SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

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TEST REPORT

Application No.:	SHEM1610006729IT
Applicant:	SANWA ELECTTRIC INSTRUMENT CO.,LTD.
Address of Applicant:	Dempa Bldg., 4-4 Sotokanda 2-Chome Chiyoda-ku, Tokyo, 101-0021, JAPAN
Manufacturer:	SANWA ELECTTRIC INSTRUMENT CO.,LTD.
Address of Manufacturer:	4-7-15 Shinmeidai, Hamurashi, Tokyo 205-0023, Japan
Factory:	SANWA ELECTTRIC INSTRUMENT CO.,LTD.
Address of Factory:	4-7-15 Shinmeidai, Hamurashi, Tokyo 205-0023, Japan
Equipment Under Test (EUT):	
Product Description:	DIGITAL MULTIMETER
Model No.:	PM300
Trade mark:	sanwa
Standards:	EN 61326-1:2013, EN61326-2-2:2013
Date of Receipt:	2016-10-20
Date of Test:	2016-10-20 to 2016-10-21
Date of Issue:	2017-02-03
Test Result :	**Pass***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EU Directives.

Parlam Zhan
E&E Section Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

2 Test Summary

Item	Standard	Method	Class	Result
RE(30M-1G)	EN 61326-1:2013	EN 55011:2009+A1:2010	N/A	Pass
ESD	EN 61326-1:2013	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
RI(80M-2.7G)	EN 61326-1:2013	EN 61000-4-3:2006+A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod. 3V/m, 80%, 1kHz Amp. Mod. 1V/m, 80%, 1kHz Amp. Mod.	Pass

N/A: Not applicable

3 Contents

4 General Information

4.1 Details of E.U.T.

Product Name: DIGITAL MULTIMETER

Power supply: DC3V 1*CR2032 battery

Power 0.1W

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Standards Applicable for Testing

Table 1 : Tests Carried Out Under EN 61326-1:2013

Method	Item	Status
EN 55011:2009+A1:2010	Conducted Disturbance at Mains Terminals(150KHz-30MHz)	×
EN 55011:2009+A1:2010	Radiated Disturbance(30MHz-1GHz)	√
EN 61000-3-2:2014	Harmonic Current Emission	×
EN 61000-3-3:2013	Voltage Fluctuations and Flicker	×
EN 61000-4-2:2009	Electrostatic Discharge	√
EN 61000-4-4:2012	Electrical Fast Transients/Burst at Power Port	×
EN 61000-4-4:2012	Electrical Fast Transients/Burst at Signal Port	×
EN 61000-4-5:2014	Surge at Power Port	×
EN 61000-4-5:2014	Surge at Signal Port	×
EN 61000-4-6:2014	Conducted Immunity at Power Port(150kHz-80MHz)	×
EN 61000-4-6:2014	Conducted Immunity at Signal Port(150kHz-80MHz)	×
EN 61000-4-11:2004	Voltage Dips and Interruptions	×
EN 61000-4-3:2006+A1:2008+A2:2010	Radiated Immunity(80MHz-2.7GHz)	√

× Indicates that the test is not applicable
√ Indicates that the test is applicable

4.4 Test Location

All tests were performed at:
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab
588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China
Tel: +86 21 6191 5666
Fax: +86 21 6191 5678
No tests were sub-contracted.

4.5 Test Facility

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868,C-4336,T-2221,G-830 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 Monitoring of EUT for All Immunity Test

Visual: monitor the measured value (changed less than 2%)

4.9 Measurement Uncertainty

According to CISPR 16-4-2.

Test Item	Frequency Range	Measurement Uncertainty	U_{cispr}
Conducted Emission at mains port using AMN	9kHz-150kHz	3.2 dB	3.8 dB
Conducted Emission at mains port using AMN	150kHz-30MHz	3.0 dB	3.4 dB
Conducted Emission at mains port using VP	9kHz-30MHz	1.9 dB	3.9 dB
Conducted Emission at telecommunication port using AAN	150kHz-30MHz	2.4 dB	5.0 dB
Radiated Emission	30MHz-1000MHz	4.4 dB	6.3 dB
Radiated Emission	1GHz-6GHz	4.6 dB	5.2 dB (1GHz-6GHz)
Radiated Emission	6GHz-18GHz	4.6 dB	5.5 dB (6GHz-18GHz)
Disturbance Power	30MHz-300MHz	3.5 dB	4.5 dB
Remark: AMN – Artificial Mains Network VP – Voltage Probe ANN – Asymmetric Artificial Network			

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

5 Equipment List

RE(30M-1G)						
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
1	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESU40	SHEM051-1	2016-08-12	2017-08-11
2	CONTROLLER	INNCO	CO200	SHEM047-1	N/A	N/A
3	ANTENNA MAST	INNCO	MA400-EP	SHEM047-2	N/A	N/A
4	TURN DEVICE	INNCO	DE 3600-RH	SHEM047-3	N/A	N/A
5	BROADBAND UHF-VHF ANTENNA	SCHWARZBECK	VULB9168	SHEM048-1	2016-01-16	2017-01-15
6	LOW FREQUENCY AMPLIFIER	CLAVIIO	BDLNA-0001-412010	SHEM164-1	2016-08-12	2017-08-11
7	SEMI/FULLY ANECHOIC	ST	11*6*6M	SHEM078-2	2016-08-17	2017-08-16

ESD						
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
1	ELECTROSTATIC DISCHARGE SIMULATOR	TESEQ	NSG 437	SHEM041-1	2016-08-15	2017-08-14

RI(80M-2.7G)						
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
1	SIGNAL GENERATOR	ROHDE & SCHWARZ	SMJ100A	SHEM141-1	2016-01-13	2017-01-12
2	POWER METER	ROHDE & SCHWARZ	NRP	SHEM057-1	2016-01-14	2017-01-13
3	POWER METER SENSOR	ROHDE & SCHWARZ	NRP-Z91	SHEM057-2	2016-01-14	2017-01-13
4	ANTENNA	SCHWARZBECK	STLP9128D	SHEM130-1	N/A	N/A
5	ANTENNA	SCHWARZBECK	STLP9149	SHEM131-1	N/A	N/A
6	AMPLIFIER	MILMEGA	80RF1000-250	SHEM132-1	N/A	N/A
7	AMPLIFIER	MILMEGA	AS0840-55-55	SHEM133-1	N/A	N/A
8	POWER METER SENSOR	ROHDE & SCHWARZ	NRP-Z22	SHEM136-1	2016-08-12	2017-08-11
9	ELECTROMAGNETIC FIELD PROBE	ETS-LINDGREN	HI-6113	SHEM134-1	2016-08-12	2017-08-11
10	SEMI/FULLY ANECHOIC	ST	11*6*6M	SHEM078-2	2016-08-17	2017-08-16

General used equipment						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. date**	**Cal.Due date**
1	Digital pressure meter	YONGZHI	DYM3-01	101012	2016-03-03	2017-03-02
2	Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	84320600 803136, F304020153,20 101201FS100A 6K,201106117	2016-08-03	2017-08-02
3	Digital Multimeter	FLUKE	17B	19720439	2016-01-14	2017-01-13
4	Autoformer regulator	Guangzhou bao de	TDGC2-5KVA	N/A	N/A	N/A
5	CLAMP METER	FLUKE	316	2503030971	2016-01-14	2017-01-13

6 Emission Test Results

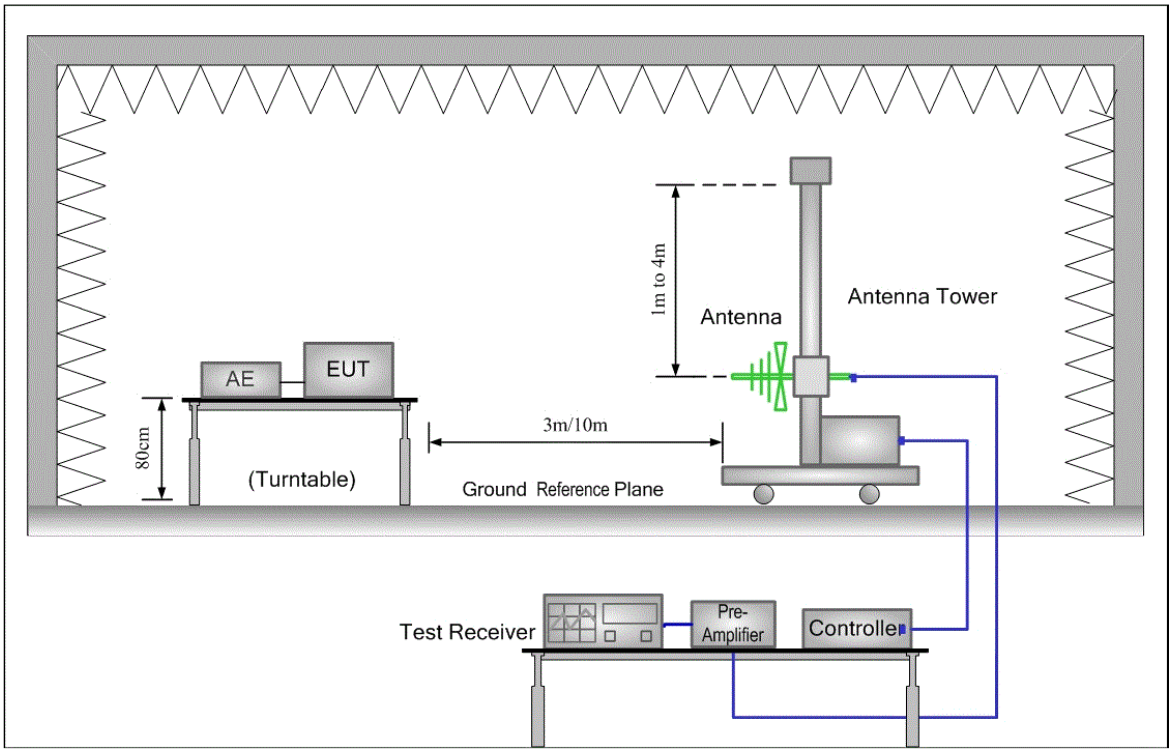
6.1 RE(30M-1G)

Test Requirement: EN 61326-1:2013
Test Method: EN 55011:2009+A1:2010
Frequency Range: 30MHz to 1GHz

6.1.1 E.U.T. Operation

Operating Environment:
Temperature: 21 °C Humidity:51 % RH Atmospheric Pressure: 1001 mbar
Test mode a:measuring mode : keep EUT measuring continual .

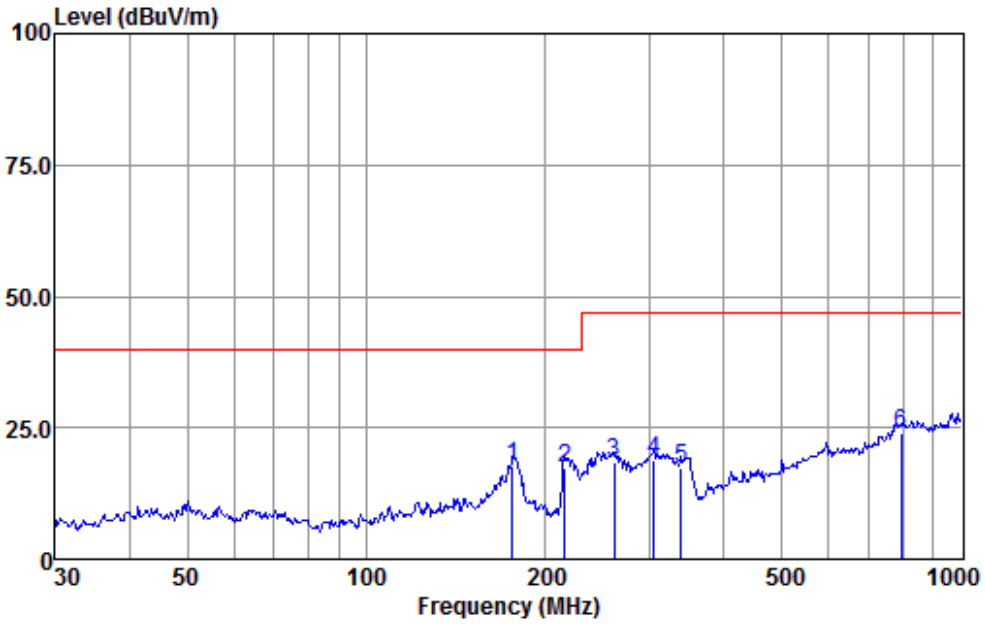
6.1.2 Test Setup



6.1.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

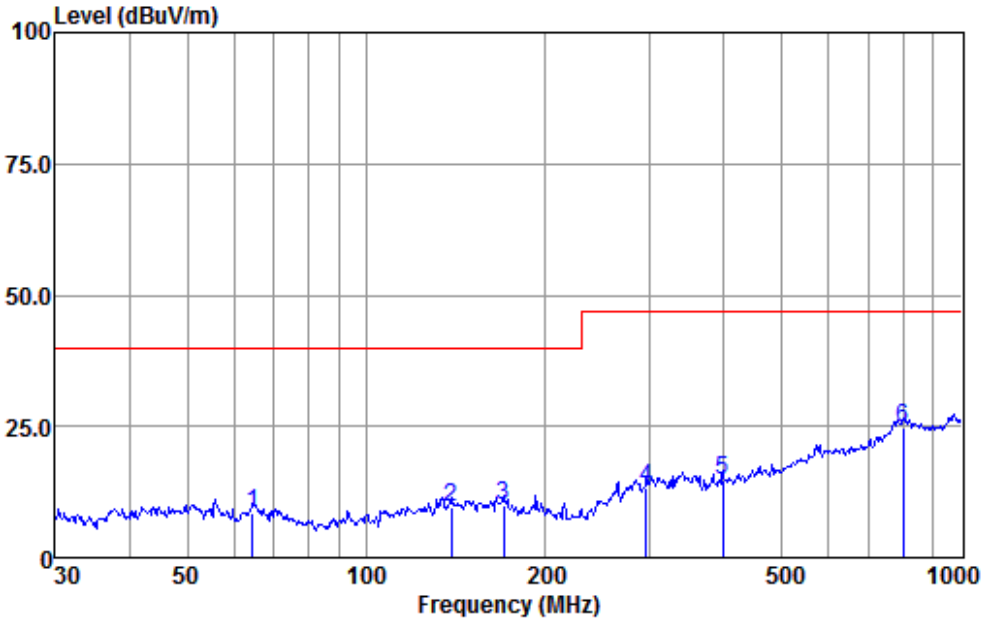
Mode:a;Polarization:Horizontal



Condition : HORIZONTAL
EUT/Project: 6729IT
Test mode : a

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 q	176.27	48.31	11.39	1.48	43.45	17.73	40.00	-22.27	QP
2	216.02	48.96	10.14	1.72	43.39	17.43	40.00	-22.57	QP
3	261.06	47.64	12.21	1.87	43.34	18.38	47.00	-28.62	QP
4	304.61	46.43	13.46	2.08	43.31	18.66	47.00	-28.34	QP
5	338.40	45.76	12.74	2.18	43.28	17.40	47.00	-29.60	QP
6	793.40	39.89	23.41	3.61	43.06	23.85	47.00	-23.15	QP

Mode:a;Polarization:Vertical



Condition : VERTICAL
EUT/Project: 6729IT
Test mode : a

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	64.43	38.54	12.65	0.82	43.70	8.31	40.00	-31.69	QP
2	138.87	39.46	12.26	1.31	43.51	9.52	40.00	-30.48	QP
3	170.19	39.62	12.20	1.45	43.45	9.82	40.00	-30.18	QP
4	296.18	41.58	13.10	2.05	43.31	13.42	47.00	-33.58	QP
5	397.63	40.51	14.92	2.40	43.24	14.59	47.00	-32.41	QP
6 q	798.98	40.47	23.50	3.63	43.06	24.54	47.00	-22.46	QP

7 Immunity Test Results

7.1 Performance Criteria Description in EN 61326-1:2013

Criterion A During testing, normal performance within the specification limits.

Criterion B During testing, temporary degradation, or loss of function or performance which is selfrecovering.

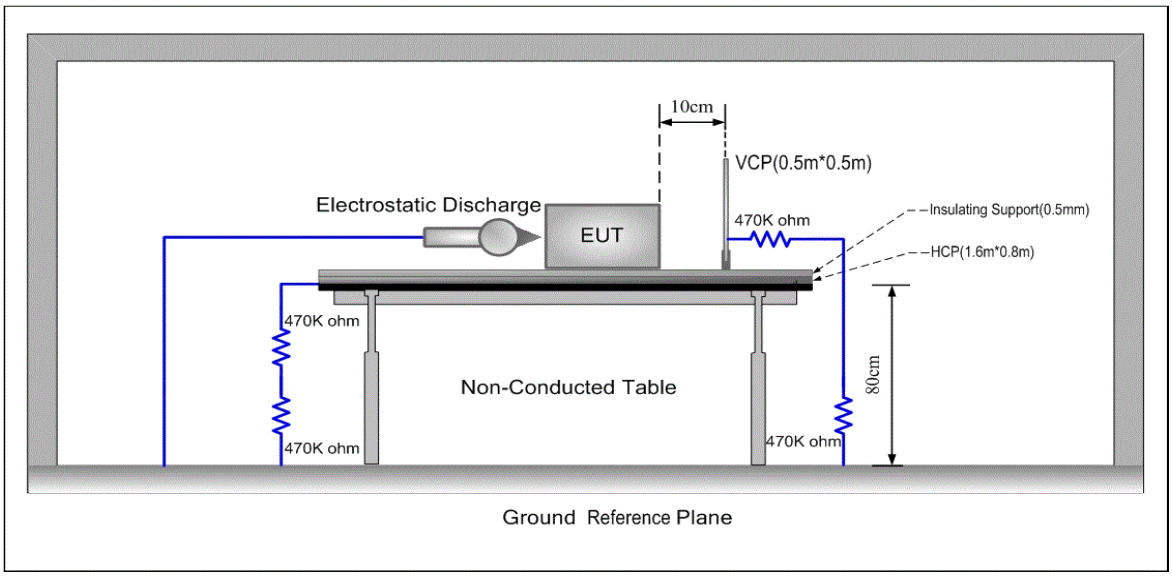
Criterion C During testing, temporary degradation, or loss of function or performance which requires operator intervention or system reset occurs.

7.2 ESD

Test Requirement: EN 61326-1:2013

Test Method: EN 61000-4-2:2009

7.2.1 Test Setup:



7.2.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 52 % RH Atmospheric Pressure: 1004 mbar

Test mode: a:measuring mode : keep EUT measuring continual .

7.2.3 Test Results:

Observations: Test Point:

1. All insulated enclosure and seams.
2. All accessible metal parts of the enclosure.
3. All side

Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	2,4,8	+	1	A
Air Discharge	2,4,8	-	1	A
Contact Discharge	2,4	+	2	A
Contact Discharge	2,4	-	2	A
Horizontal Coupling	2,4	+	3	A
Horizontal Coupling	2,4	-	3	A
Vertical Coupling	2,4	+	3	A
Vertical Coupling	2,4	-	3	A

Results:

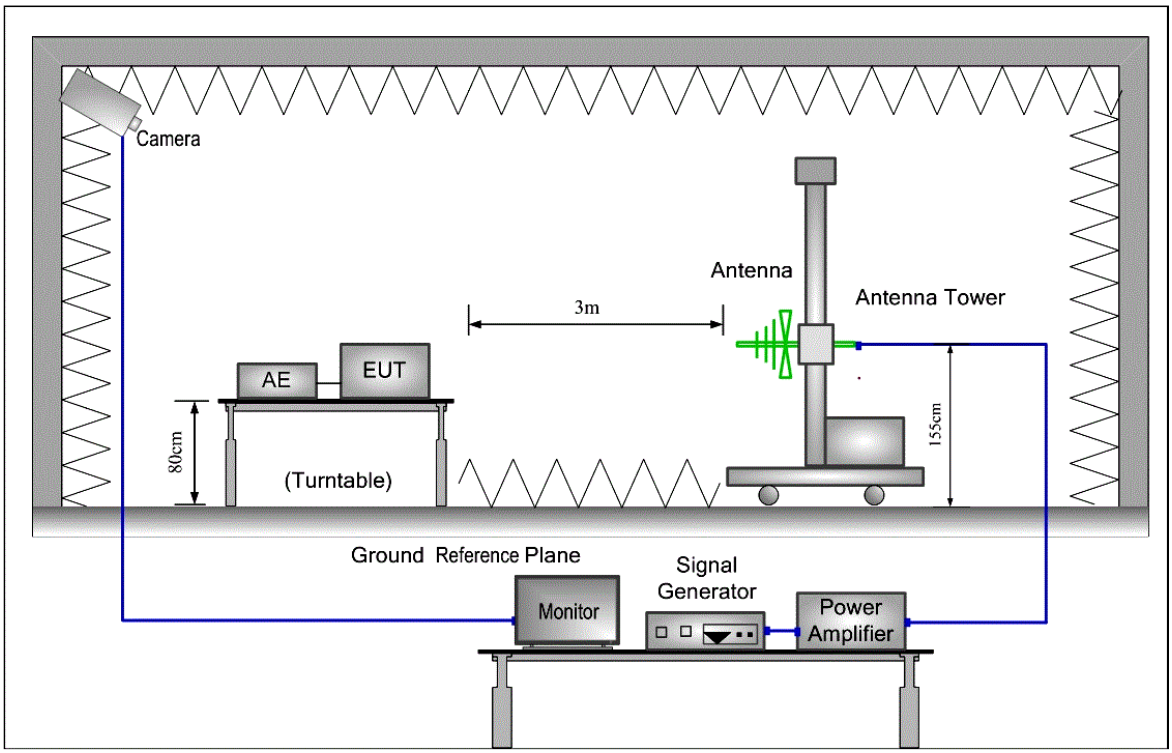
A: No degradation in the performance of the EUT was observed.

7.3 RI(80M-2.7G)

Test Requirement: EN 61326-1:2013

Test Method: EN 61000-4-3:2006+A1:2008+A2:2010

7.3.1 Test Setup:



7.3.2 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity:51 % RH Atmospheric Pressure: 1001 mbar

Test mode: a:measuring mode : keep EUT measuring continual .

7.3.3 Test Results:

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	3s	A
80MHz-1GHz	3	Back	3s	A
80MHz-1GHz	3	Left	3s	A
80MHz-1GHz	3	Right	3s	A
80MHz-1GHz	3	Top	3s	A
80MHz-1GHz	3	Underside	3s	A
1.4GHz-2GHz	3	Front	3s	A
1.4GHz-2GHz	3	Back	3s	A
1.4GHz-2GHz	3	Left	3s	A
1.4GHz-2GHz	3	Right	3s	A

1.4GHz-2GHz	3	Top	3s	A
1.4GHz-2GHz	3	Underside	3s	A
2GHz-2.7GHz	1	Front	3s	A
2GHz-2.7GHz	1	Back	3s	A
2GHz-2.7GHz	1	Left	3s	A
2GHz-2.7GHz	1	Right	3s	A
2GHz-2.7GHz	1	Top	3s	A
2GHz-2.7GHz	1	Underside	3s	A

Results:

A: No degradation in the performance of the EUT was observed.

8 Photographs

8.1 RE(30M-1G) Test Setup

8.2 ESD Test Setup

8.3 RI(80M-2.7G) Test Setup

8.4 EUT Constructional Details

--End of the Report--