Prüfbericht-Nr.: *Test report No.:*	**50052935 003**	**Auftrags-Nr.:** *Order No.:*	164069063	Seite 1 von 21 *Page 1 of 21*
Kunden-Referenz-Nr.: *Client reference No.:*	N/A	**Auftragsdatum:** *Order date.:*	14.07.2016	
Auftraggeber: *Client:*	**ContextMedia LLC** 330 N. Wabash Ave STE 2500, Chicago, Illinois United States.			
Prüfgegenstand: *Test item:*	Wallboard 32" Tablet			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	P-WAL-106-ELC-XX (XX equals to 00, 01, 02, 03...99) (ContextMedia Health)			
Auftrags-Inhalt: *Order content:*	FCC and IC approval			
Prüfgrundlage: *Test specification:*	CFR47 FCC Part 15: Subpart C Section 15.247 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 RSS-247 Issue 1 May 2015 RSS-Gen Issue 4 November 2014			
Wareneingangsdatum: *Date of receipt:*	21.07.2016	Please refer to photo documents		
Prüfmuster-Nr.: *Test sample No.:*	A000395547-002			
Prüfzeitraum: *Testing period:*	26.07.2016 - 16.08.2016			
Ort der Prüfung: *Place of testing:*	Accurate Technology Co., Ltd.			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: *Test result*:*	Pass			

geprüft von / *tested by:*			**kontrolliert von** / *reviewed by:*		
08.09.2016	Andy Yan / Senior Project Engineer		08.09.2016	Owen Tian / Technical Certifier	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges / *Other:*

FCC ID: 2AI6X-PWALELC

IC: 21722-PWALELC HVIN: P-WAL-106-ELC-01, P-WAL-106-ELC-02, P-WAL-106-ELC-03

All the Identification no. are identical in the hardware and electronic aspects with each other.

All the HVIN no. are identical in the hardware and electronic aspects with each other, the difference is only color apperance.

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:*	Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged:*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhalt
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	1 = very good	2 = good	3 = satisfactory	4 = sufficient	5 = poor
	P(ass) = passed a.m. test specifications(s)		F(ail) = failed a.m. test specifications(s)	N/A = not applicable	N/T = not tested

Test Summary

5.1.1 ANTENNA REQUIREMENT
RESULT: Pass

5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER
RESULT: Pass

5.1.3 CONDUCTED POWER SPECTRAL DENSITY
RESULT: Pass

5.1.4 6DB BANDWIDTH
RESULT: Pass

5.1.5 99% BANDWIDTH
RESULT: Pass

5.1.6 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH
RESULT: Pass

5.1.7 RADIATED SPURIOUS EMISSION
RESULT: Pass

5.1.8 CONDUCTED EMISSION ON AC MAINS
RESULT: Pass

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix D: Test Results of Wi-Fi 802.11b/g/n(HT20) of Conducted Testing

Appendix E: Test Results of Wi-Fi 802.11b/g/n(HT20) of AC Conducted and Radiated Emission

2 Test Sites

2.1 Test Facilities

Accurate Technology Co., Ltd.
F1, Bldg. A, Changyuan New Material Port Keyuan Rd., Science & Industry Park, Nanshan Shenzhen, 518057, P.R. China

FCC Registration No.: 752051

Test site Industry Canada No.: 5077A-2

The tests at the test sites have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Accurate Technology Co., Ltd.

Radio Spectrum Test				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Spectrum Analyzer	R&S	ESPI3	100396/003	09.01.2017
Spectrum Analyzer	Agilent	E7405A	MY45115511	09.01.2017
Spurious Emission				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Spectrum Analyzer	R&S	FSV40	101495	09.01.2017
Test Receiver	R&S	ESCS30	100307	09.01.2017
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	14.01.2017
Loop Antenna	Schwarzbeck	FMZB1516	1516131	14.01.2017
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	14.01.2017
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	14.01.2017
RF Switching Unit+PreAMP	Compliance Direction	RSU-M2	38322	09.01.2017
Pre-Amplifier	R&S	CBLU11835 40-01	3791	09.01.2017
50 Coaxial Switch	Anritsu Corp	MP59B	6200506474	09.01.2017
RF Coaxial Cable	SUHNER	N-3m	No.8	09.01.2017
RF Coaxial Cable	RESENBERGER	N-3.5m	No.9	09.01.2017
RF Coaxial Cable	SUHNER	N-6m	No.10	09.01.2017
RF Coaxial Cable	RESENBERGER	N-12m	No.11	09.01.2017
50_ Coaxial Switch	Anritsu Corp	MP59B	6200283933	09.01.2017
Conducted Emission on AC Mains				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Test Receiver	R&S	ESCS30	100307	09.01.2017
L.I.S.N.	R&S	NLSK8126	8126431	09.01.2017
50Ω Coaxial Switch	Anritsu	MP59B	6200283933	09.01.2017

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix D & D of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

Item		**Extended Uncertainty**
Conducted Emission		± 3.0 dB
Radiated Emission (9kHz-30MHz)	Field strength (dBµV/m)	U=3.08dB, k=2, σ=95%
Radiated Emission (30-1000MHz)	Field strength (dBµV/m)	U=4.42dB, k=2, σ=95%
Radiated Emission (above 1000MHz)	Field strength (dBµV/m)	U=4.06dB, k=2, σ=95%
Occupied Channel Bandwidth		±5.0 %
RF Output Power, Conducted		±1.5 dB
Power Spectral Density, Conducted		±3.0 dB
Unwanted Emission, Conducted		±3.0 dB
Radio Frequency		±1x10^-5
Duty Cycle		±5.0 %

2.7 Status of Facility Used for Testing

The Accurate Technology Co., Ltd. Test facility located at F1, Bldg. A, Changyuan New Material Port Keyuan Rd., Science & Industry Park, Nanshan Shenzhen, 518057, P.R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a Wallboard 32" Tablet which supports Bluetooth (dual mode) and Wi-Fi 802.11 a/b/g/n/ac wireless technology. This DTS report is only for 2.4GHz band 802.11b/g/n technology. Other functions with different technologies are reported in the related reports.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment	Wallboard 32” Tablet
Type Designation	P-WAL-106-ELC-XX (XX equals to 00, 01, 02, 03...99)
Trade Mark	ContextMedia Health
FCC ID	2AI6X-PWALELC
IC / HVIN	21722-PWALELC / P-WAL-106-ELC-01, P-WAL-106-ELC-02, P-WAL-106-ELC-03
Operating Temperature Range	0 °C ~ +40 °C
Operating Voltage	DC 12 V from AC/DC Adapter
Testing Voltage	DC 12 V from AC/DC Adapter with input 120V/60Hz
Antenna Type	Integral Antenna
Max. Antenna Gain	2.0dBi
Technical Specification of Wi-Fi 802.11 b/g/n(HT20)	
Operating Frequency	2412 - 2462 MHz for 802.11b/g/n(HT20)
Type of Modulation	DSSS(DBPSK/DQPSK/CCK) OFDM(BPSK/QPSK/16QAM/64QAM)
Data Rate	1/2/5.5/11 Mbps for 802.11b 6/9/12/18/24/36/48/54 Mbps for 802.11g MCS0 ~ MCS7 Mbps for 802.11n(HT20)
Channel Number	11 channels for 802.11b/g/n(HT20)
Channel Separation	5 MHz
Maximum tune-up average output power (dBm):	802.11b: 17.0dBm; 802.11g: 16.0dBm; 802.11n: 15.5dBm

Table 3: RF Channel and Frequency of Wi-Fi 802.11 b/g/n(HT20)

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437	/	/

Remark:

Test frequencies are lowest channel: 2412 MHz, middle channel: 2437 MHz and highest channel: 2462 MHz for 802.11b/g/n(HT20)

3.3 Independent Operation Modes

The basic operation modes are:

A. On, Wi-Fi transmitting with AD/DC adapter
   1. Low channel
   2. Middle channel
   3. High channel

B. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- Block Diagram
- Schematics
- Technical Description
- FCC/IC Label and Location Info
- Photo Document
- User Manual

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10: 2013.

4.3 Special Accessories and Auxiliary Equipment

Table 4: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Adapter 1	FUJIA	FJ-SW1205000	N/A	Input: 100-240V~, 50/60Hz, 1.5A Output: DC 12.0V, 5.0A
Adapter 2	Mass Power	NBS65A120500B3	N/A	Input: 100-240V~, 50/60Hz, 1.5A Output: DC 12.0V, 5.0A
Notebook PC	Lenovo	ThinkPad X240	N/A	N/A
Printer	HP	HP laserjet 1015	CNFG030424	N/A

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

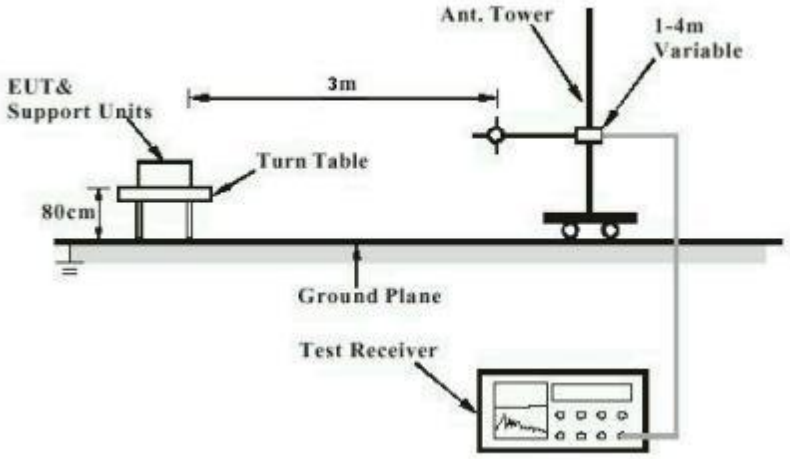


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

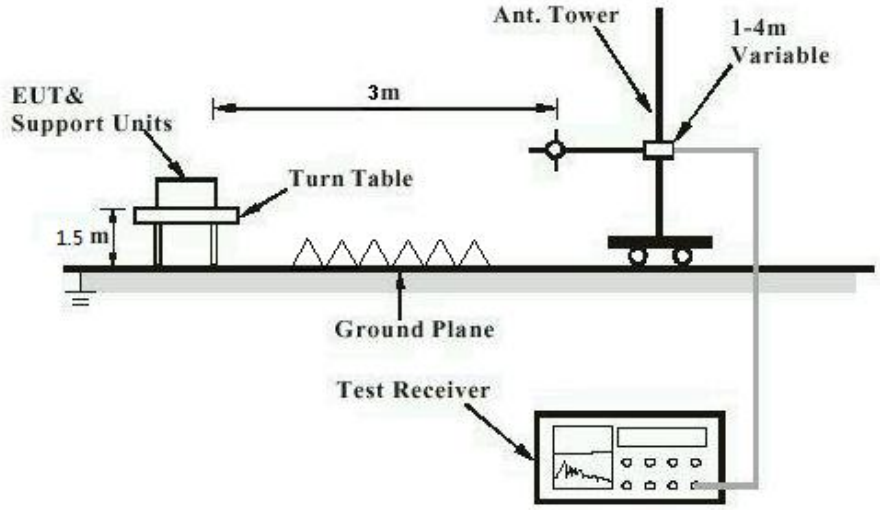


Diagram of Measurement Configuration for Mains Conduction Measurement

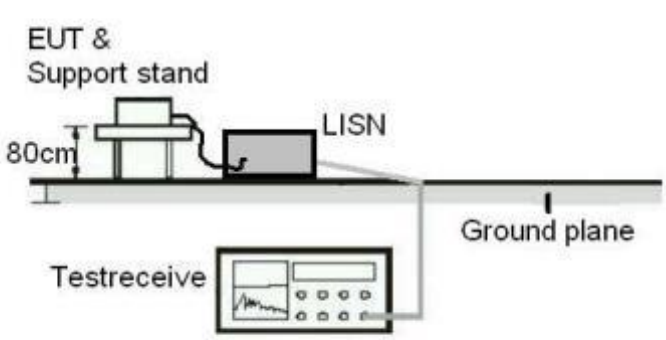
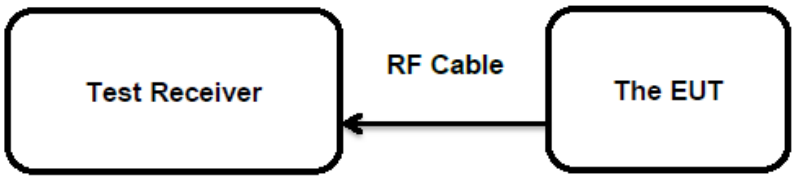


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Pass**

Test Specification

Test standard : FCC Part 15.247(b)(4) and Part 15.203
RSS-Gen Clause 8.3

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 2.00 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Maximum Peak Conducted Output Power

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(b)(3)
		RSS-247 Clause 5.4(4)
Basic standard	:	ANSI C63.10: 2013
Limits	:	< 1.0 Watts
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	31.07.2016
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

For details refer to following test result.

Table 5: Test Result of Maximum Peak Conducted Output Power

Test Mode	Data Rate	Frequency (MHz)	Measured Power		Limit
			dBm	W	
802.11b	1 Mbps	2412	13.97	0.0249	< 1W(30dBm)
		2437	15.29	0.0338	
		2462	16.61	0.0458	
802.11g	6 Mbps	2412	13.60	0.0229	
		2437	15.06	0.0321	
		2462	15.96	0.0394	
802.11n (HT20)	MCS0 Mbps	2412	12.93	0.0196	
		2437	14.21	0.0264	
		2462	15.38	0.0345	
Maximum Measured Value			**16.61**	**0.0458**	

Note: The cable loss is taken into account in results.

5.1.3 Conducted Power Spectral Density

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(e)
		RSS-247 Clause 5.2(2)
Basic standard	:	ANSI C63.10: 2013
Limits	:	8 dBm / 3kHz
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	31.07.2016
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

For details refer to following test result.

Table 6: Test Result of Power Spectral Density, BU Unit

Test Mode	Data Rate	Frequency (MHz)	Measured Peak Power Spectral Density (dBm/3KHz)
802.11b	1 Mbps	2412	-7.41
		2437	-6.25
		2462	-4.74
802.11g	6 Mbps	2412	-16.50
		2437	-15.10
		2462	-13.46
802.11n (HT20)	MCS0 Mbps	2412	-15.47
		2437	-14.73
		2462	-14.18
Maximum Measured Value			**-4.74**

Note: The cable loss is taken into account in results.

For the measurement records, refer to the appendix D.

5.1.4 6dB Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(a)(2)
		RSS-247 Clause 5.2(1)
Basic standard	:	ANSI C63.10: 2013
Limits	:	> 500 KHz
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	31.07.2016
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

For details refer to following test result.

Table 7: Test Result of 6dB Bandwidth, BU Unit

Test Mode	Data Rate	Frequency (MHz)	-6dB Bandwidth (MHz)	Limit (kHz)
802.11b	1 Mbps	2412	8.596	> 500
		2437	8.596	
		2462	8.596	
802.11g	6 Mbps	2412	16.459	
		2437	16.459	
		2462	16.459	
802.11n (HT20)	MCS0 Mbps	2412	17.740	
		2437	17.739	
		2462	17.739	
Minimum Measured Value			**8.596**	

For the measurement records, refer to the appendix D.

5.1.5 99% Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	RSS-Gen Clause 6.6
Basic standard	:	ANSI C63.10: 2013
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	31.07.2016
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

For details refer to following test result.

Table 8: Test Result of 99% Bandwidth, BU Unit

Test Mode	Data Rate	Frequency (MHz)	99% Bandwidth (MHz)	Limit (kHz)
802.11b	1 Mbps	2412	10.420	Within the frequency band 2400MHz~ 2483.5MHz
		2437	10.507	
		2462	10.550	
802.11g	6 Mbps	2412	16.459	
		2437	16.459	
		2462	16.533	
802.11n (HT20)	MCS0 Mbps	2412	17.740	
		2437	17.740	
		2462	17.740	
Maximum Measured Value			**17.740**	

For the measurement records, refer to the appendix D.

5.1.6 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(d)
		RSS-247 Clause 5.5
Basic standard	:	ANSI C63.10: 2013
Limits	:	20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power);
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	31.07.2016
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to following test plot, and compliance is achieved as well.

For the measurement records, refer to the appendix D.

5.1.7 Radiated Spurious Emission

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(d) & FCC Part 15.205
		RSS-247 Clause 3.3
Basic standard	:	ANSI C63.10: 2013
Limits	:	Refer to 15.209(a) of FCC part 15.247(d)
		RSS-Gen Table 4 & Table 5
Kind of test site	:	3m Semi-anechoic Chamber

Test Setup

Date of testing	:	26.07.2016 ~ 16.08.2016
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	23 ℃
Relative humidity	:	48 %
Atmospheric pressure	:	101 kPa

Remark:
During the pretest the EUT was rotated through three orthogonal axes to determine the attitude that maximizes the emissions. After that the EUT was manually handled to find the orientation that has the maximum emission, which is the orientation shown in the test set-up photos.

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to following test plot, and compliance is achieved as well.

Testing was carried out within frequency range 9kHz to the tenth harmonics.

For the measurement records, refer to the appendix E.

5.1.8 Conducted Emission on AC Mains

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.207(a)
		RSS-Gen Clause 8.8
Basic standard	:	ANSI C63.10: 2013
Frequency range	:	0.15 – 30MHz
Limits	:	FCC Part 15.207(a)
		RSS-Gen Table 3
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	10.08.2016
Operation mode	:	B
Earthing	:	Not connected
Ambient temperature	:	24 ℃
Relative humidity	:	53 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix E.

6 Photographs of the Test Set-Up

Photograph 1: Set-up for Radio Spectrum Test

Please refer to TÜV Rheinland report 50052935 002 for more details.

Photograph 2: Set-up for Radiated Spurious Emission (9kHz ~ 30MHz)

Please refer to TÜV Rheinland report 50052935 002 for more details.

Photograph 3: Set-up for Radiated Spurious Emission (30MHz~1GHz)

Please refer to TÜV Rheinland report 50052935 002 for more details.

Photograph 4: Set-up for Radiated Spurious Emission (1GHz ~ 18GHz)

Please refer to TÜV Rheinland report 50052935 002 for more details.

Photograph 5: Set-up for Radiated Spurious Emission (18GHz ~ 26GHz)

Please refer to TÜV Rheinland report 50052935 002 for more details.

Photograph 6: Set-up for Conducted Emission on AC Mains

Please refer to TÜV Rheinland report 50052935 002 for more details.

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