

# **Test Report**

Applicant:	Shenzhen NCTS Technology Co., Ltd.			
Product Name:	Interactive Whiteboard and Touch Screen Overlay(Touch Frame)			
Brand Name:	NCTS			
Model No.:	NCTS-IWB86, NCTS-IWB90, NCTS-IWB95, NCTS-IWB96, NCTS-IWB102			
Remark:	Frame is different Provision updates the Applicant information, Brand Name, Model No. base on the original report No. MTE/LUL/E18071263			
Date of Receipt :	/			
Date of Test:	Jul.09-11, 2018			
Date of Report:	Apr.18,2023			
Prepared by:	Shenzhen Most Technology Service Co., Ltd.			
The EMC testing has been performed on the submitted samples and found in compliance with the council EMC directive 2014/30/EU.				

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APPENDIX II	(4 pages)
APPENDIX III (Photos of the EUT)	(9 pages)



# TEST REPORT DECLARATION

Report Number	MTEB23040178					
	Shenzhen NCTS Technology Co., Ltd.					
Applicant	Room 519 of block 5, Jiada Development building, No. 5 SongPingshan Road, Nanshan District, Shenzhen, China					
	Shenzhen NC	CTS Technology Co., Ltd.				
Manufacturer	Room 519 of District, Sher	block 5, Jiada Development building, No. 5 SongPingshan Road, Nanshan zhen, China				
	Product Name	Interactive Whiteboard and Touch Screen Overlay(Touch Frame)				
Product	Model No.	NCTS-IWB86				
	Power Supply	DC 5V				
Test Result	The EUT was	s found compliant with the requirement(s) of the standards.				
Standard	EN 55032:2015+A11:2020+A1:2020, EN IEC 61000-3-2:2019+A1:2021, EN 61000-3-3:2013+A1:2019+A2:2021 EN 55035:2017+A11:2020					
*Note The above device has been tested by Shenzhen Most Technology Service Co., Ltd. To determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test record, data evaluation & Equipment Under Test (EUT) configurations represented are contained in this test report and Shenzhen Most Technology Service Co., Ltd. Is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the requirement of the above standards. This report applies to above tested sample only. This report shall not be reproduced except in full, without written approval of Shenzhen Most Technology Service Co., Ltd., this document may be altered or revised by Shenzhen Most Technology Service Co., Ltd., personal only, and shall be noted in the revision of the document.						
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	Alisa Luo(Engineer)					
Reviewed by	Sunny Deng APPROVED					
	Sunny Deng (Engineer)					
Approved by		Juttez				
	Yvette Zhou(Manager)					



# 1. GENERAL INFORMATION

# 1.1. Description of Device (EUT)

Description	:	Interactive Whiteboard and Touch Screen Overlay(Touch Frame)
Model Number	:	NCTS-IWB86, NCTS-IWB90, NCTS-IWB95, NCTS-IWB96, NCTS-IWB102
Remark	:	Used NCTS-IWB86 does all tests

# 1.2. Operational Mode(s) of EUT

Order Number	:	Test Mode(s)
1	:	Running

# 1.3. Test Voltage(s) of EUT

Order Number	•	Test Voltage(s)
1	:	DC 5V



# 2. DESCRIPTION OF TEST STANDARD

The intention of this publication is to establish uniform requirements for the radio disturbance level of the equipment contained in the scope, to fix limits of disturbance, to describe methods of measurement and to standardize operating conditions and interpretation of results.

The following referenced standard are indispensable for the application of this report.

Referenced Description below:

EN 55032:2015+A11:2020+A1:2020 Information Technology Equipment-Radio disturbance characteristics-Limits and methods of measurement.

EN IEC 61000-3-2:2019+A1:2021 Limits for harmonic current emissions (equipment input current <= 16 A per phase).

#### EN 61000-3-3:2013+A1:2019+A2:2021

Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection.

EN 55035:2017+A11:2020 Information technology equipment - Immunity characteristics - Limits and methods of measurement.



# 3. LABORATORY INFORMATION

3.1. Laboratory Name

Shenzhen Most Technology Service Co., Ltd.

3.2. Location

No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China

3.3. Test facility

3m Anechoic Chamber	:	Nov. 28, 2012 File on Federal Communication Commission Registration Number:490827
Shielding Room	:	Nov. 28, 2012 File on Federal Communication Commission Registration Number:490827
EMC Lab.	:	Accredited by TUV Rheinland Shenzhen Audit Report: UA 50149851 Mar. 12, 2009
		Accredited by Industry Canada Registration Number: 7103A-1 Oct. 22, 2012
		Accredited by TIMCO Registration Number: Q1460 March 28, 2010

3.4. Measurement Uncertainty

No.	Item	Uncertainty
1.	Uncertainty for Conducted Disturbance Test	1.25dB
2.	Uncertainty for Radiated Disturbance Test	3.15dB



# 3.5. Supporting System Details

#### 3.5.1.Monitor

EMC CODE	:	Test Monitor B
M/N	:	HEW8220Q
S/N	:	CJ2A07270
Manufacturer	:	PHILIPS
Data cord	:	Shielded, detachable, 1.8m
Power cord	:	Unshielded, detachable, 1.8m
FCC ID	:	By DoC
BSMI ID	:	N/A

# 3.5.2.Keyboard

EMC CODE	:	Test Keyboard
M/N	:	SK-2880
S/N	:	BC34C0CJ6UZ888
Manufacturer	:	Нр
Data cord	:	Unshielded, detachable, 1.5m
FCC ID	:	By DoC
BSMI ID	:	N/A

#### 3.5.3.Mouse

:	Test Mouse
:	M-UAE58
:	LZ4537H064N
:	LENOVO
:	Unshielded, detachable, 1.5m
:	By DoC
:	N/A
	•



#### 3.5.4.Headphone

EMC CODE	:	Test Headphone			
M/N	:	SM-906			
S/N	:	692739990369884			
Manufacturer	:	SOMC			
Data cord	:	Unshielded, detachable, 2.5m			
FCC ID	:	By DoC			
BSMI ID	:	N/A			

#### 3.5.5.Printer

EMC CODE	:	Test Printer
M/N	:	L11121E
S/N	:	N/A
Manufacturer	:	Canon
Data cord	:	Shielded, detachable, 1.8m
Power cord	:	Unshielded, detachable, 1.8m



# 4. SUMMARY OF TEST RESULTS

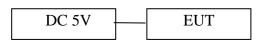
	EMISSION			
Test Item	Standard	Limits	Results	
Conducted disturbance at mains terminals	EN 55032:2015+A11:2020+A1:2020	Class B	PASS	
Conducted disturbance at telecommunication ports terminals test	EN 55032:2015+A11:2020+A1:2020	Class B	N/A	
Radiated disturbance	EN 55032:2015+A11:2020+A1:2020	Class B	PASS	
Harmonic current emissions	EN IEC 61000-3-2:2019+A1:2021	Class A	N/A	
Voltage fluctuations & flicker	EN 61000-3-3:2013+A1:2019 +A2:2021		PASS	
IMN	IUNITY (EN 55035:2017+A11:2020	))		
Test Item	Basic Standard	Performance Criteria	Results	
Electrostatic discharge (ESD)	EN 61000-4-2:2009	В	PASS	
Radio-frequency, Continuous radiated disturbance	EN IEC 61000-4-3:2020	А	PASS	
Electrical fast transient (EFT)	EN 61000-4-4:2012	В	PASS	
Surge (Input a.c. power ports)		В	PASS	
Surge (Telecommunication ports)	EN IEC 61000-4-3:2020	В	N/A	
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6:2014	А	PASS	
Power frequency magnetic field	EN 61000-4-8:2010	А	PASS	
Voltage dips, >95% reduction		В	PASS	
Voltage dips, 30% reduction	EN IEC 61000-4-11:2020	С	PASS	
	1	С	PASS	



# 5. BLOCK DIAGRAM OF TEST SETUP

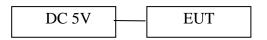
The equipments are installed test to meet EN 55032 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application. EUT was tested in normal configuration (Please See following Block diagrams)

5.1. Block Diagram of connection between EUT and simulation-EMI



(EUT: Interactive Whiteboard and Touch Screen Overlay(Touch Frame)

5.2. Block Diagram of connection between EUT and simulation-EMS



(EUT: Interactive Whiteboard and Touch Screen Overlay(Touch Frame)



# 6. TEST INSTRUMENT USED

#### 6.1. For Conducted Disturbance at Mains Terminals Emission Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
						Interval
1.	Test Receiver	Rohde & Schwarz	ESCI	100492	Mar. 10, 18	1 Year
2.	L.I.S.N.	Rohde & Schwarz	ENV216	100093	Mar. 10, 18	1 Year
3.	Coaxial Switch	Anritsu Corp	MP59B	6200283933	Mar. 10, 18	1 Year
4.	Terminator	Hubersuhner	50Ω	No.1	Mar. 10, 18	1 Year
5.	RF Cable	SchwarzBeck	N/A	No.1	Mar. 10, 18	1 Year

#### 6.2. For Conducted Disturbance at Telecommunication Port Terminals Test

Ite	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
m						Interval
1.	Test Receiver	Rohde & Schwarz	ESCS30	100340	Mar. 10, 18	1 Year
2.	L.I.S.N.	Rohde & Schwarz	ESH3-Z5	100317	Mar. 10, 18	1 Year
3.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100168	Mar. 10, 18	1 Year
4.	RF Cable	FUJIKUSR	N/A	843 Cabl1#	Mar. 10, 18	1 Year
5.	ISN	Tseq	T800	27597	Mar. 10, 18	1 Year

#### 6.3. For Radiation Test (In Anechoic Chamber)(Below 1000MHz)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
						Interval
1.	Test Receiver	Rohde & Schwarz	ESPI	101202	Mar. 10, 18	1 Year
2.	Bilog Antenna	Sunol	JB3	A121206	Mar. 10, 18	1 Year
3.	Cable	Resenberger	N/A	NO.1	Mar. 10, 18	1 Year
4.	Cable	SchwarzBeck	N/A	NO.2	Mar. 10, 18	1 Year
5.	Cable	SchwarzBeck	N/A	NO.3	Mar. 10, 18	1 Year
6.	DC Power Filter	DuoJi	$DL2 \times 30B$	N/A	N/A	N/A
7.	Single Phase Power	DuoJi	FNF 202B30	N/A	N/A	N/A
	Line Filter					
8.	3 Phase Power Line	DuoJi	FNF 402B30	N/A	N/A	N/A
	Filter					



Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
						Interval
1	Spectrum Analyzer	Agilent	E4408B	MY414400460	Mar. 10, 18	1 Year
2	Pre- Amplifier	DCS	PAP-0118	24001	Mar. 10, 18	1 Year
3	Horn Antenna	Schwarzback	BBHA9120	D69250	Mar. 10, 18	1 Year
			D			
4	RF Cable	Schwarzback	LL142-10	RF Cable No.1	Mar. 10, 18	1 Year
5	RF Cable	Schwarzback	LL142-0.05	RF Cable No.2	Mar. 10, 18	1 Year
6	DC Power Filter	DuoJi	$DL2 \times 30B$	N/A	N/A	N/A
7	Single Phase Power	DuoJi	FNF 202B30	N/A	N/A	N/A
	Line Filter					
8	3 Phase Power Line	DuoJi	FNF 402B30	N/A	N/A	N/A
	Filter					

#### 6.4. For Radiation Test (In Anechoic Chamber)(Above 1000MHz)

### 6.5. For Harmonic / Flicker Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
						Interval
1.	AC Power Source	Kikusui	AC40MA	LM003232	Mar. 10, 18	1 Year
2.	Test Analyzer	Kikusui	KHA1000	LM003720	Mar. 10, 18	1 Year
3.	Line Impendence	Kikusui	LIN40MA-	LM002352	Mar. 10, 18	1 Year
	Network		PCR-L			

# 6.6. For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
						Interval
1.	ESD Tester	Zhongsheng	ESD-203AX	023K14538	Mar. 10, 18	1 Year

#### 6.7. For RF Strength Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
						Interval
1.	Signal Generator	IFR	2032	203002/100	Mar. 10, 18	1 Year
2.	Amplifier	A&R	150W1000	301584	NCR	NCR
3.	Dual Directional Coupler	A&R	DC6080	301508	Mar. 10, 18	1 Year
4.	Power Sensor	Anritsu	MA2491A	32263	Mar. 10, 18	1 Year
5.	Power Meter	R&S	NRVS	100444	Mar. 10, 18	1 Year
6.	Field Monitor	A&R	FM5004	300329	Mar. 10, 18	1 Year
7.	Field Probe	A&R	FP5000	300221	Mar. 10, 18	1 Year
8.	Log-periodic Antenna	A&R	AT1080	16512	Mar. 10, 18	1 Year
9.	RF Cable	MIYAZAKI	N/A	No.1/No.2	Mar. 10, 18	1 Year



### 6.8. For Electrical Fast Transient/Burst Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
						Interval
1.	EMCPRO System	EM Test	UCS-500-M4	V0648102026	Mar. 10, 18	1 Year

# 6.9. For Surge Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
						Interval
1.	EMCPRO System	EM Test	UCS-500-M4	V0648102026	Mar. 10, 18	1 Year

#### 6.10.For Injected Currents Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
						Interval
1.	Signal Generator	IFR	2032	203002/100	Mar. 10, 18	1 Year
2.	Amplifier	A&R	150W1000	301584	NCR	NCR
3.	CDN	FCC	FCC-801-M2-25	47	Mar. 10, 18	1 Year
4.	CDN	FCC	FCC-801-M3-25	107	Mar. 10, 18	1 Year
5.	EM Injection Clamp	FCC	F-203I-23mm	403	Mar. 10, 18	1 Year
6.	RF Cable	MIYAZAKI	N/A	No.1/No.2	Mar. 10, 18	1 Year

#### 6.11.For Magnetic Field Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
						Interval
1.	EMCPRO System	EM Test	UCS-500-M4	V0648102026	Mar. 10, 18	1 Year

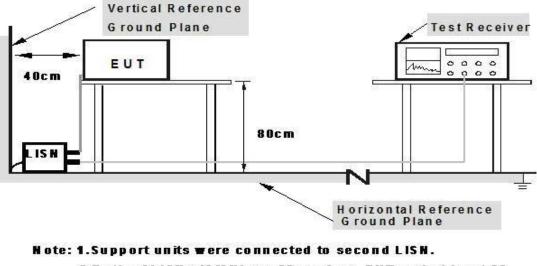
# 6.12.For Voltage Dips and Interruptions Test

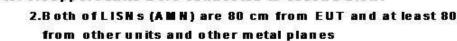
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
						Interval
1.	EMCPRO System	EM Test	UCS-500-M4	V0648102026	Mar. 10, 18	1 Year



# 7. CONDUCTED DISTURBANCE AT MAINS TERMINALS TEST

#### 7.1. Configuration of Test System





7.2. Test Standard

EN 55032:2015+A11:2020+A1:2020

7.3. Power Line Conducted Disturbance at Mains Terminals Limit

	Maximum RF Line Voltage			
Frequency	Quasi-Peak Level	Average Level		
	$dB(\mu V)$	dB(µV)		
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*		
500kHz ~ 5MHz	56	46		
5MHz ~ 30MHz	60	50		

Notes: 1. \* Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

7.4. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). This provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to EN 55032 Class B on conducted Disturbance test.

The bandwidth of test receiver is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked. The test result are reported on Section 7.5.



#### 7.5. Conducted Disturbance at Mains Terminals Test Results

#### 7.5.1. Test Results: **PASS**

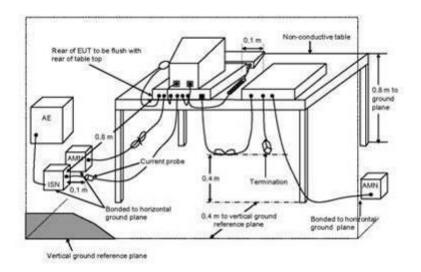
- 7.5.2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.
- 7.5.3. Emission Level= Correct Factor + Reading Level.
- 7.5.4. The test data and the scanning waveform are attached within Appendix I.

Note : All test modes are performed, only the worst case is recorded in this report.



# 8. CONDUCTED DISTURBANCE AT TELECOMMUNICATION

# PORTS TERMINALS TEST



#### 8.1. Configuration of Test System

#### 8.2. Test Standard

EN 55032:2015+A11:2020+A1:2020

8.3. Conducted Disturbance at Telecommunication port Limit

	Maximum R	F Line Voltage
Frequency	Quasi-Peak Level	Average Level
	dB(µV)	dB(µV)
150kHz ~ 500kHz	84 to 74	74 to 64
500kHz ~ 30MHz	74	64

Notes: 1. The lower limit shall apply at the transition frequencies.

2. The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

#### 8.4. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. ISN are used for measurements on telecom ports, they shall be nominally 0.8m from the EUT and bonded to a ground reference plane, other units of the equipment under test shall be at least 0.8m form the ISN, an ISN is connected to a telecommunications port during the measurement of conducted disturbances at the mains port, then ISN receiver port shall be teminated in 50-ohm and the LCL Shall be representative of the telecommunications network to which that port attaches, In order to make reliable emission measurements representative of high LAN utilization it is only necessary to create a condition of LAN utilization in excess of 10% and sustain that and pseudo-random messages in order to emulate realistic types of data transmission. If the LAN maintains transmission during idle periods measurements shall also be made during idle periods.



The bandwidth of test receiver is set at 9 kHz.

The frequency range from 150kHz to 30MHz is checked. The test result are reported on Section 8.5.

#### 8.5. Conducted Disturbance At Telecommunication Ports Terminals Test Results

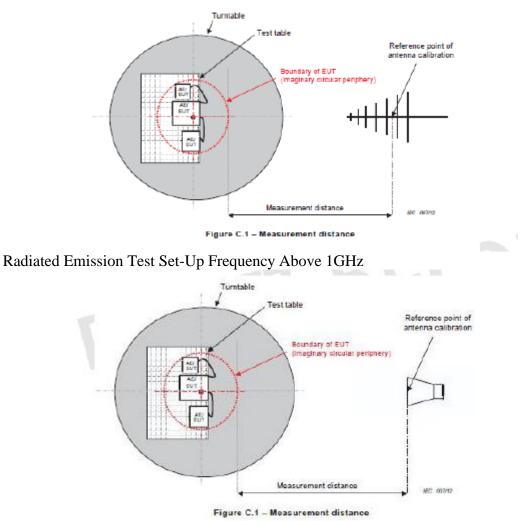
8.5.1.Test Results: N/A



# 9. RADIATED DISTURBANCE TEST

### 9.1. Configuration of Test System

Radiated Emission Test Set-Up Frequency Below 1 GHz



9.2. Test Standard

EN 55032:2015+A11:2020+A1:2020



#### 9.3. Radiated Disturbance Limit

All emanations from a Class B computing devices or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

Below 1C	Bel	low	1G
----------	-----	-----	----

Below 10		•
Frequency range (MHz)	Quasi peak limits(dBuV/m),	Quasi peak limits(dBuV/m),
	for Class B ITE,	for Class A ITE,
	at 3m measurement distance	at 3m measurement distance
30 - 230	40	50
230 - 1000	47	57

Above 1000 MHz(EN 55032:2015+A11:2020)

Frequency range (MHz)	Peak limits(dBµV/m),		Average limits(dBµV/m)	
	at 3m measurement distance		at 3m measurement distance	
	Class A	Class B	Class A	Class B
1000 - 3000	76	70	56	50
3000 - 6000	80	74	60	54

Above 1000 MHz(EN 55032:2015+A1:2020)

Frequency range (MHz)	Peak limits(dBµV/m),		y range (MHz) Peak limits(dBµV/m), Average limits(dBµV/m)		μV/m)
	at 3m measurement distance		at 3m measurement distance		
	Class A Class B		Class A	Class B	
1000 -6000	80	74	60	54	

Note: 1.The lower limit shall apply at the transition frequencies.

2. Distance refers to the distance in meters between the test antenna and the closed point of any part of the EUT.

#### 9.4. Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to EN 55032 Class B on Radiated Disturbance test.

The bandwidth setting on the test receiver is 120 kHz. .(frequency range from 30MHz to 1000MHz) and 1MHz (frequency range from 1000MHz to 6000MHz).

The frequency range from 30MHz to 6000MHz is checked. The test result are reported on Section 9.5.

#### 9.5. Radiated Disturbance Test Results

9.5.1. Test Results: PASS



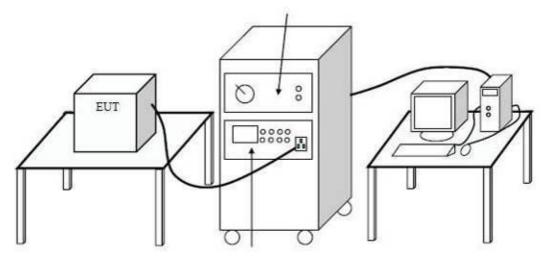
- 9.5.2. Emission Level= Correct Factor + Reading Level.
- 9.5.3. All reading are Quasi-Peak values.
- 9.5.4. The worst test data and the scanning waveform are attached within Appendix II. Note : All test modes are performed, only the worst case is recorded in this report.



## **10.HARMONIC CURRENT TEST**

#### 10.1. Configuration of Test System

HARMONIC & FLICKER ANALYSER



#### 10.2.Test Standard

EN IEC 61000-3-2:2019+A1:2021

#### 10.3.Test Limits

For Class A equipment, the hamonics of the input current shall not exceed the values given in below:

Harmonic order h	Maximum permissible harmonic current A
Odd ha	rmonics
3	2,30
5	1,14
7	0,77
9	0,40
11	0,33
13	0,21
$15 \le h \le 39$	0,15 <u>15</u> h
Even ha	rmonics
2	1,08
4	0,43
6	0,30
$8 \le h \le 40$	0,23 <u>8</u>

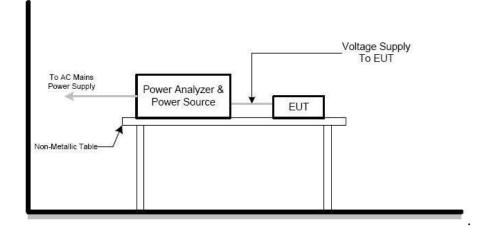
#### **10.4.Test Results**

No limit apply for equipment with an active input power less than or equal to 75W.



# **11.VOLTAGE FLUCTUATIONS & FLICKER TEST**

#### 11.1.Configuration of Test System



#### 11.2.Test Standard

EN 61000-3-3:2013+A1:2019+A2:2021

#### 11.3.Test Limits

The limits shall be applicable to voltage fluctuations and flicker at the supply terminal s of the equipment under test, the following limites apply:

the value of Pst shall not be greater than 1.0;

the value of Plt shall not be greater than 0.65;

the value of d(t) during a voltage change shall not exceed 3.3% for more than 500ms; the relative steady-state voltage change, dc, shall not exceed 3.3%;

the maximum relative voltage change dmax, shall not exceed

- a) 4% without additional conditions;
- b) 6% for equipment which is:

Switched manually, or

Swithced automatically more frequently than twice per day, and also has either a delayed restart(the delay being not less than a few thens of seconds), or manual restart, after a power supply interruption.

c) 7% for equipment which is

Attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or

switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart(the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

#### 11.4.Test Results

11.4.1.Test Results: PASS



EUT:	Interactive Whiteboard and Touch Screen Overlay(Touch Frame)	M/N:	NCTS-IWB86
Mode:	Running	Power:	DC 5V
Tested by:	Seven	Test date:	Jul.11,2018
Temperature: / Humidity	26.0℃/ 53.0%		

#### Test Data of Voltage Fluction and Flicker

PASS
230V
50Hz
600s
100%
100%

	Pst	dc(%)	dmax(%)	d(t)>3.3%(ms)	Judge
Limit	1.000	3.300	4.000	500	
Seg. 1	0.010	0.004	0.035	0	Pass
Seg. 2	a.,		-,		
Seg. 3	-,	-,	-,		
Seg. 4	-,	-,	-,		
Seg. 5	-,	-,	-,		
Seg. 6	-,	-,	-,		
Seg. 7	-,	-,	-,		
Seg. 8	a,	a,	-,		
Seg. 9	-,	-,	-,		
Seg.10	a,	-,	-,		
Seg.11	-,	-,	-,		
Seg.12	4,744	2,000	-,		

	Plt	Judge
Limit	0.650	
Measurement	0.004	Pass



# **12.IMMUNITY PERFORMANCE CRITERIA**

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level by its manufacturer or the requestor of the test, or the agreed between the manufacturer and the purchaser of the product.

Definition related to the performance level: Based on the used product standard Based on the declaration of the manufacturer, requestor or purchaser

#### 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. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test. 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 form the equipment if 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.

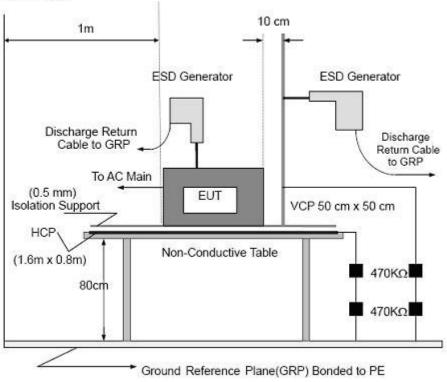


# **13.ELECTROSTATIC DISCHARGE IMMUNITY TEST**

### 13.1.Configuration of Test System

#### 13.1.1. TEST SETUP

Nearest Wall



#### 13.2.Test Standard

EN 55035:2017+A11:2020(EN 61000-4-2) (Severity Level 3 for Air Discharge at 8KV, Severity Level 2 for Contact Discharge at 4KV)



#### 13.3. Severity Levels and Performance Criterion

#### 13.3.1.Severity level

Level	Test Voltage	Test Voltage
	Contact Discharge (KV)	Air Discharge (KV)
1.	2	2
2.	4	4
3.	6	8
4.	8	15
Х	Special	Special

13.3.2.Performance criterion : **B** 

#### 13.4.Test Procedure

13.4.1.Air Discharge:

The test was applied on non-conductive surfaces of EUT. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the discharge electrode was removed from the EUT. The generator was re-triggered for a new single discharge and repeated 20 times for each pre-selected test point. This procedure was repeated until all the air discharge completed

#### 13.4.2.Contact Discharge:

All the procedure was same as Section 13.4.1. except that the generator was re-triggered for a new single discharge and repeated 50 times for each pre-selected test point. the tip of the discharge electrode was touch the EUT before the discharge switch was operated.

#### 13.5.Test Results

- 13.5.1.Test Results: PASS
- 13.5.2.Test data on the following pages.



# Electrostatic Discharge Test Results

Shenzhen Most Technology Service Co., Ltd.

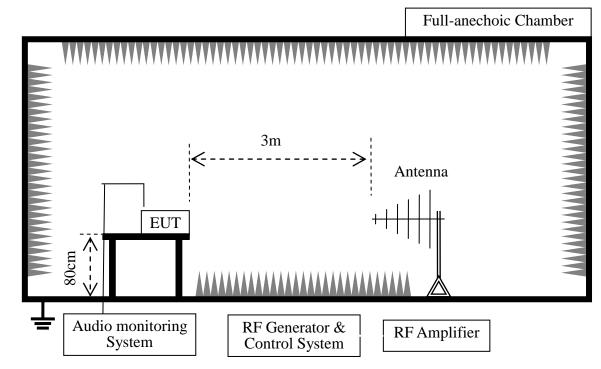
Criterion	: B	
	. D	
Humidity:	52.0%	
ge each Point Positi	ive 10 times an	d negative 10
scharge each point	positive 25 tim	es and
es discharge		
Description		
D C	ischarge -Contact	Result
	A	PASS
	Α	PASS
	С	PASS
		PASS
		PASS
	ge each Point Positi scharge each point es discharge Description A- D C	ge each Point Positive 10 times an scharge each point positive 25 tim es discharge Description Kind A-Air Discharge C-Contact Discharge A A C C C

Discharge was considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).

Reviewer :



# 14.RF FIELD STRENGTH SUSCEPTIBILITY TEST



14.1.Configuration of Test System

14.2.Test Standard

EN 55035:2017+A11:2020 (EN IEC 61000-4-3) (Severity Level: 2 at 3V / m)

#### 14.3. Severity Levels and Performance Criterion

Basic Standard:	EN IEC 61000-4-3
Required Performance:	Α
Frequency Range:	80 MHz - 1000 MHz,1800MHz,2600MHz,3500MHz,5000MHz
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



#### 14.4.Test Procedure

- a. The testing was performed in a fully anechoic chamber. The transmit antennawas located at a distance of 3 meters from the EUT.
- b. The frequency range is swept from 80 MHz to 1000 MHz, 1800 MHz, 2600 MHz, 3500 MHz, 5000 MHz, with the signal 80% amplitude modulated with a 1kHz sine-wave. The rate ofsweep did not exceed  $1.5 \times 10^{-3}$  decade/s,where the frequency range is sweptincrementally, the step size was 1% of preceding frequency value.
- c. The dwell time at each frequency shall be not less than the time necessary for theEUT to be able to respond.
- e. The test was performed with the EUT exposed to both vertically and horizontallypolarized fields on each of the four sides.

14.5.Test Results

14.5.1.Test Results: PASS

14.5.2.Test data on the following pages.



# RF Field Strength Susceptibility Test Results

Shenzhen Most Technology Service Co., Ltd.

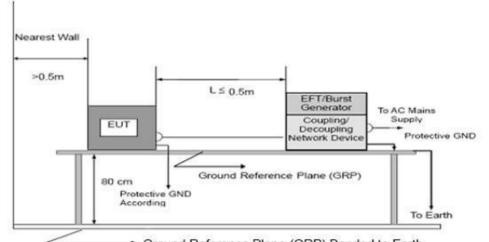
Temperature:	23.4°C			Relative Humidity:			52.0%		
Test Voltage:	1		Test l	st Mode:		1			
			-		_	-			
Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Azimut	h	Perform. Criteria	Resu	ilts	Judgment	
80MHz - 1000MHz	H / V	3 V/m (rms) AM Modulated 1000Hz, 80%	Front Rear Left Right		А	I	4	PASS	
1800MHz	H / V	3 V/m (rms) AM Modulated 1000Hz, 80%	Front Rear Left Right		A	I	4	PASS	
2600MHz	H / V	3 V/m (rms) AM Modulated 1000Hz, 80%	Front Rear Left Right		А	I	4	PASS	
3500MHz	H / V	3 V/m (rms) AM Modulated 1000Hz, 80%	Front Rear Left Right		А	P	Ą	PASS	
5000MHz	H / V	3 V/m (rms) AM Modulated 1000Hz, 80%	Front		A	P	A	PASS	

Reviewer :

Sunn

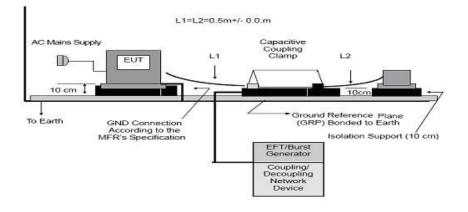


# **15.ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST**



### 15.1.Configuration of Test System





#### 15.2.Test Standard

EN 55035:2017+A11:2020(EN 61000-4-4) (Severity Level 2 at 1KV)



#### 15.3. Severity Levels and Performance Criterion

Open Circuit Output Test Voltage ±10%						
Level	On Power Supply	On I/O (Input/Output)				
	Lines	Signal data and control lines				
1.	0.5 KV	0.25 KV				
2.	1 KV	0.5 KV				
3.	2 KV	1 KV				
4.	4 KV	2 KV				
X	Special	Special				

#### 15.3.1.Severity level

15.3.2.Performance criterion : B

#### 15.4.Test Procedure

The EUT and its simulators were placed on a the ground reference plane and were insulated from it by an wood support  $0.1m \pm 0.01m$  thick. The ground reference plane was 1m\*1m metallic sheet with 0.65mm minimum thickness. This reference ground plane was project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane was more than 0.5m. All cables to the EUT was placed on the wood support, cables not subject to EFT/B was routed as far as possible from the cable under test to minimize the coupling between the cables.

15.4.1.For input and AC power ports:

The EUT was connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both positive transients and negative transients of test voltage was applied during compliance test and the duration of the test can't less than 2mins.

15.4.2.For signal lines and control lines ports:

It's unnecessary to test.

15.4.3.For DC input and DC output power ports:

It's unnecessary to test.

#### **15.5.Test Results**

- 15.5.1.Test Results: PASS
- 15.5.2.Test data on the following pages.



# Electrical Fast Transient/Burst Test Results

Shenzhen Most Technology Service Co., Ltd.

Test Voltage	:	1			Test	Dat	e :	Jul.11,2	2018		
Test Mode	:	1			Crite	erior	ı :	В			
Temperature:		23.4 °C			Hum	Humidity:			52.0%		
				Tes	t Results De	escription	ı				
Inject Line		ltage KV	Inject Time(s)	Inject Method	Results	Inject L	ine	Voltage KV	Inject Time(s)	Inject Method	Results
L		±1	120	Direct	PASS						
Ν		±1	120	Direct	PASS						
L + N		±1	120	Direct	PASS						
PE		±1	120	Direct	PASS						
L+PE		±1	120	Direct	PASS						
N + PE		±1	120	Direct	PASS						
L + N + PE		±1	120	Direct	PASS						

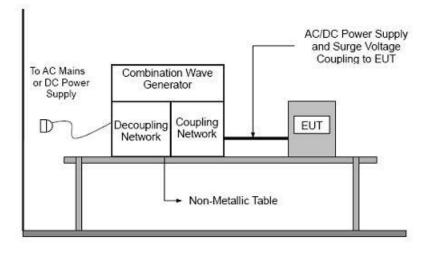
Remark:

Reviewer : Summ



## **16.SURGE TEST**

#### 16.1.Configuration of Test System



#### 16.2.Test Standard

EN 55035:2017+A11:2020 (EN 61000-4-5) (Severity Level : Line to Line was Level 2 at 1KV Line to PE was Level 3 at 2KV)

#### 16.3. Severity Levels and Performance Criterion

#### 16.3.1.Severity level

Severity Level	Open-Circuit Test Voltage					
	KV					
1	0.5					
2	1.0					
3	2.0					
4	4.0					
*	Special					

16.3.2.Performance criterion : **B** 



#### 16.4.Test Procedure

- 16.4.1.Set up the EUT and test generator as shown on Section 16.1.
- 16.4.2.For line to line coupling mode, provide a 1KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points, and for active line / neutral line to ground are same except test level is 2KV.
- 16.4.3.At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are applied during test.
- 16.4.4.Different phase angles are done individually.
- 16.4.5.Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

#### 16.5.Test Results

- 16.5.1.Test Results: PASS
- 16.5.2.Test data on the following pages.



# Surge Immunity Test Results Shenzhen Most Technology Service Co., Ltd.

Test Voltage :	1			Test Date :	Jul.11,2018
Test Mode :	1			Criterion :	В
Temperature:	23.4 °C			Humidity:	52.0%
		Tes	st Results Descrip	otion	
Location	Polarity	Phase Angle	No of Pulse	Pulse Voltage (KV)	Result
L-N	±	0	5	1.0	PASS
	±	90	5	1.0	PASS
	±	180	5	1.0	PASS
	±	270	5	1.0	PASS
L-PE	±	0	5	2.0	PASS
	±	90	5	2.0	PASS
	$\pm$	180	5	2.0	PASS
	$\pm$	270	5	2.0	PASS
N-PE	$\pm$	0	5	2.0	PASS
	$\pm$	90	5	2.0	PASS
	$\pm$	180	5	2.0	PASS
	$\pm$	270	5	2.0	PASS
L+N-PE	$\pm$	0	5	2.0	PASS
	<u>+</u>	90	5	2.0	PASS
	<u>±</u>	180	5	2.0	PASS
	<u>±</u>	270	5	2.0	PASS

Remark:

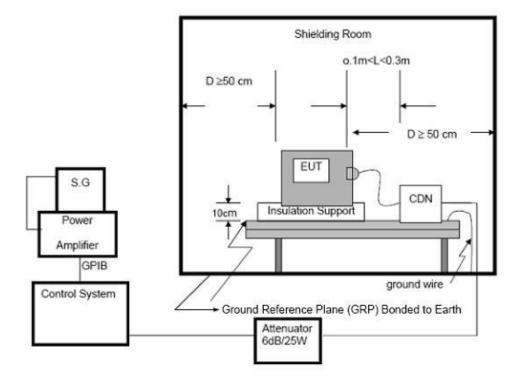
Reviewer :

unn



### **17.INJECTED CURRENTS SUSCEPTIBILITY TEST**

### 17.1.Configuration of Test System



### 17.2.Test Standard

EN 55035:2017+A11:2020(EN 61000-4-6) (Severity Level 2 at 3V (r.m.s.) and frequency is from 0.15MHz to 10MHz Severity Level 1& Level 2 at 3V (r.m.s.) to 1V (r.m.s.) and frequency is from 10MHz to 30MHz

Severity Level 1 at 1V (r.m.s.) and frequency is from30MHz to 80MHz)

### 17.3. Severity Levels and Performance Criterion

17.3.1.Severity level

Level	Voltage Level (e.m.f.) V
1.	1
2.	3
3.	10
X	Special

17.3.2.Performance criterion: A



### 17.4.Test Procedure

- 17.4.1.Set up the EUT, CDN and test generators as shown on Section 17.1.
- 17.4.2.Let the EUT work in test mode and test it.
- 17.4.3. The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 17.4.4.The disturbance signal description below is injected to EUT through CDN.
- 17.4.5. The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 17.4.6.Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

### **17.5.Test Results**

- 17.5.1.Test Results: PASS
- 17.5.2.Test data on the following pages.



# Injected Currents Susceptibility Test Results Shenzhen Most Technology Service Co., Ltd.

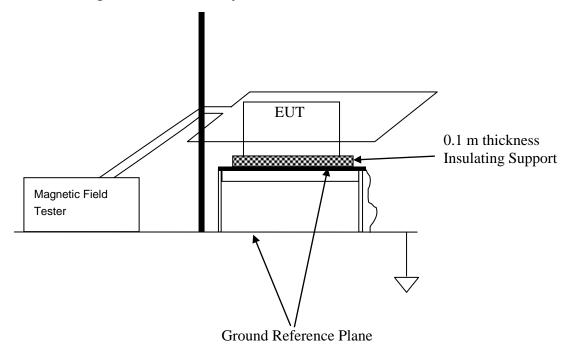
Power Supply :	1	Test Date:		Jul.11,2018		
Test Mode :	1		Criterion:		Α	
Temperature:	23.4 °C	Hur	midity:	52.0%		
	Test	Results Descripti	on		1	
Frequency Range (MHz)	Injected Position	el Criterion		rion	Result	
0.15 ~ 80	AC Power Port 3V(rms), Unmodulate			d A		PASS
Remark : No function	loss					
,						

Sunmi Reviewer :



### **18.MAGNETIC FIELD IMMUNITY TEST**

### 18.1.Configuration of Test System



18.2.Test Standard

EN 55035:2017+A11:2020(EN 61000-4-8) (Severity Level 1 at 1A/m)

### 18.3. Severity Levels and Performance Criterion

18.3.1.Severity level

Level	Magnetic Field Strength A/m
1.	1
2.	3
3.	10
4.	30
5.	100
Χ.	Special

18.3.2.Performance criterion : A



### **18.4.Test Procedure**

The EUT was subjected to the test magnetic field by using the induction coil of standard dimensions (1m\*1m) and shown in Section 18.1. The induction coil was then rotated by 90° in order to expose the EUT to the test field with different orientations.

#### **18.5.Test Results**

18.5.1.Test Results: PASS

18.5.2.Test data on the following pages.



### Magnetic Field Immunity Test Results

Shenzhen Most Technology Service Co., Ltd.

Test Voltage :	1		Test Date: Jul.11	Test Date: Jul.11,2018				
Test Mode :	1		Criterion : A					
Temperature:	23.4 °C		Humidity: 52.0%					
Test Results Description								
Test Level	Testing Duration	Coil Orientation	Criterion	Result				
1A/m(50Hz/60Hz)	5 mins	X	A	PASS				
1A/m(50Hz/60Hz)	5 mins	Y	A	PASS				
1A/m(50Hz/60Hz)	5 mins	Ζ	Α	PASS				

Remark: No function loss

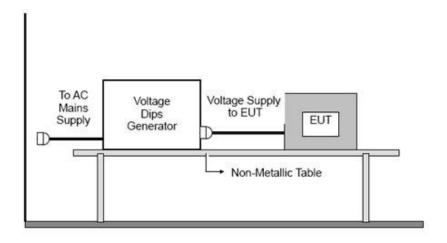
Reviewer :

Sunmi



### **19.VOLTAGE DIPS AND INTERRUPTIONS TEST**

### 19.1.Configuration of Test System



### 19.2.Test Standard

EN 55035:2017+A1	1:2020(EN IEC 61000-4-11)
(Severity level: 0%	250 period
0%	0.5 periods
70%	25 periods )

### 19.3. Severity Levels and Performance Criterion

### 19.3.1.Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Performance Criterion	Duration (in period)
0	100	С	250
0	100	В	0.5
70	30	С	25

19.3.2.Performance criterion : **B & C** 



#### **19.4.Test Procedure**

19.4.1. The EUT and test generator were setup as shown on Section 19.1.

19.4.2. The interruptions is introduced at selected phase angles with specified duration.

19.4.3.Record any degradation of performance.

### **19.5.Test Results**

- 19.5.1.Test Results: PASS
- 19.5.2.Test data on the following pages.



### Voltage Dips And Interruptions Test Results

Shenzhen Most Technology Service Co., Ltd.

Test Voltage :	1		Test Date:	Test Date: Jul.11,2018			
Test Mode :	1		Criterion .	Criterion : B&C			
Temperature:	23.4 °C		Humidity:	52.0%	52.0%		
		Test Results Des	cription				
Test Level	Voltage Dips & Short	Duration (in period)	Phase Angle	Criterion	Result		
$\% U_{T}$	Interruptions % U <sub>T</sub>						
0	100	250P	0 °~360 °	С	PASS		
70	30	25P	0 °~360 °	В	PASS		
0	100	0.5P	0 °~360 °	В	PASS		

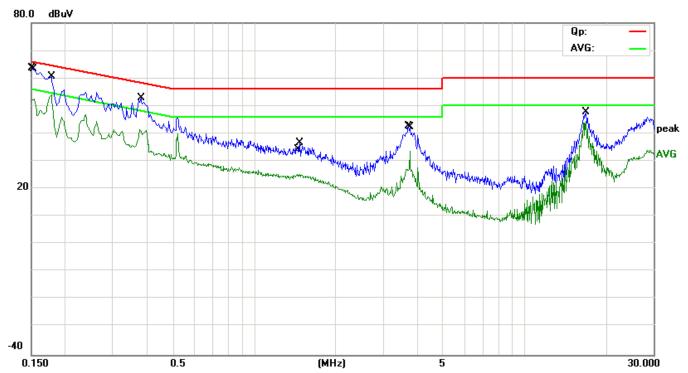
*Remark:*  $U_T$  is the rated voltage for the equipment.

Reviewer :

Sunm

# **APPENDIX I**

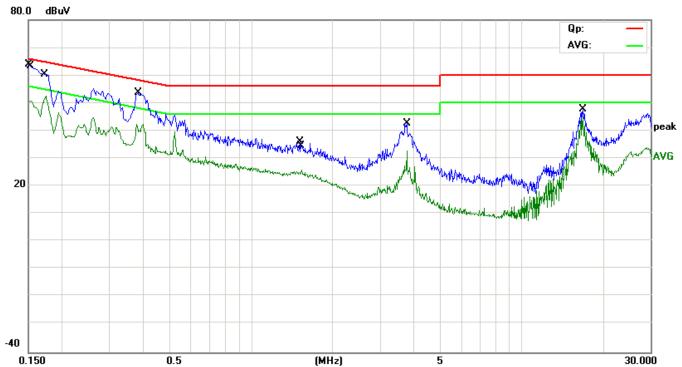
EUT:	Interactive Whiteboard and Touch Screen Overlay(Touch Frame)	M/N:	NCTS-IWB86
Mode:	Running	Phase:	L1
Test by:	Joe	Power:	DC 5V
Temperature: / Humidity	25.0℃/ 53.0%	Test date:	2018-07-11



No.	MŁ	Freq.	Reading Level	Correct Factor	Measure-	Limit	Over		
INU.	IVIK.				ment				
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	52.20	9.60	61.80	66.00	-4.20	QP	
2		0.1540	41.10	9.60	50.70	55.78	-5.08	AVG	
3		0.1780	47.10	9.61	56.71	64.58	-7.87	QP	
4		0.1780	40.20	9.61	49.81	54.58	-4.77	AVG	
5		0.3780	31.81	9.59	41.40	48.32	-6.92	AVG	
6		0.3820	43.24	9.59	52.83	58.24	-5.41	QP	
7		1.4460	15.70	9.60	25.30	46.00	-20.70	AVG	
8		1.4740	27.07	9.60	36.67	56.00	-19.33	QP	
9		3.7380	33.17	9.62	42.79	56.00	-13.21	QP	
10		3.7780	24.07	9.62	33.69	46.00	-12.31	AVG	
11		16.8780	38.09	9.71	47.80	60.00	-12.20	QP	
12		16.8780	34.74	9.71	44.45	50.00	-5.55	AVG	

\*:Maximum data x:Over limit !:over margin

EUT:	Interactive Whiteboard and Touch Screen Overlay(Touch Frame)	M/N:	NCTS-IWB86
Mode:	Running	Phase:	Ν
Test by:	Joe	Power:	DC 5V
Temperature: / Humidity	25.0°C/ 53.0%	Test date:	2018-07-11

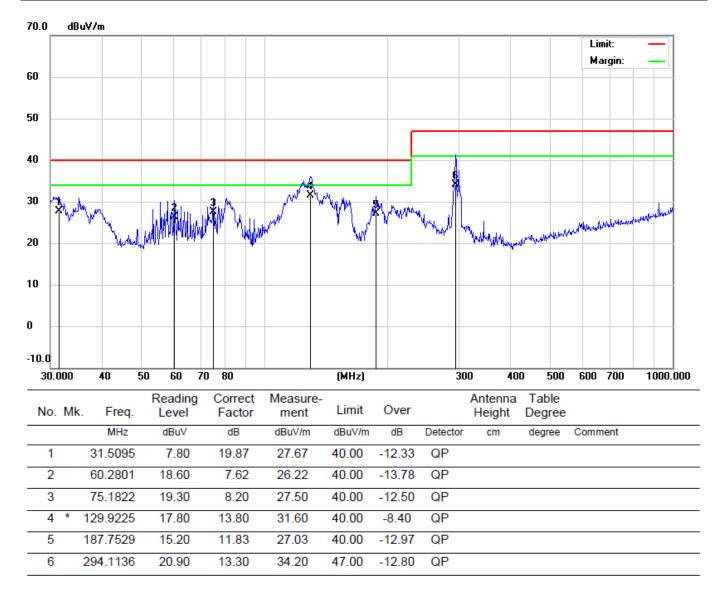


0.100		0.0			(0002)			U U		
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over				
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment		
1	0.1500	52.20	9.60	61.80	66.00	-4.20	QP			
2	0.1540	40.60	9.60	50.20	55.78	-5.58	AVG			
3	0.1740	47.70	9.61	57.31	64.77	-7.46	QP			
4 *	0.1740	41.10	9.61	50.71	54.77	-4.06	AVG			
5	0.3780	32.83	9.59	42.42	48.32	-5.90	AVG			
6	0.3820	44.10	9.59	53.69	58.24	-4.55	QP			
7	1.5180	26.47	9.60	36.07	56.00	-19.93	QP			
8	1.5380	16.22	9.60	25.82	46.00	-20.18	AVG			
9	3.7780	32.93	9.62	42.55	56.00	-13.45	QP			
10	3.7780	23.12	9.62	32.74	46.00	-13.26	AVG			
11	16.8780	38.03	9.71	47.74	60.00	-12.26	QP			
12	16.8780	35.02	9.71	44.73	50.00	-5.27	AVG			

\*:Maximum data x:Over limit !:over margin

## **APPENDIX II**

	Interactive Whiteboard and Touch Screen Overlay(Touch Frame)	M/N:	NCTS-IWB86
Mode:	Running	Polarization:	Horizontal
Test by:	Joe	Power:	DC 5V
Temperature: / Humidity	24.0°C/ 51.0%	Test date:	2018-07-11

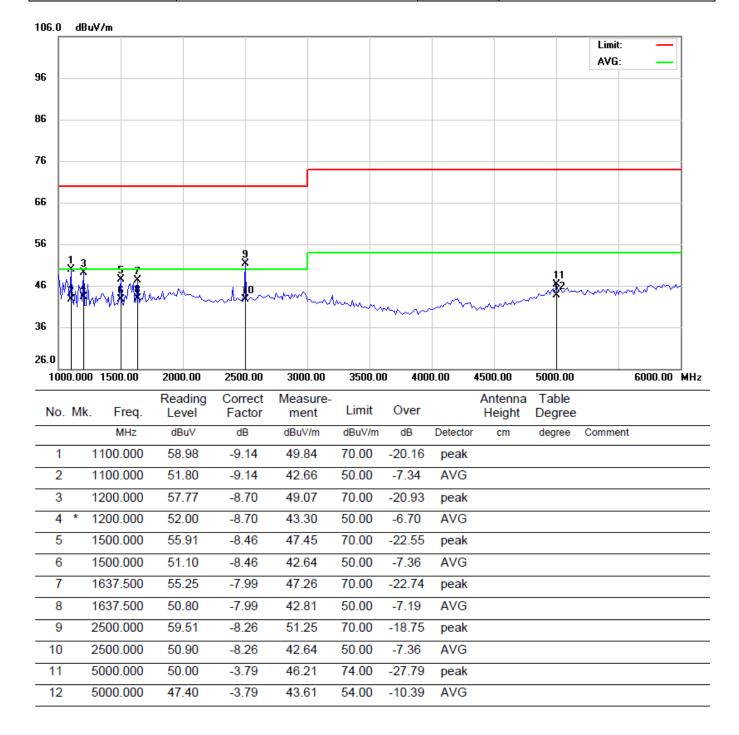


EUT:	Interactive Whiteboard and Touch Screen Overlay(Touch Frame)	M/N:	NCTS-IWB86	
Mode:	Running	Polarization:	Vertical	
Test by:	Joe	Power:	DC 5V	
Temperature: / Humidity	24.0°C/ 51.0%	Test date:	2018-07-11	



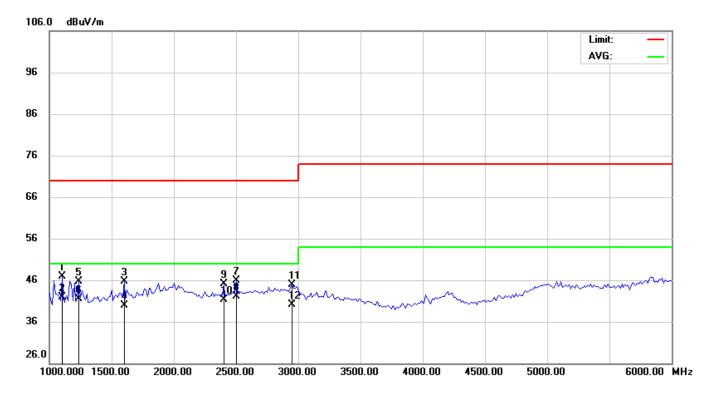
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		39.4371	16.20	14.22	30.42	40.00	-9.58	QP			
2		62.6506	23.10	7.79	30.89	40.00	-9.11	QP			
3	*	134.0880	18.70	13.64	32.34	40.00	-7.66	QP			
4		189.0743	16.20	11.87	28.07	40.00	-11.93	QP			
5		295.1468	20.30	13.33	33.63	47.00	-13.37	QP			
6		590.9737	7.60	18.70	26.30	47.00	-20.70	QP			

EUT:	Interactive Whiteboard and Touch Screen Overlay(Touch Frame)	M/N:	NCTS-IWB86
Mode:	Running	Polarization:	Horizontal
Test by:	Joe	Power:	DC 5V
Temperature: / Humidity	24.0°C/ 51.0%	Test date:	2018-07-11



\*:Maximum data x:Over limit 1:over margin

EUT:	Interactive Whiteboard and Touch Screen Overlay(Touch Frame)	M/N:	NCTS-IWB86
Mode:	Running	Polarization:	Vertical
Test by:	Joe	Power:	DC 5V
Temperature: / Humidity	24.0°C/ 51.0%	Test date:	2018-07-11



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1100.000	55.96	-9.14	46.82	70.00	-23.18	peak			
2		1100.000	51.10	-9.14	41.96	50.00	-8.04	AVG			
3		1600.000	53.88	-8.08	45.80	70.00	-24.20	peak			
4		1600.000	47.90	-8.08	39.82	50.00	-10.18	AVG			
5		1237.500	54.48	-8.73	45.75	70.00	-24.25	peak			
6		1237.500	50.20	-8.73	41.47	50.00	-8.53	AVG			
7		2500.000	54.07	-8.26	45.81	70.00	-24.19	peak			
8	*	2500.000	50.40	-8.26	42.14	50.00	-7.86	AVG			
9		2400.000	53.58	-8.43	45.15	70.00	-24.85	peak			
10		2400.000	49.80	-8.43	41.37	50.00	-8.63	AVG			
11		2950.000	53.19	-8.30	44.89	70.00	-25.11	peak			
12		2950.000	48.40	-8.30	40.10	50.00	-9.90	AVG			

# **APPENDIX III** (Photos of the EUT)



Figure 1 General Appearance of the EUT

Figure 2 General Appearance of the EUT

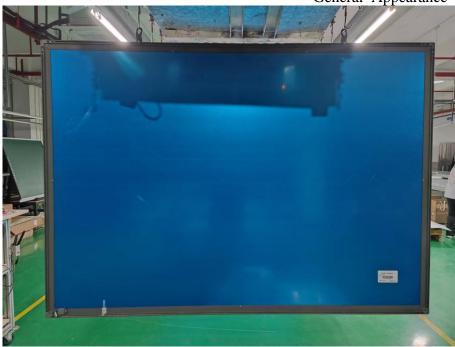


Figure 3 General Appearance of the EUT



Figure 4 General Appearance of the EUT



Figure 5 Components Side of the PCB

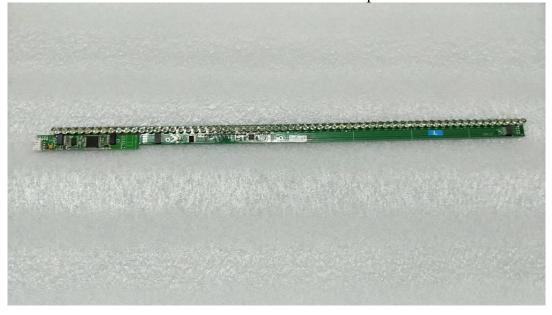


Figure 6 Components Side of the PCB



Figure 7 Components Side of the PCB



Figure 8 Components Side of the PCB

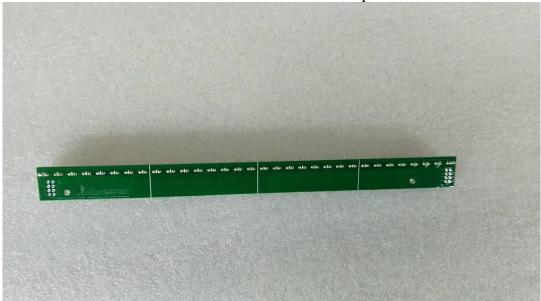


Figure 9 Components Side of the PCB

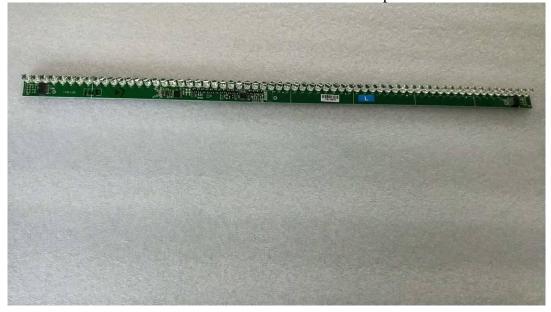


Figure 10 Components Side of the PCB

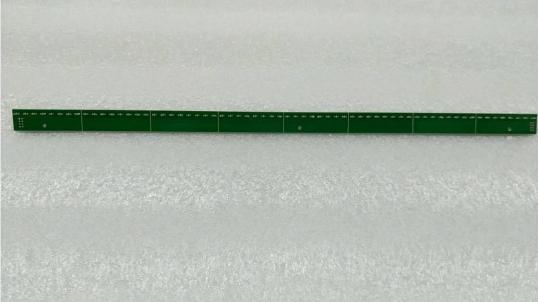


Figure 11 Components Side of the PCB

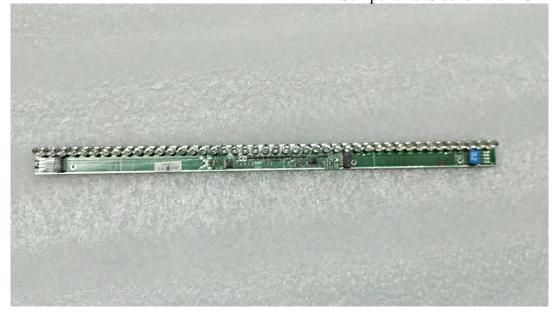


Figure 12 Components Side of the PCB



Figure 13 Components Side of the PCB

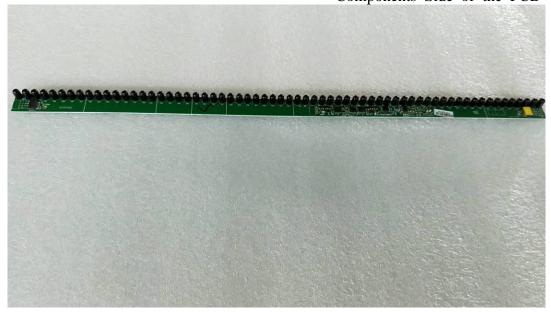


Figure 14 Components Side of the PCB

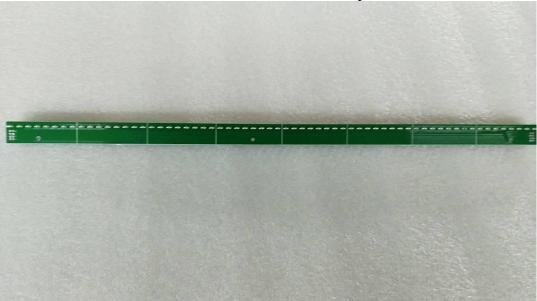


Figure 15 Components Side of the PCB

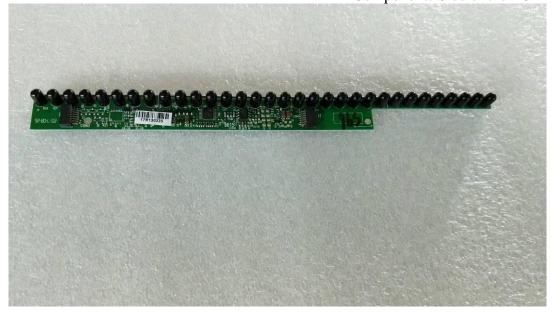


Figure 16 Components Side of the PCB

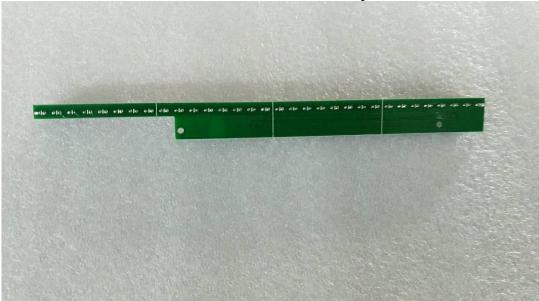


Figure 17 Components Side of the PCB

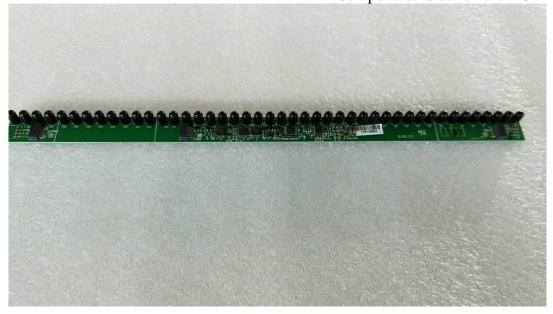


Figure 18 Components Side of the PCB

