

# Test Report of FCC Part 15 C for FCC Certificate

On Behalf of

**Shenzhen Xinbond Technology Co., Ltd.**

Product description: Wireless Mouse  
Model No.: BD-8008(R)  
Remark: (R) refer to receiver  
FCC ID: T94BD-8008R

**Prepared for: Shenzhen Xinbond Technology Co., Ltd.**

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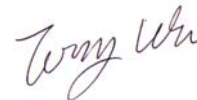
**Test by:**

**Reviewed By:**



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Tony Wu

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# 1. GENERAL INFORMATION

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

Applicant:	<b>Shenzhen Xinbond Technology Co., Ltd.</b>
Address of applicant:	Xinbond Building, NO.10th, Honghualing Industrial Park, Longxi, Longgang, Shenzhen, China.
Manufacturer:	<b>Shenzhen Xinbond Technology Co., Ltd.</b>
Address of manufacturer:	Xinbond Building, NO.10th, Honghualing Industrial Park, Longxi, Longgang, Shenzhen, China.
EUT Description:	Wireless Mouse
Trade Name:	N/A
Model No.:	BD-8008(R) Remark: (R) refer to receiver
Rated Voltage	DC 5V from PC system
Frequency range	27.045MHz
Number of channels	N/A
Channel Separation	None

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

## 1.2 Related Submittal(s) / Grant (s)

This submittal(s) is a test report based on the Electromagnetic Interference (EMI) tests performed on the EUT. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 - 2003.

The tests were performed in order to determine compliance with FCC Part 15, Subpart B, section 15.107 and section 15.109 rules.

## 1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 - 2003, 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. Radiated testing was performed at an antenna to EUT distance 3 meters.

## 1.4 Test Facility

All measurement required was performed at laboratory of Solid Industrial (Shenzhen) Co., Ltd. at 333 Bulong Highway Buji Longgang, Shenzhen, Guangdong, China.

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

**FCC – Registration No.: 759397**

Solid Industrial., 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 759397, Nov 04, 2003.

## **2. SYSTEM TEST CONFIGURATION**

The tests documented in this report were performed in accordance with ANSI C63.4-2003 and FCC CFR 47 Part 15 Subpart B, section 15.107 and section 15.109..

### **2.1 EUT Configuration**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

### **2.2 EUT Exercise**

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

### **2.3 General Test Procedures**

**Conducted Emissions** The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

**Radiated Emissions** The EUT is placed on a turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2003.

## 2.4 List of Measuring Equipments Used

Equipment	Manufacturer	Model No.	Last Cal	Calibration Period
EMC Analyzer	Agilent	E7402A	2007/11	1 year
EMI Test Receiver	R&S	ESS	2007/11	1 year
Receiver/ Spectrum Analyzer	R&S	ESCI	2007/11	1 year
RF Selector	TOYO	NS4901A	2007/11	1 year
Pre Amplifier	Anritsu	MH648A	2007/11	1 year
Bilog Antenna	CHASE	CBL6111A	N/A	N/A
Signal Generator	R&S	SMG	N/A	N/A
Turn Disc	HD	DS4150S	N/A	N/A
Power Reflection Meter	R&S	NAP	2007/11	1 year
RF Power Amplifier	TOYO	AS300SSS	2007/11	1 year
Isotropic Field Monitor	AR	FM2000	2007/11	1 year
Antenna Mast	HD	MA2400	N/A	1 year
Distortion Meter	HM-250	KNEWOOD	N/A	N/A
Synthesized Function Generator	FC110	YOKOGAWA	2007/11	1 year
Distortion Meter	MEGURO	MAK-6578A	2007/11	1 year
AM/FM Stereo Signal Generator	Panasonic	VP-8122A	2007/11	1 year
Oscilloscope	LEADER	LS1020	N/A	1 year
Function Generator	National	VP-7422A	N/A	N/A
Signal Generator	R&S	SMG	2007/11	1 year
Remote Controller	TOYO	MAC	2007/11	1 year
Fast Transient Burst Generator	SCHAFFENR	NSG3025	2007/11	1 year
AC Power Supply	KIKUSUI	PCR2000L	2007/11	1 year
Electrostatic Discharge Simulator	Noiseken	ESS-200AX	2007/11	1 year
AC Power Supply	KIKUSUI	PCR4000L	2007/11	1 year

### 3. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
15.107	Disturbance Voltage at The Mains Terminals	Pass
15.109	Radiation Emission	Pass

## 4 - DISTURBANCE VOLTAGE AT THE MAINS TERMINALS

### 4.1 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.

### 4.2 EUT Setup

The setup of EUT is according with ANSI C63.4-2003 measurement procedure. The specification used was the FCC Rules and Regulations Part 15 Subpart B Section 15.107 Class B limits.

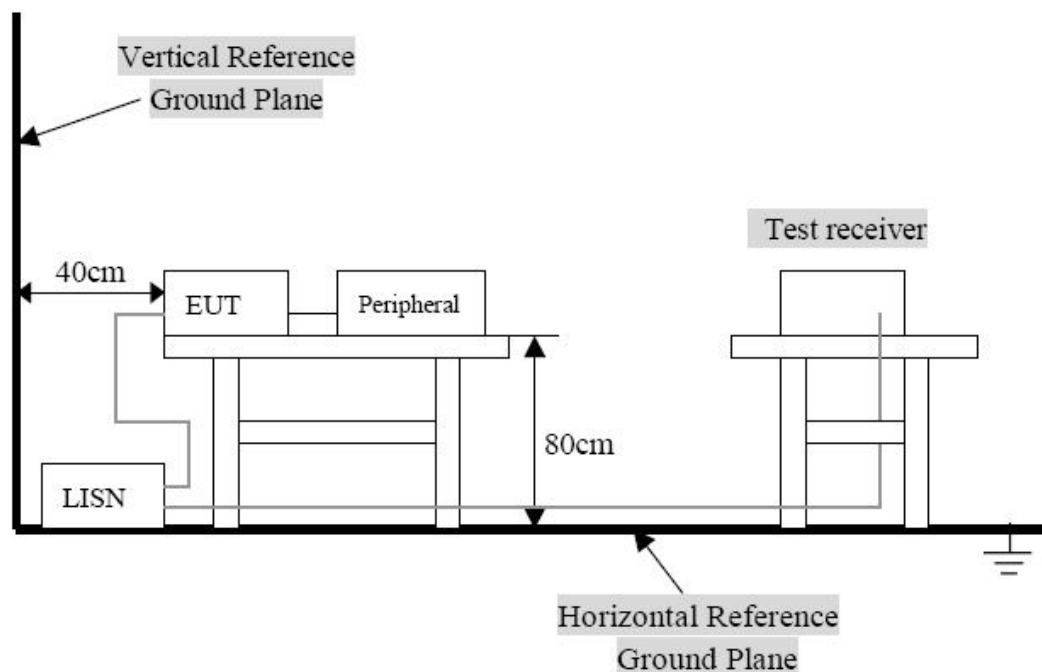
The EUT was placed center and the back edge of the test table.

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.

### 4.3 Test Setup Diagram





#### 4.4 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

#### 4.5 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**".

#### 4.6 Disturbance Voltage Test Data

Temperature ( °C ) : 22~23	EUT: Wireless Mouse
Humidity (%RH ) : 50~54	M/N: BD-8008(R)
Barometric Pressure ( mbar ) : 950~1000	Operation Condition: Normal Operation

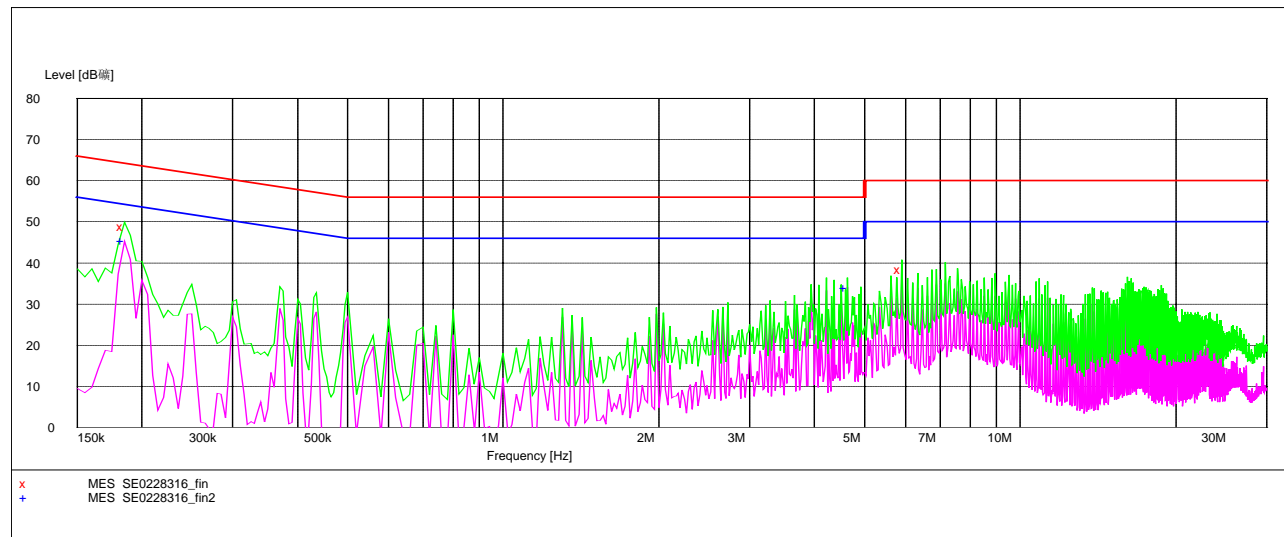
**Remark:** (1) When PK reading is less than relevant limit 20dB, the QP reading and AV reading will not be recorded.  
(2) Where QP reading is less than relevant AV limit, the AV reading will not be measured

## Conducted Emission Test Data

EUT: Receiver of Wireless Mouse  
Operating Condition: Normal Operating  
Operator: Andy  
Test Specification: AC 110V/60Hz  
Comment: Neutral Line  
Start of Test: 12/06/07 6:42:03PM

### SCAN TABLE: "Voltage (150K-30M)QP"

Short Description: 150K-30M Voltage  
Start Stop Step Detector Meas. IF Transducer  
Frequency Frequency Width Time Bandw.  
150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz ESH2-Z5\_100028O  
Average



### MEASUREMENT RESULT: "BCT1206316\_fin"

12/06/07 6:45PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.185000	48.90	11.1	64	15.4	QP	L1	GND
5.910000	38.40	10.5	60	21.6	QP	L1	GND

### MEASUREMENT RESULT: "BCT1206316\_fin2"

12/06/07 6:45PM

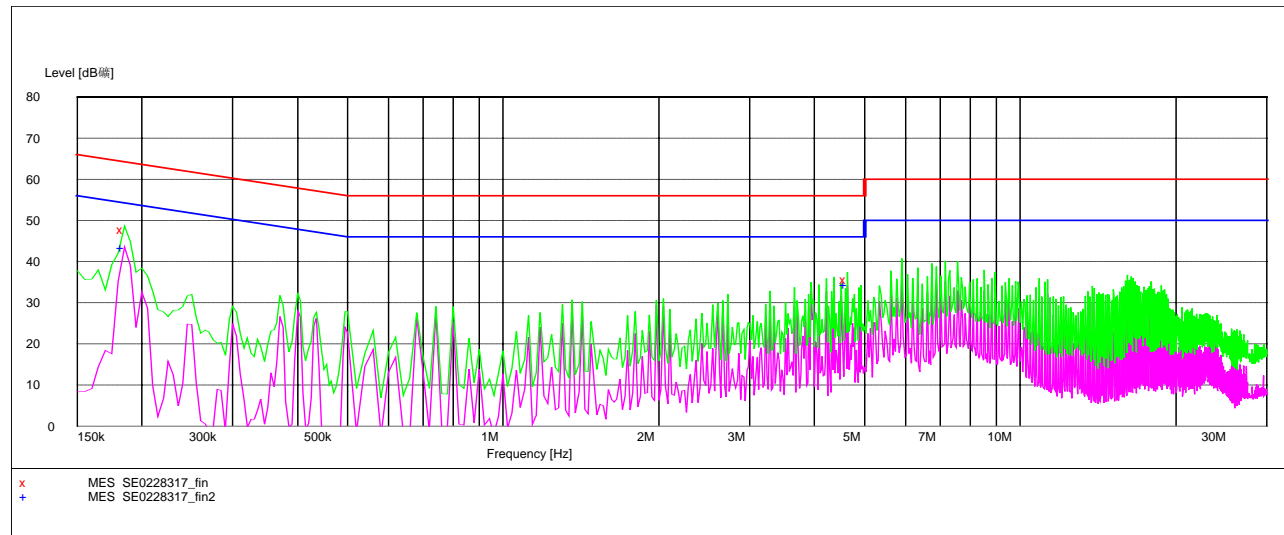
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.185000	45.40	11.1	54	8.9	AV	L1	GND
4.640000	34.10	10.4	46	11.9	AV	L1	GND

## Conducted Emission Test Data

EUT: Receiver of Wireless Mouse  
Operating Condition: Normal Operating  
Operator: Andy  
Test Specification: AC 110V/60Hz for PC system  
Comment: Live Line  
Start of Test: 12/06/2007 6:45:57PM

### SCAN TABLE: "Voltage (150K-30M)QP"

Short Description: 150K-30M Voltage  
Start Stop Step Detector Meas. IF Transducer  
Frequency Frequency Width Time Bandw.  
150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz ESH2-Z5\_100028O  
Average



### MEASUREMENT RESULT: " BCT1206317\_fin"

12/06/07 6:49PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.185000	47.80	11.1	64	16.5	QP	N	GND
4.640000	35.70	10.4	56	20.3	QP	N	GND

### MEASUREMENT RESULT: " BCT1206317\_fin2"

12/06/07 6:49PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.185000	43.50	11.1	54	10.8	AV	N	GND
4.640000	34.40	10.4	46	11.6	AV	N	GND

## 5 - RADIATED DISTURBANCES

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

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB $\mu$ V/m)
30 ~ 88	3	40
88~216	3	43.5
216 ~ 960	3	46
960 ~ 1000	3	54

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.

### 5.2 EUT Setup

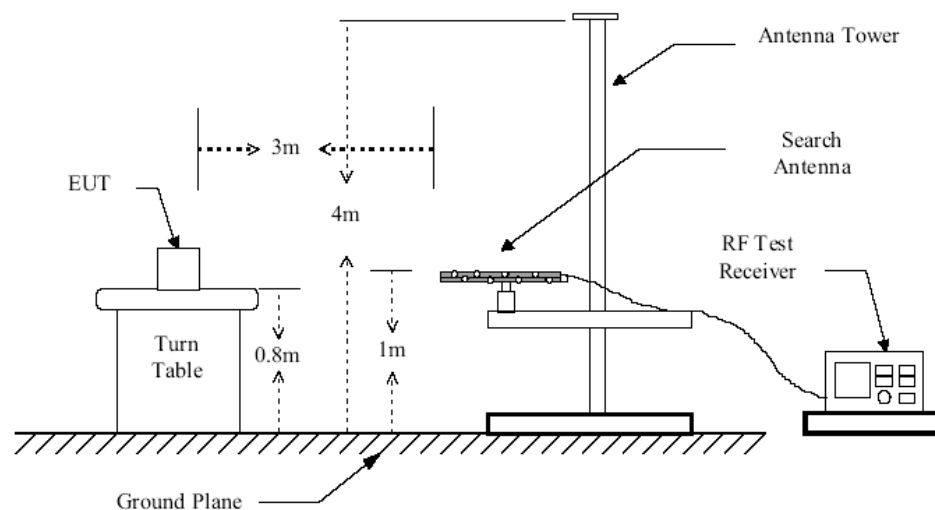


Figure 1 : Frequencies measured below 1 GHz configuration

### 5.3 EUT Setup

The radiated emission tests were performed in the in the 3-meter anechoic chamber, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part 15 Subpart B Section 15.109 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.

## 5.4 Test Receiver Setup

According to FCC Part 15 rule, 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

## 5.5 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.

## 5.6 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:

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

## 5.7 Radiated Emissions Test Result

Temperature ( °C ) : 22~23	EUT: Wireless Mouse
Humidity (%RH) : 50~54	M/N: BD-8008(R)
Barometric Pressure ( mbar ) : 950~1000	Operation Condition: Normal Operation

**Remark:** (1) When PK reading is less than relevant limit 20dB, the QP reading and AV reading will not be recorded.

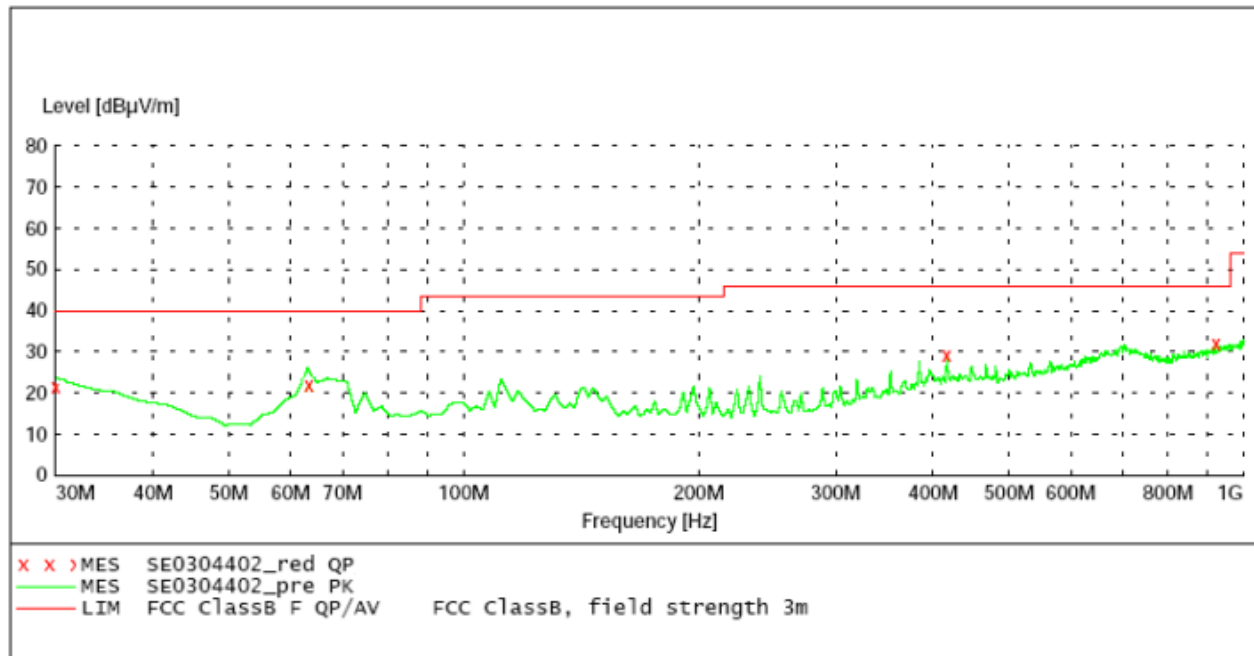
(2) Where QP reading is less than relevant AV limit, the AV reading will not be measured

## RADIATED EMISSION TEST DATA

EUT: Receiver of Wireless Mouse  
Operating Condition: Normal Operating  
Test Site: 3m CHAMBER  
Operator: Jimmy  
Test Specification: AC 110V/60Hz for PC system  
Comment: Polarisation:H  
Start of Test: 12/05/07 / 5:51:34PM

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

Short Description: Field Strength(30M-1G)  
Start Stop Step Detector Meas. IF Transducer  
Frequency Frequency Width Time Bandw.  
30.0 MHz 1.0 GHz 60.0 kHz QuasiPeak 1.0 s 120 kHz HL562new



### MEASUREMENT RESULT: "BCT1205407\_fin QP"

12/05/07 5:55PM

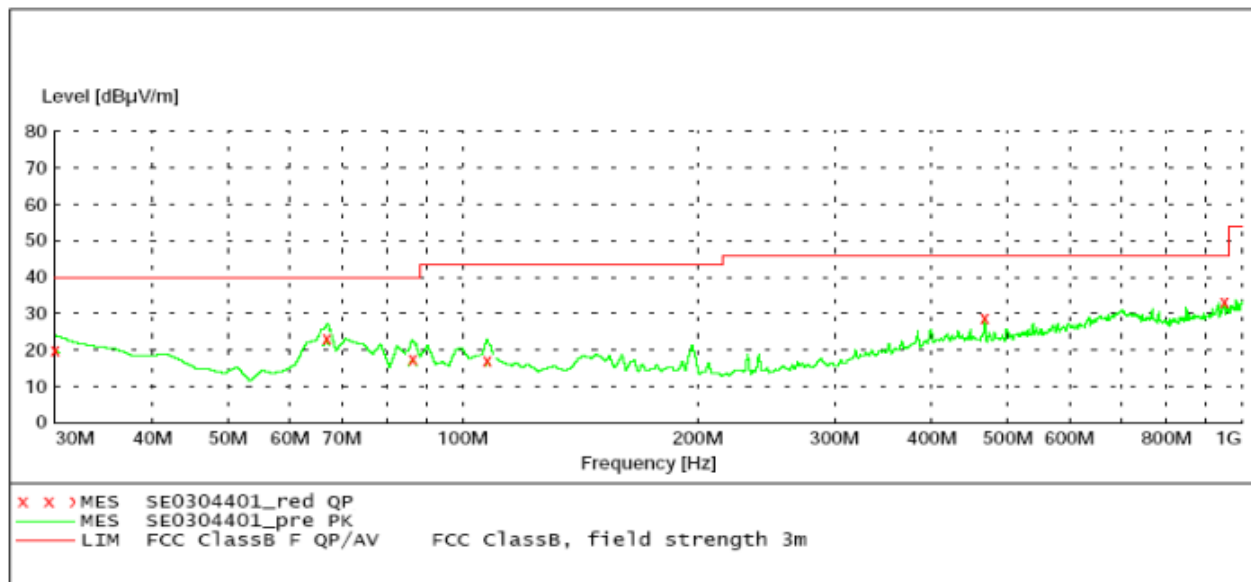
Frequency MHz	Level dBµV/m	Azimuth deg	Height cm	Polarisation	Transd dB	Limit dBµV/m	Margin dB
30.000000	20.90	169.00	100.0	HOR	17.1	40.0	19.1
62.511022	21.70	38.00	100.0	HOR	15.7	40.0	18.3
428.276553	28.92	70.00	100.0	HOR	21.9	46.0	17.1
923.547094	31.21	38.00	100.0	HOR	22.6	46.0	14.8

## RADIATED EMISSION TEST DATA

EUT: Receiver of Wireless Mouse  
Operating Condition: Normal Operating  
Test Site: 3m CHAMBER  
Operator: Jimmy  
Test Specification: AC 110V/60Hz for PC system  
Comment: Polarisation:V  
Start of Test: 12/05/07 / 5:59:23PM

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

Short Description: Field Strength(30M-1G)  
Start Stop Step Detector Meas. IF Transducer  
Frequency Frequency Width Time Bandw.  
30.0 MHz 1.0 GHz 60.0 kHz QuasiPeak 1.0 s 120 kHz HL562new



### MEASUREMENT RESULT: " BCT1205408\_fin QP"

12/05/07 6:04PM

Frequency MHz	Level dBµV/m	Azimuth deg	Height cm	Polarisation	Transd dB	Limit dBµV/m	Margin dB
30.000000	20.58	102.00	100.0	VER	11.2	40.0	19.4
66.411623	22.34	5.00	100.0	VER	12.1	40.0	17.7
87.276553	18.16	102.00	100.0	VER	11.9	40.0	21.8
112.085760	17.98	98.00	100.0	VER	12.4	43.5	25.5
468.411623	28.84	173.00	100.0	VER	16.1	46.0	17.2
945.276553	32.78	254.00	100.0	VER	18.9	46.0	13.2