



EMC TEST REPORT

ETSI EN 301 489-1 V2.2.3:2019

ETSI EN 301 489-17 V3.2.4:2020

Product : Translation machine

Trade Name : N/A

Model Name : T4

Report No. : LTR2502057E02

Prepared for

Shenzhen MSAI Technology Co., Ltd.

Factory 401, Building C11, Xin 'an Second Industrial Zone, GuxingCommunity,
Xixiang Street, Baoan District, Shenzhen

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name : Shenzhen MSAI Technology Co., Ltd.
Address..... : Factory 401, Building C11, Xin 'an Second Industrial Zone,
GuxingCommunity, Xixiang Street, Baoan District, Shenzhen
Manufacture's name : Shenzhen MSAI Technology Co., Ltd.
Address..... : Factory 401, Building C11, Xin 'an Second Industrial Zone,
GuxingCommunity, Xixiang Street, Baoan District, Shenzhen

Product description

Product name : Translation machine
Trademark : N/A
Model and/or type reference : T4
Serial Model : N/A

Standards : ETSI EN 301 489-1 V2.2.3:2019
ETSI EN 301 489-3 V2.3.0:2022
ETSI EN 301 489-17 V3.2.4:2020

Date of Test:

Date (s) of performance of tests: 2024-04-19 to 2024-04-19

Date of Issue: 2025-02-26

Test Result.....: **Pass**

Tested by

:

Sunny Yuan

Approved by

:

Kevin Huang



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1. TEST SUMMARY

Test procedures according to the technical standards:

ETSI EN 301 489-1 V2.2.3:2019

ETSI EN 301 489-17 V3.2.4:2020

EMC Emission			
Standard	Test Item	Judgment	Remark
EN 55032	Conducted Emission	PASS	
	Radiated Emission	PASS	
EN61000-3-2	Harmonic Current Emission	PASS	
EN 61000-3-3	Voltage Fluctuations & Flicker	PASS	
EMC Immunity			
Section	Test Item	Judgment	Remark
EN 61000-4-2	Electrostatic Discharge	PASS	
EN 61000-4-3	RF electromagnetic field	PASS	
EN 61000-4-4	Fast transients	PASS	
EN 61000-4-5	Surges	PASS	
EN 61000-4-6	Injected Current	PASS	
EN 61000-4-11	Volt. Interruptions Volt. Dips	PASS	

NOTE:

- (1) "N/A" denotes test is not applicable in this Test Report
- (2) The power consumption of EUT is less than 75W and no Limits apply.
- (3) Voltage dip: 100% reduction – Performance Criteria **B**
 Voltage dip: 30% reduction – Performance Criteria **C**
 Voltage Interruption: 100% Interruption – Performance Criteria **C**
- (4) For client's request and manual description, the test will not be executed.

1.1 TEST FACILITY

1.2 MEASUREMENT UNCERTAINTY

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

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U · (dB)	NOTE
C01	ANSI	150 KHz ~ 30MHz	3.2	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	U · (dB)	NOTE
A01	ANSI	30MHz ~ 1000MHz	4.7	
		1GHz ~6GHz	5.0	

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Translation machine
Trade Name	N/A
Model Name	T4
Serial Model	N/A
Frequency Bands:	2402~2480 MHz
Modulation Mode:	GFSK
Power Rating	DC5V
Battery	N/A
Antenna:	PCB Antenna
Connecting I/O Port(s)	Please refer to the User's Manual
Hard Ware Version	V1.0
Soft Ware Version	V1.0

This report is amended from the previous report LTR24041965E28, which was issued on Apr. 30, 2024, due to below amendments:

- Updated Applicant and Address: Shenzhen MSAI Technology Co., Ltd.

Factory 401, Building C11, Xin 'an Second Industrial Zone, GuxingCommunity, Xixiang Street, Baoan District, Shenzhen

- Added additional photo

No test requirement.

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.1 DESCRIPTION OF TEST MODES

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

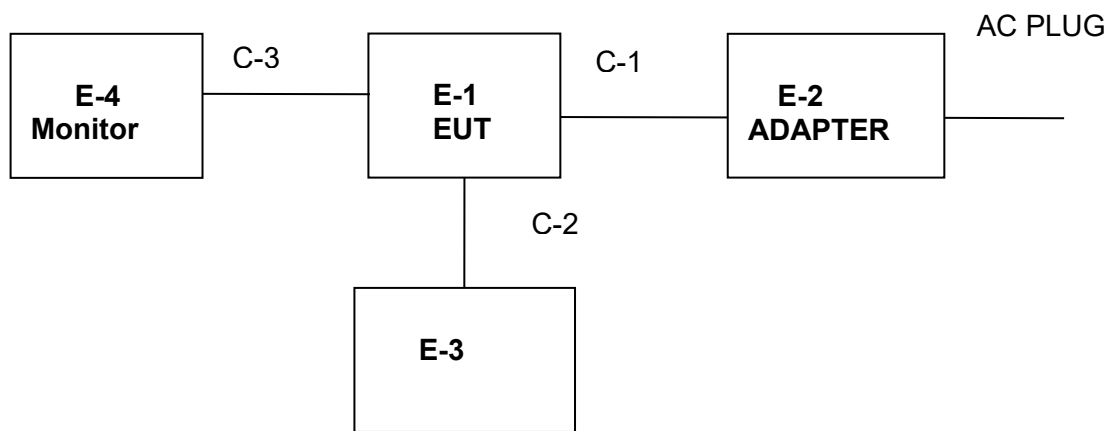
Pretest Mode	Description
Mode 1	Running Mode
Mode 2	BT Mode
Mode 3	USB PLAYING Mode

For Radiated Test	
Final Test Mode	Description
Mode 1	Running Mode

For EMS Test	
Final Test Mode	Description
Mode 1	Running Mode
Mode 2	BT Mode
Mode 3	USB PLAYING Mode

NOTE: The test modes were carried out for all operation modes. The final test mode of the EUT was the worst test mode for EMI, and its test data was showed.

2.2 DESCRIPTION OF TEST SETUP



2.3 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.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	Translation machine	N/A	T4	sagatronics ultra, sagatronics edge, sagatronics pro	EUT

Item	Shielded Type	Ferrite Core	Length	Note

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.

2.4 MEASUREMENT INSTRUMENTS LIST

2.4.1 CONDUCTED EMISSION

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	LISN	R&S	ENV216	101313	May. 06, 2023	May. 05, 2024	1 year
2	LISN	SCHWARZBECK	NNLK 8129	8129245	May. 06, 2023	May. 05, 2024	1 year
3	Pulse Limiter	SCHWARZBECK	VTSD 9561F	9716	May. 06, 2023	May. 05, 2024	1 year
4	50Ω Switch	ANRITSU CORP	MP59B	6200983704	May. 06, 2023	May. 05, 2024	1 year
5	Test Cable	N/A	C01	N/A	May. 06, 2023	May. 05, 2024	1 year
6	Test Cable	N/A	C02	N/A	May. 06, 2023	May. 05, 2024	1 year
7	Test Cable	N/A	C03	N/A	May. 06, 2023	May. 05, 2024	1 year
8	EMI Test Receiver	R&S	ESCI	101160	May. 06, 2023	May. 05, 2024	1 year
9	Passive Voltage Probe	ESH2-Z3	R&S	100196	May. 06, 2023	May. 05, 2024	1 year
10	Triple-Loop Antenna	EVERFINE	LIA-2	11020003	May. 06, 2023	May. 05, 2024	1 year
11	Absorbing Clamp	R&S	MDS-21	100423	May. 06, 2023	May. 05, 2024	1 year

2	LISN	SCHWARZBECK	NNLK 8129	8129245	May. 06, 2023	May. 05, 2024	1 year
3	Pulse Limiter	SCHWARZBECK	VTSD 9561F	9716	May. 06, 2023	May. 05, 2024	1 year

2.4.2 RADIATED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Bilog Antenna	TESEQ	CBL6111D	31216	May. 06, 2023	May. 05, 2024	1 year
2	Test Cable	N/A	R-01	N/A	May. 06, 2023	May. 05, 2024	1 year
3	Test Cable	N/A	R-02	N/A	May. 06, 2023	May. 05, 2024	1 year
4	EMI Test Receiver	R&S	ESCI-7	101318	May. 06, 2023	May. 05, 2024	1 year
5	Antenna Mast	EM	SC100_1	N/A	N/A	N/A	N/A
6	Turn Table	EM	SC100	060531	N/A	N/A	N/A
7	50Ω Switch	Anritsu Corp	MP59B	6200983705	May. 06, 2023	May. 05, 2024	1 year
8	Spectrum Analyzer	Agilent	E4407B	MY45108040	May. 06, 2023	May. 05, 2024	1 year
9	Horn Antenna	EM	EM-AH-10180	2011071402	May. 06, 2023	May. 05, 2024	1 year
10	Amplifier	EM	EM-30180	060538	May. 06, 2023	May. 05, 2024	1 year

2	Test Cable	N/A	R-01	N/A	May. 06, 2023	May. 05, 2024	1 year
3	Test Cable	N/A	R-02	N/A	May. 06, 2023	May. 05, 2024	1 year

2.4.3 HARMONICS AND FILCK

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Harmonic & Flicker	EM TEST	DPA500	0303-04	May. 06, 2023	May. 05, 2024	1 year
2	AC Power Source	EM TEST	ACS500	0203-01	May. 06, 2023	May. 05, 2024	1 year

2.4.4 ESD

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	ESD TEST GENERATOR	SCHAFFNER	NSG438	859	May. 06, 2023	May. 05, 2024	1 year

2.4.5 RS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Signal Generator	R&S	SMT 06	832080/007	May. 06, 2023	May. 05, 2024	1 year
2	Log-Bicon Antenna	Schwarzbeck	VULB9161	4022	May. 06, 2023	May. 05, 2024	1 year
3	Power Amplifier	AR	150W1000M1	320946	May. 06, 2023	May. 05, 2024	1 year
4	Microwave Horn Antenna	AR	AT4002A	321467	May. 06, 2023	May. 05, 2024	1 year
5	Power Amplifier	AR	25S1G4A	308598	May. 06, 2023	May. 05, 2024	1 year
6	Universal radio communication tester	R&S	CMU200	1100.008.02	May. 06, 2023	May. 05, 2024	1 year
7	Audio Power Amplifier	Brüel & Kjær	4602B	2185667	May. 06, 2023	May. 05, 2024	1 year
8	Mouth Simulator	Brüel & Kjær	2669	2143265	May. 06, 2023	May. 05, 2024	1 year
9	Sound Calibrator	Brüel & Kjær	4185	2194825	May. 06, 2023	May. 05, 2024	1 year
10	1/2" Pressure-field Microphone	Brüel & Kjær	735	2641678	May. 06, 2023	May. 05, 2024	1 year
11	Audio Analyzer	R&S	UPV	100419	May. 06, 2023	May. 05, 2024	1 year
12	Ear Simulator	Brüel & Kjær	4185	2553612	May. 06, 2023	May. 05, 2024	1 year

	for Telephony						
13	Telephone Test Head	Brüel & Kjær	4185	2631728	May. 06, 2023	May. 05, 2024	1 year

2.4.6 SURGE, EFT/BURST, VOLTAGE INTERRUPTION/DIPS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Surge Generator	EVERFINE	EMS61000-5A	1101002	May. 06, 2023	May. 05, 2024	1 year
2	DIPS Generator	EVERFINE	EMS61000-11K	1011002	May. 06, 2023	May. 05, 2024	1 year
3	EFT/B Generator	EVERFINE	EMS61000-4A-V2	1012005	May. 06, 2023	May. 05, 2024	1 year

2.4.7 INJECTION CURRENT

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Signal Generator	IFR	2023A	202301/368	May. 06, 2023	May. 05, 2024	1 year
2	Power Amplifier	AR	75A250AM1	0320709	May. 06, 2023	May. 05, 2024	1 year
3	CDN	FCC	FCC-801-M2	06043	May. 06, 2023	May. 05, 2024	1 year
4	EM Clamp	FCC	F-203I-23MM	504	May. 06, 2023	May. 05, 2024	1 year
5	Universal radio communication tester	R&S	CMU200	1100.008.02	May. 06, 2023	May. 05, 2024	1 year
6	Universal radio communication tester	R&S	CMU200	1100.008.02	May. 06, 2023	May. 05, 2024	1 year
7	Audio Power Amplifier	Brüel & Kjær	4602B	2185667	May. 06, 2023	May. 05, 2024	1 year
8	Mouth Simulator	Brüel & Kjær	2669	2143265	May. 06, 2023	May. 05, 2024	1 year
9	Sound Calibrator	Brüel & Kjær	4185	2194825	May. 06, 2023	May. 05, 2024	1 year
10	1/2" Pressure-field Microphone	Brüel & Kjær	735	2641678	May. 06, 2023	May. 05, 2024	1 year
11	Audio Analyzer	R&S	UPV	100419	May. 06, 2023	May. 05, 2024	1 year
12	Ear Simulator for Telephony	Brüel & Kjær	4185	2553612	May. 06, 2023	May. 05, 2024	1 year

	metry						
13	Telephone Test Head	Brüel & Kjær	4185	2631728	May. 06, 2023	May. 05, 2024	1 year

2.4.8 MF

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibra tion period
1	Generator	EVERFINE	EMS61000-8K	1007001	May. 06, 2023	May. 05, 2024	1 year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

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

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
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.

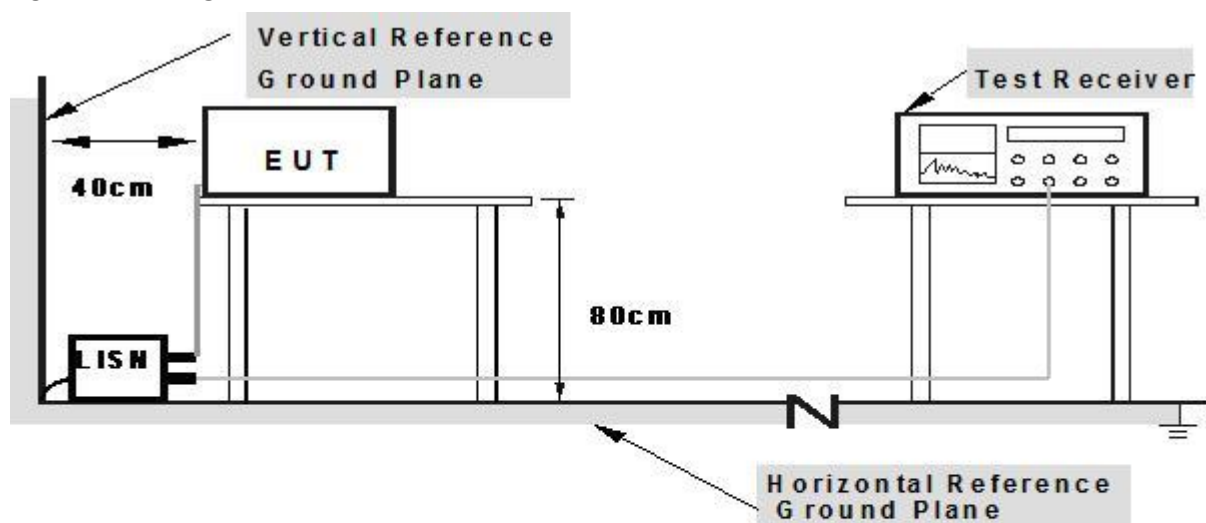
The following table is the setting of the receiver

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

3.1.2 TEST PROCEDURE

- The EUT was placed 0.8 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.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 TEST SETUP



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

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

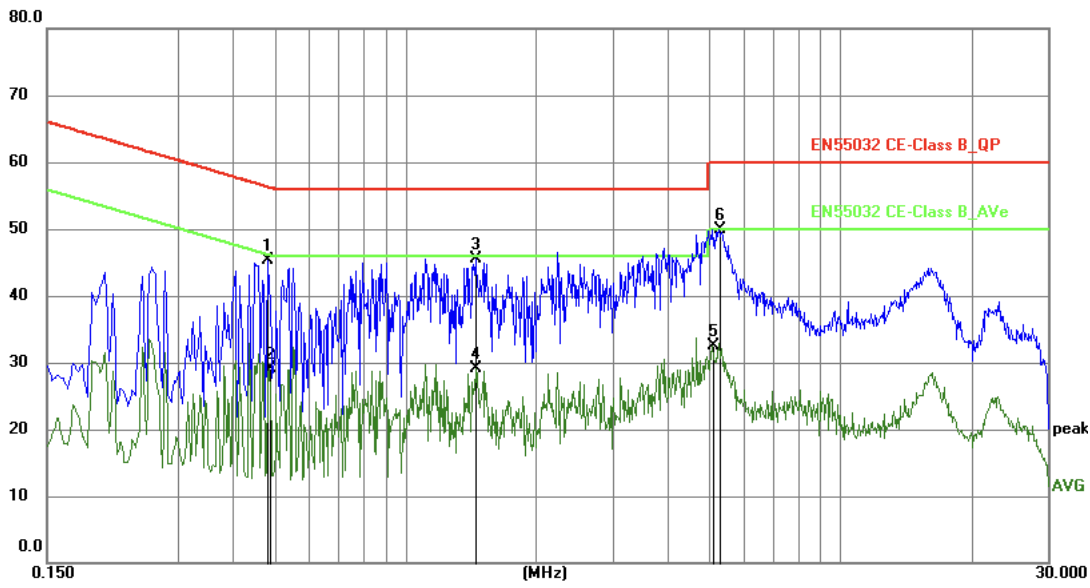
3.1.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.2** Unless otherwise a special operating condition is specified in the follows during the testing.

3.1.5 TEST RESULTS

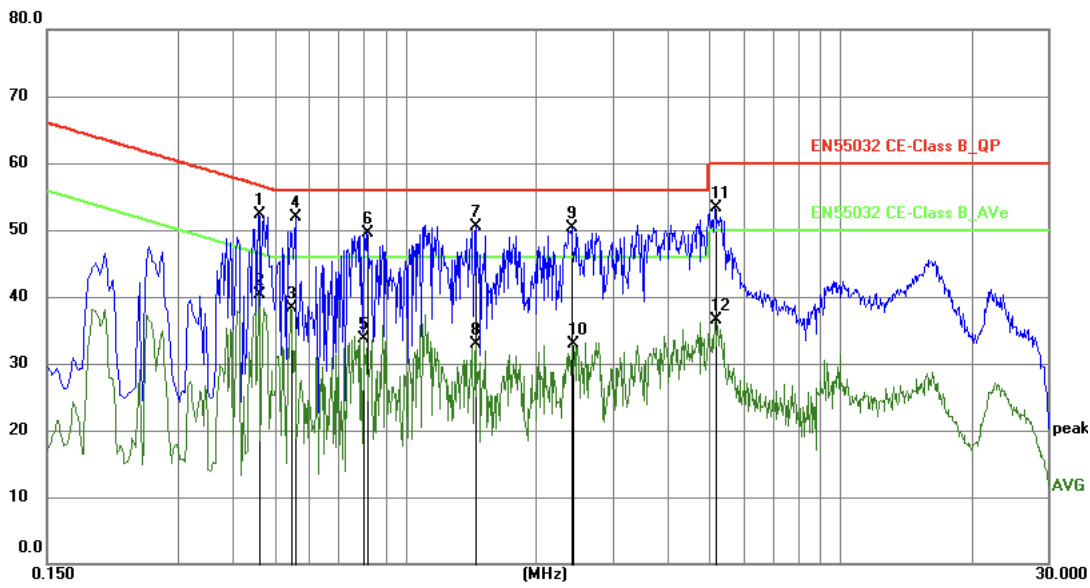
Pass

Line



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4830	34.78	10.52	45.30	56.29	-10.99	peak
2	0.4875	18.54	10.52	29.06	46.21	-17.15	AVG
3	1.4505	35.26	10.25	45.51	56.00	-10.49	peak
4	1.4505	18.85	10.25	29.10	46.00	-16.90	AVG
5	5.1045	22.17	10.34	32.51	50.00	-17.49	AVG
6	5.2755	39.55	10.35	49.90	60.00	-10.10	peak

Neutral



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4605	41.70	10.52	52.22	56.68	-4.46	peak
2	0.4605	29.85	10.52	40.37	46.68	-6.31	AVG
3	0.5460	27.90	10.49	38.39	46.00	-7.61	AVG
4	0.5595	41.44	10.48	51.92	56.00	-4.08	peak
5	0.8025	23.34	10.35	33.69	46.00	-12.31	AVG
6	0.8160	39.17	10.34	49.51	56.00	-6.49	peak
7	1.4505	40.20	10.25	50.45	56.00	-5.55	peak
8	1.4505	22.66	10.25	32.91	46.00	-13.09	AVG
9	2.4180	40.03	10.27	50.30	56.00	-5.70	peak
10	2.4270	22.71	10.27	32.98	46.00	-13.02	AVG
11	5.1450	42.99	10.34	53.33	60.00	-6.67	peak
12	5.1450	26.19	10.34	36.53	50.00	-13.47	AVG

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 10m)
	dBuV/m	dBuV/m
30 – 230	40	30
230 – 1000	47	37

3.2.2 LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

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

Notes:

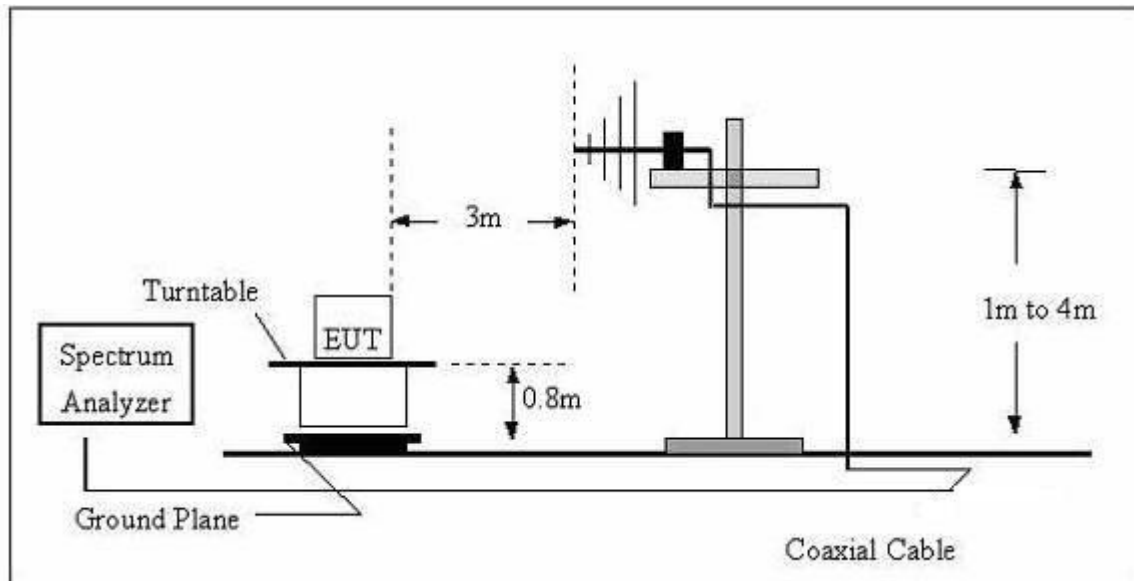
- (1) The limit for radiated test was performed according to as following:
CISPR 22/ FCC PART 15B /ICES-003.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

3.2.3 TEST PROCEDURE

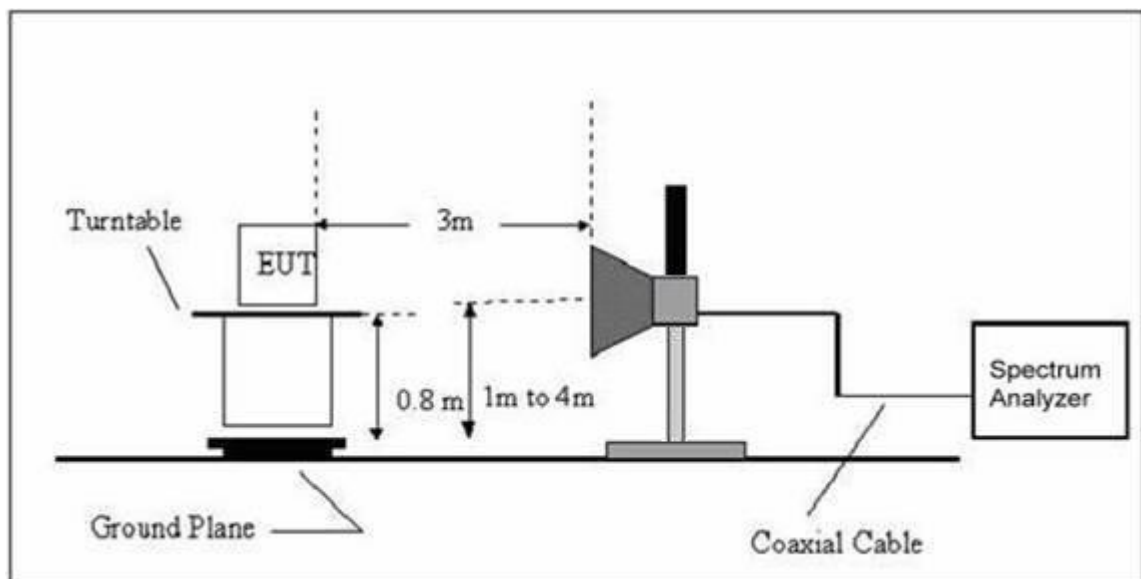
- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter. The table was rotated 360 degrees to 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.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.4 TEST SETUP

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



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

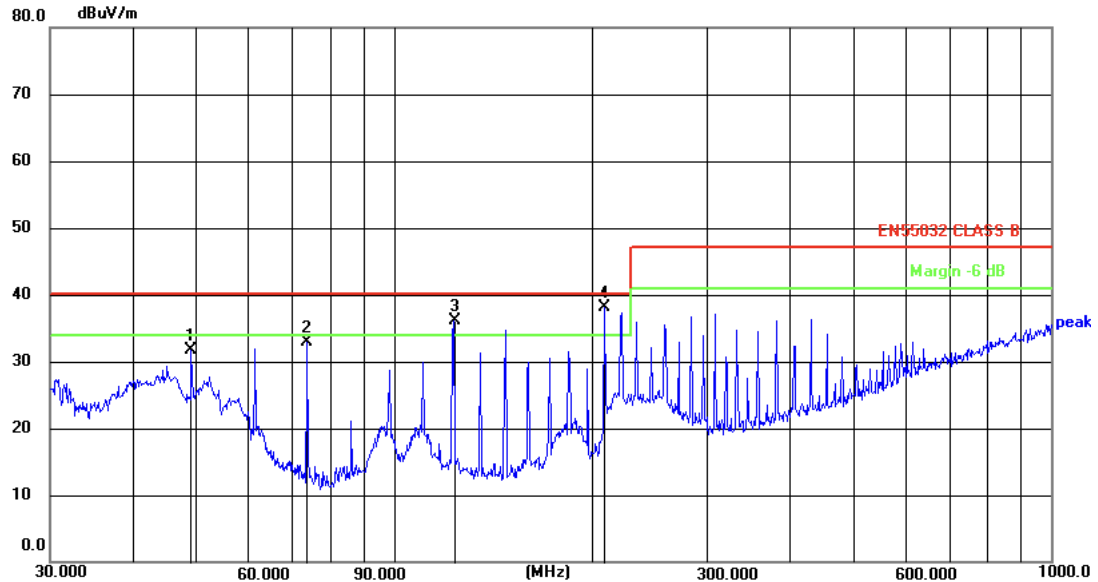


3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.2** Unless otherwise a special operating condition is specified in the follows during the testing.

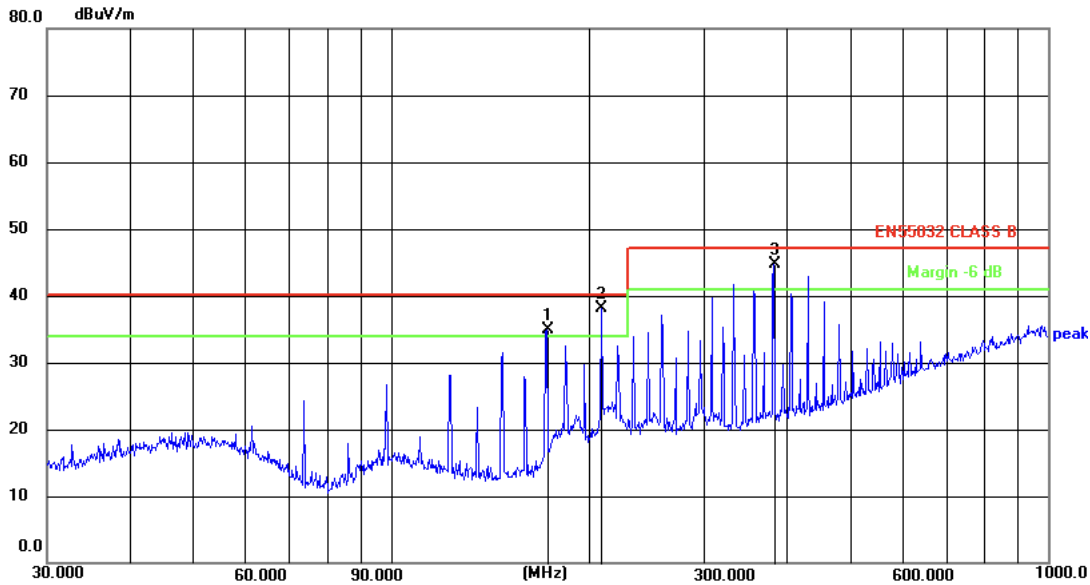
3.2.6 TEST RESULTS (30-1000MHz)

EUT :	Translation machine	Model Name :	T4
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Power :	DC5V	Test Mode :	Mode 1



No.	Mk.	Freq.	Level	Factor	ment	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		49.1865	45.77	-13.98	31.79	40.00	-8.21	peak
2		73.8756	51.87	-18.88	32.99	40.00	-7.01	peak
3	!	123.2655	54.14	-17.97	36.17	40.00	-3.83	peak
4	*	209.3129	53.28	-15.20	38.08	40.00	-1.92	peak

EUT :	Translation machine	Model Name :	T4
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Power :	DC5V	Test Mode :	Mode 1



No.	Mk.	Freq.	Level	Factor	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	Detector
1	!	172.5988	52.48	-17.58	34.90	40.00	peak
2	*	209.3129	53.31	-15.20	38.11	40.00	peak
3	!	382.5879	55.06	-10.27	44.79	47.00	peak

3.2.7 TEST RESULTS(1000-6000)

EUT :	Translation machine	Model Name :	T4
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Mode :	Mode 1
Test Power :	DC5V		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
V	2367.504	53.85	-7.98	45.87	70	-24.13	peak
V	2367.504	41.67	-7.98	33.69	50	-16.31	AVG
V	2993.840	53.47	-6.26	47.21	70	-22.79	peak
V	2993.840	43.94	-6.26	37.68	50	-12.32	AVG
H	2149.169	53.09	-7.12	45.97	70	-24.03	peak
H	2149.169	43.42	-7.12	36.3	50	-13.7	AVG
H	3053.432	53.48	-5.99	47.49	74	-26.51	peak
H	3053.432	42.12	-5.99	36.13	54	-17.87	AVG

Remark:
 Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

3.3 HARMONICS CURRENT

3.3.1 LIMITS OF HARMONICS CURRENT

IEC 555-2					
Table - I			Table - II		
Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in Amperes)	Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in Amperes)
Non Portable Tools or TV Receivers	Odd Harmonics		TV Receivers	Odd Harmonics	
	3	2.30		3	0.80
	5	1.14		5	0.60
	7	0.77		7	0.45
	9	0.40		9	0.30
	11	0.33		11	0.17
	13	0.21		13	0.12
	15≤n≤39	0.15 · 15/n		15≤n≤39	0.10 · 15/n
	Even Harmonics			Even Harmonics	
	2	1.08		2	0.30
	4	0.43		4	0.15
	8	0.30			
8≤n≤40	0.23 · 8/n	DC	0.05		

EN 61000-3-2/IEC 61000-3-2					
Equipment Category	Max. Permissible Harmonic Current (in Amperes)	Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in A) (mA/w)	
Class A	Same as Limits Specified in 4-2.1, Table - I, but only odd harmonics required	Class D	3	2.30	3.4
			5	1.14	1.9
			7	0.77	1.0
			9	0.40	0.5
			11	0.33	0.35
			13≤n≤39	see Table I	3.85/n
			only odd harmonics required		

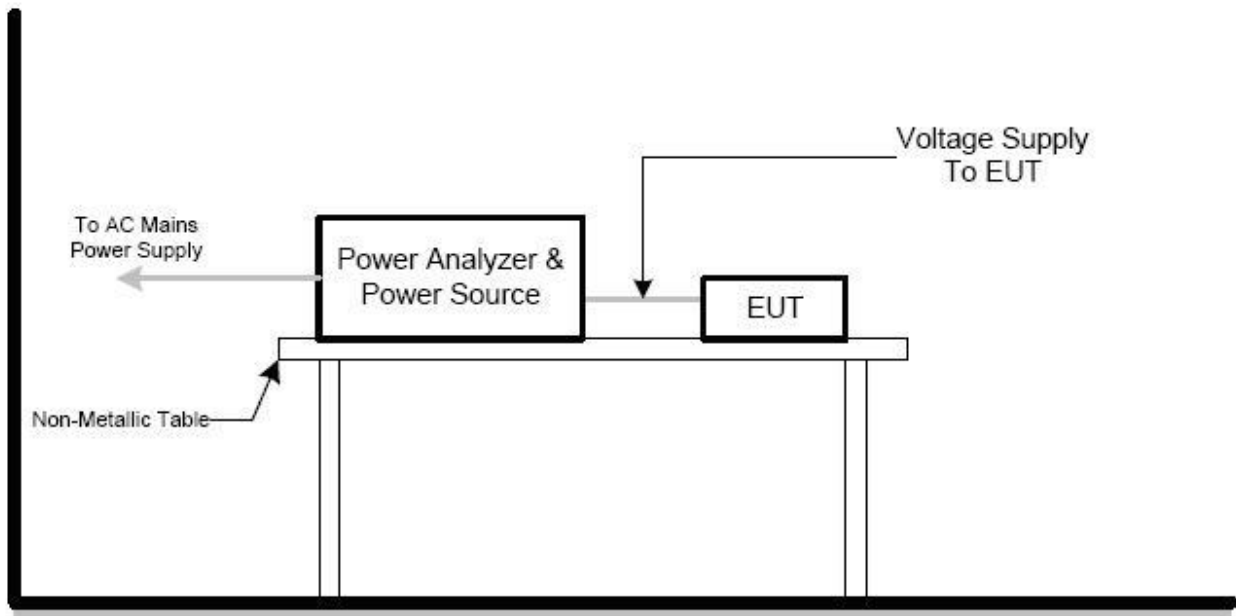
3.3.1.1 TEST PROCEDURE

- 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: 2000. 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 600W of the following types: Personal computers and personal computer monitors and television receivers.
- 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.
- d. For the actual test configuration, please refer to the related item –EUT Test Photos.

3.3.1.2 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.2** Unless otherwise a special operating condition is specified in the follows during the testing.

3.3.1.3 TEST SETUP



3.3.2 TEST RESULTS: Pass

3.4 VOLTAGE FLUCTUATION AND FLICKERS

3.4.1 LIMITS OF VOLTAGE FLUCTUATION AND FLICKERS

Tests	Limits		Descriptions
	IEC555-3	IEC/EN 61000-3-3	
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	$\leq 3\%$	$\leq 3.3\%$	Relative Steady-State V-Chang
dmax	$\leq 4\%$	$\leq 4\%$	Maximum Relative V-change
d (t)	N/A	$\leq 3.3\%$ for > 500 ms	Relative V-change characteristic

3.4.1.1 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.

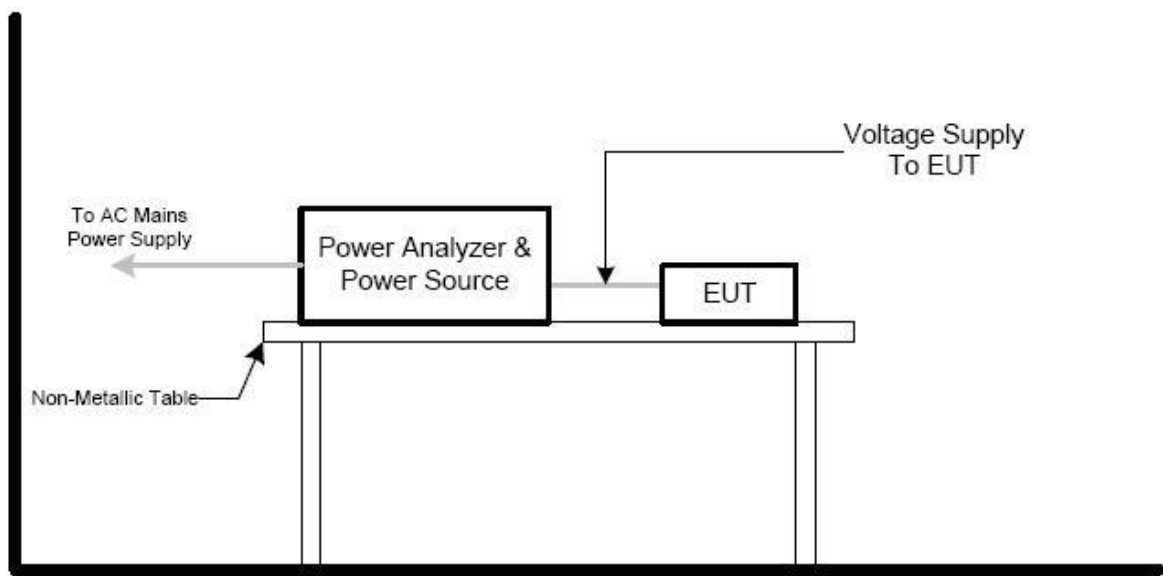
c. All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

d. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.4.1.2 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.2** Unless otherwise a special operating condition is specified in the follows during the testing.

3.4.1.3 TEST SETUP



3.4.2 TEST RESULTS: Pass

4. EMC IMMUNITY TEST

4.1 GENERAL PERFORMANCE CRITERIA

4.1.1 PERFORMANCE CRITERIA

According to **EN 301489 -17** standard, the general performance criteria as following:

Criteria	During the test	After the test
A	Shall operate as intended May show degradation of performance (see note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance (see note 2) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (see note 1) No unintentional transmissions	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (see note 2) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance (see note 2)
NOTE 1: Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended. NOTE 2: no degradation of performance after the test is understood as any degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.		

PERFORMANCE FOR TT

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration, for which performance criteria C shall apply. Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) or not-acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

PERFORMANCE FOR TR

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration for which performance criteria C shall apply. Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

PERFORMANCE FOR CT

The performance criteria A shall apply. Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an Acknowledgement (ACK) or Not Acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

PERFORMANCE FOR CR

The performance criteria A shall apply. Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

4.2 GENERAL PERFORMANCE CRITERIA TEST SETUP

The EUT tested system was configured as the statements of **2.2** Unless otherwise a special operating condition is specified in the follows during the testing.

4.3 ESD TESTING

4.3.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-2
Discharge Impedance:	330 ohm / 150 pF
Required Performance	B
Discharge Voltage:	Air Discharge : 2kV/4kV/8kV 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:	A/C Discharge
Discharge Period:	1 second minimum

4.3.2 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.

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):

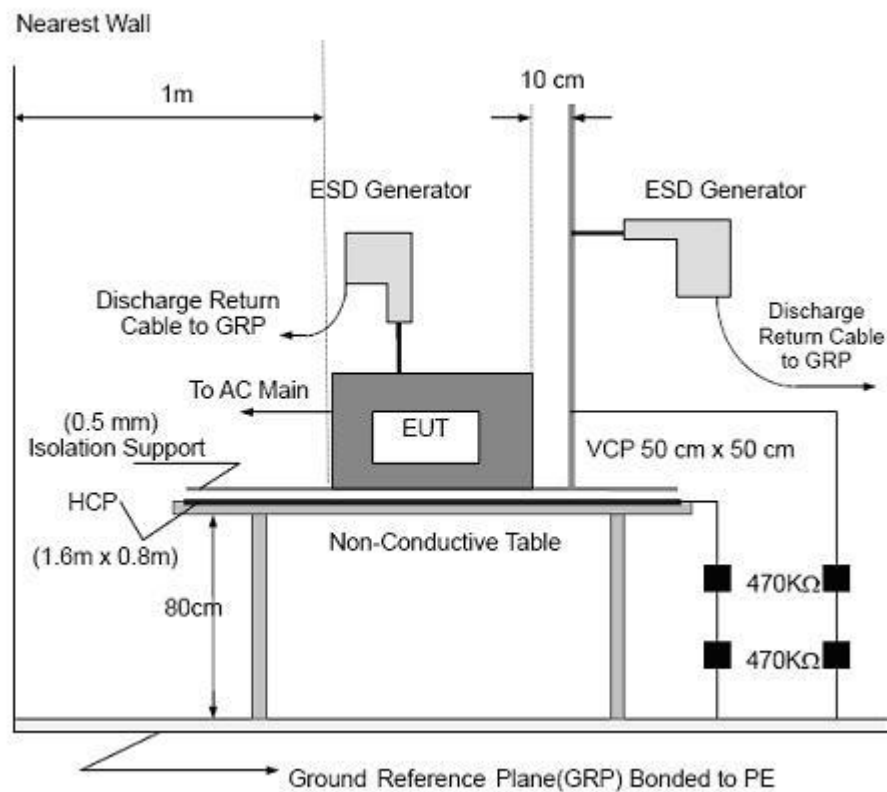
The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

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.

4.3.3 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.

4.3.4 TEST RESULTS

EUT :	Translation machine	Model Name :	T4
Temperature :	25 °C	Relative Humidity :	45%
Pressure :	1010 hPa	Test Power :	DC5V
Test Mode	Mode1/2/3/4/5/6		

Mode	Contact Discharge (Indirect)							Criterion	Result		
Test level (kV)	Test Point	2		4		6					
Test Location		+	-	+	-	+	-				
HCP	Front	P	P	P	P			B	Complies		
	Rear	P	P	P	P						
	Left	P	P	P	P						
	Right	P	P	P	P						
VCP	Front	P	P	P	P						
	Rear	P	P	P	P						
	Left	P	P	P	P						
	Right	P	P	P	P						

Mode	Air Discharge								Contact Discharge								Observation	Criterion	Result
Test level (kV)	2		4		8		15		2		4		6		8				
Test Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-			
A1	P	P	P	P	P	P											TR/TT	B	Complies
A2	P	P	P	P	P	P													
A3	P	P	P	P	P	P													
A4	P	P	P	P	P	P													
A5	P	P	P	P	P	P													
C1									P	P	P	P							
C2									P	P	P	P							
C3									P	P	P	P							
C4									P	P	P	P							
C5									P	P	P	P							
C6									P	P	P	P							

Note:

- 1) +/- denotes the Positive/Negative polarity of the output voltage.
- 2) In the table: 'P' represents 'PASS'; 'F' represents 'FAIL'.

4.4 RS TESTING

4.4.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-3
Required Performance	A
Frequency Range:	80 MHz - 1000 MHz ,1400MHz-2700MHz
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

4.4.2 TEST PROCEDURE

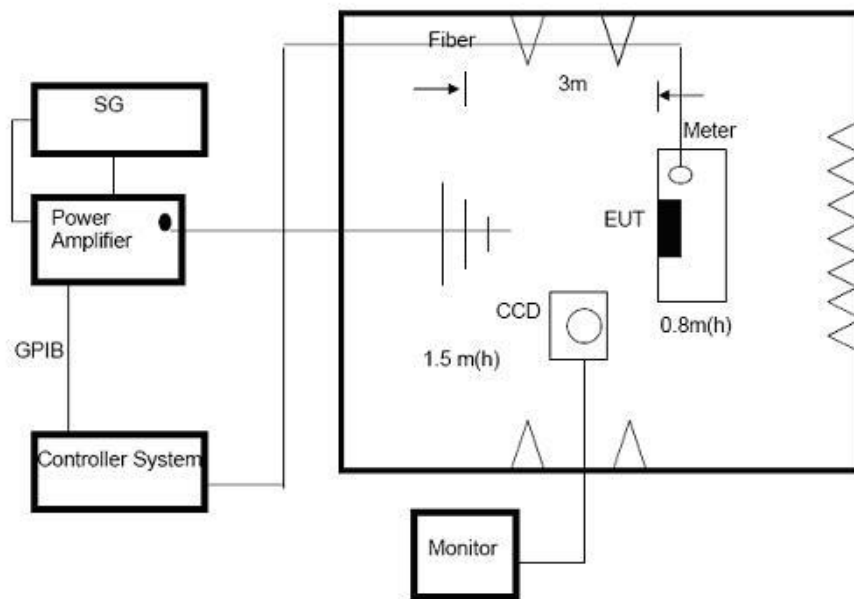
The EUT and support equipment, which are placed on a table that is 0.8 meter above ground and the testing was performed in a fully-anechoic chamber.

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

The other condition as following manner:

- a. The field strength level was 3V/m.
- b. 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 1.5×10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- c. Sweep Frequency 900 MHz, with the Duty Cycle:1/8 and Modulation: Pulse 217 Hz(if applicable)
- d. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- e. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.4.3 TEST SETUP



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.

4.4.4 TEST RESULTS

EUT :	Translation machine	Model Name :	T4
Temperature :	25 °C	Relative Humidity :	45%
Pressure :	1010 hPa	Test Power :	DC5V
Test Mode	Mode1/2/3		

TEST RESULT

Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Azimuth	Observation	Perform. Criteria	Results
80~1000 1400-2700	H / V	3 V/m (rms) AM Modulated 1000Hz, 80%	Front	CT,CR	A	P
			Rear			
			Left			
			Right			

Note: "A" stand for, during test, operate as intended no loss of function, no degradation of performance, no unintentional transmissions and after test, no degradation of performance, no loss of function, no loss of stored data or user programmable functions.

Note:

- 1) N/A - denotes test is not applicable in this test report.
- 2) There was not any unintentional transmission in standby mode
- 3) In the table: 'P' represents 'PASS'; 'F' represents 'FAIL'.

4.5 EFT/BURST TESTING

4.5.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-4
Required Performance	B
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.

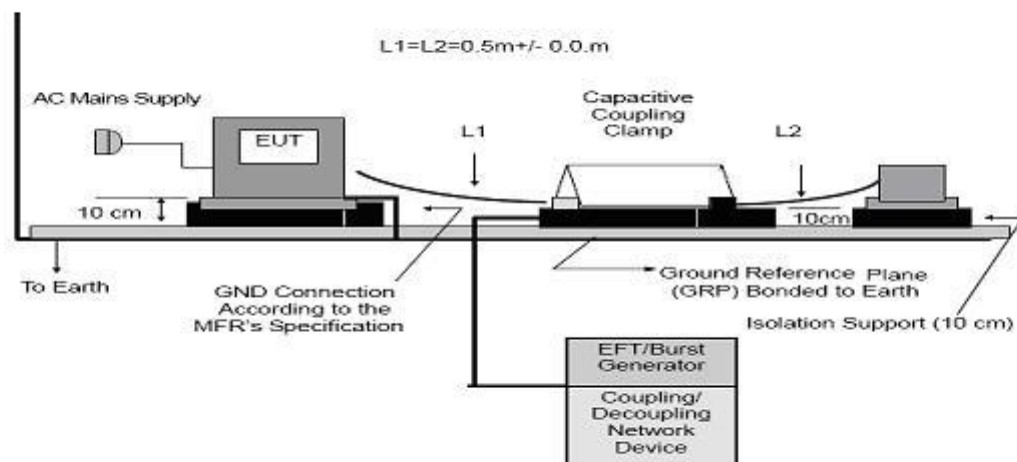
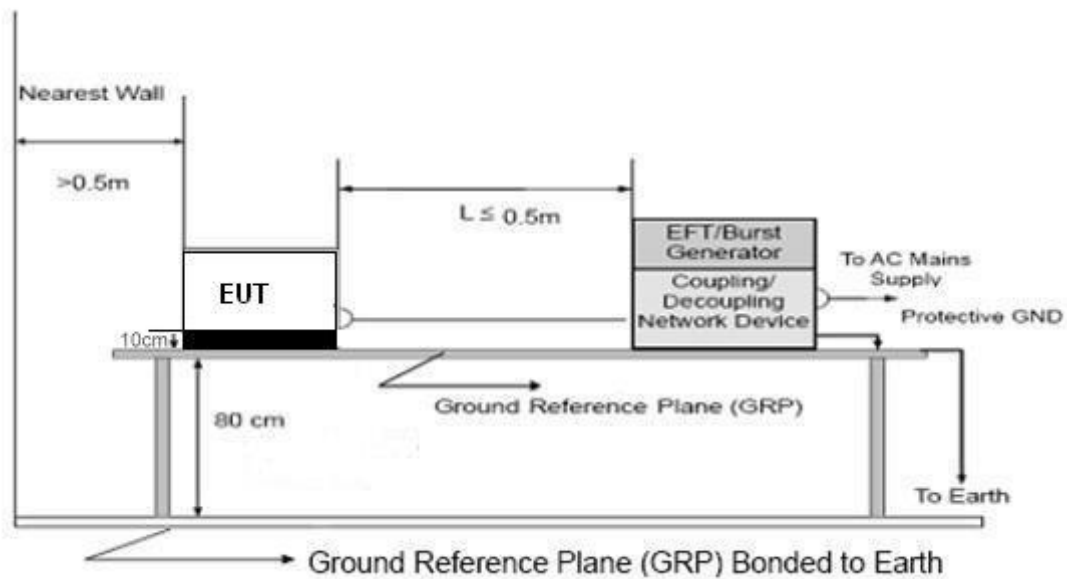
4.5.2 TEST PROCEDURE

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
- d. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.5.3 TEST SETUP



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.

4.5.4 TEST RESULTS: Pass

EUT :	Translation machine	Model Name :	T4
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Mode :	Mode 1
Test Power :	DC5V		

TEST RESULT

Line	Test Voltage	Performance			Result
		Required	Observation(+)	Observation(-)	(Pass/Fail)
L	0.5/1kV	B	A	A	Pass
N	0.5/1kV	B	A	A	Pass
L N	0.5/1kV	B	A	A	Pass
L-PE	--	--	--	--	N/A
N-PE	--	--	--	--	N/A
L-N-PE	--	--	--	--	N/A
Signal Line	--	--	--	--	N/A

Note:

4.6 SURGE TESTING

4.6.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-5
Required Performance	B
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
Surge Input/Output:	L-N
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:	--

4.6.2 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:

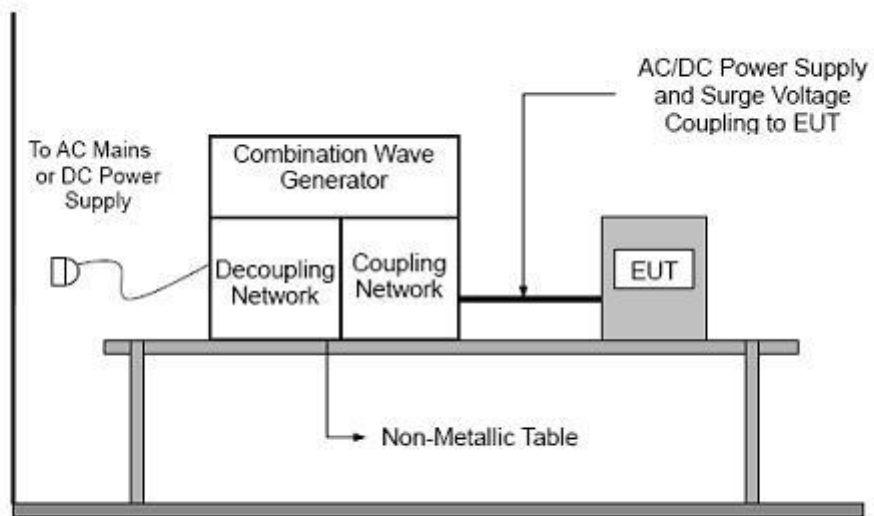
The surge is applied to the lines via the capacitive coupling. The coupling /decoupling networks shall not influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

c. For test applied to unshielded symmetrically operated interconnection /telecommunication lines of EUT:

The surge is applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrester cannot be specified. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

d. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.6.3 TEST SETUP



4.6.4 TEST RESULTS: Pass

EUT :	Translation machine	Model Name :	T4
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Mode :	Mode 1
Test Power :	DC5V		

TEST RESULT

Coupling Line			Test level								Observation	Criterion	Result
			0.5 kV		1 kV		2 kV		4 kV				
			+	-	+	-	+	-	+	-			
AC line	L-N	0°	/	/	/	/	/	/	/	/	A	A	Pass
		90°	B	A	/	B	A	/	/	/			
		180°	/	/	/	/	/	/	/	/			
		270°	B	/	A	B	/	A	/	/			
	L-PE	--	--	--	--	--	--	--	--	--			N/A
		--	--	--	--	--	--	--	--	--			
		--	--	--	--	--	--	--	--	--			
		--	--	--	--	--	--	--	--	--			
	N-PE	--	--	--	--	--	--	--	--	--			N/A
		--	--	--	--	--	--	--	--	--			
		--	--	--	--	--	--	--	--	--			
		--	--	--	--	--	--	--	--	--			
DC Line		--	--	--	--	--	--	--	--	N/A			
Signal Line		--	--	--	--	--	--	--	--	N/A			

Note:

4.7 INJECTION CURRENT TESTING

4.7.1 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

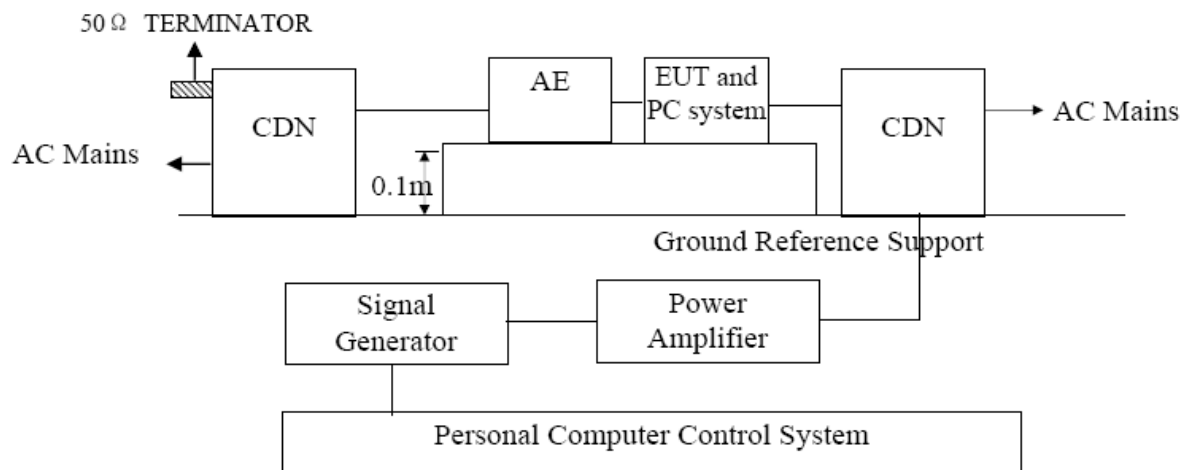
4.7.2 TEST PROCEDURE

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:

- The field strength level was 3V.
- 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 1.5×10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.7.3 TEST SETUP



For the actual test configuration, please refer to the related Item –EUT Test Photos.

NOTE:

FLOOR-STANDING EQUIPMENT

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.

4.7.4 TEST RESULTS: Pass

EUT :	Translation machine	Model Name :	T4
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Mode :	Mode 1
Test Power :	DC5V		

TEST RESULT

Test Ports (Mode)	Freq. Range MHz)	Field Strength	Observation	Perform. Criteria	Results
Input/ Output AC. Power Port	0.15 ---80	3V(rms) AM Modulated 1000Hz, 80%	A	A	Pass
Input/ Output DC. Power Port	0.15 --- 80		A	A	Pass
Signal Line	0.15 --- 80		--	--	--

Note:

4.8 VOLTAGE INTERRUPTION/DIPS TESTING

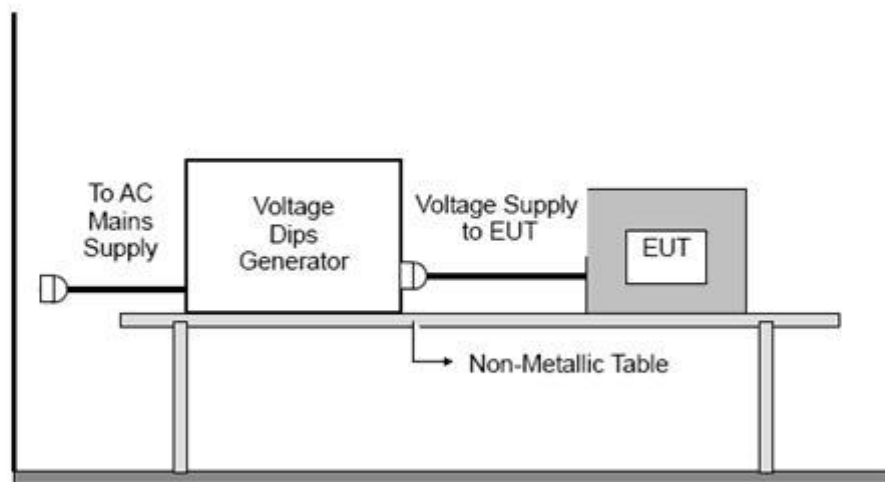
4.8.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-11
Required Performance	100% reduction, 0.5 Cycle 100% reduction, 1.0 Cycle 30% reduction, 25 Cycles
Voltage Interruptions:	100% reduction, 250 Cycles
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

4.8.2 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.

4.8.3 TEST SETUP



For the actual test configuration, please refer to the related Item –EUT Test Photos.

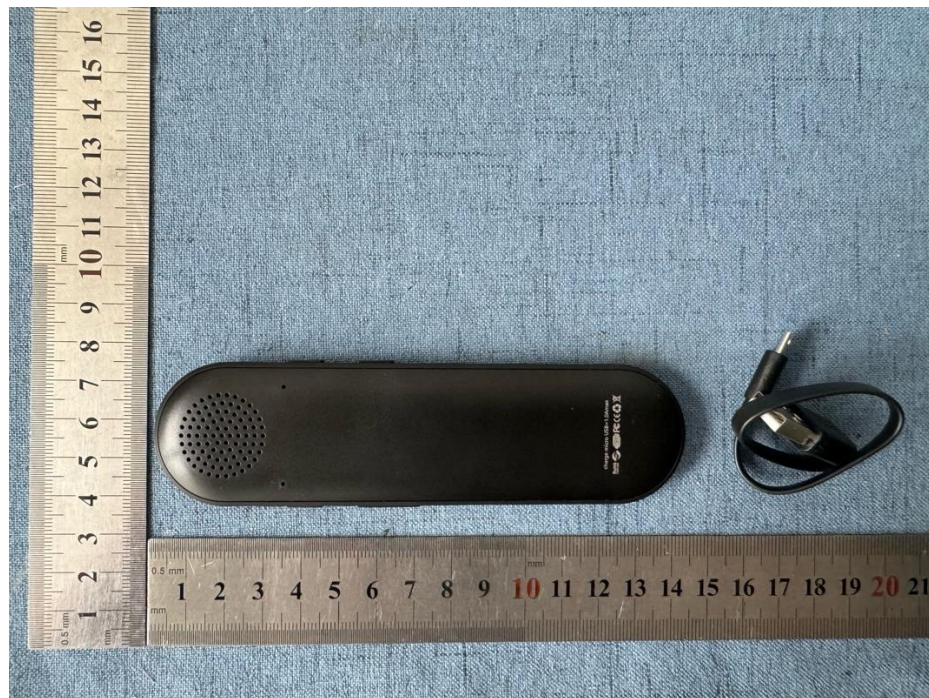
4.8.4 TEST RESULTS: Pass

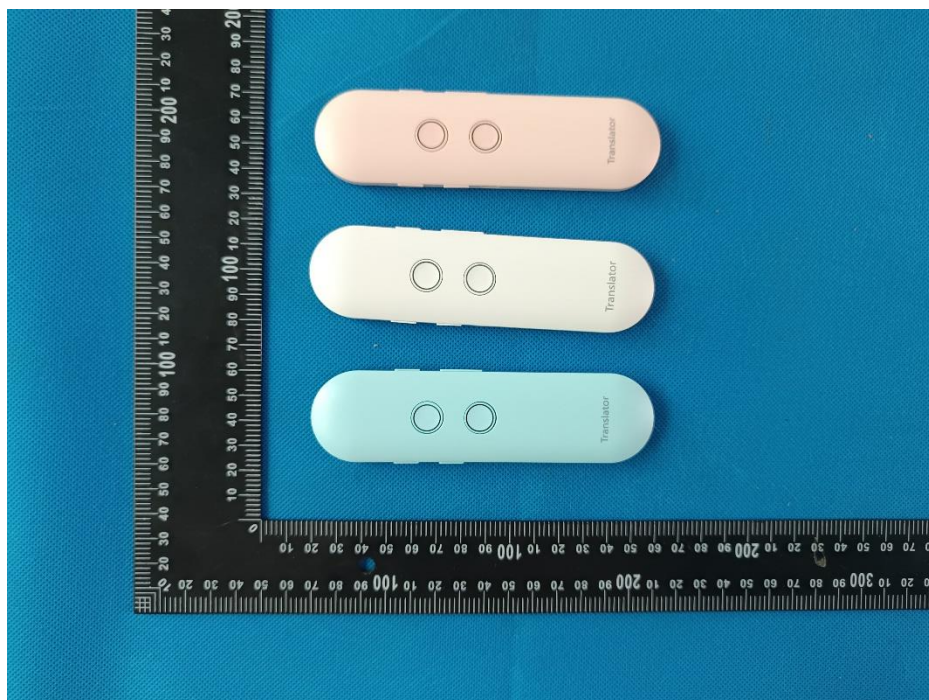
EUT :	Translation machine	Model Name :	T4
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Mode :	Mode 1
Test Power :	DC5V		

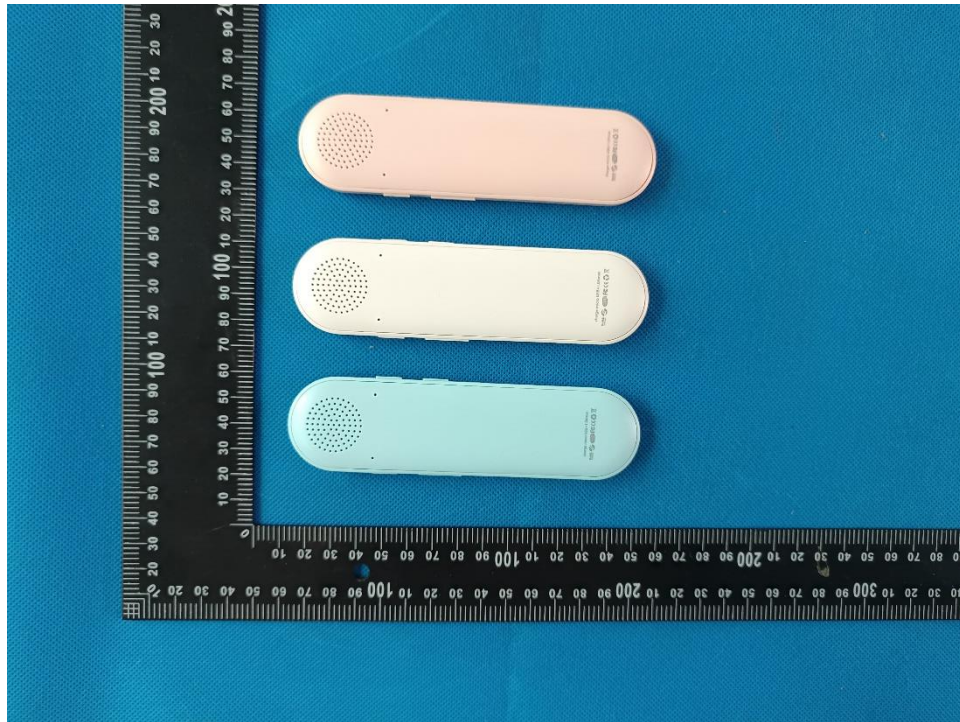
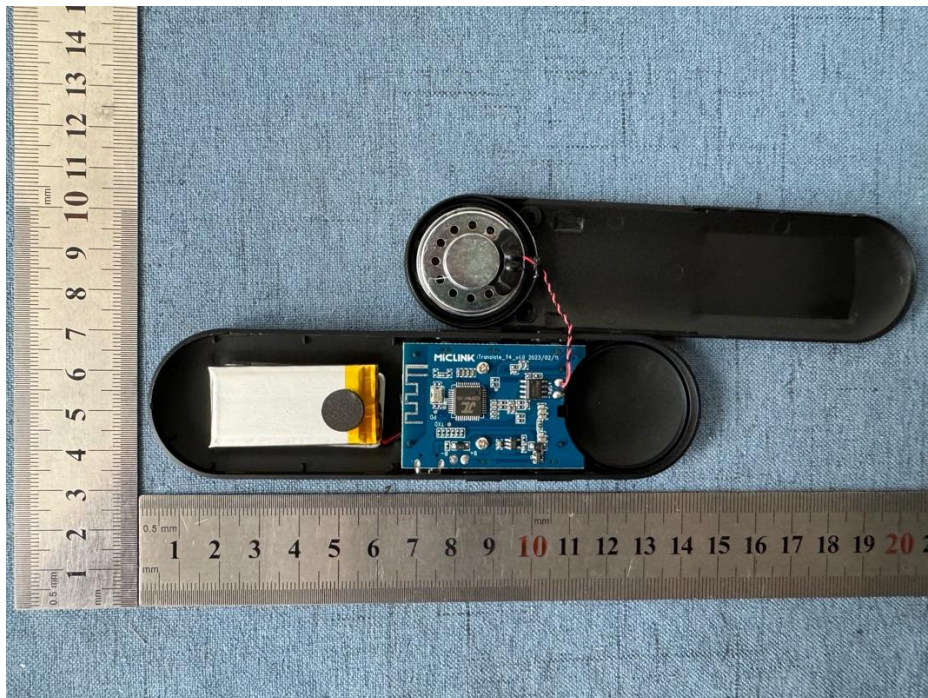
TEST RESULT

Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in period)	Phase Angle	Required	Observation	Result
						(Pass / Fail)
0	100	0.5P	0 ° -360 °	B	A	PASS
70	30	25P	0 ° -360 °	C	B	PASS
0	100	250P	0 ° -360 °	C	C	PASS

Note:

EUT TEST PHOTO**Fig.01****Fig.02**

**Fig.03****Fig.04**

**Fig.05****Fig.06**

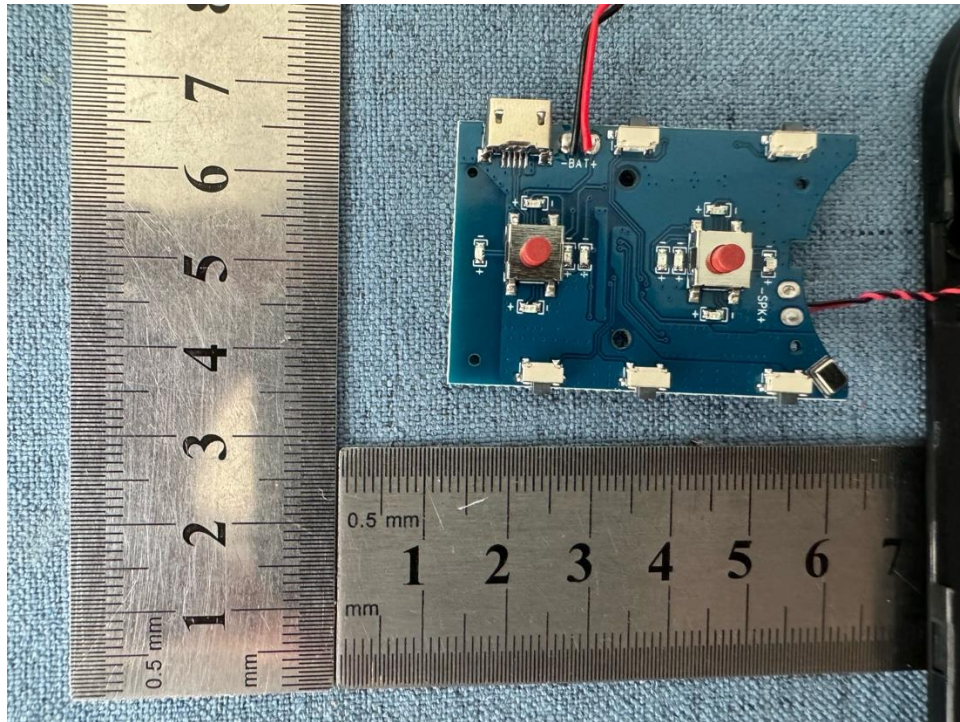


Fig.07

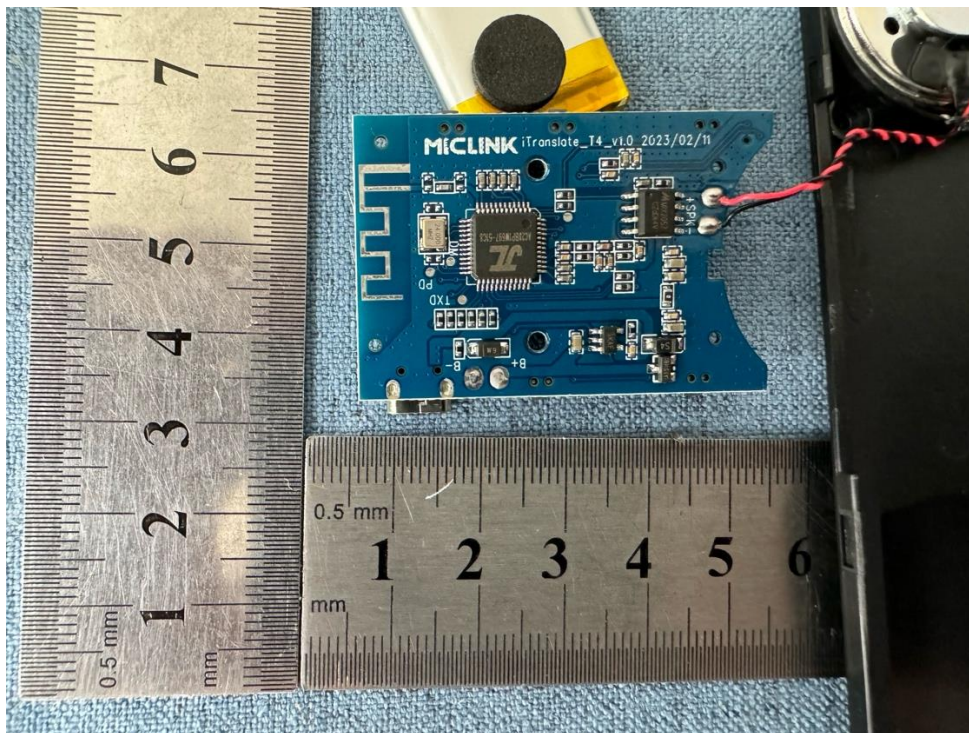


Fig.08

*****End of Report *****