

EN 55022: 2006+A1:2007  
EN 55024: 1998+A1: 2001+A2: 2003  
EN 61000-3-2: 2006  
EN 61000-3-3: 1995+A1: 2001+A2: 2005  
MEASUREMENT AND TEST REPORT

For  
**Fanvil Technology Co., Ltd.**

Unit 4A, Building NO.7, Tian An Industrial Park, Nanshan District, Shenzhen P.R.China 518054

**Model: BW210, BW320, BW530**

July 08, 2009

<b>This Report Concerns:</b> <input checked="" type="checkbox"/> Original Report	<b>Equipment Type:</b> VoIP Phone
<b>Test Engineer:</b>	Shirley Wu/ <i>Shirley Wu</i>
<b>Report Number:</b>	<b>BCT09GR-611E</b>
<b>Test Date:</b>	July 01 ~ 07, 2009
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**Note:** This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Bontek Compliance Testing Laboratory Ltd.

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# 1 - GENERAL INFORMATION

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## 1.1 Product Description for Equipment Under Test (EUT)

### Client Information

Applicant: **Fanvil Technology Co., Ltd.**  
Address of applicant: Unit 4A, Building NO.7, Tian An Industrial Park, Nanshan District, Shenzhen P.R.China 518054  
Manufacturer: **Fanvil Technology Co., Ltd.**  
Address of manufacturer: Unit 4A, Building NO.7, Tian An Industrial Park, Nanshan District, Shenzhen P.R.China 518054

### General Description of E.U.T

EUT Description: **VoIP Phone**  
Model No.: **BW210, BW320, BW530**  
Power Rating: Input:100-240VAC 50-60Hz 0.2A Max  
Output:5VDC 1A

Remark: \* The test data gathered are from the production sample provided by the manufacturer.

## 1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with

EN 55022: 2006+A1:2007

EN 55024: 1998+ A1: 2001+A2: 2003

EN 61000-3-2: 2006

EN 61000-3-3: 1995+A1: 2001+A2: 2005

The objective of the manufacturer is to demonstrate compliance with the described standards above.

### 1.3 Test Summary

For the EUT described above. The standards used were EN 55022 Class B for Emissions & EN 55024 for Immunity.

Table 1 : Tests Carried Out Under EN 55022: 2006+A1:2007

Standard	Test Items	Status
EN 55022: 2006	Disturbance Voltage at The Mains Terminals (0.15MHz To 30MHz)	√
+A1:2007	Radiated Disturbances (30MHz To 1000MHz)	√

- √ Indicates that the test is applicable
- × Indicates that the test is not applicable

Table 2 : Tests Carried Out Under EN 61000-3-2: 2006/ EN 61000-3-3: 1995+A1:2001+A2: 2005

Standard	Test Items	Status
EN 61000-3-2: 2006	Harmonic Current Test	X
EN 61000-3-3: 1995+A1:2001 +A2: 2005	Voltage Fluctuations and Flicker Test	√

- √ Indicates that the test is applicable
- × Indicates that the test is not applicable

Table 3 : Tests Carried Out Under EN 55024: 1998+ A1: 2001+A2: 2003

Standard	Test Items	Status
IEC 61000-4-2;2001	Electrostatic discharge Immunity	√
IEC 61000-4-3;2006	Radiated Susceptibility (80MHz to 1GHz)	√
IEC 61000-4-4;2004	Electrical Fast Transient/Burst Immunity	√
IEC 61000-4-5;2005	Surge Immunity	√
IEC 61000-4-6;2006	Conducted Susceptibility (150kHz to 80MHz)	√
IEC 61000-4-8;2001	Power Frequency Magnetic Field Immunity (50/60Hz)	X
IEC 61000-4-11;2004	Voltage Dips, Short Interruptions Immunity	√

- √ Indicates that the test is applicable
- × Indicates that the test is not applicable

## 1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2001, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

The maximum emission levels emanating from the device are compared to the FCC Part 15 Subpart B Class A limits for radiation emissions and the measurement results contained in this test report show that EUT is to be technically compliant with FCC requirements.

All measurement required was performed at Bontek Compliance Testing Laboratory Ltd at 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

## 1.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

### **FCC – Registration No.: 338263**

Bontek Compliance Testing Laboratory Ltd, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 338263, March, 2008.

### **IC Registration No.: 126111**

The 3m alternate test site of Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 126111 on March, 2008.

## 1.6 Test Equipment List and Details

Test equipments list of Bontek Compliance Testing Laboratory Ltd.

Equipment	Manufacturer	Model No.	calibration date	calibration date
EMI Test Receiver	R&S	ESCI	2009-2-22	2010-2-21
EMI Test Receiver	R&S	ESPI	2009-2-22	2010-2-21
Amplifier	HP	8447D	2009-2-22	2010-2-21
Single Power Conductor Module	FCC	FCC-LISN-5-50-1-01-CISPR25	2009-2-22	2010-2-21
Single Power Conductor Module	FCC	FCC-LISN-5-50-1-01-CISPR25	2009-2-22	2010-2-21
Power Clamp	SCHWARZBECK	MDS-21	2009-2-22	2010-2-21
Positioning Controller	C&C	CC-C-1F	2009-2-22	2010-2-21
Electrostatic Discharge Simulator	TESEQ	NSG437	2009-3-31	2010-3-30
Fast Transient Burst Generator	SCHAFFNER	MODULA6150	2009-2-22	2010-2-21
Fast Transient Noise Simulator	Noiseken	FNS-105AX	2009-2-22	2010-2-21
Color TV Pattern Generator	PHILIPS	PM5418	N/A	N/A
Power Frequency Magnetic Field Generator	EVERFINE	EMS61000-8K	2009-2-22	2010-2-21
Capacitive Coupling Clamp	TESEQ	CDN8014	2009-2-22	2010-2-21
High Field Bucolical Antenna	ELECTRO-METRICS	EM-6913	2008-9-04	2009-9-03
Log Periodic Antenna	ELECTRO-METRICS	EM-6950	2008-9-04	2009-9-03
Remote Active Vertical Antenna	ELECTRO-METRICS	EM-6892	2008-9-04	2009-9-03
TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	2009-2-22	2010-2-21
Horn Antenna	SCHWARZBECK	BBHA9120A	2009-2-27	2010-2-26
Toe Line Single Phase Module	SCHWARZBECK	NSLK8128	2009-3-31	2010-3-30
10dB attenuator	SCHWARZBECK	MTAIMP-136	2009-2-22	2010-2-21
Electric Bridge	Zentech	100 LCR METER	N/A	N/A
RF Current Probe	FCC	F-33-4	2008-9-22	2009-9-21
SIGNAL GENERATOR	HP	8647A	2008-11-10	2009-11-9
MICROWAVE AMPLIFIER	HP	8349B	2008-11-10	2009-11-9
Triple-Loop Antenna	EVERFINE	LLA-2	2009-2-27	2010-2-26

## 2 - SYSTEM TEST CONFIGURATION

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### 2.1 Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

### 2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacture, can let the EUT being normal operation.

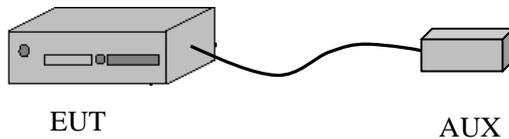
### 2.3 Special Accessories

As shown in section 2.5, interface cable used for compliance testing is shielded as normally supplied by **Fanvil Technology Co., Ltd.** and its respective support equipment manufacturers.

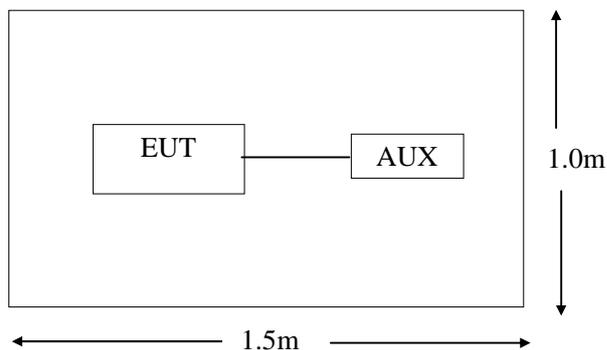
### 2.4 Basic Configuration of Test System

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 Operating Instructions.

Immunity: The equipment under test (EUT) was configured to the representative operating mode and conditions.



### 2.5 Test Setup Diagram



### 3 - DISTURBANCE VOLTAGE AT THE MAINS TERMINALS

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#### 3.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is 3.4 dB.

#### 3.2 Limit of Disturbance Voltage At The Mains Terminals (Class B)

Frequency Range (MHz)	Limits ( dBuV)	
	Quasi-Peak	Average
0.150~0.500	66~56	56~46
0.500~5.000	56	46
5.000~30.00	60	50

Note: (1)The tighter limit shall apply at the edge between two frequency bands.

#### 3.3 EUT Setup

The setup of EUT is according with CISPR 16-1: 2002, CISPR16-2: 2002 measurement procedure. The specification used was the EN 55022 limits.

The EUT was placed center and the back edge of the test table.

The AV cables were draped along the test table and bundled to 30-40cm in the middle.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

#### 3.4 Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range.....150 KHz to 30 MHz  
Detector.....Peak & Quasi-Peak & Average  
Sweep Speed.....Auto  
IF Band Width.....9 KHz

### 3.5 Test Procedure

During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dB $\mu$ V of specification limits). Quasi-peak readings are distinguished with a "QP". Average readings are distinguished with a "AV".

### 3.6 Summary of Test Results

According to the data in section 3.6, the EUT complied with the EN 55022 Conducted margin, with the *worst* margin reading of:

### 3.7 Disturbance Voltage Test Data

Temperature ( °C )	22~24
Humidity ( %RH )	50~60
Barometric Pressure ( mbar )	950~1000
EUT	VoIP Phone
M/N	BW210/BW320/BW530
Operating Mode	Connect to PC

Test data see following pages

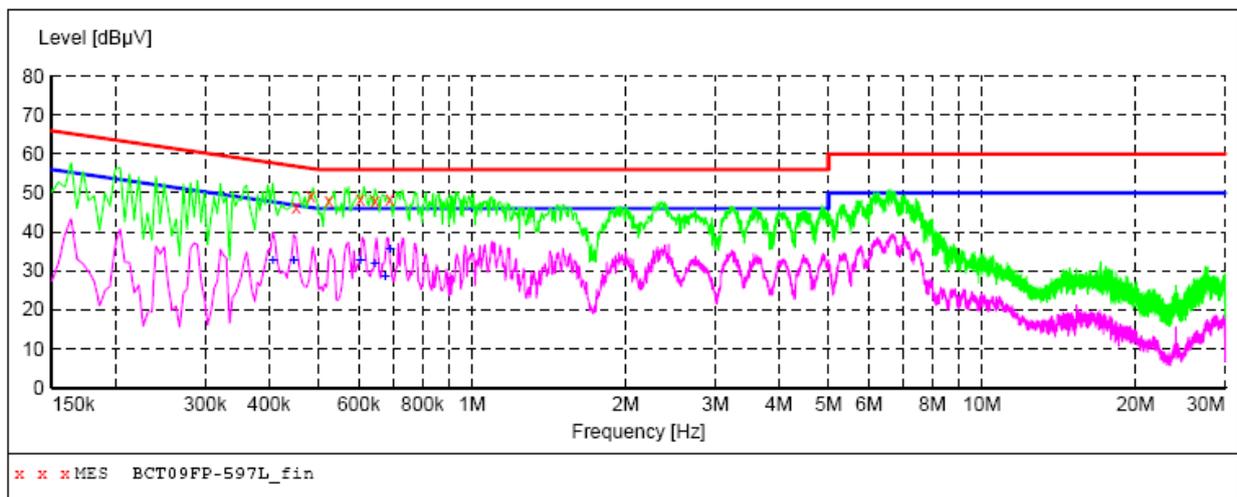
### 3.8 Test Result

**PASS**

## Conducted Emission Test Data

EUT: VoIP Phone  
M/N: BW210  
Operating Condition: Connect to PC  
Test Site: Shielded Room  
Operator: Hgchi  
Test Specification: AC 230V/50Hz  
Comment: Live Line  
Start of Test: 07/01/09/ 22:57 Tem:24°C Hum:55%

**SCAN TABLE: "Voltage (150K-30M) FIN"**  
Short Description: 150K-30M Voltage



### MEASUREMENT RESULT: "BCT09FP-597L\_fin"

7/1/2009 22:57

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.451500	46.40	10.3	57	10.4	QP	L1	GND
0.483000	49.20	10.3	56	7.1	QP	L1	GND
0.523500	48.10	10.2	56	7.9	QP	L1	GND
0.604500	48.60	10.2	56	7.4	QP	L1	GND
0.645000	48.20	10.2	56	7.8	QP	L1	GND
0.690000	48.40	10.2	56	7.6	QP	L1	GND

### MEASUREMENT RESULT: "BCT09FP-597L\_fin2"

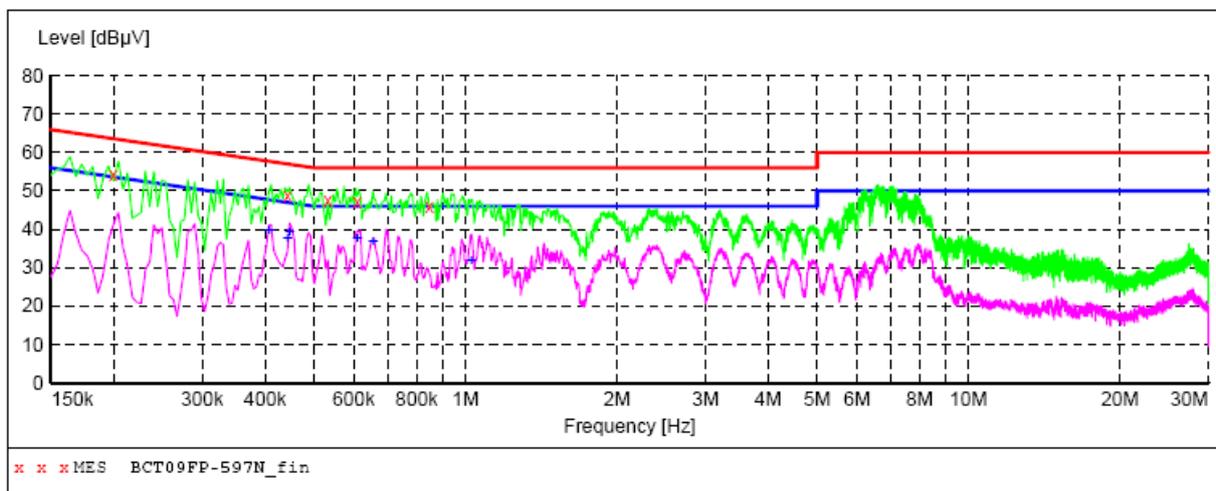
7/1/2009 22:57

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.406500	32.90	10.4	48	14.8	AV	L1	GND
0.447000	32.60	10.3	47	14.3	AV	L1	GND
0.604500	32.60	10.2	46	13.4	AV	L1	GND
0.645000	32.00	10.2	46	14.0	AV	L1	GND
0.676500	28.60	10.2	46	17.4	AV	L1	GND
0.690000	35.60	10.2	46	10.4	AV	L1	GND

## Conducted Emission Test Data

EUT: VoIP Phone  
M/N: BW210  
Operating Condition: Connect to PC  
Test Site: Shielded Room  
Operator: Hgchi  
Test Specification: AC 230V/50Hz  
Comment: Neutral Line  
Start of Test: 07/01/09/ 22:53 Tem:24°C Hum:55%

**SCAN TABLE: "Voltage (150K-30M) FIN"**  
Short Description: 150K-30M Voltage



### MEASUREMENT RESULT: "BCT09FP-597N\_fin"

7/1/2009 22:53

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.199500	54.10	10.8	64	9.5	QP	N	GND
0.442500	48.90	10.3	57	8.1	QP	N	GND
0.532500	47.70	10.2	56	8.3	QP	N	GND
0.609000	47.30	10.2	56	8.7	QP	N	GND
0.847500	46.10	10.2	56	9.9	QP	N	GND

### MEASUREMENT RESULT: "BCT09FP-597N\_fin2"

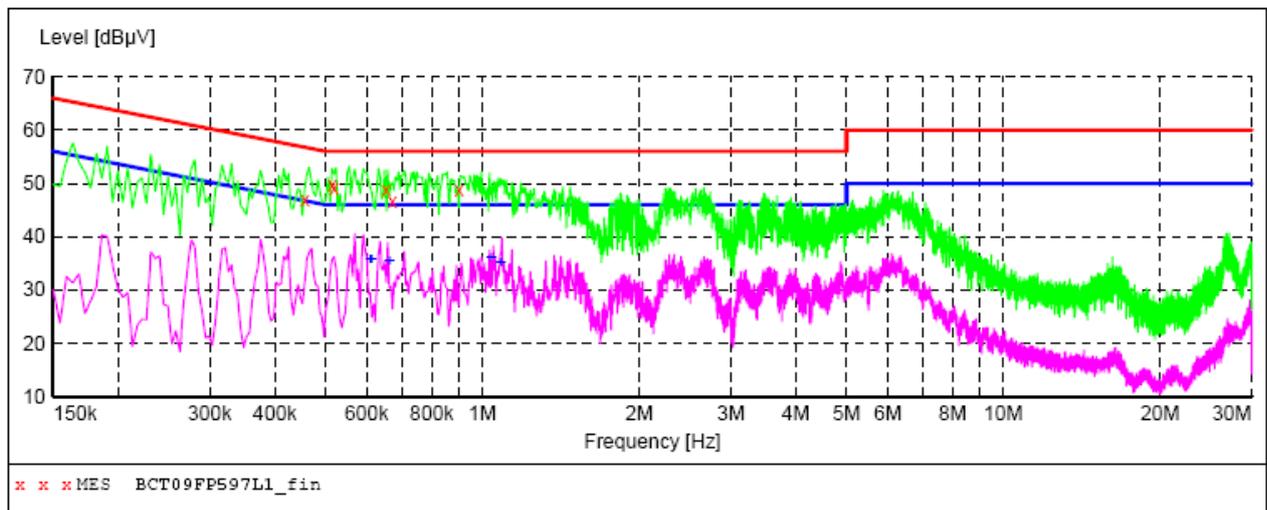
7/1/2009 22:53

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.406500	39.70	10.4	48	8.0	AV	N	GND
0.442500	37.80	10.3	47	9.2	AV	N	GND
0.447000	39.30	10.3	47	7.6	AV	N	GND
0.609000	37.50	10.2	46	8.5	AV	N	GND
0.654000	36.80	10.2	46	9.2	AV	N	GND
1.027500	32.00	10.3	46	14.0	AV	N	GND

### Conducted Emission Test Data

EUT: VoIP Phone  
M/N: BW320  
Operating Condition: Connect to PC  
Test Site: Shielded Room  
Operator: Hgchi  
Test Specification: AC 230V/50Hz  
Comment: Live Line  
Start of Test: 07/01/09/ 08:34 Tem:24°C Hum:55%

**SCAN TABLE: "Voltage (150K-30M) FIN"**  
Short Description: 150K-30M Voltage



#### MEASUREMENT RESULT: "BCT09FP597L1\_fin"

7/1/2009 08:34

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.456000	46.90	10.3	57	9.9	QP	L1	GND
0.514500	49.60	10.2	56	6.4	QP	L1	GND
0.519000	49.10	10.2	56	6.9	QP	L1	GND
0.654000	48.90	10.2	56	7.1	QP	L1	GND
0.672000	46.70	10.2	56	9.3	QP	L1	GND
0.901500	48.70	10.2	56	7.3	QP	L1	GND

#### MEASUREMENT RESULT: "BCT09FP597L1\_fin2"

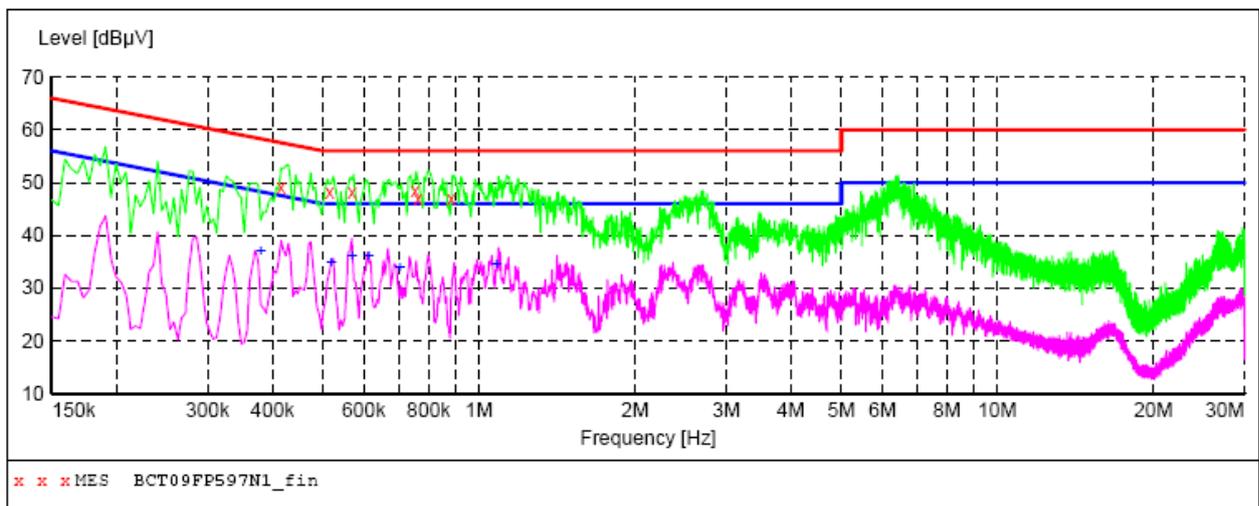
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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.609000	35.90	10.2	46	10.1	AV	L1	GND
0.613500	35.80	10.2	46	10.2	AV	L1	GND
0.663000	35.50	10.2	46	10.5	AV	L1	GND
1.041000	36.10	10.3	46	9.9	AV	L1	GND
1.086000	35.20	10.3	46	10.8	AV	L1	GND

## Conducted Emission Test Data

EUT: VoIP Phone  
M/N: BW320  
Operating Condition: Connect to PC  
Test Site: Shielded Room  
Operator: Hgchi  
Test Specification: AC 230V/50Hz  
Comment: Neutral Line  
Start of Test: 07/01/09/ 08:37 Tem:24°C Hum:55%

**SCAN TABLE: "Voltage (150K-30M) FIN"**  
Short Description: 150K-30M Voltage



### MEASUREMENT RESULT: "BCT09FP597N1\_fin"

7/1/2009 08:37

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.415500	49.30	10.4	58	8.2	QP	N	GND
0.514500	48.30	10.2	56	7.7	QP	N	GND
0.568500	48.20	10.2	56	7.8	QP	N	GND
0.753000	48.60	10.2	56	7.4	QP	N	GND
0.762000	47.10	10.2	56	8.9	QP	N	GND
0.883500	46.90	10.2	56	9.1	QP	N	GND

### MEASUREMENT RESULT: "BCT09FP597N1\_fin2"

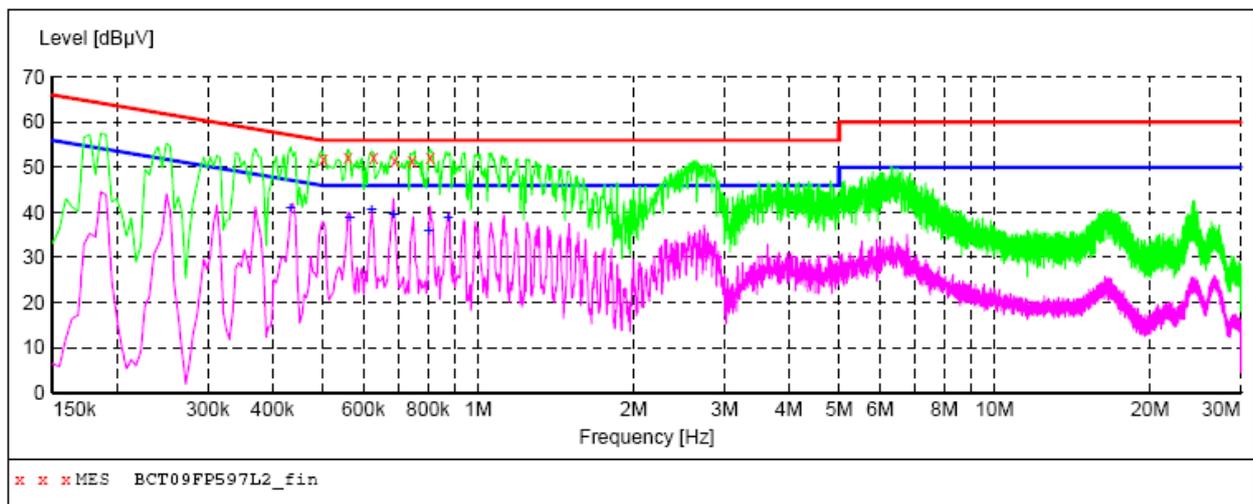
7/1/2009 08:37

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.379500	37.00	10.4	48	11.3	AV	N	GND
0.519000	34.70	10.2	46	11.3	AV	N	GND
0.568500	36.10	10.2	46	9.9	AV	N	GND
0.613500	36.10	10.2	46	9.9	AV	N	GND
0.703500	33.90	10.2	46	12.1	AV	N	GND
1.081500	34.40	10.3	46	11.6	AV	N	GND

## Conducted Emission Test Data

EUT: VoIP Phone  
 M/N: BW530  
 Operating Condition: Connect to PC  
 Test Site: Shielded Room  
 Operator: Hgchi  
 Test Specification: AC 230V/50Hz  
 Comment: Live Line  
 Start of Test: 07/01/09/ 08:30 Tem:24°C Hum:55%

**SCAN TABLE: "Voltage (150K-30M) FIN"**  
 Short Description: 150K-30M Voltage



### MEASUREMENT RESULT: "BCT09FP597L2\_fin"

7/1/2009 08:30

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.501000	52.00	10.2	56	4.0	QP	L1	GND
0.559500	52.30	10.2	56	3.7	QP	L1	GND
0.627000	52.10	10.2	56	3.9	QP	L1	GND
0.690000	51.50	10.2	56	4.5	QP	L1	GND
0.744000	51.40	10.2	56	4.6	QP	L1	GND
0.807000	52.10	10.2	56	3.9	QP	L1	GND

### MEASUREMENT RESULT: "BCT09FP597L2\_fin2"

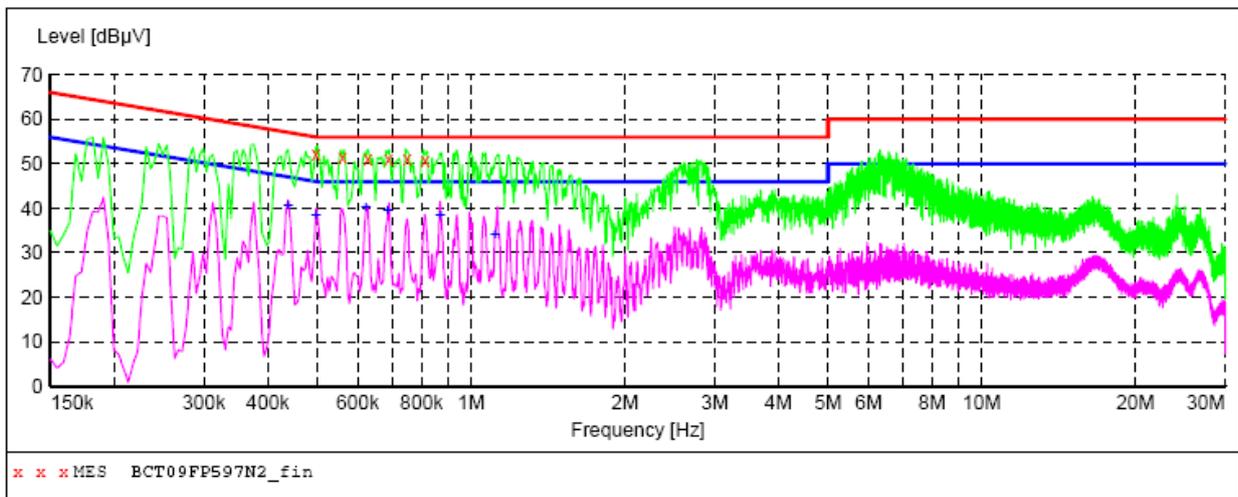
7/1/2009 08:30

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.433500	41.10	10.3	47	6.1	AV	L1	GND
0.564000	38.80	10.2	46	7.2	AV	L1	GND
0.622500	40.60	10.2	46	5.4	AV	L1	GND
0.685500	39.40	10.2	46	6.6	AV	L1	GND
0.802500	35.70	10.2	46	10.3	AV	L1	GND
0.874500	38.80	10.2	46	7.2	AV	L1	GND

**Conducted Emission Test Data**

EUT: VoIP Phone  
M/N: BW530  
Operating Condition: Connect to PC  
Test Site: Shielded Room  
Operator: Hgchi  
Test Specification: AC 230V/50Hz  
Comment: Neutral Line  
Start of Test: 07/01/09/ 08:27 Tem:24°C Hum:55%

**SCAN TABLE: "Voltage (150K-30M) FIN"**  
Short Description: 150K-30M Voltage



**MEASUREMENT RESULT: "BCT09FP597N2\_fin"**

7/1/2009 08:27

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.496500	52.30	10.3	56	3.8	QP	N	GND
0.559500	51.60	10.2	56	4.4	QP	N	GND
0.627000	51.10	10.2	56	4.9	QP	N	GND
0.690000	51.20	10.2	56	4.8	QP	N	GND
0.748500	51.20	10.2	56	4.8	QP	N	GND
0.811500	50.80	10.2	56	5.2	QP	N	GND

**MEASUREMENT RESULT: "BCT09FP597N2\_fin2"**

7/1/2009 08:27

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.438000	40.50	10.3	47	6.6	AV	N	GND
0.496500	38.50	10.3	46	7.6	AV	N	GND
0.622500	40.20	10.2	46	5.8	AV	N	GND
0.685500	39.50	10.2	46	6.5	AV	N	GND
0.870000	38.50	10.2	46	7.5	AV	N	GND
1.113000	34.10	10.3	46	11.9	AV	N	GND

## 4 - RADIATED DISTURBANCES

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### 4.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is 4.0 dB.

### 4.2 Limit of Radiated Disturbances (Class B)

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB $\mu$ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: (1) The tighter limit shall apply at the edge between two frequency bands.  
(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

### 4.3 EUT Setup

The radiated emission tests were performed in the open area 3-meter test site, using the setup accordance with the CISPR 16-1: 2002, CISPR16-2: 2002. The specification used was EN 55022 Class B limits.

The EUT was placed on the center of the test table.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

### 4.4 Test Receiver Setup

According to EN 55022 rules, the frequency was investigated from 30 to 1000 MHz. During the radiated emission test, the test receiver was set with the following configurations:

Test Receiver Setting:

Detector.....Peak & Quasi-Peak  
IF Band Width.....120KHz  
Frequency Range.....30MHz to 1000MHz  
Turntable Rotated.....0 to 360 degrees

Antenna Position:

Height.....1m to 4m  
Polarity.....Horizontal and Vertical

#### 4.5 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within -10 dB $\mu$ V of specification limits), and are distinguished with a "QP" in the data table.

#### 4.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB $\mu$ V means the emission is 7dB $\mu$ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Class B Limit} - \text{Corr. Ampl.}$$

#### 4.7 Radiated Emissions Test Result

Temperature ( °C )	22~25
Humidity ( %RH )	50~54
Barometric Pressure ( mbar )	950~1000
EUT	VoIP Phone
M/N	BW210/BW320/BW530
Operating Mode	Connect to PC

#### 4.8 Test Result

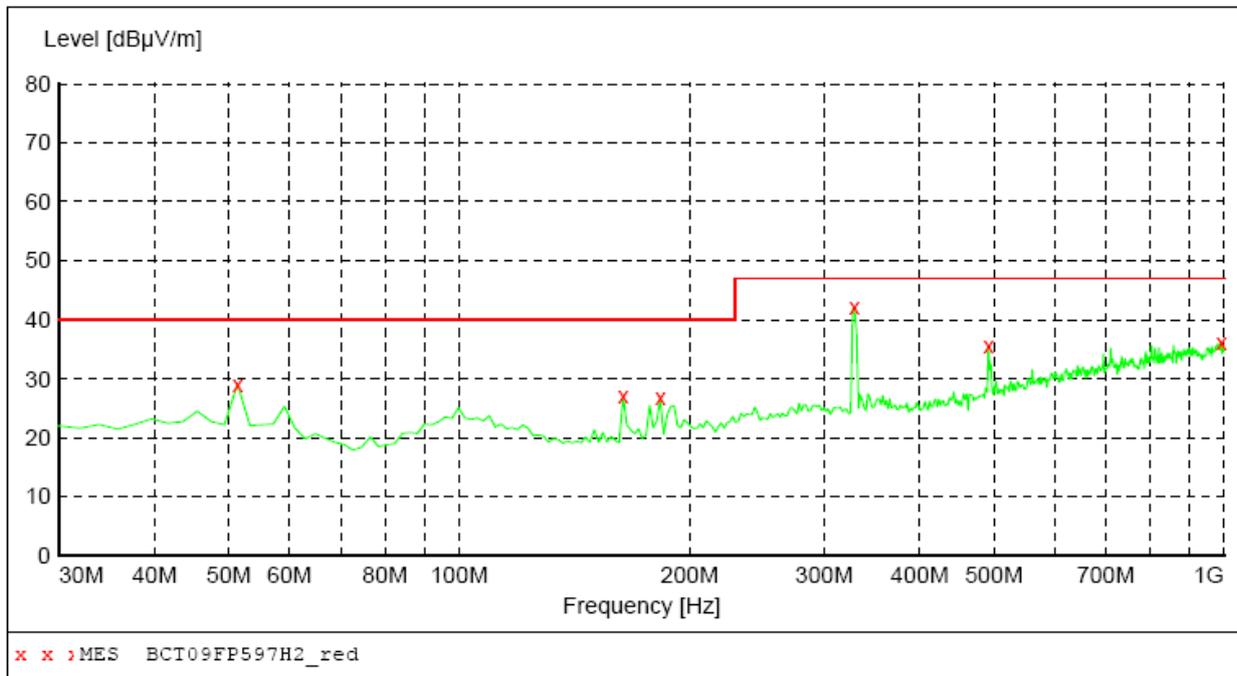
**PASS**

## Radiated Emission Test Data

EUT: VoIP Phone  
 M/N: BW210  
 Operating Condition: Connect to PC  
 Test Site: 3m CHAMBER  
 Operator: Jip  
 Test Specification: AC 230V/50Hz  
 Comment: Polarisation: Horizontal  
 Start of Test: 07/02/09/ 08:37 Tem:25°C Hum:50%

### SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	MaxPeak	Coupled	100 kHz	VULB9163 NEW
30.0 MHz	1.0 GHz				



### MEASUREMENT RESULT: "BCT09FP597H2\_red"

7/2/2009 08:37

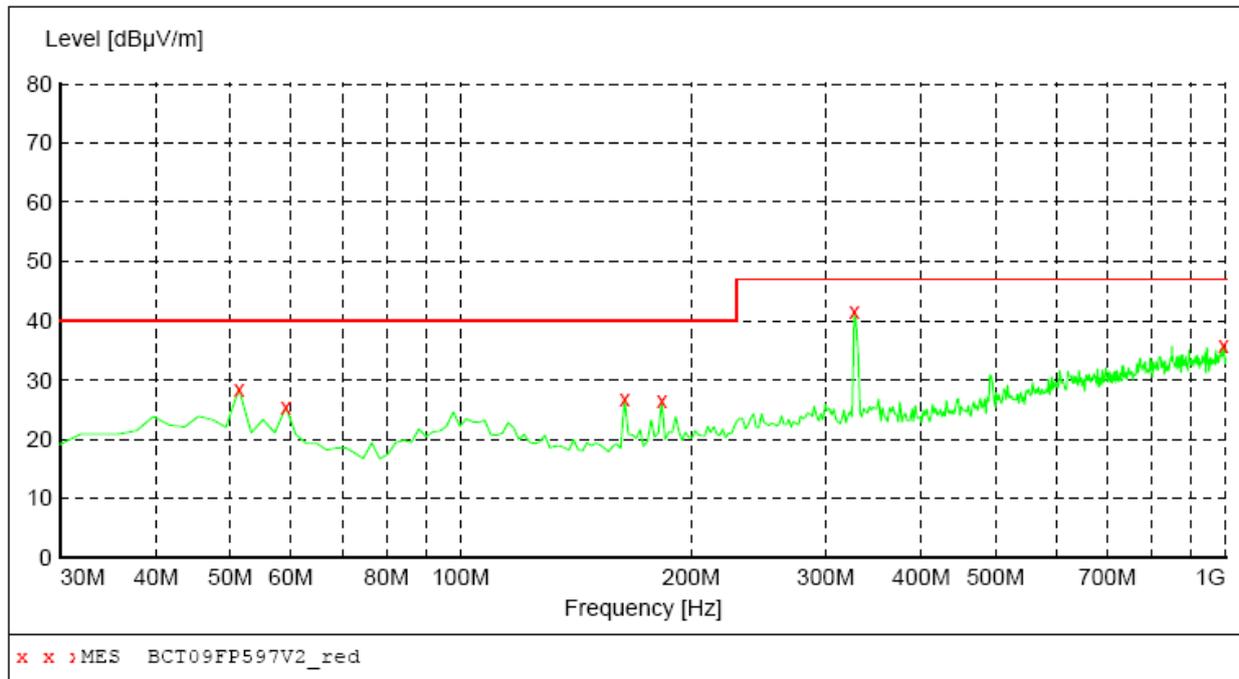
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
51.340000	29.10	16.6	40.0	10.9	QP	100.0	0.00	HORIZONTAL
163.860000	27.00	14.8	40.0	13.0	QP	100.0	0.00	HORIZONTAL
183.260000	26.70	16.1	40.0	13.3	QP	100.0	0.00	HORIZONTAL
328.760000	42.20	20.5	47.0	4.8	QP	100.0	0.00	HORIZONTAL
491.720000	35.60	22.4	47.0	11.4	QP	100.0	0.00	HORIZONTAL
990.300000	36.10	30.0	47.0	10.9	QP	100.0	0.00	HORIZONTAL

## Radiated Emission Test Data

EUT: VoIP Phone  
 M/N: BW210  
 Operating Condition: Connect to PC  
 Test Site: 3m CHAMBER  
 Operator: Jip  
 Test Specification: AC 230V/50Hz  
 Comment: Polarisation: Vertical  
 Start of Test: 07/02/09/ 08:37 Tem:25°C Hum:50%

### SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength				Transducer
Start	Stop	Detector	Meas. Time	IF Bandw.		
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW	



### MEASUREMENT RESULT: "BCT09FP597V2\_red"

7/2/2009 08:37

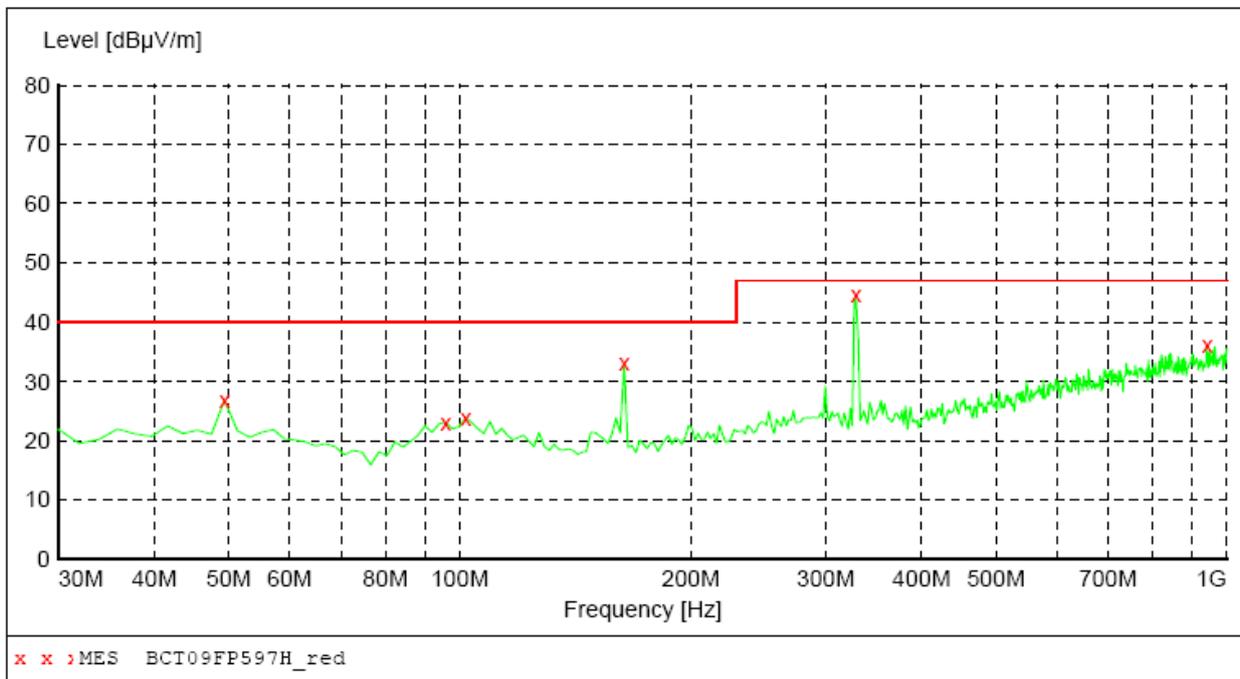
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
51.340000	28.50	16.6	40.0	11.5	QP	100.0	0.00	VERTICAL
59.100000	25.50	15.5	40.0	14.5	QP	100.0	0.00	VERTICAL
163.860000	26.80	14.8	40.0	13.2	QP	100.0	0.00	VERTICAL
183.260000	26.50	16.1	40.0	13.5	QP	100.0	0.00	VERTICAL
326.820000	41.50	20.5	47.0	5.5	QP	100.0	0.00	VERTICAL
992.240000	35.90	30.0	47.0	11.1	QP	100.0	0.00	VERTICAL

## Radiated Emission Test Data

EUT: VoIP Phone  
 M/N: BW320  
 Operating Condition: Connect to PC  
 Test Site: 3m CHAMBER  
 Operator: Jip  
 Test Specification: AC 230V/50Hz  
 Comment: Polarisation: Horizontal  
 Start of Test: 07/02/09/ 08:32 Tem:25°C Hum:50%

### SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength				Transducer
Start	Stop	Detector	Meas. Time	IF Bandw.		
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW	



### MEASUREMENT RESULT: "BCT09FP597H\_red"

7/2/2009 08:32

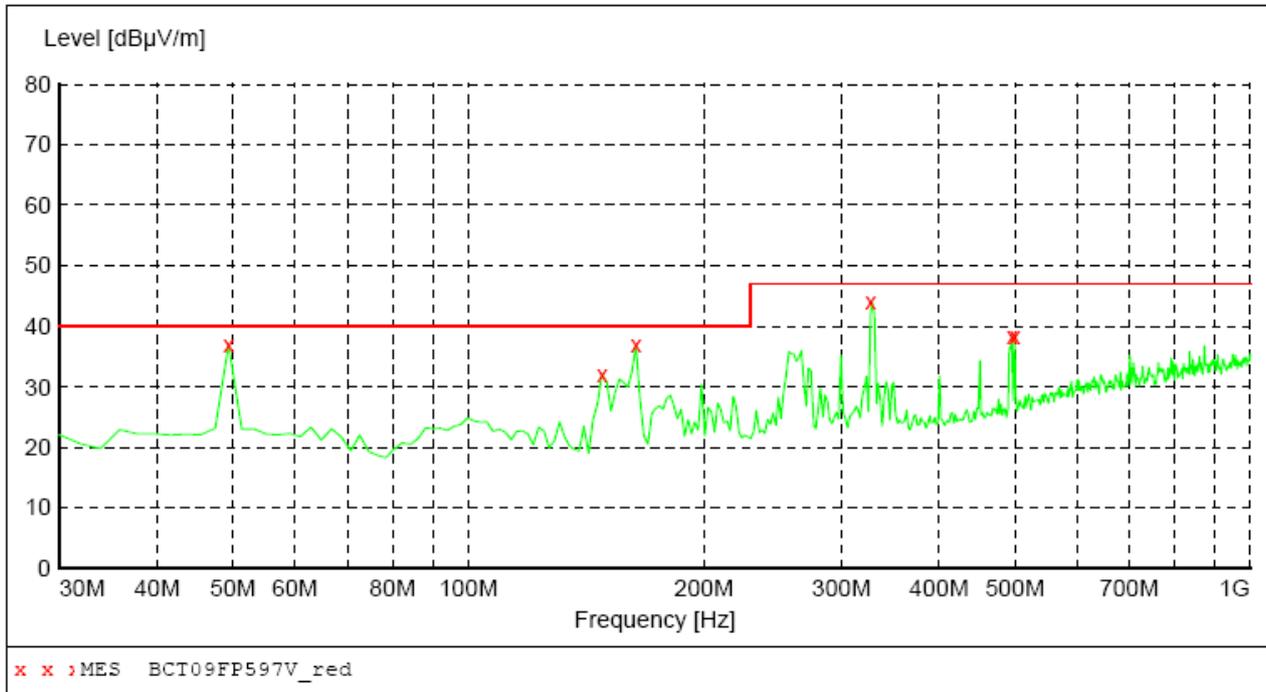
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
49.400000	26.90	16.7	40.0	13.1	QP	100.0	0.00	HORIZONTAL
95.960000	23.10	18.0	40.0	16.9	QP	100.0	0.00	HORIZONTAL
101.780000	23.90	18.2	40.0	16.1	QP	100.0	0.00	HORIZONTAL
163.860000	33.00	14.8	40.0	7.0	QP	100.0	0.00	HORIZONTAL
328.760000	44.50	20.5	47.0	2.5	QP	100.0	0.00	HORIZONTAL
941.800000	36.20	29.6	47.0	10.8	QP	100.0	0.00	HORIZONTAL

## Radiated Emission Test Data

EUT: VoIP Phone  
 M/N: BW320  
 Operating Condition: Connect to PC  
 Test Site: 3m CHAMBER  
 Operator: Jip  
 Test Specification: AC 230V/50Hz  
 Comment: Polarisation: Vertical  
 Start of Test: 07/02/09/ 08:44 Tem:25°C Hum:50%

### SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



### MEASUREMENT RESULT: "BCT09FP597V\_red"

7/2/2009 08:44

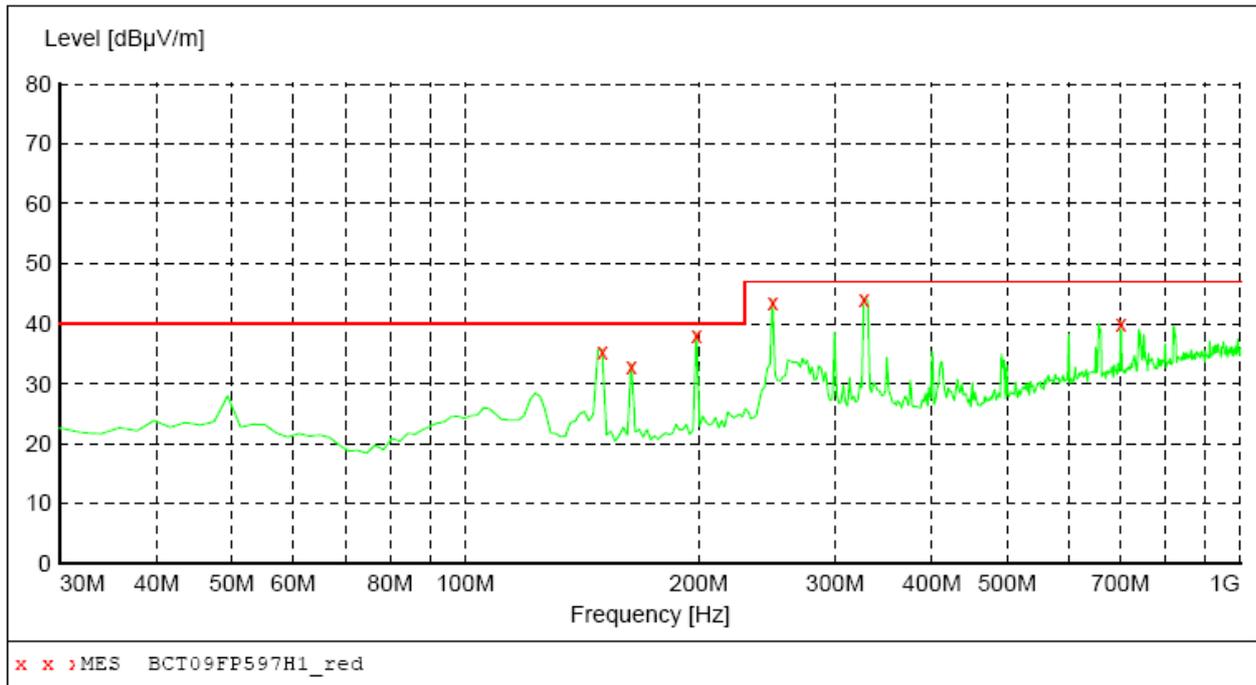
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
49.400000	37.00	16.7	40.0	3.0	QP	100.0	0.00	VERTICAL
148.340000	32.10	14.1	40.0	7.9	QP	100.0	0.00	VERTICAL
163.860000	37.00	14.8	40.0	3.0	QP	100.0	0.00	VERTICAL
326.820000	44.00	20.5	47.0	3.0	QP	100.0	0.00	VERTICAL
495.600000	38.30	22.5	47.0	8.7	QP	100.0	0.00	VERTICAL
499.480000	38.40	22.7	47.0	8.6	QP	100.0	0.00	VERTICAL

## Radiated Emission Test Data

EUT: VoIP Phone  
 M/N: BW530  
 Operating Condition: Connect to PC  
 Test Site: 3m CHAMBER  
 Operator: Jip  
 Test Specification: AC 230V/50Hz  
 Comment: Polarisation: Horizontal  
 Start of Test: 07/07/09/ 12:13 Tem:25°C Hum:50%

### SWEEP TABLE: "test (30M-1G)"

Start Frequency	Stop Frequency	Detector	Meas. Time	Field Strength IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



### MEASUREMENT RESULT: "BCT09FP597H1\_red"

7/7/2009 12:13

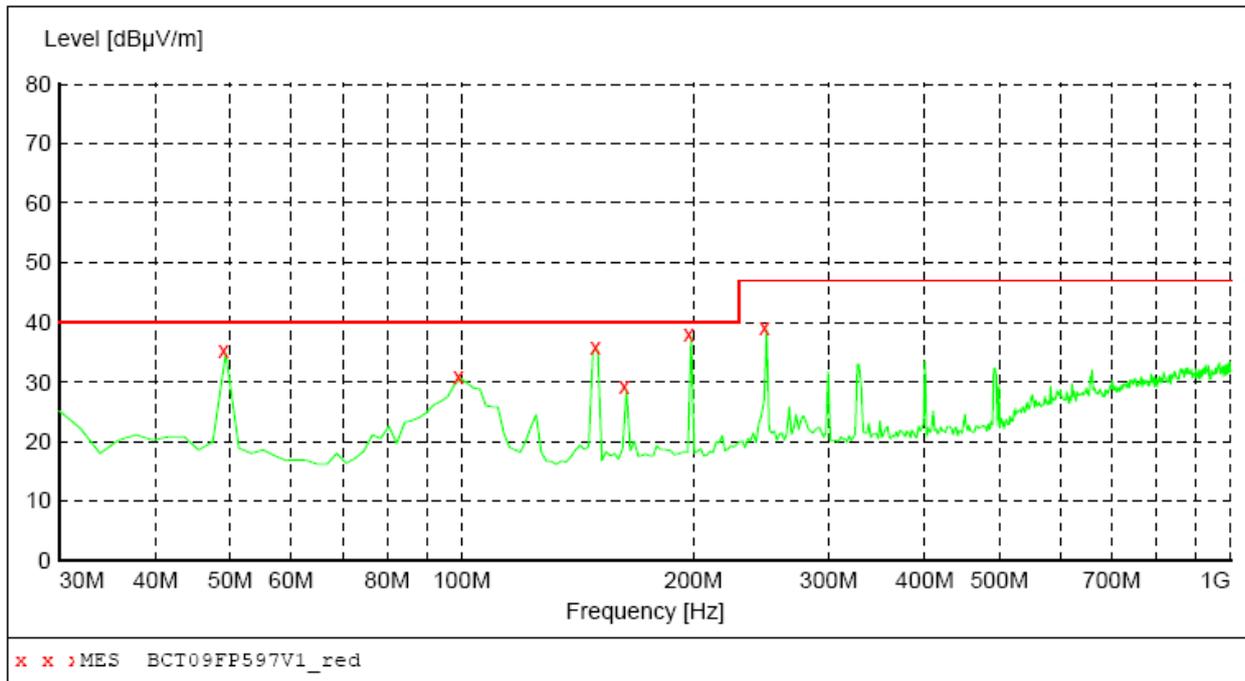
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
150.280000	35.80	14.1	40.0	4.2	QP	100.0	0.00	HORIZONTAL
163.860000	33.40	14.8	40.0	6.6	QP	100.0	0.00	HORIZONTAL
198.780000	38.00	16.9	40.0	2.0	QP	100.0	0.00	HORIZONTAL
249.220000	44.10	18.4	47.0	2.9	QP	100.0	0.00	HORIZONTAL
326.820000	44.40	20.5	47.0	2.6	QP	100.0	0.00	HORIZONTAL
701.240000	40.40	26.7	47.0	6.6	QP	100.0	0.00	HORIZONTAL

## Radiated Emission Test Data

EUT: VoIP Phone  
 M/N: BW530  
 Operating Condition: Connect to PC  
 Test Site: 3m CHAMBER  
 Operator: Jip  
 Test Specification: AC 230V/50Hz  
 Comment: Polarisation: Vertical  
 Start of Test: 07/01/09/ 17:54 Tem:25°C Hum:50%

### SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



### MEASUREMENT RESULT: "BCT09FP597V1\_red"

7/1/2009 17:54

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
49.400000	35.60	16.7	40.0	4.4	QP	100.0	0.00	VERTICAL
99.840000	31.30	18.3	40.0	8.7	QP	100.0	0.00	VERTICAL
150.280000	36.10	14.1	40.0	3.9	QP	100.0	0.00	VERTICAL
163.860000	33.50	14.8	40.0	6.5	QP	100.0	0.00	VERTICAL
198.780000	38.00	16.9	40.0	2.0	QP	100.0	0.00	VERTICAL
249.220000	40.50	18.4	47.0	6.5	QP	100.0	0.00	VERTICAL

## **6 - VOLTAGE FLUCTUATIONS AND FLICKER TEST (EN 61000-3-3)**

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### **6.1 Application of Voltage Fluctuations and Flicker Test**

Compliance to these standards ensures that tested equipment will not generate flickers and voltage change at levels that cause unacceptable degradation of the main environment. This directly contributes to meeting compatibility levels established in other EMC standards, which defines compatibility levels for low-frequency conducted disturbances in low-voltage supply systems.

### **6.2 Measurement Data**

Note: For detailed test data, refer to the following pages:

Standard used:	EN/IEC 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	10 min (1 Flicker measurement)
Flickermeter:	230V / 50Hz
E. U. T.:	VoIP Phone
M/N	BW210/BW320/BW530
Operation Mode	Connect to PC

### **6.3 Test Results**

**Pass**

**Model No.:BW210**

Voltage Variations :

Highest Level:	+2.24%	
Lowest Level:	+0.56%	
d(max):	1.67%	PASS
Highest d(t) of 500ms:	0.00%	PASS
Present d(t) over 3.33%:	0.00 Seconds	
Longest d(t) over 3.33%:	0.02 Seconds	
Highest Steady State:	+1.09%	
Lowest Steady State:	+0.80%	
Max d(c) Between Adjacent:	0.29%	PASS
Max d(c) Between Any:	0.29%	
Short Term Flicker Pst:	0.18	PASS

Flicker Results :

Pst Classifier	Plt Calculation		
Duration	Flicker	Interval	Pst
0.1%	1.03		
0.7%	0.02		
1.0%	0.02		
1.5%	0.02		
2.2%	0.00		
3%	0.00		
4%	0.00		
6%	0.00		
8%	0.00		
10%	0.00		
13%	0.00		
17%	0.00		
30%	0.00		
50%	0.00		
80%	0.00		

**Model No.:BW320**

Voltage Variations :

Highest Level:	+2.38%	
Lowest Level:	+0.73%	
d(max):	1.65%	PASS
Highest d(t) of 500ms:	0.00%	PASS
Present d(t) over 3.33%:	0.00 Seconds	
Longest d(t) over 3.33%:	0.02 Seconds	
Highest Steady State:	+1.24%	
Lowest Steady State:	+1.21%	
Max d(c) Between Adjacent:	0.02%	PASS
Max d(c) Between Any:	0.02%	
Short Term Flicker Pst:	0.06	PASS

Flicker Results :

Pst Classifier	Plt Calculation		
Duration	Flicker	Interval	Pst
0.1%	0.09		
0.7%	0.02		
1.0%	0.01		
1.5%	0.01		
2.2%	0.00		
3%	0.00		
4%	0.00		
6%	0.00		
8%	0.00		
10%	0.00		
13%	0.00		
17%	0.00		
30%	0.00		
50%	0.00		
80%	0.00		

**Model No.:BW530**

Voltage Variations :

Highest Level:	+2.24%	
Lowest Level:	+0.56%	
d(max):	1.67%	PASS
Highest d(t) of 500ms:	0.00%	PASS
Present d(t) over 3.33%:	0.00 Seconds	
Longest d(t) over 3.33%:	0.02 Seconds	
Highest Steady State:	+1.09%	
Lowest Steady State:	+0.80%	
Max d(c) Between Adjacent:	0.29%	PASS
Max d(c) Between Any:	0.29%	
Short Term Flicker Pst:	0.18	PASS

Flicker Results :

Pst Classifier	Plt Calculation		
Duration	Flicker	Interval	Pst
0.1%	1.03		
0.7%	0.02		
1.0%	0.02		
1.5%	0.02		
2.2%	0.00		
3%	0.00		
4%	0.00		
6%	0.00		
8%	0.00		
10%	0.00		
13%	0.00		
17%	0.00		
30%	0.00		
50%	0.00		
80%	0.00		

## **7 - EN 55024 Test MEASUREMENT INSTRUMENTATION**

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### **7.1 Electrostatic Discharge Test System**

An EM TEST DITOC0103Z ESD simulator is used for all testing. It is capable of applying Electrostatic discharges in both contact discharge modes to 4 kV and air discharge modes to 8 kV in both positive and negative polarities. This is in accordance with the IEC 61000-4-2 basic EMC publication.

### **7.2 Radiated Susceptibility Test System**

An IFR 2032 signal generator and a Amplifier Research power amplifier are used to provide a signal at the appropriate power and frequency to a transmitting antenna to obtain the required electromagnetic field at the position of the EUT in accordance with the IEC 61000-4-3 basic EMC publication. The field was monitored by Amplifier Research field probe and Amplifier Research PM2002 power meter according the IEC 61000-4-3 standards. In order to judge the performance of the EUT, a set of monitor system is used.

### **7.3 Electrical Fast Transient/Burst Immunity Test System**

An EM Test UCS 500-M6 Immunity test system is used for all testing. It is capable of applying fast transients to the AC line at any phase angle with respect to the AC line voltage wave form and to attached cables via a capacitive coupling clamp in accordance with the IEC 61000-4-4 basic EMC publication.

### **7.4 Surge Immunity Test System**

An EM Test UCS 500-M6 Immunity test system is used for all testing. Both positive and negative polarities of voltage up to 2kV were applied to the AC input lines. The coupling network defined in the standard was used.

### **7.5 Conducted Susceptibility Test System**

An IFR 2032A signal generator and a set of Amplifier Research test system are used for the testing. EUT was tested from 0.15 MHz to 80 MHz with 1kHz sine wave, 80% modulation with 3Vr.m.s. CDN coupling and de-coupling networks and EM clamp was tested. During the tests, injected was applied to power line by using CDNs-6.2.2 method, and I/O lines was injected by using EM clamp injection-6.2.3.method.

### **7.6 Power Frequency Magnetic Field Immunity Test System**

An EM Test UCS 500-M6 Immunity test system is used for all testing. Test level as described in IEC 61000-4-8 titled "Table 1 – Test Levels for continuous field" was chosen. Single turn induction coil in 1m x 1m size was used to generate the magnetic field.

### **7.7 Voltage Dips, Short Interruptions Immunity Tests System**

An EM Test UCS 500-M6 Immunity test system is used for all testing. Test level as described in IEC 61000-4-11, section 5, titled "Test Levels".

## 7.8 Equipment Test Table

IEC 61000-4-2: 1995 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on a insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.6 by 0.8-meter metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470 k Ohms resistors in series. The EUT and attached cables are isolated from this metal sheet by *0.5-millimeter* thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

IEC 61000-4-3 and IEC 61000-4-4 specify that a tabletop EUT be placed on a non-conducting table 80 centimeters above a ground reference plane and that floor-mounted equipment shall be placed on an insulating support approximately 10 centimeters above a ground plane. During the IEC 61000-4-3 tests, the EUT is positioned on a table in a shielded semi-anechoic test chamber to reduce reflections from the internal surfaces of the chamber. During the IEC 61000-4-4 tests, the EUT is positioned on a table over a ground reference plane in conformance with this requirement.

## 7.9 Instrument Calibration

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications.

Extensive engineering efforts have been made to ensure test data reliability through Quality Control and regular equipment calibration schedules. However, the application of radio frequency fields and voltages are not without an unavoidable level of uncertainty. These include inaccuracies in antenna factors, chamber imperfections and possible test generator output uncertainties.

## **8 - EN 55024 TEST PROCEDURES**

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### **8.1 EUT and Cable Placement**

The EUT and any peripherals are located at the center of the table for tabletop devices and in the center of the ground plane with the insulating support for floor-standing devices. The standards require that interconnecting cables to be connected to available ports of the unit and that the placement of the unit and the attached cables simulate a typical installation so far as to be practical.

### **8.2 Application of Electrostatic Discharge Immunity Test**

The test is conducted in the following order according to the basic standard IEC 61000-4-2: Air Discharge, Direct Contact Discharge, Indirect Contact Horizontal Coupling Plane Discharge, and Indirect Contact Vertical Coupling Plane Discharge. The Electrostatic Discharge test levels are set and discharges for the different test modes are set appropriately. The Electrostatic Discharge is applied to the conductive surface of the computer in which the EUT is enclosed, and along all seams and control surfaces on the computer. When a discharge occurs and an error is caused, the type of error, discharge level and location is recorded.

### **8.3 Application of Radiated Susceptibility Test**

The electromagnetic field is established at the front edge of the EUT. The frequency range is swept from 80 to 1000 MHz using a power level necessary to obtain a 3 volt/meter and 80% amplitude of a 1 kHz sine wave modulated field Strength is directed at the EUT. The test is performed with each of four sides of EUT facing the transmitting antenna. If an error is detected when the susceptible side of the EUT facing the transmitting antenna, the field is reduced until the error is not repeatable, the field is then manually increased until the error begins to occur. This threshold level, the frequency and the error created are noted before continuing. Both horizontal and vertical polarization of the antenna are set on test and measured individually

### **8.4 Application of Electrical Fast Transient/Burst Immunity Test**

The EUT was arranged for Power Line Coupling and for I/O Line Coupling through a capacitive clamp, where applicable. (Note: The I/O coupling test using a capacitive clamp is performed on the I/O interface cables that are longer in length than 3 meters.) A metal ground plane 2.4 meter by 2.0 meter was placed between the floor and the table and is connected to the earth by a 2.0 meter ground rod. The ground rod is connected to the test facility's electrical earth.

### **8.5 Application of Surge Immunity Test**

The EUT was setup as described in IEC 61000-4-5 and the test shall be performed according to the test plan.

### **8.6 Application of Conducted Susceptibility Test**

The EUT was setup according to the IEC 61000-4-6 and the test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn while the other non-excited RF input ports of the coupling devices are terminated by a 50  $\Omega$  load resistor. The frequency range is 150kHz to 80 MHz.

### **8.7 Application of Power Frequency Magnetic Field Immunity Test**

It is deemed that according to the standard of EN 55024: 1998+ A1: 2001+A2: 2003, this test is not applicable to the EUT which dose not contain devices susceptible to magnetic fields, such as CRT monitors, Hall elements, electro-dynamic microphone, magnetic field sensor, etc.

### **8.8 Application of Voltage Dips, Short Interruptions Immunity Tests**

The EUT was setup according to the IEC 61000-4-11 and the test shall be done as the procedure described in the standard.

### **8.9 Deviations from the Standard**

No deviations from EN 55024 were made when performing the tests described in this report.

## 9 - TEST DATA

### 9.1 Electrostatic Discharge Immunity Test (IEC 61000-4-2)

Temperature ( °C )	22~23
Humidity ( %RH )	50~54
Barometric Pressure ( mbar )	950~1000
EUT	VoIP Phone
M/N	BW210/BW320/BW530
Operating Mode	Connect to PC

Table 1: Electrostatic Discharge Immunity (Air Discharge)

IEC 61000-4-2 Test Points	Test Levels									
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV	-15 kV	+15 kV
Shell 2 Points	A	A	A	A	A	A	A	A	/	/
Gap 2 Points	A	A	A	A	A	A	A	A	/	/
Port 2 Points	A	A	A	A	A	A	A	A	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

IEC 61000-4-2 Test Points	Test Levels									
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV	-15 kV	+15 kV
N/A	/	/	/	/	/	/	/	/	/	/

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

IEC 61000-4-2 Test Points	Test Levels									
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV	-15 kV	+15 kV
Front Side	A	A	A	A	/	/	/	/	/	/
Back Side	A	A	A	A	/	/	/	/	/	/
Left Side	A	A	A	A	/	/	/	/	/	/
Right Side	A	A	A	A	/	/	/	/	/	/

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

IEC 61000-4-2 Test Points	Test Levels									
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV	-15 kV	+15 kV
Front Side	A	A	A	A	/	/	/	/	/	/
Back Side	A	A	A	A	/	/	/	/	/	/
Left Side	A	A	A	A	/	/	/	/	/	/
Right Side	A	A	A	A	/	/	/	/	/	/

## 9.2 Radiated Susceptibility Test (IEC 61000-4-3)

Frequency Range (MHz): 80~1000MHz  
 Modulation: Amplitude 80%, 1kHz sinewave  
 Severity Level: 3V/m

Temperature ( °C )	22~23
Humidity ( %RH )	50~54
Barometric Pressure ( mbar )	950~1000
EUT	VoIP Phone
M/N	BW210/BW320/BW530
Operating Mode	Connect to PC

Frequency Range (MHz)	Front (3 V/m)		Rear (3 V/m)		Left Side (3 V/m)		Right Side (3 V/m)	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	A	A	A	A	A	A	A	A

## 9.3 Electrical Fast Transient/Burst Immunity Test (IEC 61000-4-4)

Temperature ( °C )	22~23
Humidity ( %RH )	50~54
Barometric Pressure ( mbar )	950~1000
EUT	VoIP Phone
M/N	BW210/BW320/BW530
Operating Mode	Connect to PC

IEC 61000-4-4 Test Points		Test Levels (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
Power Supply	L1	A	A	A	A	/	/	/	/
	L2	A	A	A	A	/	/	/	/
	Earth	/	/	/	/	/	/	/	/
Power Line of EUT	L1+L2	A	A	A	A	/	/	/	/
	L1 + Earth	/	/	/	/	/	/	/	/
	L2 + Earth	/	/	/	/	/	/	/	/
	L1+L2+Earth	/	/	/	/	/	/	/	/

#### 9.4 Surge Immunity Test (IEC 61000-4-5)

Temperature ( °C )	22~23
Humidity ( %RH )	50~54
Barometric Pressure ( mbar )	950~1000
EUT	VoIP Phone
M/N	BW210/BW320/BW530
Operating Mode	Connect to PC

Table 1: Surge Power Supply

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	L-N	A	/
2	1kV	±	L-N	A	/
3	2kV	±	L-PE, N-PE	/	/
4	4kV	±	L-N, L-PE, N-PE	/	/

#### 9.5 Conducted Susceptibility Test (IEC 61000-4-6)

Frequency Range (MHz): 0.15~80MHz  
 Modulation: Amplitude 80%, 1kHz sinewave  
 Severity Level:  $3\sqrt{V}$ r.m.s.

Temperature ( °C )	22~23
Humidity ( %RH )	50~54
Barometric Pressure ( mbar )	950~1000
EUT	VoIP Phone
M/N	BW210/BW320/BW530
Operating Mode	Connect to PC

Level	Voltage Level (e.m.f.) U <sub>0</sub>	Pass	Fail
1	1	/	/
2	3	A	/
3	10	/	/
X	Special	/	/

## 9.6 Voltage Dips, Short Interruptions Immunity Tests (IEC 61000-4-11)

Temperature ( °C )	22~23
Humidity ( %RH )	50~54
Barometric Pressure ( mbar )	950~1000
EUT	VoIP Phone
M/N	BW210/BW320/BW530
Operating Mode	Connect to PC

Level	U2	td	Phase Angle	N	Pass	Fail
1	>95%	10ms	0/90/180/270	3	B	/
2	30%	500ms	N/A	3	C	/
3	>95%	5000ms	N/A	3	C	/

### Note:

- A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.
- B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacture. No change in operating state or loss or data is permitted.
- C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.

## 10 - TEST RESULTS

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The following tests were performed on the **Fanvil Technology Co., Ltd.**'s product; model: **BW210, BW320, BW530** ; the actual test results are contained within the Test Data section of this report.

### 10.1 IEC 61000-4-2 Electrostatic Discharge Immunity Test Configuration

The EUT was subjected to the electrostatic discharge tests required by EN 55024 and all lower levels specified in IEC 61000-4-2.

*The EUT continued to perform as intended during and after the application of the ESD. Test setup photographs presented in Appendix C.*

### 10.2 IEC 61000-4-3 Radiated Susceptibility Test Configuration

The EUT was subjected to a 3-volt/meter, 80% Amplitude, 1 kHz Sine wave field as required by EN 55024 and all lower levels specified in IEC 61000-4-3.

*The EUT continued to perform as intended during and after the application of the electromagnetic field. Test setup photographs presented in Appendix C.*

### 10.3 IEC 61000-4-4 Electrical Fast Transient/Burst Immunity Test Configuration

The EUT was subjected to the electrical fast transient tests required by EN 55024 and all lower levels specified in IEC 61000-4-4.

*The EUT continued to perform as intended during and after the application of the EFT/B. Test setup photographs presented in Appendix C.*

### 10.4 IEC 61000-4-5 Surge Immunity Test Configuration

The EUT was subjected to the Surge Immunity tests required by EN 55024 and all lower levels specified in IEC 61000-4-5.

*The EUT continued to perform as intended during and after the application of the Surge Immunity Test. Test setup photographs presented in Appendix C.*

### 10.5 IEC 61000-4-6 Conducted Susceptibility Test Configuration

The EUT was subjected to the Conducted Susceptibility tests required by EN 55024 and all lower levels specified in IEC 61000-4-6.

*The EUT continued to perform as intended during and after the application of the Conducted Susceptibility Test.*

### 10.6 IEC 61000-4-11 Voltage Dips, Short Interruptions Immunity Tests Configuration

The EUT was subjected to the Voltage Dips/Interruptions tests required by EN 55024 and all lower levels specified in IEC 61000-4-11.

*The EUT continued to perform as intended during and after the application of the Voltage Dips/Interruptions Test. Test setup photographs presented in Appendix C.*

## APPENDIX A - PRODUCT LABELING

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### CE Marking Label Specification

Specification: Text is Black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing and shall be affixed at a conspicuous location on the EUT or silk-screened onto the EUT.



### Proposed Label Location on EUT

EUT Rear View/Proposed CE Marking Location



## APPENDIX B - EUT PHOTOGRAPHS

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Model No.: BW210  
EUT –Front View



EUT – Rear View



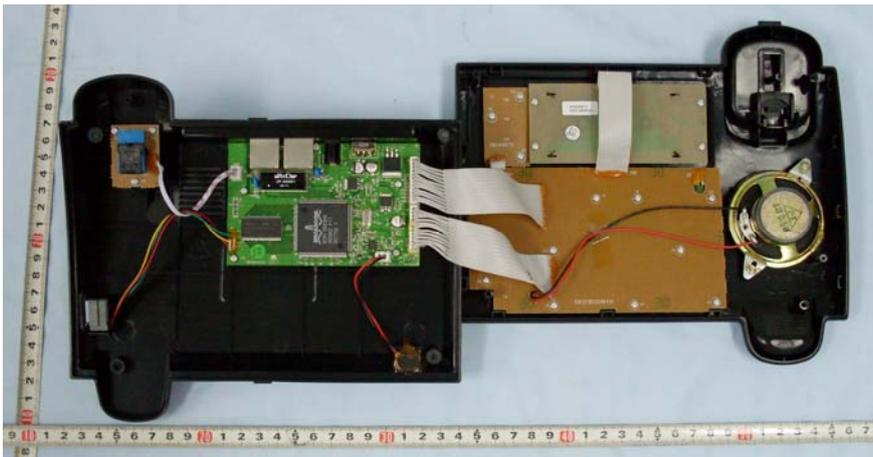
EUT – Port View



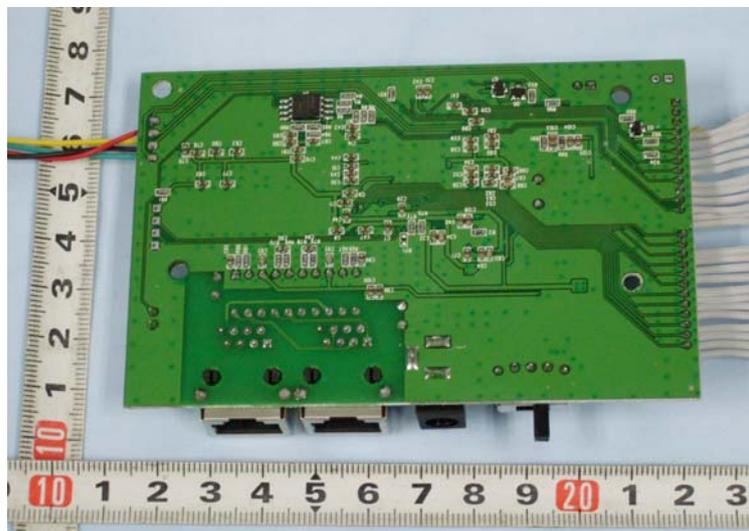
**EUT – Fitting View**



**EUT –Covered View**



**EUT –PCB View**





Model No.: BW320  
EUT –Front View



EUT – Rear View



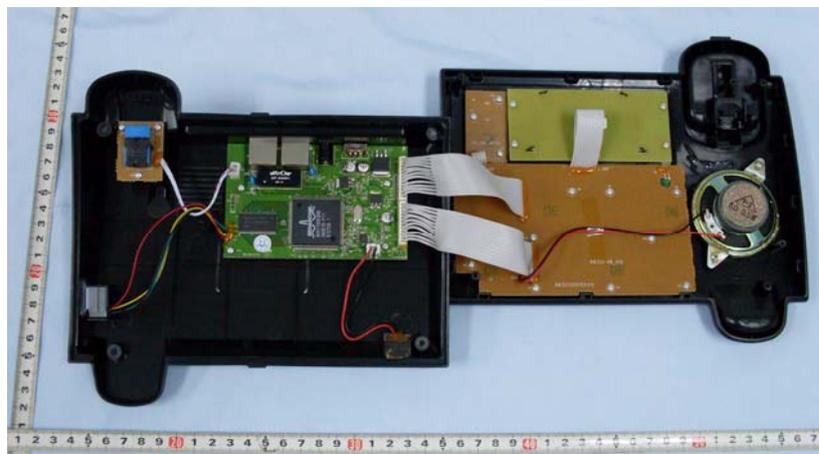
### EUT – Port View



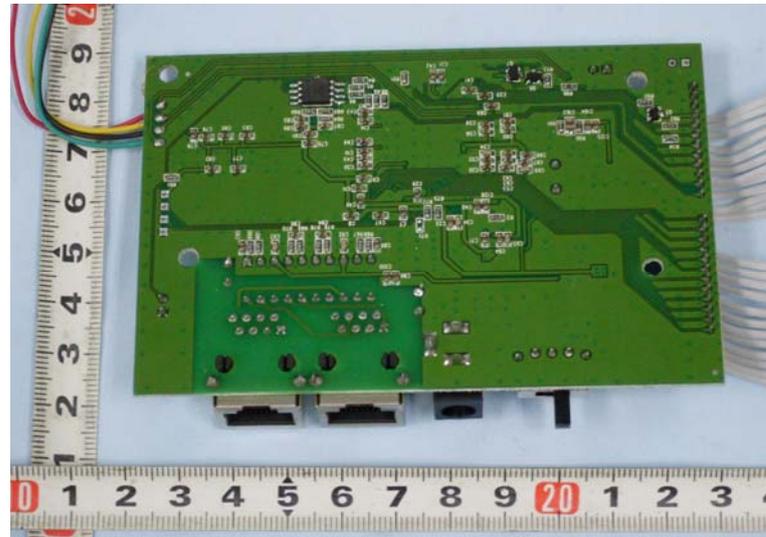
### EUT – Fitting View



### EUT –Covered View



**EUT –PCB View**



**Model No.: BW530  
EUT –Front View**



**EUT – Rear View**



**EUT – Port View**



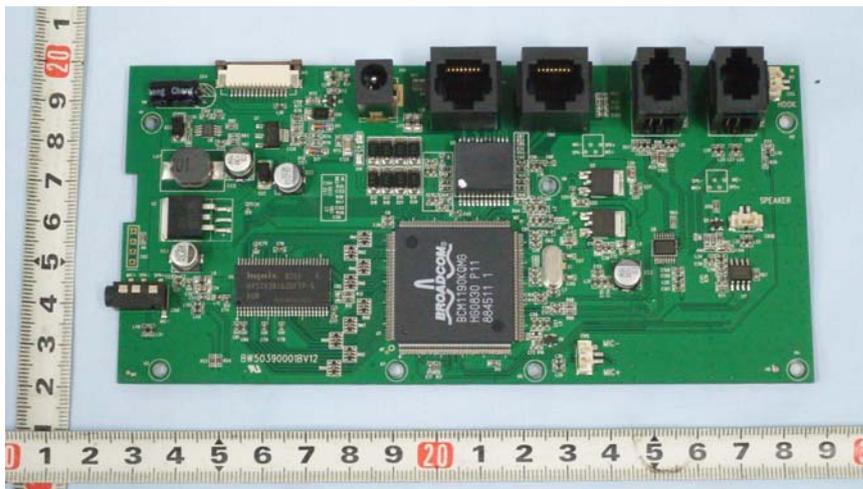
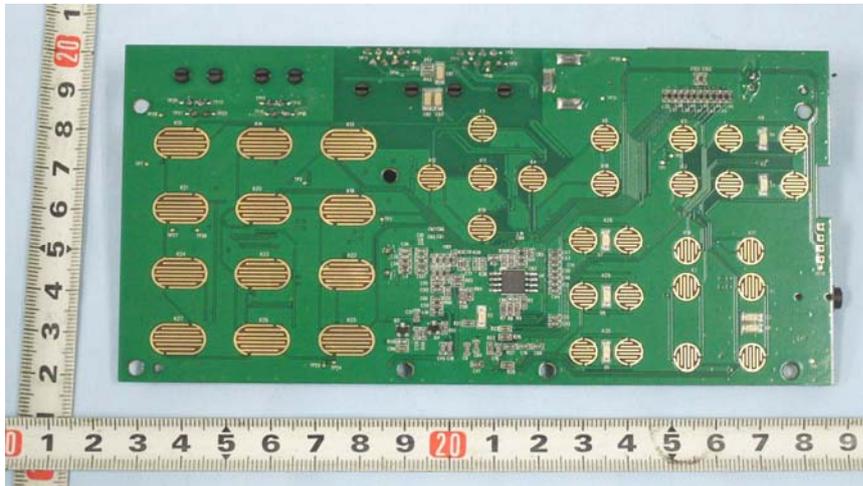
**EUT – Fitting View**



**EUT –Covered View**



**EUT –PCB View**



## APPENDIX C - TEST SETUP PHOTOGRAPHS

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Model No.: BW210/BW320  
Conducted Emission



Radiated Emission



Electrostatic Discharge Immunity Test (IEC 61000-4-2)



### Radiated Susceptibility Test (IEC 61000-4-3)



### Electrical Fast Transient/Surge Test (IEC 61000-4-4/IEC 61000-4-5)



### Voltage Dips, Short Interruptions Immunity Test (IEC 61000-4-11)



**Model No.: BW530  
Conducted Emission**



**Radiated Emission**



**Electrostatic Discharge Immunity Test (IEC 61000-4-2)**



### **Radiated Susceptibility Test (IEC 61000-4-3)**



### **Electrical Fast Transient/Surge Test (IEC 61000-4-4/IEC 61000-4-5)**



### **Voltage Dips, Short Interruptions Immunity Test (IEC 61000-4-11)**

