

CE EMC Test Report



For

JIANGSU SAVING ELECTRONIC CO., Ltd. Xincheng Road#256, Environment And Science Area, Yixing City, Jiangsu Province, China

Product: Three Phase Smart Energy Meter

Trade Name: Saving

Model No: DTZY1218

Serial Model: --

Prepared By: Nowd Testing Services Co., Ltd.

5A, Building 29B, Yintian Industrial Zone, Yantian Community, Xixiang

Street, Bao'an District, Shenzhen, China

Tel: (86) 755-27830065 Fax: (86) 755-27830095

Report No.: NTS2212009E

Date of Test: December 01, 2022

Date of Rep.: December 12, 2022



TEST REPORT DECLARATION

Report No.: NTS2212009E

Applicant : JIANGSU SAVING ELECTRONIC CO., Ltd.

Address : Xincheng Road#256, Environment And Science Area, Yixing City,

Jiangsu Province, China

Manufacturer : JIANGSU SAVING ELECTRONIC CO., Ltd.

Address : Xincheng Road#256, Environment And Science Area, Yixing City,

Jiangsu Province, China

EUT Description : Three Phase Smart Energy Meter

Trademark : Saving

Model No. : DTZY1218

Serial Model : --

Power Supply : Input: 220/380V~, 50Hz **Standards** : EN IEC 61000-6-1: 2019

EN 61000-6-3: 2007+ A1: 2011

EN IEC 61000-3-2: 2019

EN 61000-3-3: 2013+ A1: 2019

SERVICES

APPROV

This device described above has been tested by Nowd Testing Services Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the 2014/30/EU requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of Nowd Testing Services Co., Ltd., this document may be altered or revised by Nowd Testing Services Co., Ltd., personal only, and shall be noted in the revision of the document.

Prepared by:

Jack Wu Testing Engineer

ack Wu

Reviewed by:

Andy Xie

Technical Manager

Approved by:

somnus

Authorized Signatory



HOND

AND MOIN

HOND

HOMD

Report No.: NTS2212009E

Table of Contents	Page
OND HE OND HOW HE WE HOW	Mo. Mo
1. TEST SUMMARY	40° 50
1.1 TEST FACILITY	6
1.2 MEASUREMENT UNCERTAINTY	6.40
2 . GENERAL INFORMATION	10° 7
2.1 GENERAL DESCRIPTION OF EUT	0 1000 7
2.2 DESCRIPTION OF TEST MODES	8
2.3 DESCRIPTION OF TEST SETUP	9
2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL	10
2.5 MEASUREMENT INSTRUMENTS LIST	10 NIC 11 NC
3 . EMC EMISSION TEST	13
3.1 CONDUCTED EMISSION MEASUREMENT	13
3.1.1 POWER LINE CONDUCTED EMISSION	13
3.1.2 TEST PROCEDURE	14
3.1.3 TEST SETUP	14
3.1.4 EUT OPERATING CONDITIONS 3.1.5 TEST RESULTS	14 15
3.2 RADIATED EMISSION MEASUREMENT	0 0
3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	17 17
3.2.2 LIMITS OF RADIATED EMISSION MEASUREMENT	17
3.2.3 TEST PROCEDURE	17
3.2.4 TEST SETUP	18
3.2.5 EUT OPERATING CONDITIONS	18
3.2.6 TEST RESULTS	19
3.2.7 TEST RESULTS (1000~6000MHz)	NO 21
3.3 HARMONICS CURRENT	22
3.3.1 LIMITS OF HARMONICS CURRENT 3.3.1.1 TEST PROCEDURE	22 23
3.3.1.2 EUT OPERATING CONDITIONS	23
3.3.1.3 TEST SETUP	23
3.3.2 TEST RESULTS	24
3.4 VOLTAGE FLUCTUATION AND FLICKERS	25
3.4.1 LIMITS OF VOLTAGE FLUCTUATION AND FLICKERS	25
3.4.1.1 TEST PROCEDURE	25
3.4.1.2 EUT OPERATING CONDITIONS	25
3.4.1.3 TEST SETUP	25
3.4.2 TEST RESULTS	26
4 . EMC IMMUNITY TEST	27
4.1 STANDARD COMPLIANCE/SERVRITY LEVEL/CRITERIA	27

HOND

MONOND

HOND



MD MONE

NO.

HOND Report No.: NTS2212009E

HOND

HOND

NO

HO

WONDHOWD.

HOND

Table of Contents	Page
TO TOME TOME OF CASE TOME HO. THE	OND HOW
4.2 GENERAL PERFORMANCE CRITERIA	28
4.3 GENERAL PERFORMANCE CRITERIA TEST SETUP	28
4.4 ESD TESTING	29
4.4.1 TEST SPECIFICATION	29
4.4.2 TEST PROCEDURE	29
4.4.3 TEST SETUP	30 31
4.4.4 TEST RESULTS	, M. O
4.5 RS TESTING	32
4.5.1 TEST SPECIFICATION 4.5.2 TEST PROCEDURE	32 32
4.5.3 TEST SETU	33
4.5.4 TEST RESULTS	34
4.6 EFT/BURST TESTING	35
4.6.1 TEST SPECIFICATION	35
4.6.2 TEST PROCEDURE	35
4.6.3 TEST SETUP	36
4.6.4 TEST RESULTS	37
4.7 SURGE TESTING	38
4.7.1 TEST SPECIFICATION	38
4.7.2 TEST PROCEDURE 4.7.3 TEST SETUP	38
4.7.4 TEST SETUP	39 40
4.8 INJECTION CURRENT TESTING	10 MD 40
4.8.1 TEST SPECIFICATION	41 41
4.8.2 TEST PROCEDURE	41
4.8.3 TEST SETUP	42
4.8.4 TEST RESULTS	43
4.9 POWER FREQUENCY MAGNETIC FIELD TESTING	0 44 20
4.9.1 TEST SPECIFICATION	44
4.9.2 TEST PROCEDURE	44
4.9.3 TEST SETUP	44
4.9.4 TEST RESULTS	45
4.10 VOLTAGE INTERRUPTION/DIPS TESTING	46
4.10.1 TEST SPECIFICATION 4.10.2 TEST PROCEDURE	46 46
4.10.2 TEST PROCEDURE 4.10.3 TEST SETUP	46
4.10.4 TEST RESULTS	47
5 . EUT TEST PHOTO	48
ATTACHMENT PHOTOGRAPHS OF EUT	49
ATTACHWENT PROTOGRAPHS OF EUT	.iD .0145

JOND

HOW

HOND

HOND

HOND

MON

HOND HOND

HOMD HOMD

HOMD HON

HOND YOURD HOND HOND HOND HOND HOND

Report No.: NTS2212009E

ND HOMD

HOWD ,

VD.

OND

HOND

OWD

DIND

HOMO

HOMD HE

3



ND HONE

HOND HO

HOND

HOND HE

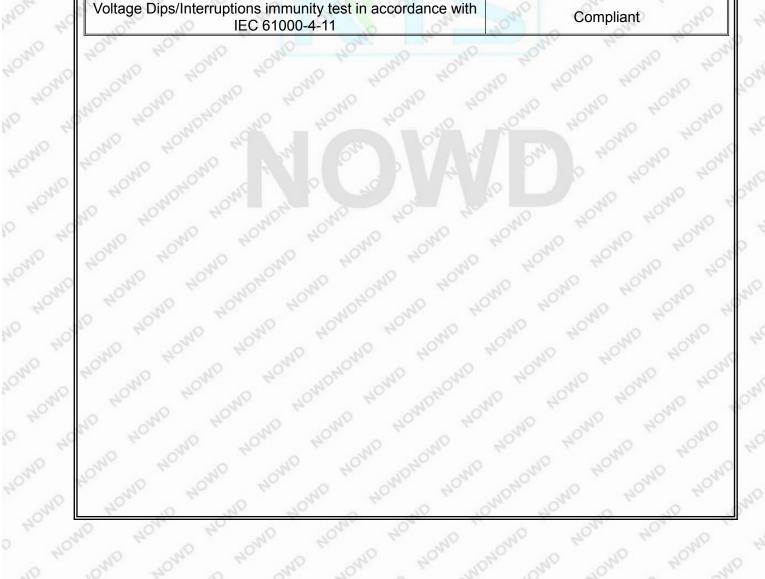
NO HONO

HOMDHON

MOND HO

MO

Desci	ription of Test	Result
Cond	ucted Emission	Compliant
Radi	ated Emission	Compliant
EN61000-3-2 Ha	rmonic Current Emission	Compliant
EN61000-3-3 Volta	age Fluctuation And Flicker	Compliant
	nmunity (ESD) in accordance with 61000-4-2	Compliant
Ho Ho	netic Field Immunity in accordance with 61000-4-3	Compliant
acco	ent/Burst (EFT/B) immunity in ordance with C 61000-4-4	Compliant
	immunity in accordance with 61000-4-5	Compliant
	disturbances in accordance with C 61000-4-6	Compliant
70% HO. O	etic field Immunity in accordance with 6 61000-4-8	Compliant
	s immunity test in accordance with 61000-4-11	Compliant







TEST FACILITY

Test Firm : Nowd Testing Services Co., Ltd. (Shenzhen)

Address : 5A, Building 29B, Yintian Industrial Zone, Yantian Community,

Xixiang Street, Bao'an District, Shenzhen, China

MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $\mathbf{y} \pm \mathbf{U}$, where expended uncertainty \mathbf{U} is based on a standard uncertainty multiplied by a coverage factor of $\mathbf{k=2}$, providing a level of confidence of approximately 95 %.

Conducted Emission Uncertainty = ± 2.23dB

Radiated Emission Uncertainty = ± 4.26 dB





HOMD HOMD

HOMD HON

ND HOND

HOMD ,

OND

HOND

OWD

HOWD HE

HOWD

HOMD HE

HOND HOND HOND HOND HOND HOND HOND

3

40,40

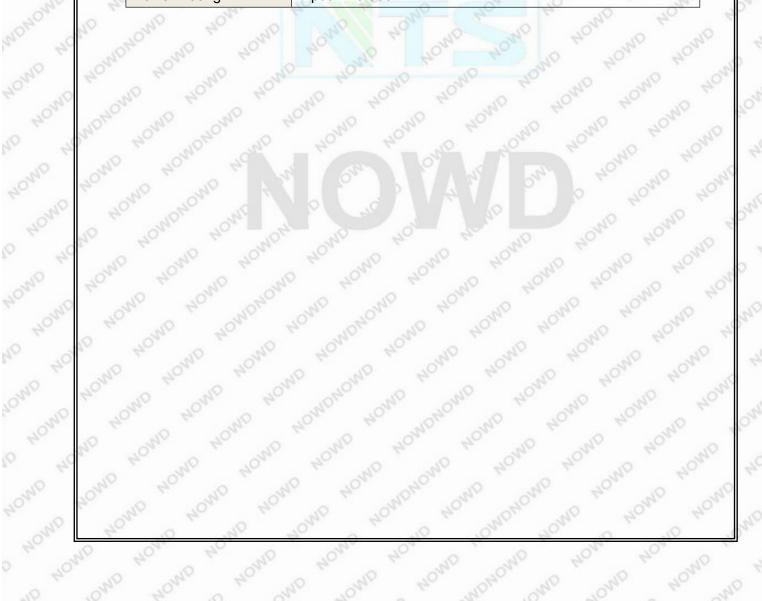


HOND

. GENERAL INFORMATION

MOND GENERAL DESCRIPTION OF EUT

EUT Description:	Three Phase Smart Energ	y Meter	10
Model No.:	DTZY1218	QUO	40%
Adding Model:	47 410 404	40	
Model Difference	- 40 MD W	10 HOM	40
Product Description	Connecting I/O port: Based on the application exhibited in User's Manu-ITE/Computing Device. Manu-ITE/Computing Device.	al, the EUT is c	onsidere
Douger Course	specification, please refe		
Power Source Power Rating			



HOV

HOND HOND HOND

HOND

OMONOMO



JOHO

VO

VD

ND

HOND

ND

DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation Running mode or test configuration Running mode which possible have effect on EMI emission level. Each of these EUT operation Running mode(s) or test configuration Running mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description		
Mode 1	Run Mode		

Mode 1 Run Mode	>

	For EMS Test
Final Test Mode	Description
Mode 1	Run Mode



MOND MOND HOND



HOND

ONDHOND HOND HOND

HOND



DESCRIPTION OF TEST SETUP

MOMD MOMD Mode 1: ND HOW

HOWD

HOND

HOND

HOND

HOND

NO

HOND

HOMD HOMD

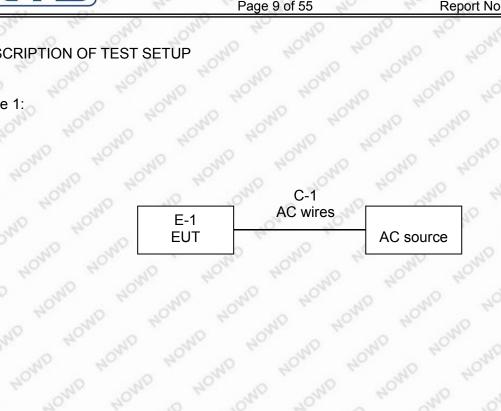
MOND

HO

MOND

HOMOHOMO

HOND







HOND

HOND

MOND



DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

			110		
Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Three Phase Smart Energy Meter	N/A	DTZY1218	N/A	EUT
.0	10 40 6	OND	40, 40	"ALC HON HO	, NO
	TOME HOM	2 04	OWL	HO OND OND	40"
.(0	ND NOW	.0	THO OF	AL TO THE	40,
20,0	HO, HO	701h, 470	.0 .0	Mr. Mohr. He	July 10
100	lo Ho, MD	ND	HON HO	AND HOWE OF	.,0
64	OND HO.	Mr. MID	HON .	10, 40 HOW.	1000
.0	Mr. CALL MOAN	70	UND GAID	HOS MO WO	210 Az
200	10 NO 2	ONL E	VO. 01.	10 HO. Mr.	4 O
.0	2000	CANT.	ON N	THE OWN HO	Que.

Item	Shielded Type	Ferrite Core	Length	Note
C1	No	No	1.0m	Power cord
100	O ONO W	200 10	and one	OH ONE ON
701	0 .0	OND	40 4	OND HO. HO ND
NO.	TOWN SHOW IT	1001	NOW T	JAN JAN JAN JAN JAN
OIL.	, contraction			The Ship Ho.
0	10 NO 1	15 O.		a one we can to
2C	is they	Moll	30 1 1	10 10 10
0	701/1 404	ON NO	101 kg	TO NOW HOW

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) "YES" means "shielded" "with core"; "NO" means "unshielded" "without core".

HOMD HON

Report No.: NTS2212009E

HOND

ALD HOMD

HOMD &

NO

DINE



AND HOME

ID MOND

MO

NO HOND

ND HONG

MEASUREMENT INSTRUMENTS LIST

CONDUCTED TEST SITE

	0 40	Page 11	of 55	Report No	o.: NTS2212009E	
MEASUREMENT INSTRUMENTS LIST CONDUCTED TEST SITE						
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date	
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2022-07-17	2023-07-16	
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2022-07-17	2023-07-16	
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2022-07-17	2023-07-16	
AMN	EMCO	3825/2	11967C	2022-07-17	2023-07-16	
Power Divider	Weinschel	1506A	PM204	2022-07-17	2023-07-16	
Current Probe	FCC	F-33-4	091684	2022-07-17	2023-07-16	

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2022-07-17	2023-07-16
EMI Test Receiver	R&S	ESVB	825471/005	2022-07-17	2023-07-16
Positioning Controller	C&C	CC-C-1F	N/A	2022-07-17	2023-07-16
RF Switch	EM	EMSW18	SW060023	2022-07-17	2023-07-16
Pre-amplifier	Agilent	8447F	3113A06717	2022-07-17	2023-07-16
Pre-amplifier	Compliance Direction	PAP-0118	24002	2022-07-17	2023-07-16
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2022-07-17	2023-07-16
Horn Antenna	ETS	3117	00086197	2022-07-17	2023-07-16

HAR	MONICS AND FILCK	HONDIND	OND HOY		NO HOWL ON
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
0110	Harmonic & Flicker	EM TEST	DPA500	0303-04	July 16, 2023
2	AC Power Source	EM TEST	ACS500	0203-01	July 16, 2023

ESD

	ESD	10 4	101 110	70 12	10 01	0 20 0	_ _
14°C	Item		Manufacturer	Type No.	Serial No.	Calibrated until	
OND	HOLIN	ESD TEST GENERATOR	SCHAFFNER	NSG438	859	July 16, 2023	OR O
MONIO	40		MONID CHONI	, n 40 , o	ND MOND	NO OND	ONE
0,0	10	NO DIN NOH	D HOME 4	OW MD F	OND HO	מוני מוני מוני	4
ND P	MOND	O HOS NO HE	JOHO MOND	D 40, 40		HO3. HO.	ne.
OND	410	2ng Hone Mb	HOND, HON		10 HOM	HOW NO HE	OW
420	NO	HOWL ID HO.	AD MOND	HOA. HO.	TOND MON	NO HOW CAND	
OW.	OWO,	HOW .NO H	OND HOME			HOME OF HE	10 4
OW.	40	AD HOS ID	TOMO MO	10 HO.		40h, 0 40,	MC
40,01	ND	HOME HOME	D MOND	TO ALL	INO M	24g HOan	7
		HOME HO.		MON WOL		TOME HOW	

MOND HOND

HOND HOND

HOND HOY

Report No.: NTS2212009E

ALD HOMD

OND

10

OND

DAND MY

40WD

HOND H



AND HOM

ID MOND

HOND HE

NO HONO

MONDHOY

MO

HO?

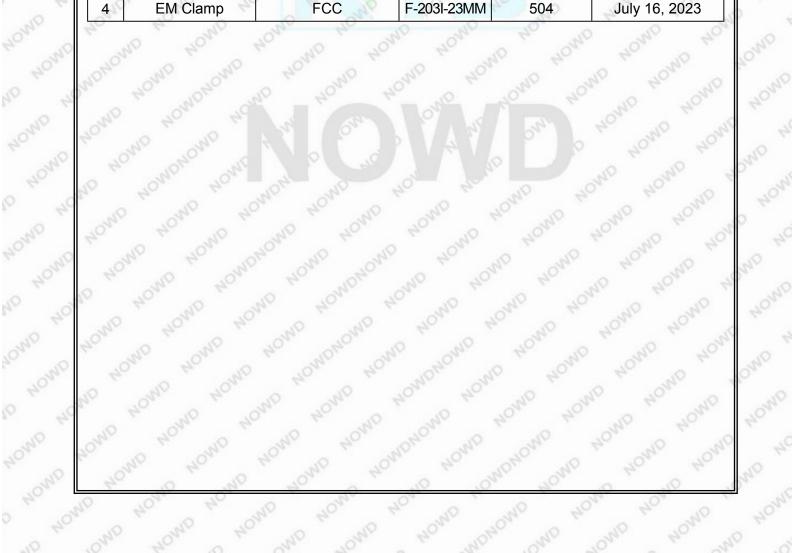
HOND HOND

RS	OMD HOS	HO WID	40% 40,		TOME HOM
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
10	Signal Generator	R&S	SMT 06	832080/007	July 16, 2023
2	Log-Bicon Antenna	Schwarzbeck	VULB9161	4022	July 16, 2023
3	Power Amplifier	AR	150W1000M1	320946	July 16, 2023
4	Microwave Horn Antenna	AR	AT4002A	321467	July 16, 2023
5	Power Amplifier	AR O	25S1G4A	308598	July 16, 2023

SUR	GE, EFT/BURST, VOI	LTAGE INTERRUP	TION/DIPS	NO HOM	HO, ND
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1,0	Surge Generator	EVERFINE	EMS61000-5 A	1101002	July 16, 2023
2	DIPS Generator	EVERFINE	EMS61000-1 1K	1011002	July 16, 2023
140	EFT/B Generator	EVERFINE	EMS61000-4 A-V2	1012005	July 16, 2023

INJECTION CURRENT

NE	Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
3	1	Signal Generator	IFR	2023A	202301/368	July 16, 2023
OND	2	Power Amplifier	AR	75A250AM1	0320709	July 16, 2023
, di	3	CDN	FCC	FCC-801-M2	06043	July 16, 2023
47	4	EM Clamp	FCC	F-203I-23MM	504	July 16, 2023
TOMIC			TOME ME			O ME CIMP
OND		AD 410 .0	y OND HO.	~ HO		HO. ND
20	270		C 100 0.	011		A. Mr.
			no by		40 40	
NO	OND	MONING MON	THE CHILL		The last	MOND NO
NO ,	HOND	THO HOND HO	1 1 (OU)		Olu, D	HOMD HOND
NO NO	HOMO	Jul HOMDHOMD HOL			o om o	HOND HOND HO
NO NO	NO NO	MONDHOND HOME	Michigan Promore		Dan Dan	MOND HOND HO
AOMO MOS	NOND NOND	HONDHOND HONE	Michigan Mondo	HOND HE	ACIND PAC	HOND HOND HON
AD MOND	MOND MOND	MONDHOND HOND	WOMD MOMD WOMD	HOND HE	HOMD NO	HOND HOND HON





. EMC EMISSION TEST

CONDUCTED EMISSION MEASUREMENT

(Frequency Range 150KHz-30MHz) POWER LINE CONDUCTED EMISSION

ſ		Class A	(dBuV)	Class B (dBuV)		
FRE	FREQUENCY (MHz)	Quasi-peak	Average	Quasi-peak	Average	
0	0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	
Γ	0.50 -5.0	73.00	60.00	56.00	46.00	
	5.0 -30.0	73.00	60.00	60.00	50.00	

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

HOND

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz



MOND MOND HOND

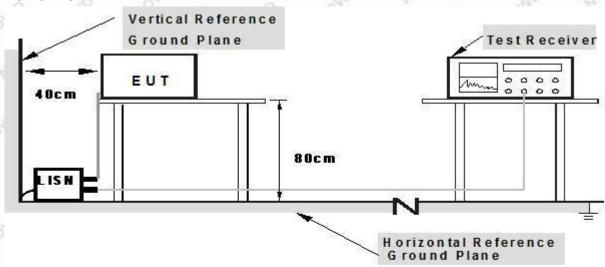
MOND MOND HOND HOND



TEST PROCEDURE

- a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item -EUT Test Photos.

TEST SETUP



Note: 1.Support units were connected to second LISM.

2.Both of LISMs (AMM) are 80 cm from EUT and at least 80 from other units and other metal planes

EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.



TEST RESULTS

EUT:	Three Phase Smart Energy Meter	Model Name. :	DTZY1218
Temperature :	22 °C	Relative Humidity:	52%
Pressure :	1010hPa	Test Date :	2022-12-01
Test Mode:	Mode 1	Phase :	70 70% NO.
Test Voltage :	230V~	OL ON L	0, 40, 0

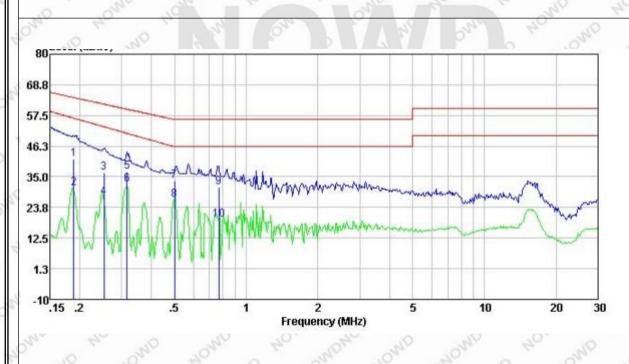
day.								
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
1	MHz	dBu√	dB	dB	dBuV	dBuV	— dB	
1	0.188	31.26	10.07	0.01	41.34	64.11	-22.77	QP
2	0.188	20.88	10.07	0.01	30.96	56.54	-25.58	Average
1 2 3	0.253	26.47	10.01	0.01	36.49	61.64	-25.15	QP
4	0.253	17.46	10.01	0.01	27.48	53.34	-25.86	Average
5	0.317	26.92	9.98	0.01	36.91	59.80	-22.89	QP
6	0.317	22.14	9.98	0.01	32.13			Average
7	0.499	23.62	9.96	0.01	33.59		-22.42	
8	0.499	16.67	9.96	0.01	26.64			Average
4 5 6 7 8 9	0.767	21.36	9.96	0.02	31.34		-24.66	
10	0.767	9.28	9.96	0.02	19.26			Average

Remark:

HO!

Factor = Antenna Factor + Cable Loss.

MOMD





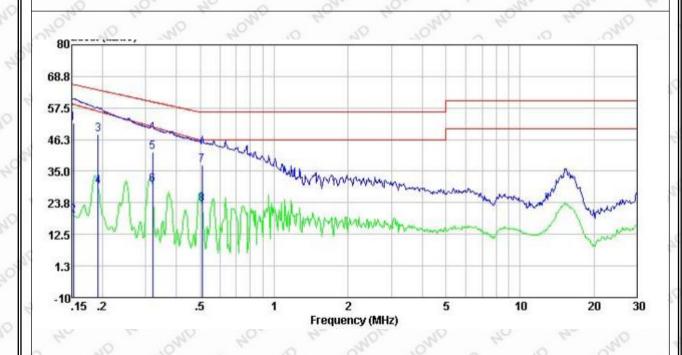
EUT:	Three Phase Smart Energy Meter	Model Name. :	DTZY1218
Temperature :	22 ℃	Relative Humidity:	52%
Pressure:	1010hPa	Test Date :	2022-12-01
Test Mode:	Mode 1	Phase :	N MO 40
Test Voltage :	230V~, 50Hz	in an	HO NO WO

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBu√	d B	dB	dBuV	dBuV	d B	-
1	0.152	41.84	10.15	0.01	52.00	65.87	-13.87	QP
2	0.152	9.17	10.15	0.01	19.33	58.83	-39.50	Average
3	0.192	38.20	10.07	0.01	48.28	63.93	-15.65	QP
4 5 6 7	0.192	19.45	10.07	0.01	29.53	56.31	-26.78	Average
5	0.320	31.85	9.97	0.01	41.83	59.71	-17.88	QP
6	0.320	20.22	9.97	0.01	30.20	50.82	-20.62	Average
7	0.510	27.19	9.96	0.01	37.16	56.00	-18.84	QP
8	0.510	13.13	9.96	0.01	23.10	46.00	-22.90	Average

Remark:

Factor = Antenna Factor + Cable Loss.

HOMD





RADIATED EMISSION MEASUREMENT

LIMITS OF RADIATED EMISSION MEASUREMENT

(Below 1000MHz)

	Clas	ss A	Class B		
FREQUENCY (MHz)	At 10m	At 3m	At 10m	At 3m	
	dBuV/m	dBuV/m	dBuV/m	dBuV/m	
30 – 230	40	50	30	40	
230 – 1000	47	57	37	47	

LIMITS OF RADIATED EMISSION MEASUREMENT

(Above 1000MHz)

	Class A (at	3m) dBuV/m	Class B (at 3m) dBuV/m		
FREQUENCY (MHz)	Peak	Avg	Peak	Avg	
1000-3000	76	56	70	50	
3000-6000	80	60	74	54	

Notes:

- (1) The limit for radiated test was performed according to as following: CISPR 22.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

TEST PROCEDURE

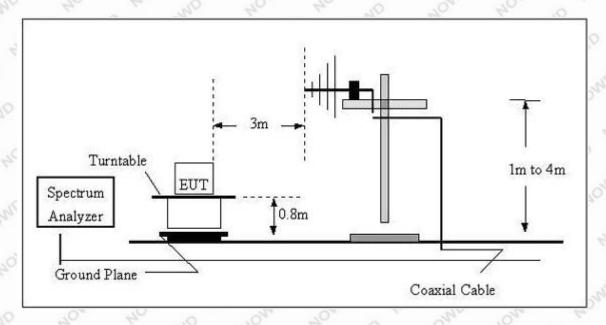
- a. The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item -EUT Test Photos.



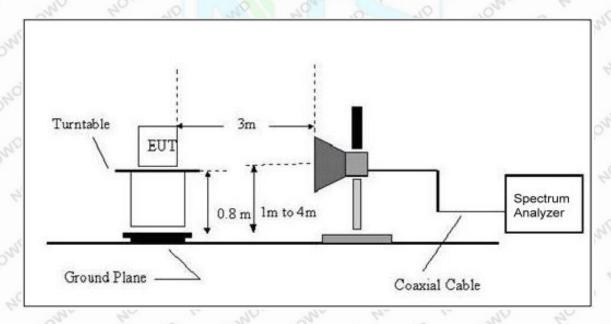
Page 18 of 55 Report No.: NTS2212009E

TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1GHz



EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



TEST RESULTS

HOW

TEST RESULT	S	MO. OH WC TOMO	HOM HO HO
EUT:	Three Phase Smart Energy Meter	Model Name :	DTZY1218
Temperature:	23.2 ℃	Relative Humidity:	52%
Pressure :	1010 hPa	Test Date :	2022-12-01
Test Mode :	Mode 1	Polarization :	Horizontal
Test Power :	230V~, 50Hz	70, 40	10 1010 100

	47.				Preamp			Limit		
		Freq	Level	Factor	Factor	Loss	Level	Line	Limit	Remark
		MHz	dBu∜	dB/m	₫B	₫B	dBuV/m	dBuV/m	dB	
1 2 3		98.833 129.923 259.234	59.54	11.63	36.95	1.44	28.21 35.66 27.11	40.00	-4.34	Peak

Remark:

NO

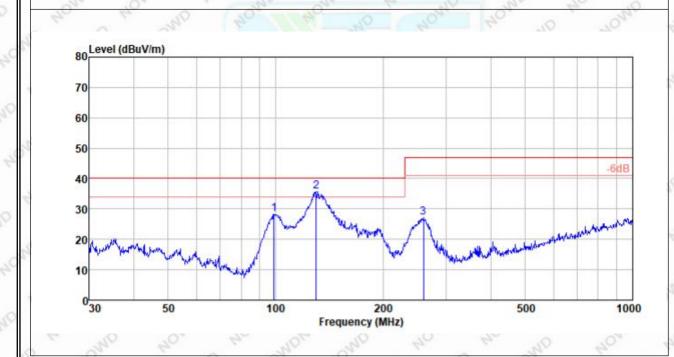
HOND

HOND

Factor = Antenna Factor + Cable Loss.

HOND

HOMD



MOND MOND HOND

HOW

HOND

OWOMOND

MOMD

TOMEHOME MOME MOME

HOND HOND HOM

HOND

MOY NOW

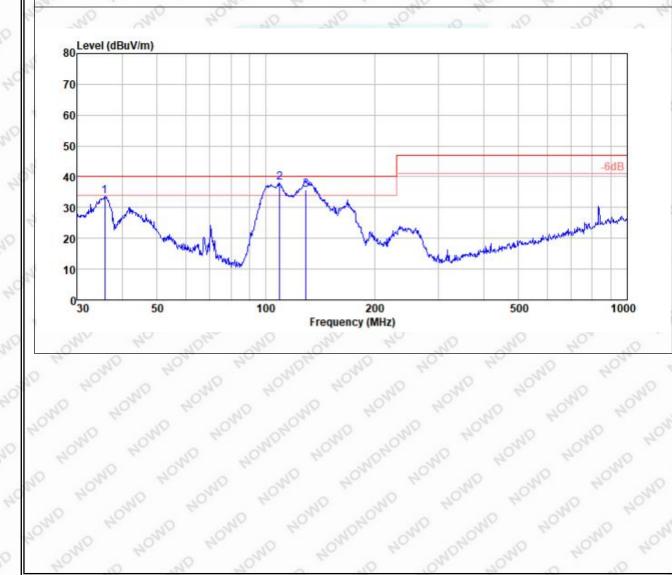


Three Phase Smart Energy EUT: Model Name : **DTZY1218** Meter Temperature: **23.2** ℃ Relative Humidity: 52% Pressure: 1010 hPa 2022-12-01 Test Date: Test Mode : Polarization: Vertical Mode 1 Test Power : 230V~, 50Hz

	10)		Ly					Ly.	
	Freq		Antenna Factor				Limit Line	Over Limit	
	MHz	dBu∜	dB/m	<u>dB</u>	dB	dBuV/m	dBuV/m	dB	
1 2 ! 3 !	35.875 109.029 129.015	63.09	10.41	36.80		37.97		-2.03	Peak

Remark:

Factor = Antenna Factor + Cable Loss.



MOND MOND MONDHOWD

HOND

HOND HOND HOND

HOMB

HOWD

OND

HOND

HOM HOM

HOND



EUT:	Three Phase Smart Energy Meter	Model Name :	DTZY1218
Temperature :	23.2 ℃	Relative Humidity:	52%
Pressure :	1010 hPa	Test Date :	N/A
Test Mode :	N/A	Polarization :	N/A
Test Power :	N/A	Mr B	MD 70% 40

Remark:

MO NO

HOND

HOND

HOND

HOND

MO MO

HOW

The oscillation frequency of the product is lower than 108MHz, it does not apply





HOND HOND

MOND

....NOWD

HOW

HOND HOY

Report No.: NTS2212009E

HOND

MOND

ND MOND

HOMD ,

HOND

HOND

OND

HOMO

OND

DIND



MOMD MOMD

HARMONICS CURRENT

MOMD LIMITS OF HARMONICS CURRENT

HOND

		h 47,	Page 22 o	of 55	Mc	Report No.: NTS221	200
	MONICS CUI S OF HARM		RRENT	HOMD HOMD	MOND MON	THO HOND HOW	
0 4			IEC 5	55-2			
20		Table -	1		Table -	- 11	2
.(0)	Equipment	Harmonic	Max. Permissible	Equipment	Harmonic	Max. Permissible	0
	Category	Order	Harmonic Current	Category	Order	Harmonic Current	
30		n	(in Ampers)		n	(in Ampers)	>
4		Odd	Harmonics		Odd	Harmonics	
		3	2.30		3	0.80	,d
NO		5	1.14		5	0.60	67.
	22.544	7	0.77		7	0.45	
	Non	9	0.40	TV	9	0.30	9
.04	Portable	11	0.33	Receivers	11	0.17	iii
By	Tools	13	0.21		13	0.12	
	or	15≤n≤39	0.15 · 15/n		15≤n≤39	0.10 · 15/n	10
	TV	Even	Harmonics		Even	Harmonics	0"
	Receivers	2	1.08	Ĭ	2	0.30	
		4	0.43		4	0.15	
		8	0.30		50	0.05	0
1		8≤n≤40	0.23 · 8/n		DC	0.05	

50		8≤N≤4U U.23 ·	0/11		DC	0.05	2
"CM	Oh.	the diverse	1 69	.0:	"10" "70"		NO
L. WIL		EN 6	1000-3-2/IEC	61000-3-2			2
40	Equipment	Max. Permissible	Equipment	Harmonic	Max. Per	missible	7010
WO O	Category	Harmonic Current	Category	Order	Harmonic	Current	, , ,
MOME		(in Ampers)		n	(in A)	(mA/w)	.0
400	3	_		3	2.30	3.4	One
N/D	Class A	Same as Limits	Class D	5	1.14	1.9	0
40.	Class A	Specified in 4-2.1, Table - I,	Class D	9	0.77 0.40	1.0 0.5	OW
.00		but only odd		11	0.40	0.35	Ly
20 4		harmonics required		13≤n≤39	see Table I	3.85/n	-2
" VID					dd harmonics r	56	NO.
NO HOND	DAND HOND	MOND MOND HON	D MOND HOND	OMOIND HO	MON ONON	HOND HON	HOND HO
MC MOIND	MO HOMO	MO HOMO HOMO	HOMO HONDHO	HOND H	MOMD HOND	OMO MOMO	HOMO
HOND	HOND	W MOND MON	OND HO	OWD WONO	NO HOS	OND HO	OND



TEST PROCEDURE

a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions.

b. The classification of EUT is according to section 5 of EN 61000-3-2. The EUT is classified as follows:

Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.

Class B: Portable tools. Portable tools.; Arc welding equipment which is not professional equipment.

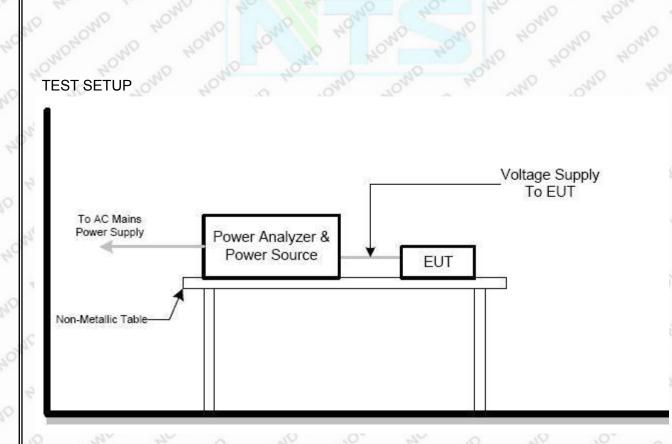
Class C: Lighting equipment.

Class D: Equipment having a specified power less than or equal to 600 W of the following types: Personal computers and personal computer monitors and television

c. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

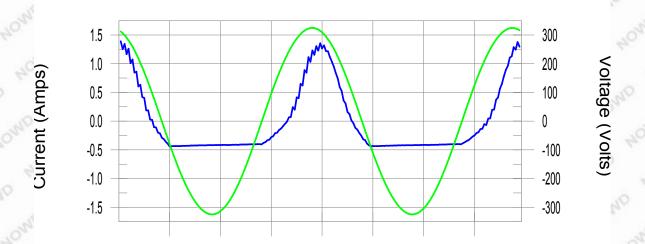




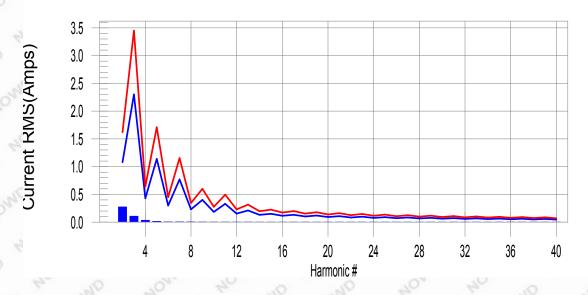
TEST RESULTS

EUT:	Three Phase Smart Energy Meter	Model Name :	DTZY1218
Temperature :	23.2 ℃	Relative Humidity:	52%
Pressure:	1010 hPa	Test Date :	2022-12-01
Test Mode :	Model 1	MD SALD	40° 40 40
Test Power :	230V~, 50Hz	40. 40	"ID "TOA" HO.

Current & voltage waveforms



Harmonics and Class A limit line European Limits



Test result: Pass Worst harmonic was #2 with 22.83% of the limit.



VOLTAGE FLUCTUATION AND FLICKERS

LIMITS OF VOLTAGE FLUCTUATION AND FLICKERS

Tooto	Li	mits	Descriptions	
Tests	IEC555-3	IEC/EN 61000-3-3	Descriptions	
Pst	≤ 1.0, Tp= 10 min.	≤ 1.0, Tp= 10 min.	Short Term Flicker Indicator	
Plt	N/A	≤ 0.65, Tp=2 hr.	Long Term Flicker Indicator	
dc	≤ 3%	≤ 3.3%	Relative Steady-State V-Chang	
dmax	≤ 4%	≤ 4%	Maximum Relative V-change	
d (t)	N/A	≤ 3.3% for > 500 ms	Relative V-change characteristic	

TEST PROCEDURE

a. Harmonic Current Test:

Test was performed according to the procedures specified in Clause 5.0 of IEC555-2 and/or Sub-clause 6.2 of IEC/EN 61000-3-2 depend on which standard adopted for compliance measurement.

b. Fluctuation and Flickers Test:

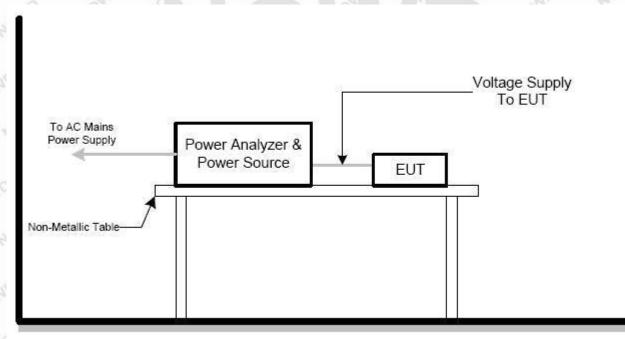
Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 5.0/6.0 of IEC555-3 and/or Clause 6.0/4.0 of IEC/EN 61000-3-3 depend on which standard adopted for compliance measurement.

c. All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

TEST SETUP





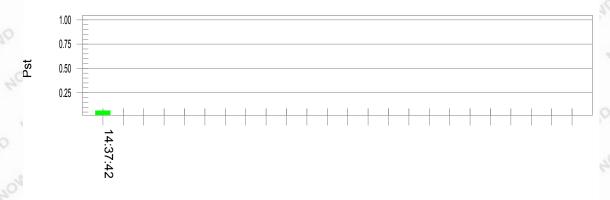
TEST RESULTS

EUT:	Three Phase Smart Energy Meter	Model Name :	DTZY1218	5-
Temperature :	23.2 ℃	Relative Humidity:	52%	4
Pressure :	1010 hPa	Test Date :	N/A	
Test Mode :	N/A	ONLY ME	the way	-,
Test Power :	N/A	and only	No ON W	10

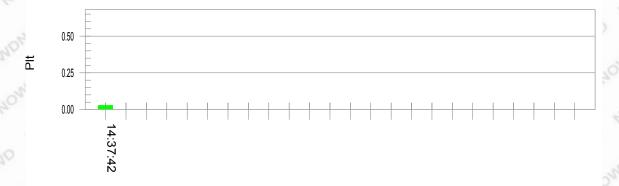
Pst_i and limit line

European Limits

Report No.: NTS2212009E



Plt and limit line



Parameter values recorded during the test:

HOMD

vrms at the end of test (voit): 2	229.85			
Highest dt (%):	0.00	Test limit (%):	3.30	Pass
Time(mS) > dt:	0.0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.00	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650	Pass

HOND

Report No.: NTS2212009E

HOND

HOIND

NO

OWD

NID

OND

SWD

WO

OND

TOND HOND HOME

MON

HOND

HOND

MOND

CMDHOND HOND HOND

MON



AD HOM

HOND

NO

HOWD

MOND

HOND

HOMD

MO

HOND

HO

MO

HOND

HOND

MC

HOND

HO

HOND

HOMOHONO

. EMC IMMUNITY TEST

STANDARD COMPLIANCE/SERVRITY LEVEL/CRITERIA

Tests Standard No.	TEST SPECIFICATION	Test Mode Test Ports	Perform. Criteria
1. ESD IEC/EN 61000-4-2	8KV air discharge 4KV contact discharge	Direct Mode	В
1LC/LIN 0 1000-4-2	4KV HCP discharge 4KV VCP discharge	Indirect Mode	BID
2. RS IEC/EN 61000-4-3	80 MHz to 1000 MHz, 1000Hz, 80%, AM modulated	Enclosure	D A HO
2 EET/Durot	5/50ns Tr/Th 5KHz Repetition Freq.	Power Supply Port	HOWE BUD
3. EFT/Burst IEC/EN 61000-4-4	5/50ns Tr/Th 5KHz Repetition Freq.	CTL/Signal Data Line Port	ND B
4. Surges	1.2/50(8/20) Tr/Th us	L-N	ONIO B
IEC/EN 61000-4-5	1.2/50(8/20) Tr/Th us	L-PE N-PE	Bulb
	0.15 MHz to 80 MHz, 1000Hz 80%, AM Modulated 150Ω source impedance	CTL/Signal Port	POINTA HO
5 Injected Current IEC/EN 61000-4-6	0.15 MHz to 80 MHz, 1000Hz 80%, AM Modulated 150Ω source impedance	AC Power Port	HOND HOND
	0.15 MHz to 80 MHz, 1000Hz 80%, AM Modulated 150Ω source impedance	DC Power Port	And
6. Power Frequency Magnetic Field IEC/EN 61000-4-8	50 Hz,	Enclosure	A
7. Volt. Interruptions Volt. Dips IEC/EN 61000-4-11	Voltage dip 100% Voltage dip 30% Interruption 100%	AC Power Port	B C C

MOND HOND HOND

HOW

HO410

HOND



GENERAL PERFORMANCE CRITERIA

According to EN 61000-6-1 standard, the general performance criteria as following:

Criterion A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
Criterion B	After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended
Criterion C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

GENERAL PERFORMANCE CRITERIA TEST SETUP

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.





ESD TESTING

TEST SPECIFICATION

7 77.5	
Basic Standard:	IEC/EN 61000-4-2
Discharge Impedance:	330 ohm / 150 pF
Required Performance	B HOW ID TOWN HOW
Discharge Voltage:	Air Discharge: 2kV/4kV/8kV (Direct)
	Contact Discharge : 2kV/4kV (Direct/Indirect)
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: min. 20 times at each test point
	Contact Discharge: min. 200 times in total
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

TEST PROCEDURE

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

a. Contact discharge was applied to conductive surfaces and coupling planes of the EUT. During the test, it was performed with single discharges. For the single discharge time between successive single discharges was at least 1 second. The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points. One of the test points shall be subjected to at least 50 indirect discharges to the center of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct contact discharges.

If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode. Test shall be performed at a maximum repetition rate of one discharge per second.

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane. The four faces of the EUT will be performed with electrostatic discharge.

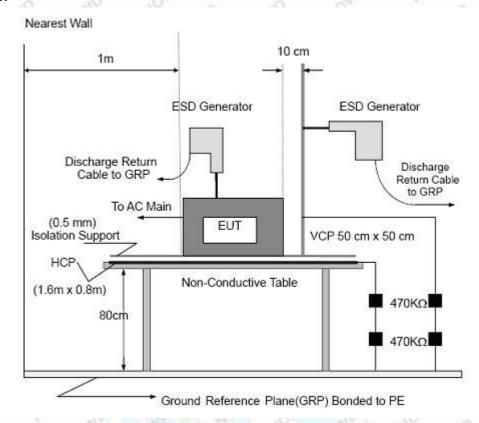
Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane. The four faces of the EUT will be performed with electrostatic discharge.

b. Air discharges at insulation surfaces of the EUT.
 It was at least ten single discharges with positive and negative at the same selected point.



TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940k total impedance. The equipment under test, was installed in a representative system as described in section 7 of IEC /EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of 1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of IEC/EN 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.



TEST RESULTS

EUT:	Three Phase Smart Energy Meter	Model Name :	DTZY1218
Temperature :	23.5 °C	Relative Humidity :	45%
Pressure :	1010 hPa	Test Date :	2022-12-01
Test Mode :	Mode 1	THE OWN	The div.
Test Power :	230V~, 50Hz	40 40	140 HO 40

Mode			Air	Dis	char	rge				C	ont	act [Discl	harg	je			
Test level (kV)	4	4 8 10 15		5	2 4		4	6		8		Criterion	Result					
Test Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-		
HCP	30		NO		~3°	0		10	Α	Α	Α	Α	0		20	2	.0	PASS
VCP		40		- 1	700	3	10		Α	Α	Α	Α		OIL		-3	21/11/20	PASS
Slot	Α	Α	Α	В		70.	2	ND	1943	~3	0		40		-10		NO.	PASS
Panel	Α	Α	Α	В	0		470			40		50	= =	26	20		40 M	PASS
Metal Part	01/2		-	70		NO		00	Α	Α	Α	Α	20		-3	10	BOWL	PASS
Display	Α	Α	Α	В	470					10	10	M			40		ND 2	PASS
7010	_ 3	-	0	ND		On			4		NO		S. S.	0	6	40	NO	NO
CALL CA	×.		4				25	6		470			2	7	10		HON	40

Note:

- 1) +/- denotes the Positive/Negative polarity of the output voltage.
- 2) Test condition:
 - Direct / Indirect (HCP/VCP) discharges: Minimum 50 times (Positive/Negative) at each point. Air discharges: Minimum 10 times (Positive/Negative) at each point.
- 3) Test location(s) in which discharge (Air and contact discharge) to be applied illustrated by photos shown in next page(s)
- 4) The Indirect (HCP/VCP) discharges description of test point as following: 1.left side 2.right side 3.front side 4.rear side
- 5) N/A denotes test is not applicable in this test report



RS TESTING

TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-3
Required Performance	A
Frequency Range:	80 MHz - 1000 MHz
Field Strength:	3 V/m
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Polarity of Antenna:	Horizontal and Vertical
Test Distance:	3 m
Antenna Height:	1.5 m
Dwell Time:	at least 3 seconds

TEST PROCEDURE

The EUT and support equipment, which are placed on a table that is 0.8 meter above ground and the testing was performed in a fully-anechoic chamber.

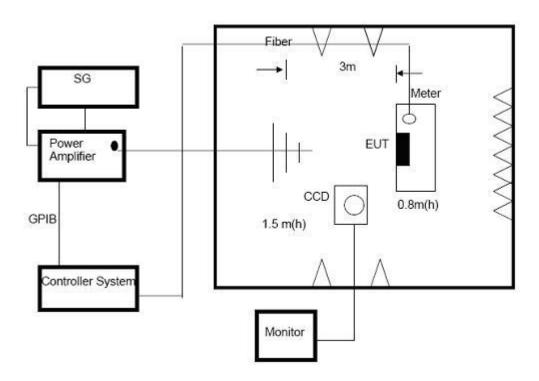
The testing distance from antenna to the EUT was 3 meters.

The other condition as following manner:

- a. The frequency range is swept from 80 MHz to 1000 MHz, & 1400MHz 2700MHz with the signal 80%amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10-3 decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- b. Sweep Frequency 900 MHz, with the Duty Cycle:1/8 and Modulation: Pulse 217 Hz(if applicable)
- c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- d. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.



TEST SETU



Note:

TABLE-TOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

HOND HOND HOND HOND



TEST RESULTS

EUT:	Three Phase Smart Energy Meter	Model Name :	DTZY1218
Temperature :	23.5 ℃	Relative Humidity:	60%
Pressure :	1010 hPa	Test Date :	2022-12-01
Test Mode :	Mode 1	The one	40 NO WO
Test Power :	230V~, 50Hz	40 40	NO HOT HO

		76,790					
	Frequency Range	RF Field	R.F.	Azimuth	Perform.	Results	Judgment
3	(MHz)	Position	Field Strength	AZIIIIUUI	Criteria	Results	Judgment
	OND GIND	HOME MD	and to	Front	-MO 41	MOMO	
	AC HOWD	ND NO WD	3 V/m (rms)	Rear	MO. NOME	, 40°	
0.	80MHz - 1000MHz	H/V	AM Modulated 1000Hz, 80%	Left	MD 4	OWA	PASS
10	DIND ON DIND	HOMO I	HOMIN HO	Right	HOMO	HOME	

Note:

- 1) N/A denotes test is not applicable in this test report.
- 2) Criteria A: There was no change operated with initial operating during the test.
- 3) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 4) Criteria C: The system shut down during the test.

HOMD



HOND HOND HOND

HOND

MOND HOND



EFT/BURST TESTING

TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-4
Required Performance	B ND NOWE AT D
Test Voltage:	Power Line : 1 kV Signal/Control Line : 0.5 KV
Polarity:	Positive & Negative
Impulse Frequency:	5 kHz
Impulse Wave shape :	5/50 ns
Burst Duration:	15 ms
Burst Period:	300 ms
Test Duration:	Not less than 1 min.

TEST PROCEDURE

The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.

The other condition as following manner:

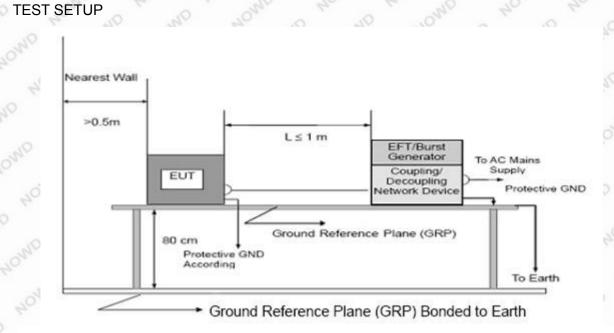
- a. The length of power cord between the coupling device and the EUT should not exceed 1 meter.
- b. Both positive and negative polarity discharges were applied.
- c. The duration time of each test sequential was 1 minute

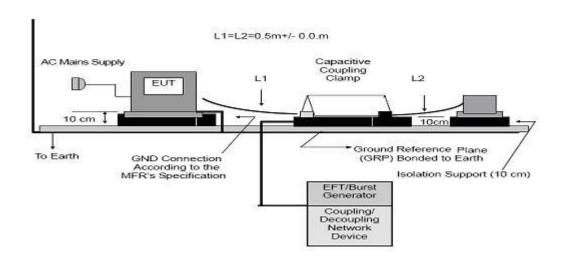


MOND HOND HOND

HOND







Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table (0.8m high) standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system. A minimum distance of 0.5m was provided between the EUT and the walls of the laboratory or any other metallic structure.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-4 and its cables, were isolated from the Ground Reference Plane by an insulating support that is 0.1-meter thick. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system.



TEST RESULTS

EUT:	Three Phase Smart Energy Meter	Model Name :	DTZY1218
Temperature :	23.5 ℃	Relative Humidity:	60%
Pressure:	1010 hPa	Test Date :	2022-12-01
Test Mode :	Mode 1	in our	40 MD - MD
Test Power :	230V~, 50Hz	40 40	MD MOS MO

					Test lev	/el (kV)					
Cou	ıpling Line	0	.5		1	2	2		4	Criterion	Result
		+	-	+	-	+	-	+	-		
.,0	NO F 40	Α	Α	A	A	NO.		0	HOME	.10 PM	PASS
1	N	Α	Α	A	А	40.	40	OND	4	22, Ho	PASS
100	PE	A	Α	Α	Α	4011	.0	100 V	NO	40MD	PASS
AC line	L+N	Α	Α	Α	A	,	7011	10	NO	MONE	PASS
0 4	L+PE	A	Α	Α	Α	CAND	100		40	DA 4	PASS
	N+PE	Α	Α	Α	Α	.01	10	ON	Mo	OWD	PASS
101/1	L+N+PE	Α	A	Α	Α	0 10	NO	10	200	40 .0	PASS
	OC Line	200	HO.	ND	401	7.	0,0	0	TOME	HOW	10 10
Siç	gnal Line	101/10	41	- ~13 D	10	MO	MOA	NO.	2	10 HC	10.

Note:

- 1) +/- denotes the Positive/Negative polarity of the output voltage.
- 2) N/A denotes test is not applicable in this test report
- 4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.

 5) Criteria C: The system shut down during the test

MOND HOND



SURGE TESTING

TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-5			
Required Performance	В			
Wave-Shape:	Combination Wave			
	1.2/50 us Open Circuit Voltage			
	8 /20 us Short Circuit Current			
Test Voltage:	Power Line: 0.5 kV, 1 kV, 2 kV			
Surge Input/Output:	L-N, L-PE, N-PE			
Generator Source:	2 ohm between networks			
Impedance:	12 ohm between network and ground			
Polarity:	Positive/Negative			
Phase Angle:	0 /90/180/270°			
Pulse Repetition Rate:	1 time / min. (maximum)			
Number of Tests:	5 positive and 5 negative at selected points			

TEST PROCEDURE

- a. For EUT power supply:
 - The surge is to be applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks shall be 2meters in length (or shorter).
- b. For test applied to unshielded unsymmetrically operated interconnection lines of EUT: The surge is applied to the lines via the capacitive coupling. The coupling /decoupling networks shall not influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).
- c. For test applied to unshielded symmetrically operated interconnection /telecommunication lines of EUT:
- d. The surge is applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrestor cannot be specified. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).



HONDHOND

MO

HOND

ND

HOND

HOND

MD

OND

OND

HOW

ONDHOND HOND HOND

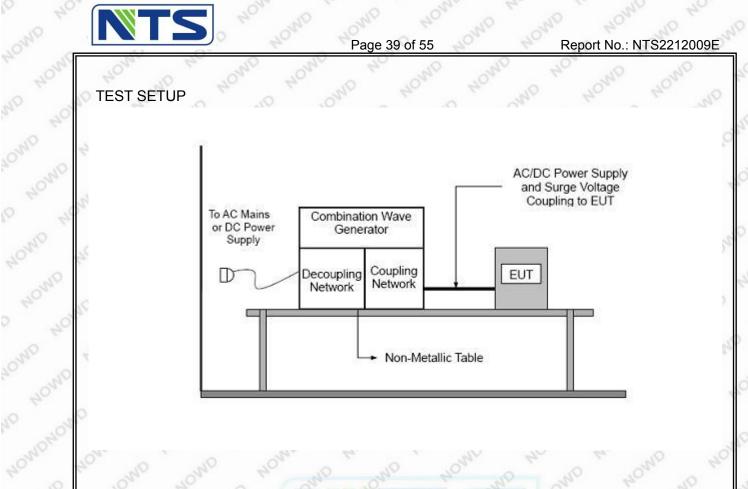
MO

MOND

MOND

HOND HOND HOM

HOND







MOND

MON

ND



TEST RESULTS

EUT:	Three Phase Smart Energy Meter	Model Name :	DTZY1218
Temperature :	23.5 ℃	Relative Humidity:	60%
Pressure:	1010 hPa	Test Date :	2022-12-01
Test Mode :	Mode 1	and one	HO WO WO
Test Power :	230V~, 50Hz	40 40	MD HOS HO

2-3				-10	6.9				_(0	
				Tes	t level					
g Line	0.5	kV	1	kV	2	kV	4	kV	Criterion	Result
	+	-	+	-	+	-	+	-		
0°	Α	A	В	В	,	ON	400	20	7011	240
90°	Α	A	В	В	NO	ani	9	70%	alD la	PASS
180°	Α	Α	В	В	0	Mo	NO	47	21 4C	PASS
270°	Α	Α	В	В	101/1/	7		NO	CAND	40%
0°	Α	Α	В	В		140	40	_	ME CIND	1
_ 90°	Α	A	В	В	0 4	- 64	Ø.	ONL	В	PASS
180°	Α	Α	В	В	550	1	.0	.0	100 H	PASS
270°	Α	Α	В	В	102/	-	0,00	0 6	OWD	JONE
0°	Α	Α	В	В		Ola	100		Page 10	, (0
90°	A	Α	ОВ	В	40	-11	0	TON	40%	PASS
180°	Α	Α	В	В	110	400	OL	-0	10 20	1 700
270°	A	Α	В	В	ND.		10/1	40.	40	70M
ine	470	150	65	P	160	NO	100		40%	,
Line				a P	NA			0	400	40
	90° 180° 270° 0° 90° 180° 270° 0° 90° 180° 180°	0° A 90° A 180° A 270° A 90° A 180° A 270° A	1 0° A A 180° A A 180° A A 270° A A 180° A A 270° A A 180° A A 180° A A 270° A A 180° A A 270° A A 270° A A 180° A A 270° A A 180° A A 180° A A 270° A A	1	g Line 0.5 kV 1 kV + - + - <t< td=""><td> 1</td><td> O</td><td> O O O O O O O O O O</td><td> O O O O O O O O O O</td><td> S S S S S S S S S S</td></t<>	1	O	O O O O O O O O O O	O O O O O O O O O O	S S S S S S S S S S

Note:

- 1) Polarity and Numbers of Impulses: 5 Pst / Ngt at each tested mode
- 2) N/A denotes test is not applicable in this Test Report
- 3) Criteria A: There was no change operated with initial operating during the test.
 4) Criteria B: The FLIT function loss during the test.
- 4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 5) Criteria C: The system shut down during the test.



INJECTION CURRENT TESTING

TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-6
Required Performance	A
Frequency Range:	0.15 MHz - 80 MHz
Field Strength:	3 Vr.m.s.
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Dwell Time:	at least 3 seconds

TEST PROCEDURE

The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.

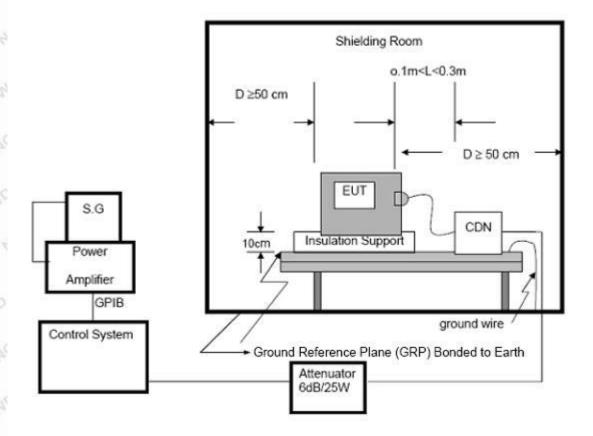
The other condition as following manner:

- a. The frequency range is swept from 150 KHz to 80 MHz, with the signal 80% amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10-3 decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- b. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.





TEST SETUP



NOTE:

FLOOR-STANDING EQUIPMENT

ND

HOND

The equipment to be tested is placed on an insulating support of 0.1 meters height above a ground reference plane. All relevant cables shall be provided with the appropriate coupling and decoupling devices at a distance between 0.1 meters and 0.3 meters from the projected geometry of the EUT on the ground reference plane.

HOND HOND HOND

ONDHOND HOND HOND



TEST RESULTS

EUT:	Three Phase Smart Energy Meter	Model Name :	DTZY1218
Temperature :	23.5 °C	Relative Humidity :	60%
Pressure :	1010 hPa	Test Date :	2022-12-01
Test Mode :	Mode 1	THE OWN	HO NO WO
Test Power :	230V~, 50Hz	40 40	MD MON MO

Test Ports (Mode)	Freq. Range MHz)	Field Strength	Perform. Criteria	Results	Judgment
Input/ Output AC. Power Port	0.1580	2)/ (rma)	HOMO WE	OND A HO	PASS
Input/ Output DC. Power Port	0.15 80	3V (rms) AM Modulated	AND A OND	N/A	N/A
Signal Line	0.15 80	1000Hz, 80%	HOMO A HO	N/A	N/A

Note:

- 1) N/A denotes test is not applicable in this Test Report.
- 2) Criteria A: There was no change operated with initial operating during the test.
- 3) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 4) Criteria C: The system shut down during the test.



HOND HOND HOND



POWER FREQUENCY MAGNETIC FIELD TESTING

TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-8
Required Performance	Α
Frequency Range:	50Hz
Field Strength:	1 A/m
Observation Time:	1 minute
Inductance Coil:	Rectangular type, 1mx1m

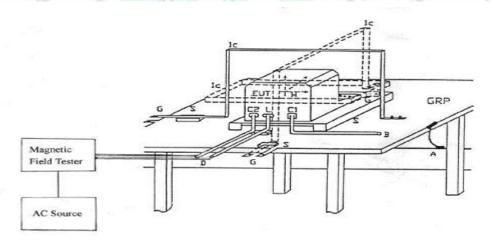
TEST PROCEDURE

The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.

The other condition as following manner:

- a. The equipment cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT.
- b. The cables supplied or recommended by the equipment manufacturer shall be used. 1 meter of all cables used shall be exposed to the magnetic field.

TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The equipment shall be subjected to the test magnetic field by using the induction coil of standard dimension (1 m \times 1 m). The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

FLOOR-STANDING EQUIPMENT

The equipment shall be subjected to the test magnetic field by using induction coils of suitable dimensions. The test shall be repeated by moving and shifting the induction coils, in order to test the whole volume of the EUT for each orthogonal direction. The test shall be repeated with the coil shifted to different positions along the side of the EUT, in steps corresponding to 50 % of the shortest side of the coil. The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.



TEST RESULTS

EUT:	Three Phase Smart Energy Meter	Model Name :	DTZY1218
Temperature :	23.5 ℃	Relative Humidity:	60%
Pressure:	1010 hPa	Test Date :	2022-12-01
Test Mode :	Mode 1	THE SHE	The one one
Test Power :	230V~, 50Hz	40 40	"MD "MO" "MO

	47.7				43.7	417
Test Mode	Test Level	COMPUTE R CASE aspect	Duration (s)	Perform Criteria	Results	Judgment
Enclosure	1 A/m	X	60 s	ID A OND	A O INT	Pass
Enclosure	1 A/m	NOTE OF	60 s	ONO A N	OWD AND	Pass
Enclosure	1 A/m	z	60 s	A A	O A MO	Pass

Note:

- 1) N/A denotes test is not applicable in this test report
- 3) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
 4) Criteria C: The system shut down during the test.

HOMD



HOND HOND HOND



VOLTAGE INTERRUPTION/DIPS TESTING

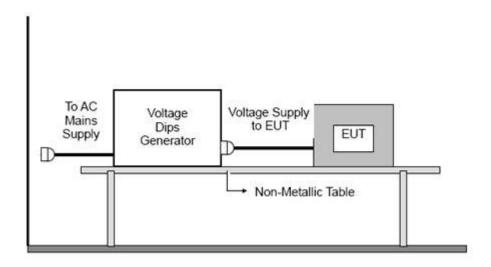
TEST SPECIFICATION

2				
Basic Standard:	IEC/EN 61000-4-11			
Required Performance	B (For 100% Voltage Dips)			
	C (For 30% Voltage Dips)			
	C (For 100% Voltage Interruptions)			
Test Duration Time:	Minimum three test events in sequence			
Interval between Event:	Minimum ten seconds			
Phase Angle:	0°/45°/90°/135°/180°/225°/270°/315°/360°			
Test Cycle:	3 times			

TEST PROCEDURE

The EUT shall be tested for each selected combination of test levels and duration with a sequence of three dips/interruptions with intervals of 10 s minimum (between each test event). Each representative mode of operation shall be tested. Abrupt changes in supply voltage shall occur at zero crossings of the voltage waveform.

TEST SETUP





TEST RESULTS

EUT:	Three Phase Smart Energy Meter	Model Name :	DTZY1218	
Temperature :	23.5 °C	Relative Humidity :	: 60% 2022-12-01	
Pressure :	1010 hPa	Test Date :		
Test Mode :	Mode 1	THE ONL	HO NO WO	
Test Power :	230V~, 50Hz	40 40	MD MON MO	

	Test Level % U _T	Voltage Dips & Voltage Interruptions % U _T	Duration (in periods)	Criterion □ A ⋈ B ⋈ C □ D	Result P=PASS F=FAIL
-	ONIO NON	100	0.5P	В	HOMP HO
	40	60	10P	C	P _M D P
	70	30	25P	C C	OND P HOND
	NA CIND	TOMO HOME	MOND HOND	D HO	HOND WE HE
	OWON.	MON CALL WAY	THOMO WO	ino ho	NO HOS

Note:

- 2) Criteria A: There was no change operated with initial operating during the test.

 3) Criteria B: The EUT function loss during the test. 3) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
 4) Criteria C: The system shut down during the test.

HOND HOND HOND HOND

MOND HOND HOND

4) Criteria C: The system shut down during the test.



Report No.: NTS2212009E HOND HE

. EUT TEST PHOTO

HOND

MD

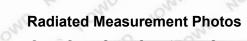
HOWD

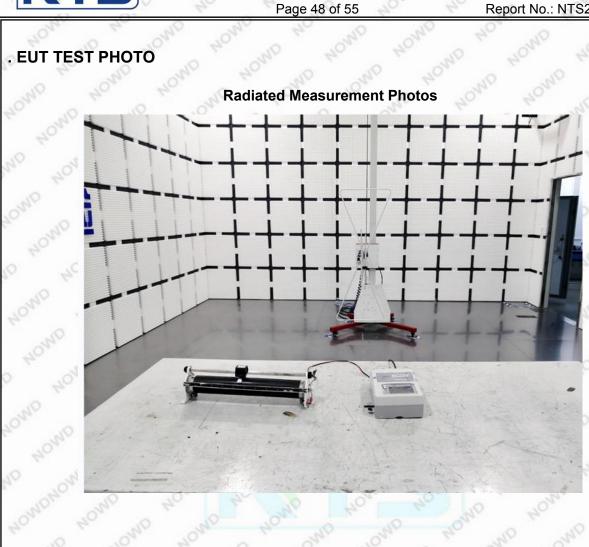
D

HOND

HOND

HOND





HOND HOMDHOND HOMD MOND HOND MOND HOND MOND HOND HOND HOND HOND HOND HOND MOND MOND MOND HOND MOND WOND WOND WOND WOND WOND HOND HOND HONDH

HOND HOND HOND HOND HOND



MD

HOND

NO

NO

HOMO

MON HON

HOMD HOW Report No.: NTS2212009E

NO

HOV

HOY HOY

HOND

MOW HOW

PACHOND

HOND

OND

ATTACHMENT PHOTOGRAPHS OF EUT

Photo 1

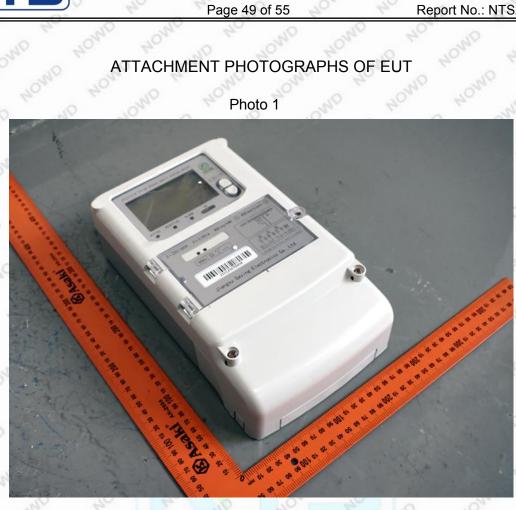


Photo 2



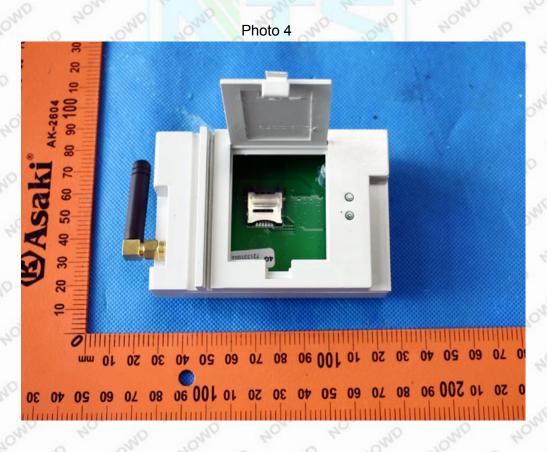
NO NO

HOW













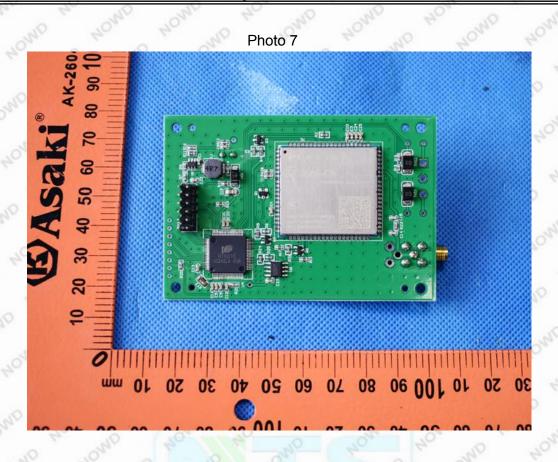


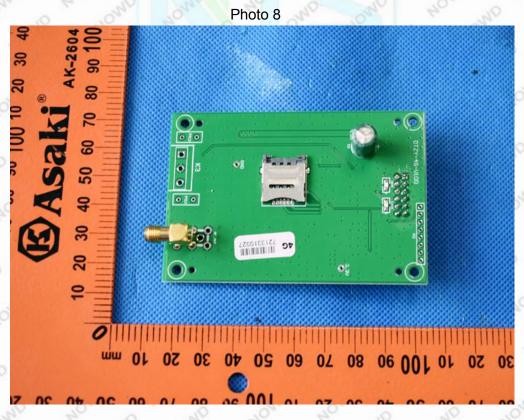
















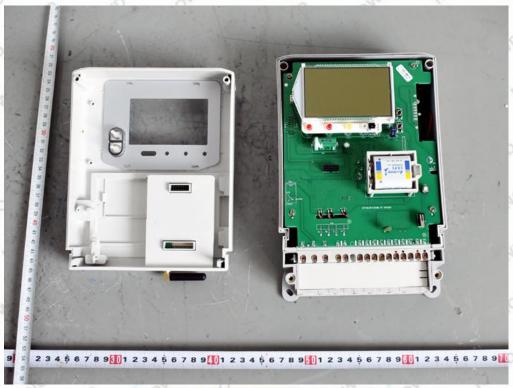


Photo 10

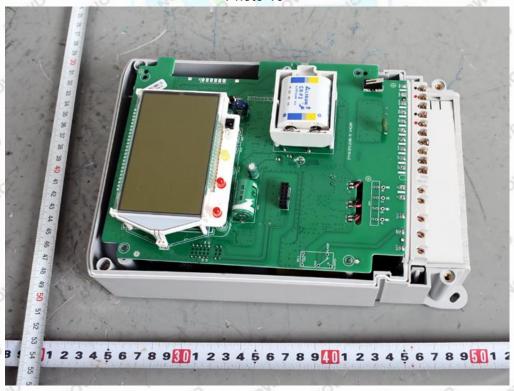






Photo 11

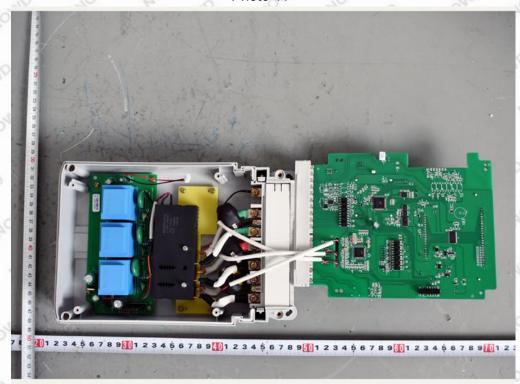
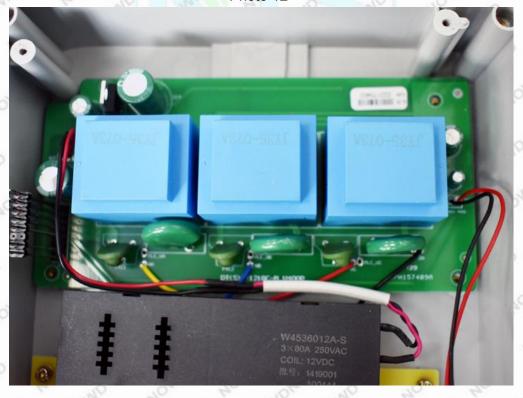
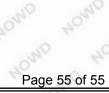


Photo 12





HOND

HOND



NO

HOND

AD HOM

HO'10

MONIO

NO HOND

MOMBMON

HOND

HOND

HOND

HOMD HOY MOND Report No.: NTS2212009E

HOMD

OND

HOND

OWD

HOWD

HOMO

HOMD

HOMD HOMD HOMD HOMD HE WAS A STATE OF THE WAS A STA

HOWD

HOW





