EMC EMISSION - TEST REPORT

Report Number	:	**64.910.16.06187.01E – (E)**	Date of Issue:	2017-05-23
Model / Serial No.	:	P326.833		
Product Type	:	Notos Bluetooth speaker		
Applicant	:	Xindao B.V.		
Manufacturer	:	Xindao B.V.		
License holder	:	Xindao B.V.		
Address	:	Verrijn Stuartlaan 1d, 2288 EK Rijswijk, THE NETHERLANDS		
Test Result	:	■ **Positive** ☐ **Negative**		
Total pages including Appendices	:	24		

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DIRECTORY - EMISSIONS

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch

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EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to the following regulations:

■ - EN 301 489-1 V1.9.2 (2011-09)
☐ - EN 301 489-3 V1.6.1 (2013-08)
■ - EN 301 489-17 V2.2.1 (2012-09)
■ - EN 55022:2010
■ - EN 55032:2010
☐ - EN 55014-1:2006+A1:2009
☐ - EN 55013:2013
☐ - EN 61000-3-2:2014
☐ - EN 61000-3-3:2013

Description of EUT

EUT is a kind of speaker using Bluetooth 4.1 wireless technology.

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Environmental Conditions In The Laboratory:

	Actual
Temperature:	: 23.8°C
Relative Humidity:	: 58.7%
Atmospheric Pressure:	: 101.5kPa

Power Supply of EUT

Rated voltage	: 5VDC
Rated power	: 3W

STATEMENT OF MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error (please refer to each test item). Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Symbol Definitions:

■ - Applicable
☐ - Not Applicable

Test laboratory:

☐ - TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
Add: 5F, Communication Building, 163 Pingyun Rd, Huangpu West Ave. Guangzhou 510656 P.R.China

■ - TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch, EMC Laboratory Department
Add: Building 12, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, Shenzhen City, 518052, P. R. China

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Emissions Test Conditions: CONDUCTED EMISSIONS (Interference Voltage)

The *CONDUCTED EMISSIONS (INTERFERENCE VOLTAGE)* measurements were performed at the following test location:

■ - Test not applicable

☐ - Test Area (TÜV SÜD Guangzhou) – Shielded room
☐ - Test Area (TÜV SÜD Shenzhen) – Shielded room

Test Equipment Used :

	Model Number	Manufacturer	Description	Serial Number	Cal. Due
☐ -	ESCI	Rohde & Schwarz	EMI Test Receiver	100727	2017-10-31
☐ -	ENV216	Rohde & Schwarz	AMN	3506.6550.05	2017-10-31
☐ -	ESH2-Z3	Rohde & Schwarz	Passive voltage probe	0299.7810.56	2017-10-31
☐ -	RSU-M314-N	Compliance Direction Systems Inc.	RF Switch Box	08042801	2017-10-31
☐ -			Artificial Hand		
☐ -	ENV216	Rohde & Schwarz	LISN	100326	2017-07-15
☐ -	ESR 3	Rohde & Schwarz	EMI Test Receiver	101782	2017-07-15
☐-	--	--	Conical metal housing	--	--

Measurement Uncertainty: ±3.88dB (9kHz-150kHz), ±3.50dB (150kHz-30MHz)
Remarks: All test equipments used are calibrated on a regular basis.

Test Regulations: EN 301 489-17 V2.2.1 Clause 7.1
EN 301 489-1 V1.9.2 Clause 8.4, 8.7

Limit: EN 301 489-1 Clause 8.3.3 Table 5
Class B limits given in EN 55022:2006+A1:2007

Remark: more critical requirements will be applied when more than one limit is used at same point.

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Emissions Test Conditions: RADIATED EMISSIONS (Magnetic Field)

The *RADIATED EMISSIONS (MAGNETIC FIELD)* measurements were performed at the following test location:

☐ **- Test not applicable**

☐ - Test Area (TÜV SÜD Guangzhou) – Shielded room
☐ - Test Area (TÜV SÜD Shenzhen) – Shielded room

Testing was performed at a test distance of :

☐ - 2 meters loops
☐ - 3 meters loops
☐ - 4 meters loops

Test Equipment Used :

	Model Number	Manufacturer	Description	Serial Number	Cal. Due
☐ -	HXYZ 9170	Schwarzbeck	3-LOOP Antenna	YP170-193	2017-10-31
☐ -	ESCI	Rohde & Schwarz	EMI Test Receiver	100727	2017-10-31
☐ -	RSU-M314-N	Compliance Direction Systems Inc.	RF Switch Box	08042801	2017-10-31
☐ -	ESR 3	Rohde & Schwarz	EMI Test Receiver	101782	2017-07-15
☐ -	HM020	Rohde & Schwarz	Triple Loop Antenna	100951	2017-07-15

Measurement Uncertainty: ±2.50dB (9 kHz-30MHz)
Remarks: All test equipments used are calibrated on a regular basis.

Test Regulations: EN 55015:2013+A1:2015 Clause 4.4

Limit: EN 55015:2013+A1:2015 Table 3a

Remark: more critical requirements will be applied when more than one limit is used at same point.

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Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

The *RADIATED EMISSIONS (ELECTRIC FIELD)* measurements, in the frequency range of 30 MHz-1000 MHz, were tested in a horizontal and vertical polarization at the following test location :

☐ - Test not applicable

■ - Test Area (TÜV SÜD Shenzhen) – Anechoic ferrite lined shielded room

Testing was performed at a test distance of :

■ - 3 meters
☐ - 10 meters

Test Equipment Used :

	Model Number	Manufacturer	Description	Serial Number	Cal. Due
■ -	ESR 26	Rohde & Schwarz	EMI Test Receiver	101269	2017-07-15
■ -	VULB 9163	Schwarzbeck	Trilog Super Broadband Test Antenna	707	2017-07-24
■ -	SCU 18	Rohde & Schwarz	Pre-amplifier	102230	2017-07-15

Measurement Uncertainty: ±4.91B (30MHz-1000MHz)
Remarks: All test equipments used are calibrated on a regular basis.

Test Regulations: EN 301 489-17 V2.2.1 Clause 7.1
EN 301 489-1 V1.9.2 Clause 8.2
EN 55022:2010
EN 55032:2015

limit:
EN 301 489-1 Clause 8.2.3
Class B limits given in EN55022:2006+A1:2007
EN 55022:2010
EN 55032:2015

Remark: more critical requirements will be applied when more than one limit is used at same point.

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Emissions Test Conditions: CONDUCTED EMISSIONS (Harmonics and Flicker)

The *Harmonic Current Emissions and Voltage Fluctuations and Flicker* measurements were performed at the following test location :

■- Test not performed

☐ - Test Area (TÜV SÜD Guangzhou) – Laboratory open area
☐ - Test Area (TÜV SÜD Shenzhen) – Laboratory open area

Test Equipment Used :

	Model Number	Manufacturer	Description	Serial Number	Cal. Due
☐ -	PCR6000LA	Kikusui	Multi purpose power supply	MG002890	2017-03-13
☐ -	PM6000-1	Voltech	Power anyalyser	100006700229	2017-03-13
☐ -	IMP555	Voltech	Impedance network	1494	2017-03-13
☐ -	MX45-3PI-400-413-CTSHL-LF-SNK	C.I.	Three Phase Harmonic flicker test system	1424A00547	2017-07-15

Remarks: All test equipments used are calibrated on a regular basis.

Test Regulations: EN 301 489-17 V2.2.1 Clause 7.1
EN 301 489-1 V1.9.2 Clause 8.5, 8.6
EN 61000-3-2:2014
EN 61000-3-3:2013

Limit: EN 61000-3-2:2014
EN 61000-3-3:2013

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Equipment Under Test (EUT) Test Operation Mode - Emissions Tests :

The equipment under test was operated under the following conditions during emissions testing:

☐ - Standby

☐ - Test Program (H - Pattern)

☐ - Test Program (Color Bar)

☐ - Test Program (Customer Specified)

■ - Normal Operating Mode

☐ - _____

_____

_____

Configuration of the equipment under test:

■ - See Constructional Data Form in Appendix B

■ - See Product Information Form(s) in Appendix B

The following peripheral devices and interface cables were connected during the testing:

■ - Adaptor	Type :	Lab tool. Input:100-240V,0.45A, 50/60Hz Output:5V DC,1A max
☐ - _____	Type :	_____
☐ - _____	Type :	_____
☐ - _____	Type :	_____
☐ - _____	Type :	_____
☐ - _____	Type :	_____
☐ - _____	Type :	_____
☐ - _____	Type :	_____

■ - unshielded power cable

☐ - unshielded cables

☐ - shielded cables TÜV SÜD.No.: _____

☐ - customer specific cables

☐ - _____

☐ - _____

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Emissions Test Results:

Conducted Emissions, 9 kHz - 30 MHz

☐ - PASS ☐ - FAIL ■ - NOT APPLICABLE

Minimum limit margin _____ dB at _____ MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: _____

Radiated Emissions (Magnetic Field), 9 kHz - 30 MHz

☐ - PASS ☐ - FAIL ■ - NOT APPLICABLE

Minimum limit margin _____ dB at _____ MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: _____

Radiated Emissions (Electric Field), 30 MHz - 1000 MHz

■ - PASS ☐ - FAIL ☐ - NOT APPLICABLE

Minimum limit margin _____ dB at _____ MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: Power supply: 5VDC

Harmonic Current Emissions and Voltage Fluctuations and Flicker

☐ - PASS ☐- FAIL ■ - NOT APPLICABLE

Harmonic measurement exceeding limit _____ Above at _____ Harmonic

Flicker measurement exceeding limit _____ Above the _____ Requirement

Remarks: _____

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China

GENERAL REMARKS:

SUMMARY:

All tests according to the regulations cited on page 3 were

■ - Performed

☐ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements cited on page 3.

☐ - **Does not** fulfill the general approval requirements cited on page 3.

Testing Start Date: 2016-12-30

Testing End Date: 2016-12-30

- TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch-

Reviewed by: Peter Jia

Prepared by: Wendy Ye

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Appendix A

Test Setup

and

Test Data Sheets

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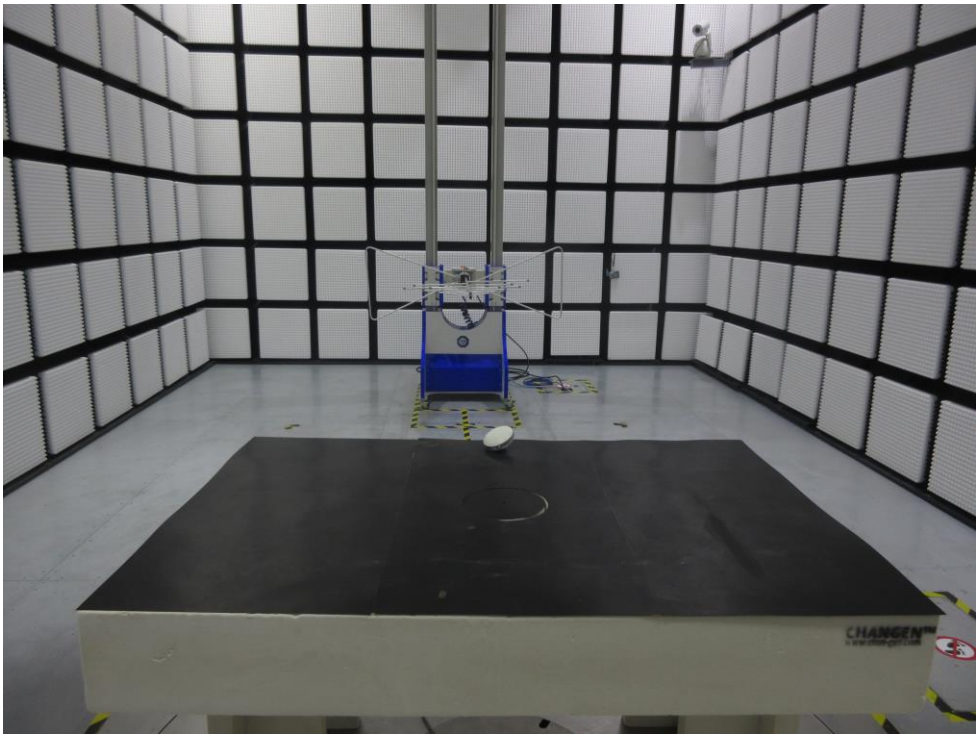
Setup Photo of Radiated Emissions



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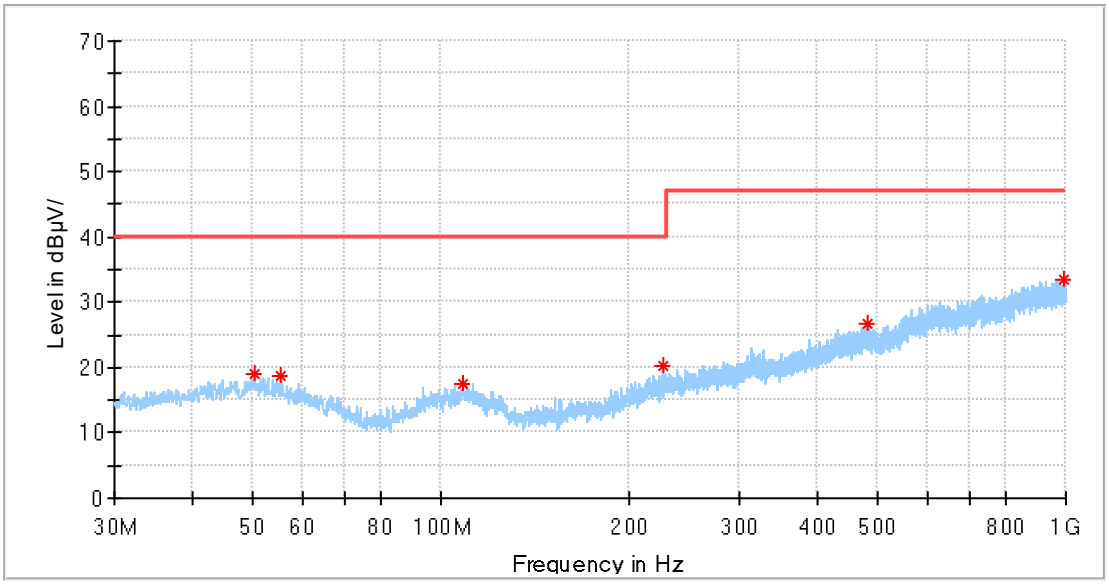
Radiated Emission (30MHz-1000MHz)



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol
50.370000	18.92	40.00	21.08	H
55.523125	18.58	40.00	21.42	H
108.388125	17.61	40.00	22.39	H
225.940000	20.20	40.00	19.80	H
479.958750	26.58	47.00	20.42	H
995.756250	33.46	47.00	13.54	H

Model : P326.833 (powered by built-in battery)
Operating Mode : Continuous operating
Antenna : Horizontal
Test By : Wendy Ye
Test Date : 2016-12-30

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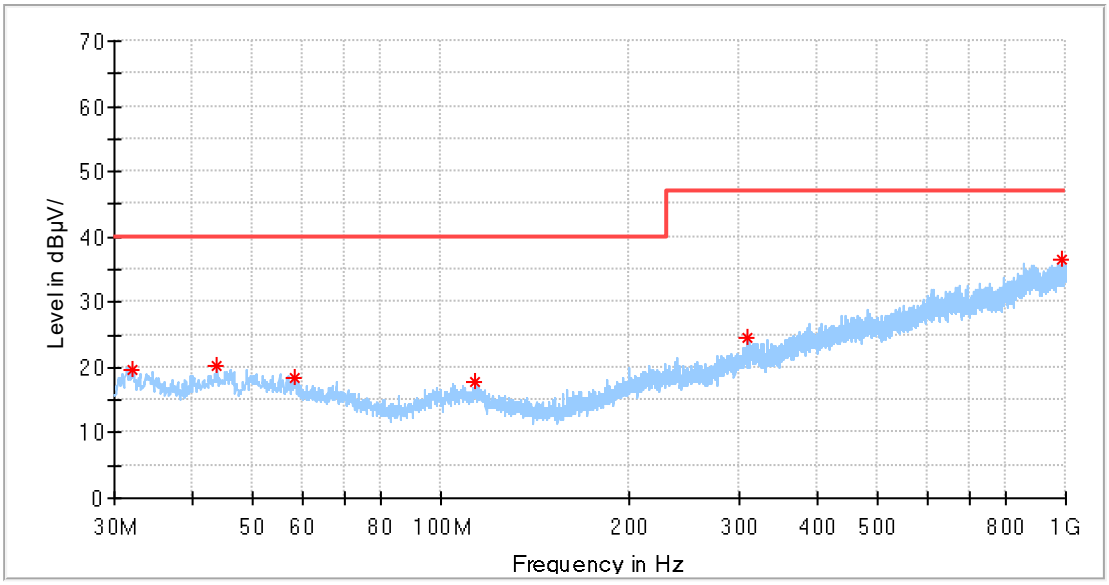
Radiated Emission (30MHz-1000MHz)



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol
32.061250	19.51	40.00	20.49	V
43.761875	20.24	40.00	19.76	V
58.251250	18.40	40.00	21.60	V
112.995625	17.76	40.00	22.24	V
310.026875	24.47	47.00	22.53	V
987.268750	36.67	47.00	10.33	V

Model : P326.833 (powered by built-in battery)
Operating Mode : Continuous operating
Antenna : Horizontal
Test By : Wendy Ye
Test Date : 2016-12-30

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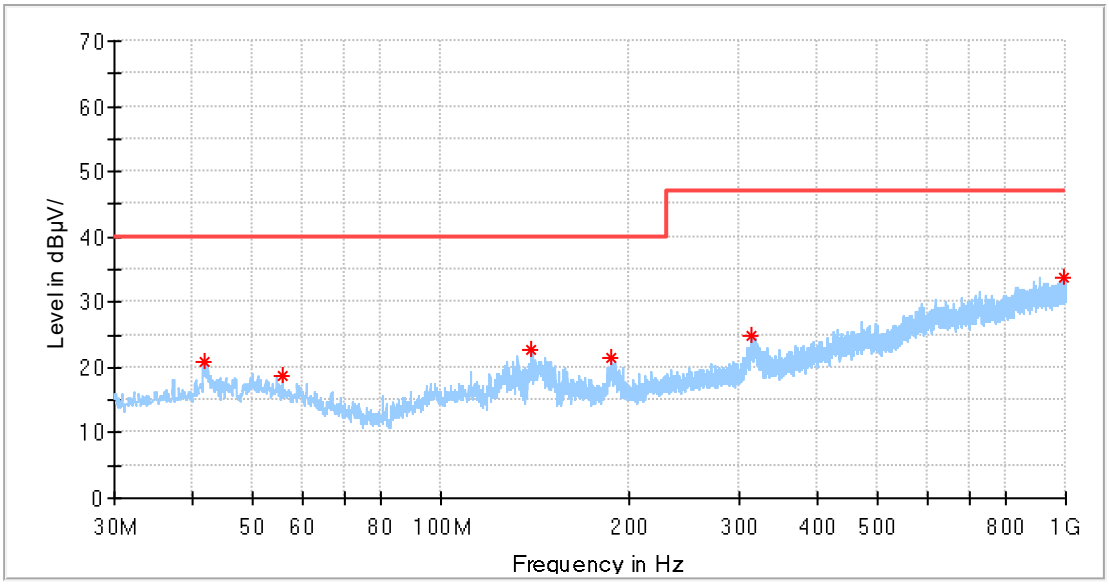
Radiated Emission (30MHz-1000MHz)



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol
41.700625	20.96	40.00	19.04	H
55.705000	18.69	40.00	21.31	H
139.428125	22.62	40.00	17.38	H
186.958125	21.37	40.00	18.63	H
313.725000	24.93	47.00	22.07	H
992.785625	33.87	47.00	13.13	H

Model : P326.833 (powered by a EMC compliance adaptor through USB port)
Operating Mode : Continuous operating and charging
Antenna : Horizontal
Test By : Wendy Ye
Test Date : 2016-12-30

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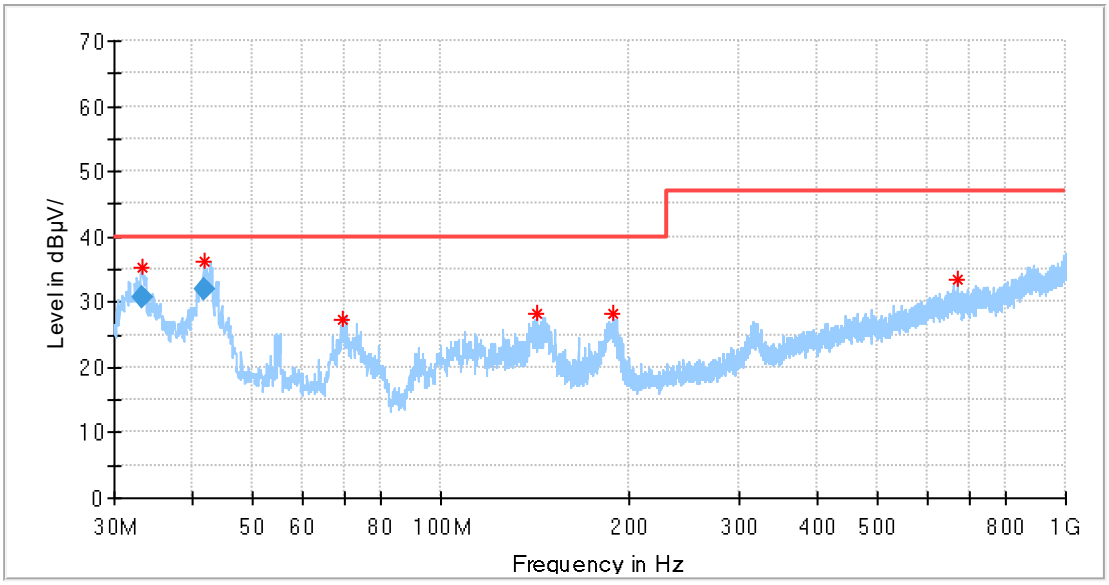
Radiated Emission (30MHz-1000MHz)



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol
33.238750	35.44	40.00	4.56	V
41.924062	36.11	40.00	3.89	V
69.588125	27.25	40.00	12.75	V
142.580625	28.20	40.00	11.80	V
188.049375	28.34	40.00	11.66	V
671.958125	33.48	47.00	13.52	V

Final_Result

Frequency (MHz)	QuasiPeak (dB¦ÌV/m)	Limit (dB¦ÌV/m)	Margin (dB)	Pol
33.238750	30.80	40.00	9.20	V
41.924062	32.01	40.00	7.99	V

Model	:	P326.833 (powered by a EMC compliance adaptor through USB port)
Operating Mode	:	Continuous operating and charging
Antenna	:	Horizontal
Test By	:	Wendy Ye
Test Date	:	2016-12-30

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Appendix B

Constructional Data Form

and

Product Information Form(s)

Any safety relevant information or constructional aspect concerning the sample or equipment under test as submitted by the applicant / report holder / certificate holder or any authorized agent is deemed to have no adverse effect on the electromagnetic compatibility (EMC) performance. Insofar as safety or compliance with Low Voltage Directive (LVD) or any relevant directive is concerned, the applicant / report holder / certificate holder or any authorized agent is required, by virtue of the relevant EU Directive provisions, to have satisfied that the product concerned (for which a sample was tested) meets with LVD or other relevant directives before placing it on the market.

Where applicable, changes or modifications made to the original sample submitted for testing are documented herein. The applicant or manufacturer shall ensure that such changes or modifications are applied to the production units. Any further changes or modifications made to the production units may void the validity of this test report unless such changes or modifications have been formally assessed by TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch through technical evaluations or other means as appropriate and it has been confirmed that the EMC performance of such units is not adversely affected.

The enclosed, if any, circuit diagram / parts list / printed circuit board diagram / component layout / user manual are strictly for reference only. TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch shall not be held responsible for any error or omission in such documents. It is the manufacturer's responsibility to ensure that production units conform to the tested sample.

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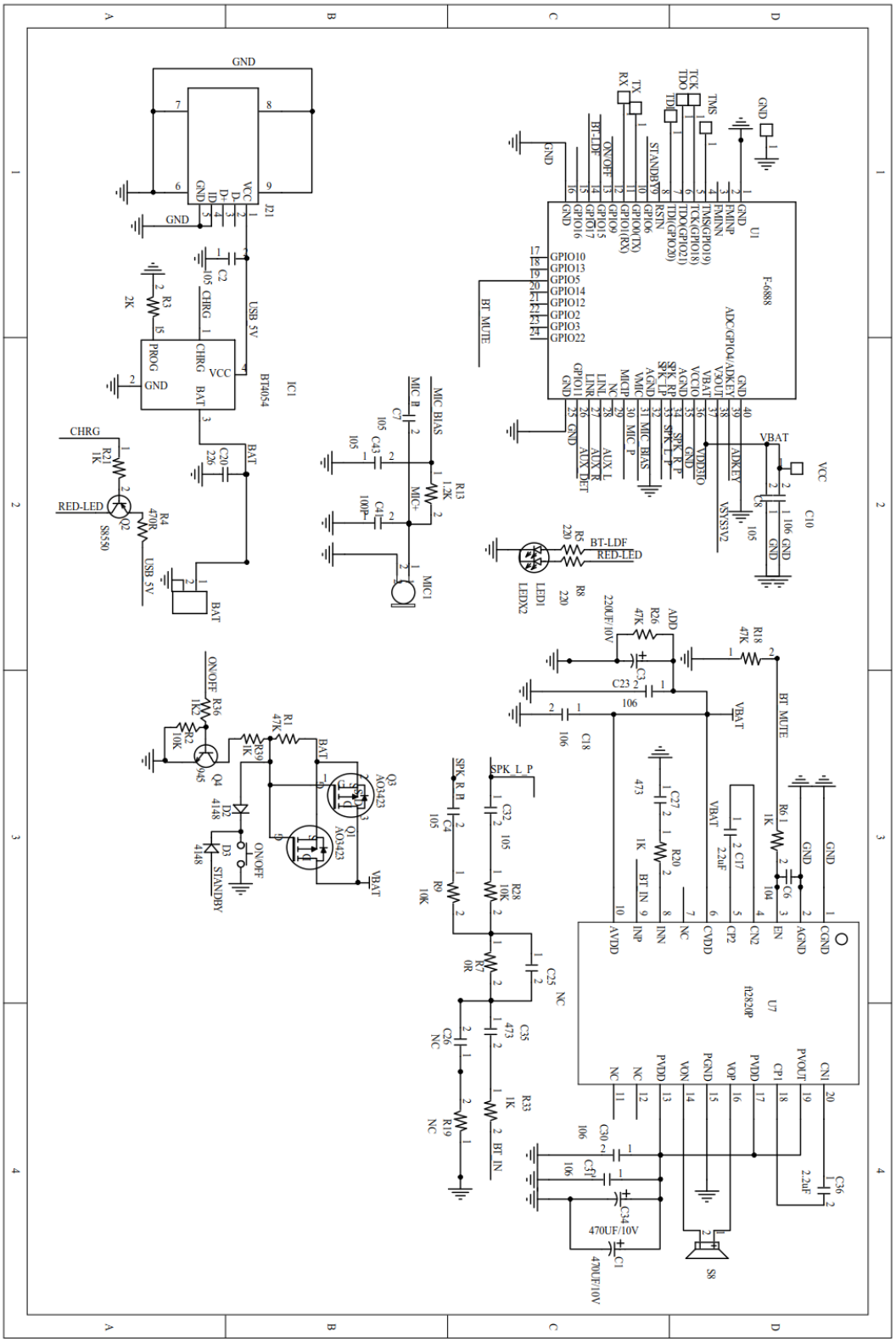
Electric Design

For main PCB



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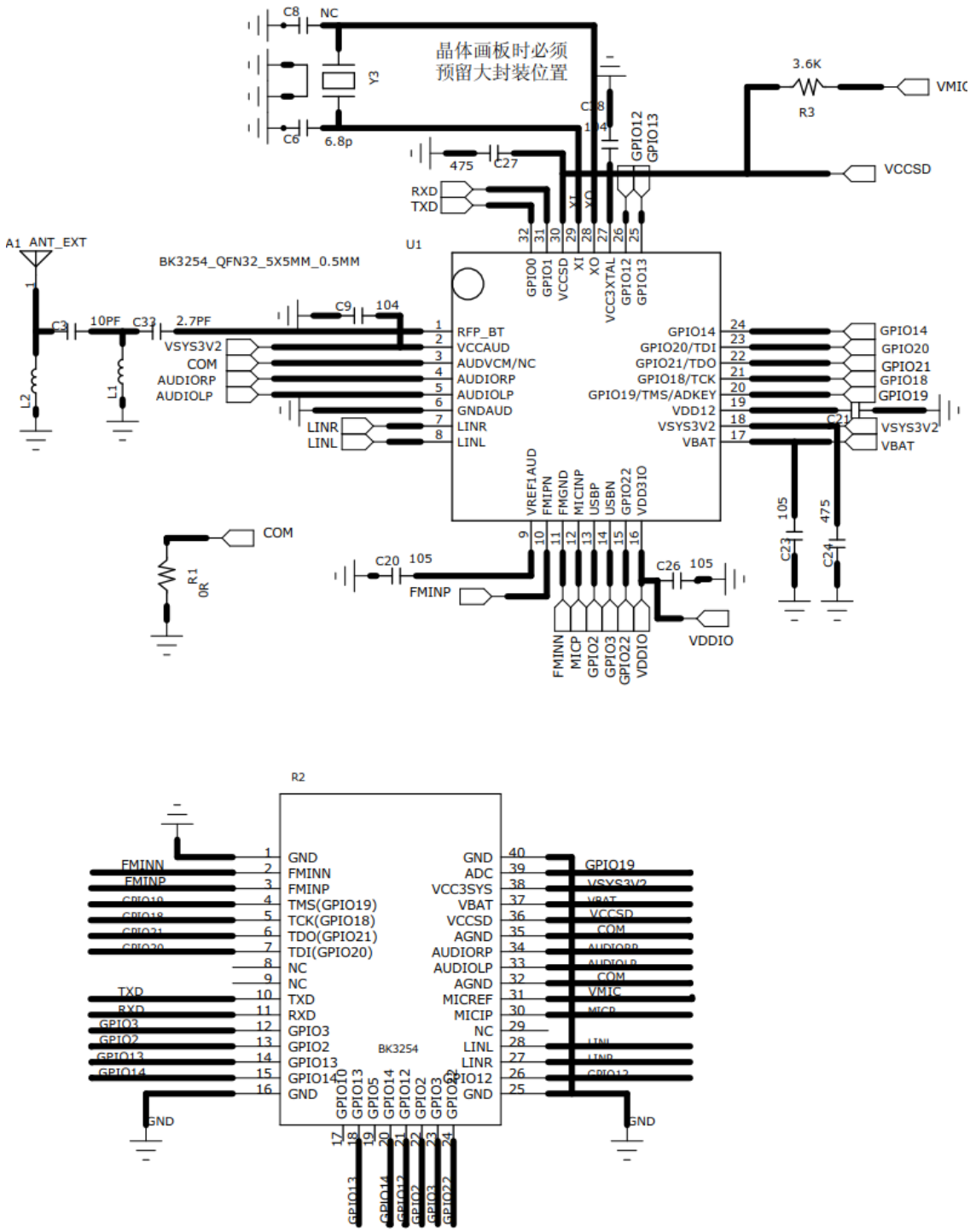
For buletooth module



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Appendix C

Constructional Photographs
of
Equipment under test (EUT)

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Constructional Photographs

Outlook

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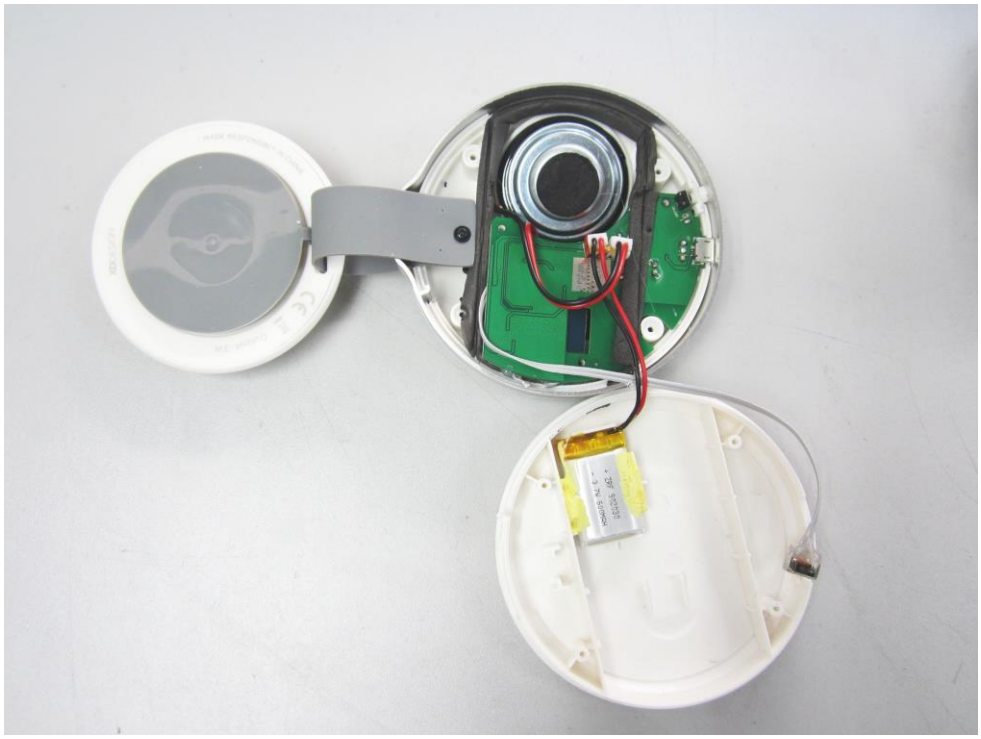
Constructional Photographs



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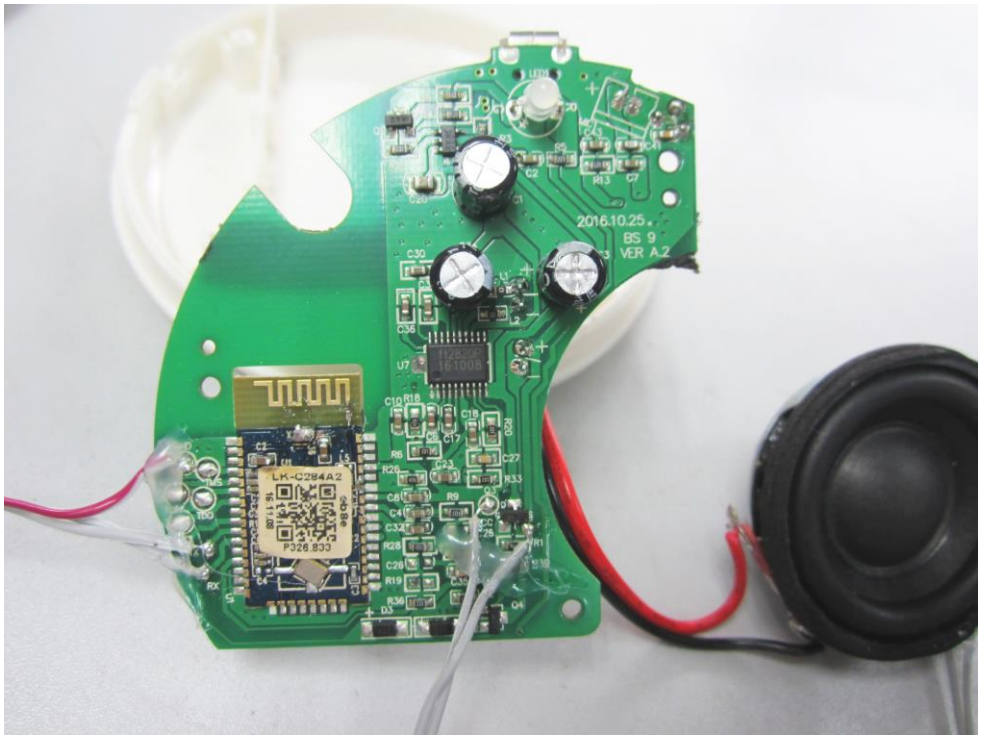
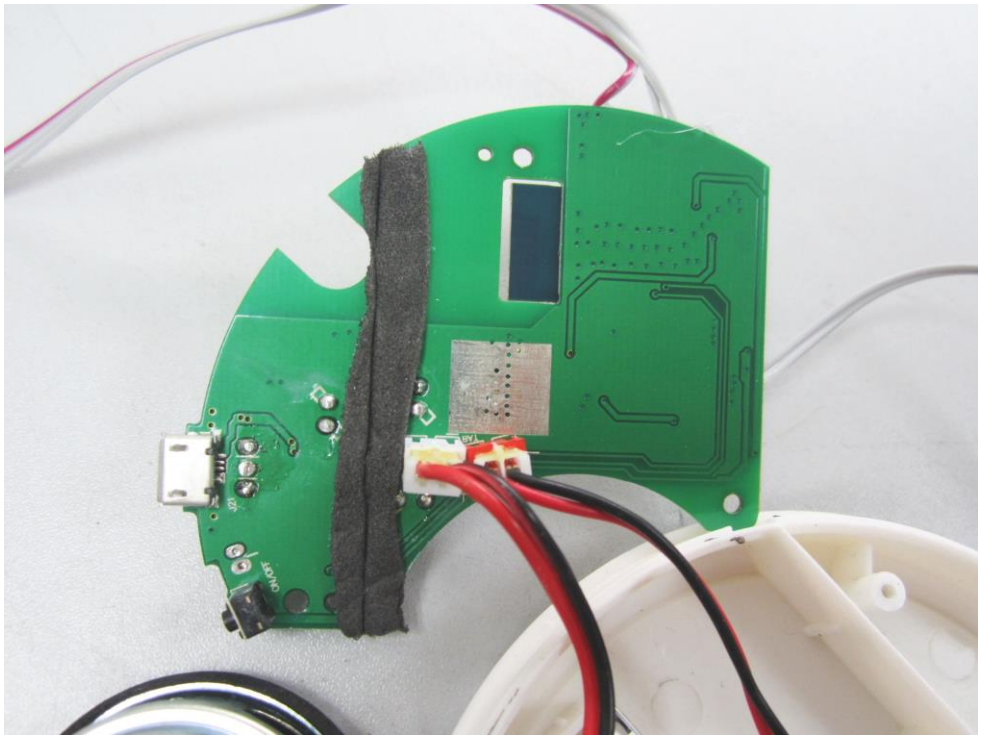
Constructional Photographs





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EMC IMMUNITY - TEST REPORT

Report Number	:	**64.910.16.06187.01 – (I)**	Date of Issue:	2017-05-23
Model / Serial No.	:	P326.833		
Product Type	:	Notos Bluetooth speaker		
Applicant	:	Xindao B.V.		
Manufacturer	:	Xindao B.V.		
License holder	:	Xindao B.V.		
Address	:	Verrijn Stuartlaan 1d, 2288 EK Rijswijk, THE NETHERLANDS		
Test Result	:	■ **Positive** ☐ **Negative**		
Total pages including Appendices	:	18		

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DIRECTORY - IMMUNITY

Remark: Constructional Data Form and Product Information Form(s) and Constructional Photographs of EUT refer to emission test report

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IMMUNITY TEST REGULATIONS :

The immunity tests were performed according to the following regulations :

■ - EN 55024:2010
■ - EN 301 489-1 V1.9.2 (2011-09)
☐ - EN 301 489-3 V1.6.1 (2013-08)
■ - EN 301 489-17 V2.2.1 (2012-09)

Following basic standards were used as reference:

■ - EN 61000-4-2:2009
■ - EN 61000-4-3:2006+A1:2008+A2:2010
☐ - EN 61000-4-4:2004+A1:2010
☐ - EN 61000-4-5:2006
☐ - EN 61000-4-6:2009
☐ - EN 61000-4-11:2004

Performance criteria:

Criteria	During test	After 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 no 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.

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Environmental Conditions In The Laboratory:

	Actual
Temperature:	: 22.4-23.4°C
Relative Humidity:	: 56-57%
Atmospheric Pressure:	: 101.9-102.0KPa

Power Supply of EUT

Rated voltage	: 5VDC
Rated power	: 3W

STATEMENT OF MEASUREMENT UNCERTAINTY

The tolerances for each tests are reduced by the uncertainty reported on the calibration certificate for the measurement, all the parameters are within the tolerances required by the relevant standard, reduced by the uncertainty reported on the calibration certificate, so the laboratory has confidence that all the tests compliant with the relevant standards with a 95% confidence level.
Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Symbol Definitions:

■ - Applicable
☐ - Not Applicable

Test laboratory:

☐ - TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
Add: 5F, Communication Building, 163 Pingyun Rd, Huangpu West Ave. Guangzhou 510656 P.R.China

■ - TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch, EMC Laboratory Department
Add: Building 12, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, Shenzhen City, 518052, P. R. China

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Immunity Test Conditions: ELECTROSTATIC DISCHARGE (ESD)

The immunity against *ELECTROSTATIC DISCHARGE (ESD)* events was performed in the following location:

☐ **- Test not applicable**

☐ - Test Area (TÜV SÜD Guangzhou) – Laboratory open area
■ - Test Area (TÜV SÜD Shenzhen) – Laboratory open area

Test Equipment Used :

	Model Number	Manufacturer	Description	Serial Number	Cal. due date
☐ -	NSG435	Teseq	ESD tester	6155	2017-11-01
☐ -	---	TÜV SÜD Guangzhou	H/V Coupling Plane	(TÜV SÜD)	
■ -	ESS-2002	Noiseken	Electrostatic Discharge Simulator	ESS0615075	2017-07-15
■ -	---	TÜV SÜD Shenzhen	H/V Coupling Plane	/	/

Remarks: All test equipments used are calibrated on a regular basis.

Test Specification:

Discharge Voltage (Air): ☐ - 2 kV ■ - 8 kV ☐ - 6 kV
☐- 4 kV ☐ - 15 kV ☐ - _ kV

Discharge Voltage (Contact): ☐ - 2 kV ☐ - 6 kV ☐ - _ kV
■ - 4 kV ☐ - 8 kV

Discharge Impedance: ■ - 330 Ω / 150 pF ☐ - 150 Ω / 150 pF

Discharge Repetition Rate: ■ - ≥ 1 sec.

Number of Discharges: ■ - ≥ ±10 at all locations

Kind of Discharges: ■ - Air discharge ■ - Conducted discharge (relay)
■ - Direct ■ - Indirect

Polarity: ■ - Positive ■ - Negative

Location of Discharge: ■ - HCP/VCP
■ - Each location on the surface touchable by hand
☐ - See drawing in Appendix A
☐ - _____

Result :

■ - No degradation of function - Met Criterion A
☐ - Distortion of function - Met Criterion B
☐ - Error of function - Met Criterion C
☐ - Loss of function - Unrecoverable Failure

Remarks: Power supply: 5VDC

Test Regulations: EN 301 489-17 V2.2.1
EN 301 489-1 V1.9.2
EN 55024:2010

Test method: EN 61000-4-2:2009

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Immunity Test Conditions: RADIATED ELECTROMAGNETIC FIELDS

The immunity against *RADIATED ELECTROMAGNETIC FIELDS* exposure was performed in the following location:

☐ **- Test not applicable**

■ - Test Area (TÜV SÜD) - Anechoic ferrite lined shielded room

Test Equipment Used :

	Model Number	Manufacturer	Description	Serial Number	Cal. Due
■ -	BBA100	Rohde & Schwarz	Power Amplifier	101238	2017-07-15
☐ -	BBA150	Rohde & Schwarz	Power Amplifier	101671	2017-07-15
■ -	HL046E	Rohde & Schwarz	Log-Periodic Antenna	100160	2017-07-15
■ -	SMB100A	Rohde & Schwarz	Signal Generator	177600	2017-07-15
■ -	NRP-Z91	Rohde & Schwarz	Average Power Sensor	102538	2017-07-15
■ -	NRP-Z91	Rohde & Schwarz	Average Power Sensor	102539	2017-07-15
■ -	NRP2	Rohde & Schwarz	Power Meter	103497	2017-07-15
■ -	FL7006/KIT	AMPLIFIER RESEARCH	Starprobe Laser-Powered Probe	0433720	2017-07-15
■ -	8X4X4	TDK	Full Anechoic Chamber	(TÜV SÜD)	2019-05-19

Remarks: All test equipments used are calibrated on a regular basis.

Test Specification:

Frequency Range:	■ - 80 MHz - 1000 MHz		■ - 1400 MHz - 2700 MHz
Exclusion Band:	■ - 2280 MHz to 2604 MHz		
Field Strength:	■ - 3 V/m	☐ - 10 V/m	☐ - _ V/m
Distance Antenna - EUT:	☐ - 1 m	■ - 3 m	

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Test Specification (continued):

Modulation:	■ - AM :	80%	1kHz
	☐ - FM :	__ kHz dev.	__ kHz
	■ - sine wave:		
	■ - unmodulated		
	☐ - Pulse	ON/OFF	Duty Cycle: __ %
Step:	☐ -≤ 0.015 decades / sec		■ - 1%
Polarization of Antenna:	■ - Horizontal	■ - Vertical	

Result:

■ - No degradation of function	- Met Criterion A
☐ - Distortion of function	- Met Criterion B
☐ - Error of function	- Met Criterion C
☐ - Loss of function	- Unrecoverable Failure

Remarks: Power supply: 5VDC

Test Regulations: EN 301 489-17 V2.2.1
EN 301 489-1 V1.9.2
EN 55024:2010

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

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Immunity Test Conditions: FAST TRANSIENTS (BURST)

The immunity against *FAST TRANSIENTS (BURST)* events was performed in the following test location:

■- Test not applicable

☐ - Test Area (TÜV SÜD Shenzhen) – Laboratory open area

Test Equipment Used :

	Model Number	Manufacturer	Description	Serial Number	Cal. due date
☐ -	UCS 500N7	EMTEST	Immunity simulator	P1313116005	2017-07-15
☐ -	CNI 503B5	EMTEST	7kV Coupling network 3-phase	P1425134991	2017-07-15

Remarks: All test equipments used are calibrated on a regular basis.

Test Specification:

Pulse Amplitude - AC Power Port:	☐ - 1,0 kV	☐ - 2,0 kV	
	☐ - 4,0 kV	☐ - ___ kV	
Pulse Amplitude - telecommunication Port:	☐ - 0.5 kV	☐ - 2,0 kV	
	☐ - 4,0 kV	☐ - ___ kV	
Burst Frequency:	☐ - 2,5 kHz	☐ - 5,0 kHz	☐ - ___ kHz
Time of Coupling:	☐ - 60 seconds	☐ - 120 seconds	☐ - ___ seconds
Coupling Method:	☐ - Coupling/decoupling network		☐ - Coupling clamp
Polarity:	☐ - Positive	☐ - Negative	

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Immunity Test Conditions: FAST TRANSIENTS (BURST), continued

Location of Coupling:

name of lines:	AC POWER CORD	
type of lines:	☐ - shielded	☐ - unshielded
status of lines:	☐ - passive	☐ - active
kind of transmission:	☐ - analog	☐ - digital
length of lines:		
name of lines:		
type of lines:	☐ - shielded	☐ - unshielded
status of lines:	☐ - passive	☐ - active
kind of transmission:	☐ - analog	☐ - digital
length of lines:		
name of lines:		
type of lines:	☐ - shielded	☐ - unshielded
status of lines:	☐ - passive	☐ - active
kind of transmission:	☐ - analog	☐ - digital
length of lines:		

Result:

☐ - No degradation of function - Met Criterion A
☐ - Distortion of function - Met Criterion B
☐ - Error of function - Met Criterion C
☐ - Loss of function - Unrecoverable Failure

Remarks:

Test Regulations: EN 301 489-17 V2.2.1
EN 301 489-1 V1.9.2
EN 55024:2010

Test method: EN 61000-4-4:2004+A1:2010

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Immunity Test Conditions: SURGE TRANSIENTS

The immunity against *SURGE TRANSIENTS* events was performed in the following test location:

■ - Test not applicable

☐ - Test Area (TÜV SÜD Shenzhen) – Laboratory open area

Test Equipment Used :

	Model Number	Manufacturer	Description	Serial Number	Cal. due date
☐ -	UCS 500N7	EMTEST	Immunity simulator	P1313116005	2017-07-15
☐ -	CNI 503B5	EMTEST	7kV Coupling network 3-phase	P1425134991	2017-07-15

Remarks: All test equipments used are calibrated on a regular basis

Test Specification:

Pulse Amplitude - AC Power Port:	☐ - 1,0 kV	☐ - 2,0 kV
	☐ - 4,0 kV	☐ - 0,5 kV
Pulse Amplitude - telecommunication Port:	☐ - 1,0 kV	☐ - 2,0 kV
	☐ - 4,0 kV	☐ - 0.5 kV
Source Impedance:	☐ - 2 Ω + 18 µF	☐ - 12 Ω + 9 µF
	☐ - 42 Ω + 0,1 µF	☐ - 42 Ω + 0,5 µF
Number of Surges:	☐ - 5 surges/angle	☐ - ___ surges /angle
Angle:	☐ - 0 °	☐ - 90 °
	☐ - 180 °	☐- 270 °
Repetition Rate:	☐ - 60 sec.	☐ - ___ sec.
Polarity:	☐ -Positive	☐ - Negative

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Immunity Test Conditions: SURGE TRANSIENTS, continued

Location of Coupling:

name of lines:	AC port	
type of lines:	☐ - shielded	☐ - unshielded
status of lines:	☐ - passive	☐ - active
kind of transmission:	☐ - analog	☐ - digital
length of lines:		

name of lines:		
type of lines:	☐ - shielded	☐ - unshielded
status of lines:	☐ - passive	☐ - active
kind of transmission:	☐ - analog	☐ - digital
length of lines:		

Result:

☐ - No degradation of function - Met Criterion A
☐ - Distortion of function - Met Criterion B
☐ - Error of function - Met Criterion C
☐ - Loss of function - Unrecoverable Failure

Remarks:

Test Regulations: EN 301 489-17 V2.2.1
EN 301 489-1 V1.9.2
EN 55024:2010

Test method: EN 61000-4-5:2006

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Immunity Test Conditions: CONDUCTED DISTURBANCE

The immunity against *CONDUCTED DISTURBANCE* events, induced by radio frequency fields above 9 kHz, was performed in the following test location:

■ - Test not applicable

☐ - Test Area (TÜV SÜD Guangzhou) – Laboratory open area
☐ - Test Area (TÜV SÜD Shenzhen) – Laboratory open area

Test Equipment Used :

	Model Number	Manufacturer	Description	Serial Number	Cal. due date
☐ -	CIT-10/75	Frankonia	C/S test generator	102D1319	2017-10-31
☐ -	75-A-MFN-06	BIRD	6dB attenuator	0638	2017-10-31
☐ -	M2+M3-801	Frankonia	CDN	A3011123	2017-10-31
☐ -	F-203I-32mm	FCC	EM Injected Clamp	08511	2017-10-31
☐ -	CWS 500N1	EMTEST	Continuous Wave Simulator	P1420134224	2016-08-17
☐ -	ATT6/80	EMTEST	Attenuator	P1402129090	2016-08-17
☐ -	CDN-M2/M3	EMTEST	CDN	P1420134163	2016-08-17
☐ -	CDN-M4	EMTEST	CDN	P1346125919	2015-08-17
☐ -	EM101	EMTEST	Electromagnetic Injection Clamp	P1411132453	2015-08-17

Test Specification:

Frequency Range: ☐ - 150kHz - 80 MHz
Exclusion Band:

Voltage Level (EMF): ☐ - 3 V

Modulation: ☐ - AM : 80 % 1 kHz
☐ - sine wave: ☐ - unmodulated
☐ - Pulse ON/OFF Duty Cycle: __ %

Step: ☐ -1%

Location of Coupling:

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name of lines:	AC port	
type of lines:	☐ - shielded	☐ - unshielded
status of lines:	☐ - passive	☐ - active
kind of transmission:	☐ - analog	☐ - digital
length of lines:	0.3m	
name of lines:		
type of lines:	☐ - shielded	☐ - unshielded
status of lines:	☐ - passive	☐ - active
kind of transmission:	☐ - analog	☐ - digital
length of lines:		

Result:

☐ - No degradation of function - Met Criterion A
☐ - Distortion of function - Met Criterion B
☐ - Error of function - Met Criterion C
☐ - Loss of function - Unrecoverable Failure

Remarks:

Test Regulations: EN 301 489-17 V2.2.1
EN 301 489-1 V1.9.2
EN 55024:2010

Test method: EN 61000-4-6:2009

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Immunity Test Conditions: VOLTAGE DIPS, INTERRUPTIONS & VARIATIONS

The immunity against *VOLTAGE DIPS, INTERRUPTIONS & VARIATIONS* events, induced by radio frequency fields above 9 kHz, was performed in the following test location:

■ - Test not applicable

☐ - Test Area (TÜV SÜD Shenzhen) – Laboratory open area

Test Equipment Used :

	Model Number	Manufacturer	Description	Serial Number	Cal. due date
☐ -	UCS 500N7	EMTEST	Immunity simulator	P1313116005	2017-07-15
☐ -	MV2616	EMTEST	Motorized Variac	P1401128623	2017-07-15
☐ -	PFLS 32N1	EMTEST	Switch-Box fo phase by phase	P1251107106	2017-07-15

Remarks: All test equipments used are calibrated on a regular basis.

Test Specification:

Nominal Mains Voltage (V_{NOM}): ☐ - 230 Vac ☐ - 100 Vac

Level of Reduction (dip):

☐ - 0.5 cycle at 0% of V_{NOM}
☐ - 1 cycle at 0% of V_{NOM}
☐ - 25 cycles at 30% of V_{NOM}

Duration of Interruption (>.95*V_{NOM}): ☐ - 250 cycles

Result :

☐ - No degradation of function - Met Criterion A
☐ - Distortion of function - Met Criterion B
☐ - Error of function - Met Criterion C
☐ - Loss of function - Unrecoverable Failure

Remarks: _____

Test Regulations: EN 301 489-17 V2.2.1
EN 301 489-1 V1.9.2
EN 55024:2010

Test method: EN 61000-4-11:2004

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Equipment Under Test (EUT) Test Operation Mode - Immunity Tests :

The equipment under test was operated under the following conditions during immunity testing :

☐ - Standby

☐ - Test Program (H - Pattern)

☐ - Test Program (Color Bar)

☐ - Test Program (Customer Specified)

■ - Normal Operating Mode

☐ - _____

_____

Configuration of the equipment under test:

■ - See Constructional Data Form

■ - See Product Information Form(s)

The following peripheral devices and interface cables were connected during the testing:

■ - Adaptor Type : Lab tool. Input:100-240V,0.45A, 50/60Hz Output:5V DC,1A max

☐ - _____ Type : _____

☐ - _____ Type : _____

☐ - _____ Type : _____

☐ - _____ Type : _____

☐ - _____ Type : _____

☐ - _____ Type : _____

☐ - _____ Type : _____

■ - unshielded power cable

☐ - unshielded cables

☐ - shielded cables TÜVSUD. No.: _____

☐ - customer specific cables

☐ - _____

☐ - _____

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China

GENERAL REMARKS:

SUMMARY:

All tests according to the regulations cited on page 3 were

■ - Performed

☐ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements cited on page 3.

☐ - **Does not** fulfill the general approval requirements cited on page 3.

Testing Start Date: 2017-01-03

Testing End Date: 2017-01-05

- TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch-

Reviewed by: Prepared by:

Peter Jia Wendy Ye

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Appendix A

Test Setup

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Setup Photo of ESD

Setup Photo of Radiated Immunity

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