Photo



(67)EUT Photo



(68)EUT Photo



(69)EUT Photo



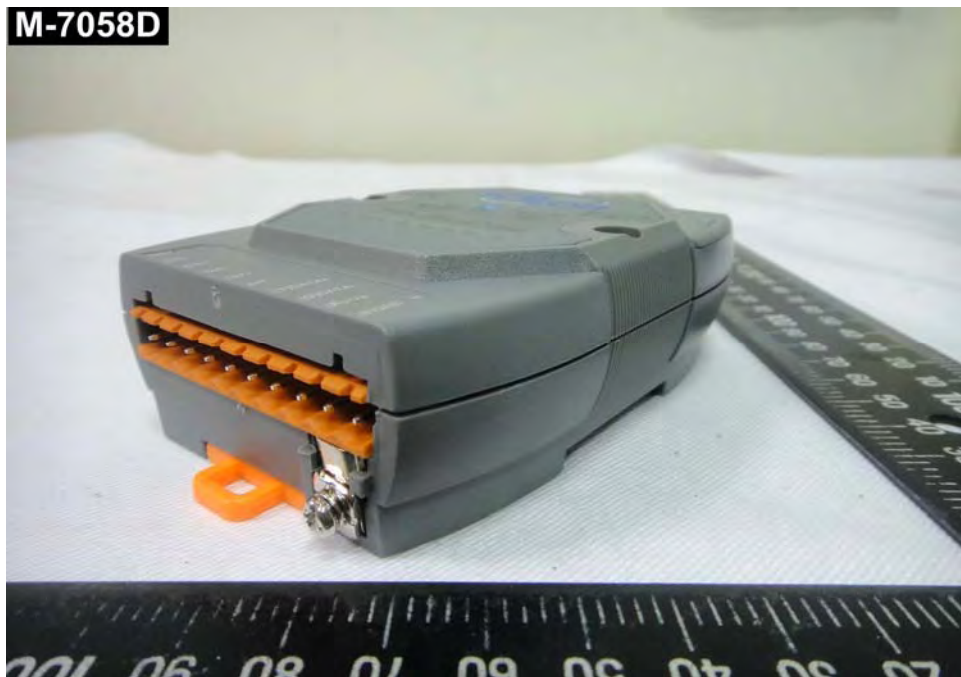
(70)EUT Photo



(71)EUT Photo



(72)EUT Photo



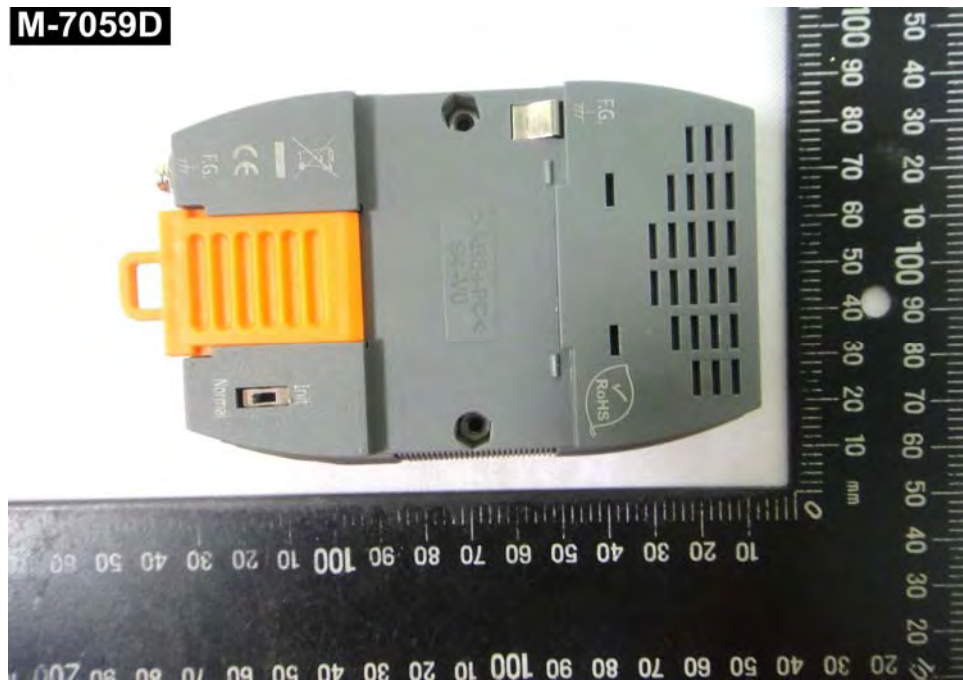
(73)EUT Photo

**M-7059D**

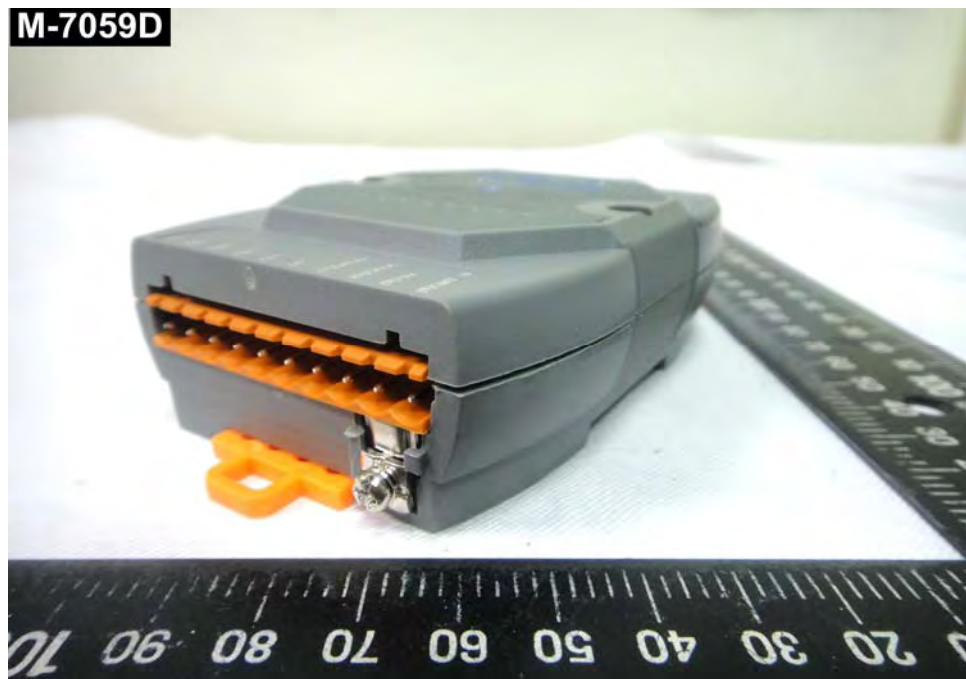


(74)EUT Photo

**M-7059D**



(75)EUT Photo



(76)EUT Photo



(77)EUT Photo



(78)EUT Photo





(79)EUT Photo



(80)EUT Photo



(81)EUT Photo



(82)EUT Photo



(83)EUT Photo



(84)EUT Photo



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(112)EUT Photo



(113)EUT Photo



(114)EUT Photo



(115)EUT Photo

**PM-3133-100**



(116)EUT Photo

**PM-3133-100**



(117)EUT Photo



(118)EUT Photo



(119)EUT Photo



(120)EUT Photo



(121)EUT Photo



(122)EUT Photo



(123)EUT Photo



(124)EUT Photo



(125)EUT Photo

**PW-3090-5S**



(126)EUT Photo

**PW-3090-5S**





(127)EUT Photo



(128)EUT Photo



(129)EUT Photo



(130)EUT Photo



(131)EUT Photo



(132)EUT Photo



(133)EUT Photo



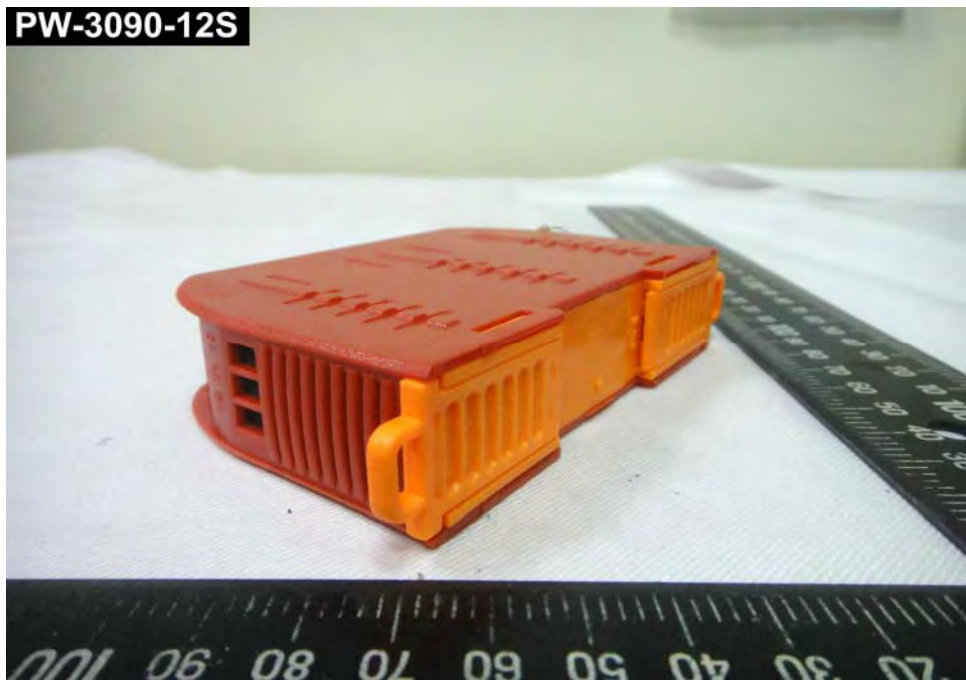
(134)EUT Photo



(135)EUT Photo



(136)EUT Photo



(137)EUT Photo



(138)EUT Photo



(139)EUT Photo



(140)EUT Photo



(141)EUT Photo



(142)EUT Photo





(143)EUT Photo



(144)EUT Photo



(145)EUT Photo

**PW-3090-24S**



(146)EUT Photo

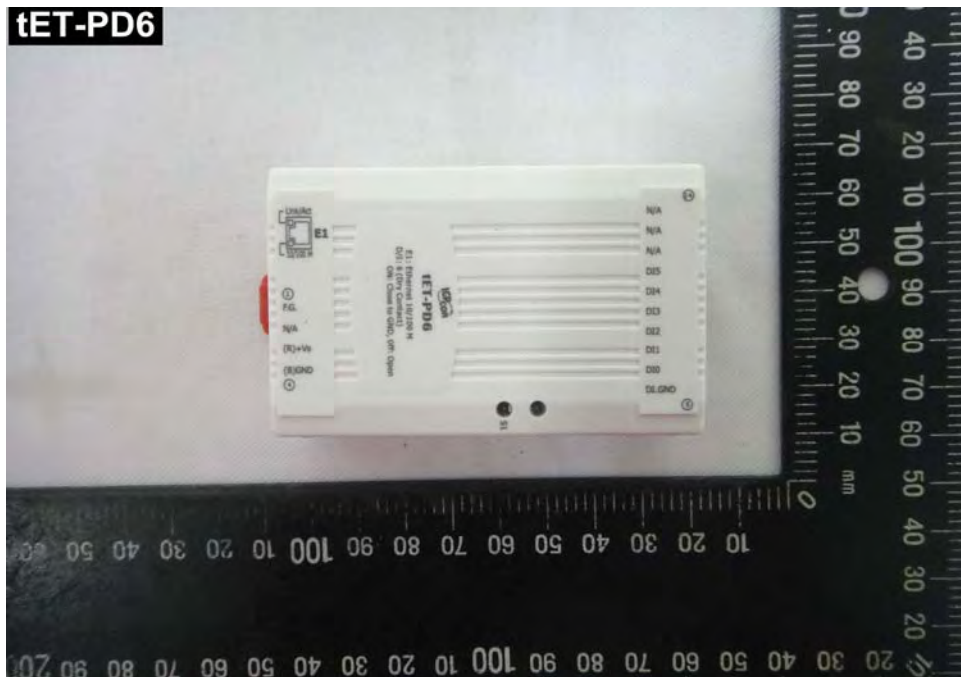
**PW-3090-24S**



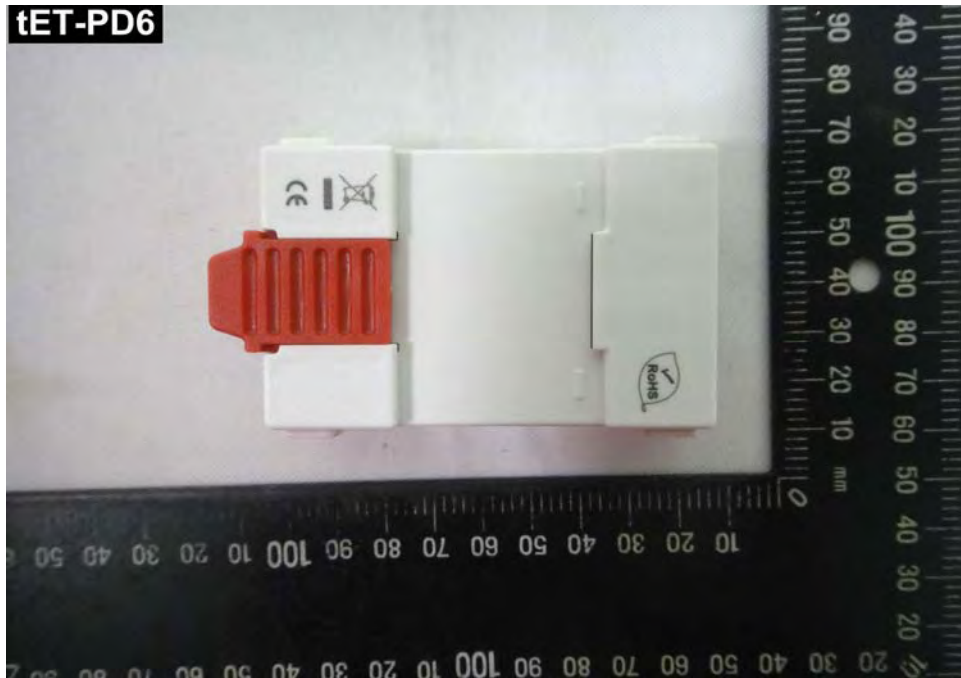
(147)EUT Photo



(148)EUT Photo



(149)EUT Photo



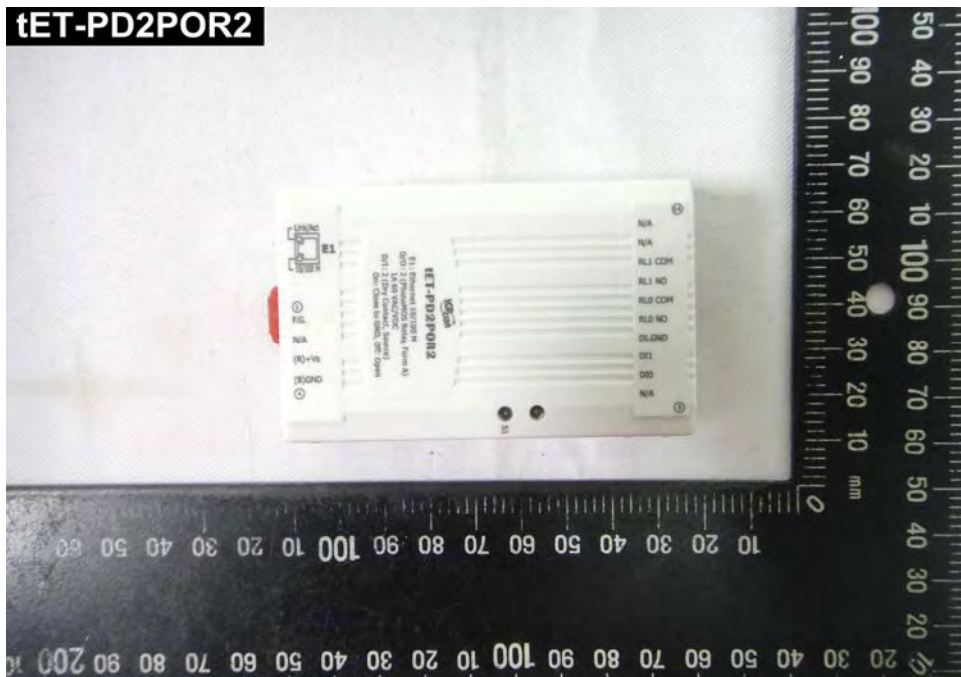
(150)EUT Photo



(151)EUT Photo



(152)EUT Photo



(153)EUT Photo



(154)EUT Photo



(155)EUT Photo



(156)EUT Photo



(157)EUT Photo

**TP-3080**



(158)EUT Photo

**TP-3080**

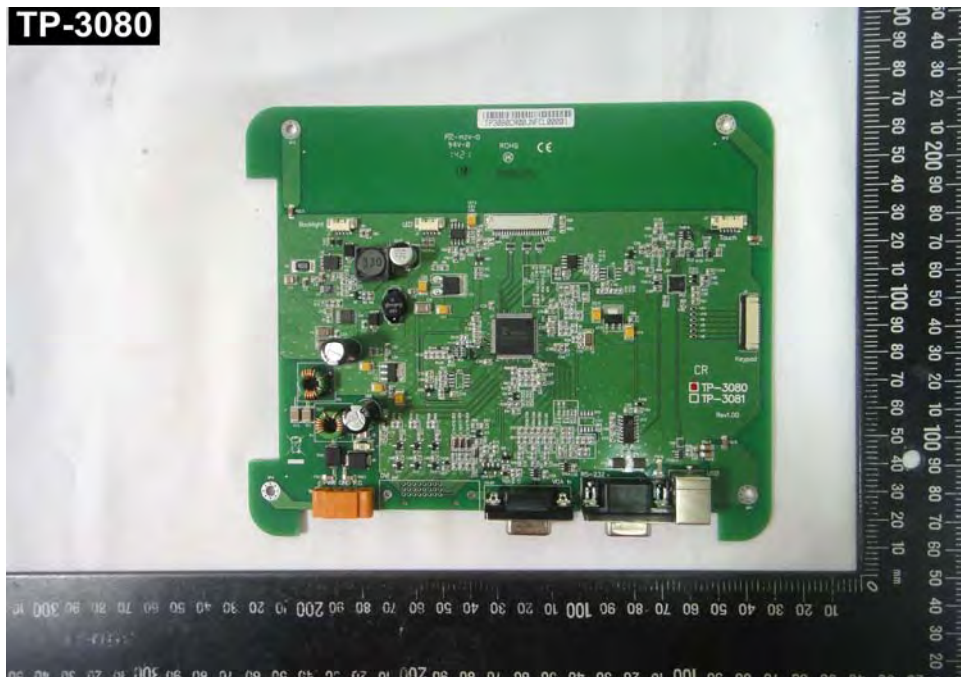




(159)EUT Photo



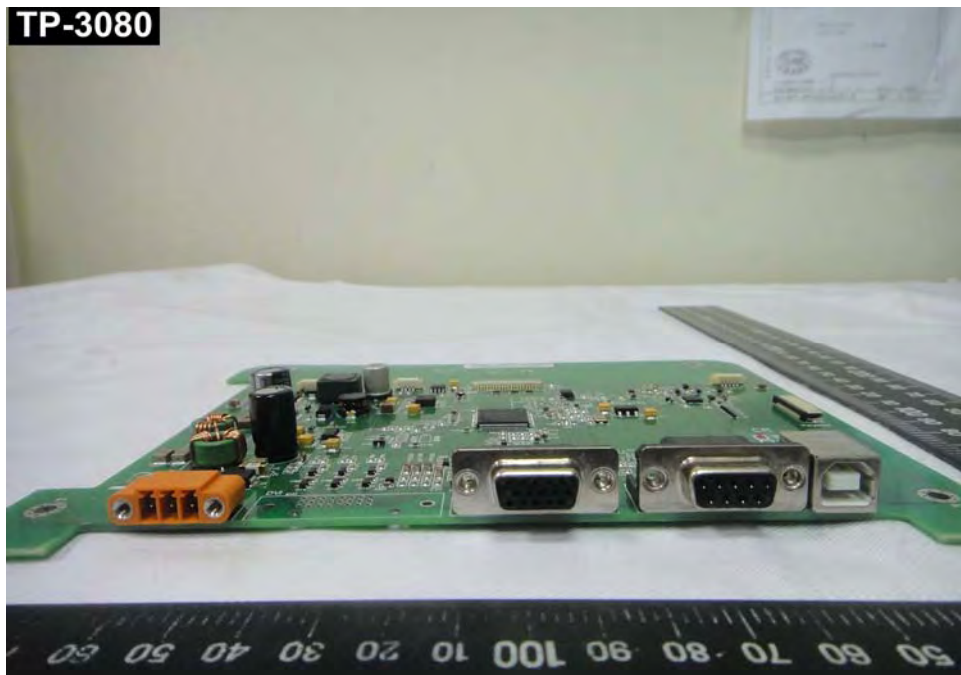
(160)EUT Photo



(161)EUT Photo



(162)EUT Photo



(163)EUT Photo



(164)EUT Photo



(165)EUT Photo



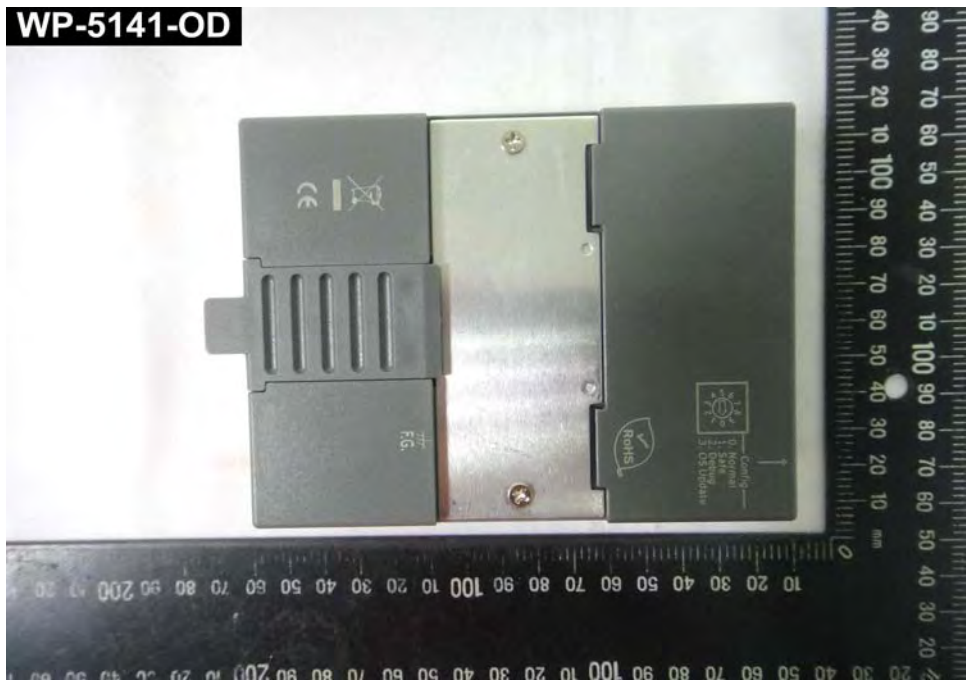
(166)EUT Photo



(167)EUT Photo



(168)EUT Photo



(169)EUT Photo



(170)EUT Photo

