APPLICATION CERTIFICATION FCC Part 15B On Behalf of HONG KONG NATURAL SOUND ELECTRONICS LIMITED

MP4 Model No.: ID2450, Eclipse Touch Pro Co

FCC ID: PWK-ID2450

Prepared for Address	:	HONG KONG NATURAL SOUND ELECTRONICS LIMITED FLAT/RM M 4/F CONTINENTAL MANSION 300 KING'S ROAD HONG KONG
Prepared by Address	:	ACCURATE TECHNOLOGY CO. LTD F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China
		Tel: (0755) 26503290 Fax: (0755) 26503396

Report Number	:	ATE20140549
Date of Test	:	Apr 14-18,2014
Date of Report	:	Apr 18,2014

TABLE OF CONTENTS

Description

Page

Test F	Report Certification	
1. G	ENERAL INFORMATION	4
1.1.	Description of Device (EUT)	4
1.2.	Accessory and Auxiliary Equipment	
1.3.	Description of Test Facility	5
1.4.	Measurement Uncertainty	5
2. M	IEASURING DEVICE AND TEST EQUIPMENT	6
3. 0	PERATION OF EUT DURING TESTING	7
3.1.	Operating Mode	7
3.2.	Configuration and peripherals	7
4. T	EST PROCEDURES AND RESULTS	8
5. C	CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.107(A)	9
5.1.	Block Diagram of Test Setup	9
5.2.	The Emission Limit	
5.3.	Configuration of EUT on Measurement	10
5.4.	Operating Condition of EUT	
5.5.	Test Procedure	
5.6.	Power Line Conducted Emission Measurement Results	11
6. R	ADIATED EMISSION FOR FCC PART 15 SECTION 15.109(A)	
6.1.	Block Diagram of Test Setup	14
6.2.	The Emission Limit For Section 15.109 (a)	
6.3.	EUT Configuration on Measurement	15
6.4.	Operating Condition of EUT	
6.5.	Test Procedure	
6.6.	The Emission Measurement Result	

Test Report Certification

Applicant : HONG KONG NATURAL SOUND ELECTRONICS LIMITED

Manufacturer : Natural Sound Electronics (Shenzhen) Co., Ltd.

EUT Description : MP4

- (A) MODEL NO.: ID2450, Eclipse Touch Pro Co
- (B) SERIAL NO .: N/A
- (C) POWER SUPPLY: DC 3.7V (Li-polymer battery) or DC 5V (Power by USB port)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart B ANSI C63.4: 2009

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test :

Apr 14-18,2014

Prepared by :

(Eric, Engineer)

Approved & Authorized Signer :

(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	MP4
Model Number	:	ID2450,Eclipse Touch Pro Co (Note: These samples are same except for the model number is difference. So we prepare the ID2450 for FCC test.)
Power Supply	:	DC 3.7V (Li-polymer battery) or DC 5V (Power by USB port)
Highest operation frequency of the EUT:	:	96MHz
Applicant	:	HONG KONG NATURAL SOUND ELECTRONICS LIMITED
Address	:	FLAT/RM M 4/F CONTINENTAL MANSION 300 KING'S ROAD HONG KONG
Manufacturer	:	Natural Sound Electronics (Shenzhen) Co., Ltd.
Address	:	4th building, Xinyuan industrial zone, Gushu village, Bao'an district, Shenzhen, China
Date of sample received Date of Test	:	Apr 14, 2014 Apr 14-18,2014

1.2. Accessory and Auxiliary Equipment

PC

Manufacturer: LENOVO M/N: 4290-RT8 S/N: R9-FW93G 11/08

1.3.Description of Test Facility

EMC Lab	:	Accredited by TUV Rheinland Shenzhen
		Listed by FCC
		The Registration Number is 752051
		Listed by Industry Canada
		The Registration Number is 5077A-2
		Accredited by China National Accreditation Committee for Laboratories
		The Certificate Registration Number is L3193
Name of Firm	:	ACCURATE TECHNOLOGY CO. LTD
Site Location	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.
		Science & Industry Park, Nanshan, Shenzhen, Guangdong
		P.R. China

1.4. Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Kind of equipment	Manufacturer	Туре	S/N	Calibrated date	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 11, 2014	Jan. 10, 2015
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 11, 2014	Jan. 10, 2015
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 11, 2014	Jan. 10, 2015
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 11, 2014	Jan. 10, 2015
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 15, 2014	Jan. 14, 2015
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 15, 2014	Jan. 14, 2015
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 11, 2014	Jan. 10, 2015
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 11, 2014	Jan. 10, 2015

Table 1: List of Test and Measurement Equipment

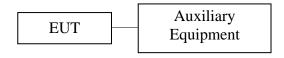
3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The modes are used: 1) Playing

- 2) Transfer data
- 3) FM 88
- 4) FM 98
- 5) FM 108

3.2. Configuration and peripherals



(EUT: MP4)

4. TEST PROCEDURES AND RESULTS

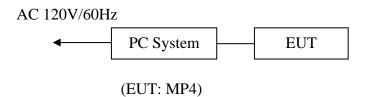
FCC Rules	Description of Test	Result
Section 15.107	Conducted Emission Test	Compliant
Section 15.109	Radiated Emission Test	Compliant

5. CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.107(A)

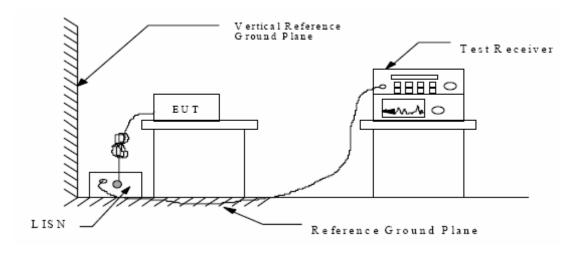
5.1.Block Diagram of Test Setup

5.1.1.Block diagram of connection between the EUT and simulators

5.1.1.1.For Transfer data



5.1.2. Shielding Room Test Setup Diagram



(EUT: MP4)

5.2. The Emission Limit

Frequency	Limit $dB(\mu V)$				
(MHz)	Quasi-peak Level	Average Level			
0.15 - 0.50	66.0 - 56.0 *	56.0 - 46.0 *			
0.50 - 5.00	56.0	46.0			
5.00 - 30.00	60.0	50.0			

5.2.1.Conducted Emission Measurement Limits According to Section 15.107(a)

* Decreases with the logarithm of the frequency.

5.3.Configuration of EUT on Measurement

The following equipment are installed on the Conducted Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.3.1.MP4 (EUT)

Model Number	:	ID2450
Serial Number	:	N/A
Manufacturer	:	Natural Sound Electronics (Shenzhen) Co., Ltd.

5.4. Operating Condition of EUT

5.4.1.Setup the EUT and simulator as shown as Section 5.1.

5.4.2.Turn on the power of all equipment.

5.4.3.Let the EUT work in modes (Transfer data) and measure it.

5.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 500hm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2009 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

5.6. Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150kHz to 30MHz is checked.

Test mode : Tr	ansfer dat	a					
MEASUREMENT	RESULT :	"RY04	14-1 <i>f</i>	in"			
2014-4-14 14:							
Frequency						Line	PE
0.167581 3.665952 27.033926	61.30 38.90 35.40	10.5 12.3 12.0	65 56 60	3.8 17.1 24.6	QP QP QP	N N N	GND GND GND
MEASUREMENT	RESULT:	"RY04	14-1_1	in2"			
2014-4-14 14:							
Frequency MHz	Level dBuV					Line	PE
0.171646 2.928308 24.636567	44.90 31.10	10.6	55 46	10.0 14.9	AV AV	N N	GND GND
24.030507	27.90	12.0	50	22.1	AV	IN	GND
MEASUREMENT	RESULT:	"RY04	14-2_f	in"			
2014-4-14 14							
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.161181 2.833391	61.60	10.5	65	3.8	QP	L1	GND
2.833391 24.933539	37.20 32.70	12.3 12.0	56 60	18.8 27.3	QP QP	L1 L1	GND GND
					-		
MEASUREMENT	RESULT:	"RY04	14-2_f	in2"			
2014-4-14 14	:53						
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.160218 2.945905	42.80	10.5	56	12.7	AV	L1	
2.945905 24.343132	31.00 27.80	12.3	46 50	15.0 22.2	AV AV	L1 L1	

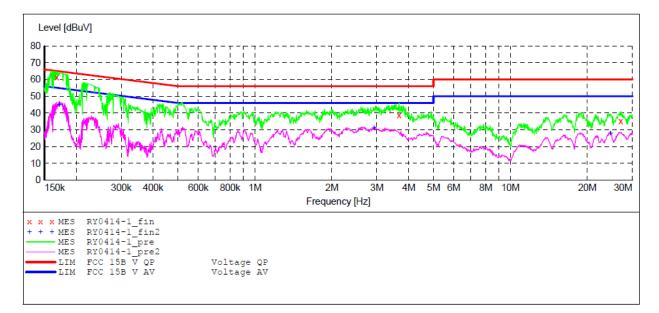
Emissions attenuated more than 20 dB below the permissible value are not reported. The spectral diagrams are attached as below.

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT:	MP4 M/N:ID2450
Manufacturer:	NATURAL SOUND
Operating Condition:	Transfer data
Test Site:	2#Shielding Room
Operator:	Ricky
Test Specification:	N 120V/60Hz
Comment:	Report NO.:ATE20140549
Start of Test:	2014-4-14 / 14:50:47

SCAN TABLE: "V 150K-30MHz fin"

Short Desc	ription:		_SUB_STD_VTE	RM2 1.70		
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
150.0 kHz	30.0 MHz	0.4 %	QuasiPeak	1.0 s	9 kHz	LISN(ESH3-Z5)
			Average			



MEASUREMENT RESULT: "RY0414-1 fin"

2014-4-14 14:52

Frequency MHz	Level dBuV		Limit dBuV	Margin dB	Detector	Line	ΡE
0.167581 3.665952 27.033926	38.90	12.3	56	17.1	ÕР	N N N	GND GND GND

MEASUREMENT RESULT: "RY0414-1 fin2"

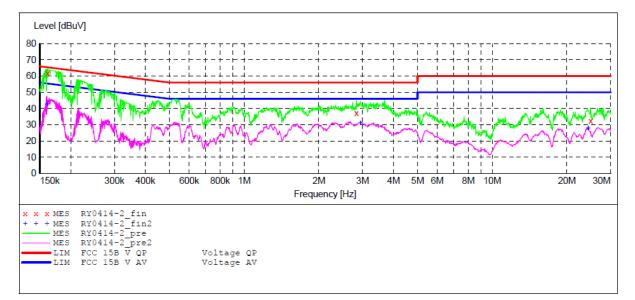
2014-4-14 14:	:52						
Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
MHz	dBuV	dB	dBuV	dB			
0.171646	44.90	10.6	55	10.0	AV	Ν	GND
2.928308	31.10	12.3	46	14.9	AV	Ν	GND
24.636567	27.90	12.0	50	22.1	AV	Ν	GND

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT:	MP4 M/N:ID2450
Manufacturer:	Transfer data
Operating Condition:	ON
Test Site:	2#Shielding Room
Operator:	Ricky
Test Specification:	L 120V/60Hz
Comment:	Report NO.:ATE20140549
Start of Test:	2014-4-14 / 14:52:35

SCAN TABLE: "V 150K-30MHz fin"

S	Short Desci	ciption:		_SUB_STD_VTE	RM2 1.70		
S	tart	Stop	Step	Detector	Meas.	IF	Transducer
E	requency	Frequency	Width		Time	Bandw.	
1	50.0 kHz	30.0 MHz	0.4 %	QuasiPeak	1.0 s	9 kHz	LISN (ESH3-Z5)
				Average			



MEASUREMENT RESULT: "RY0414-2_fin"

2014-4-14 14	:53						
Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
MHz	dBuV	dB	dBuV	dB			
0 1 6 1 1 0 1	C1 C0	10 5	CF	2.0	0.5	T 1	CINID
0.161181	61.60	10.5	65	3.8	QP	L1	GND
2.833391	37.20	12.3	56	18.8	QP	L1	GND
24.933539	32.70	12.0	60	27.3	QP	L1	GND

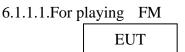
MEASUREMENT RESULT: "RY0414-2_fin2"

2014-4-14 14:	53						
Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
MHz	dBuV	dB	dBuV	dB			
		10.5		10 5			
0.160218	42.80	10.5	56	12.7	AV	L1	GND
2.945905	31.00	12.3	46	15.0	AV	L1	GND
24.343132	27.80	12.0	50	22.2	AV	L1	GND

6. RADIATED EMISSION FOR FCC PART 15 SECTION 15.109(A)

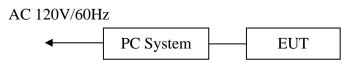
6.1.Block Diagram of Test Setup

6.1.1.Block diagram of connection between the EUT and simulators



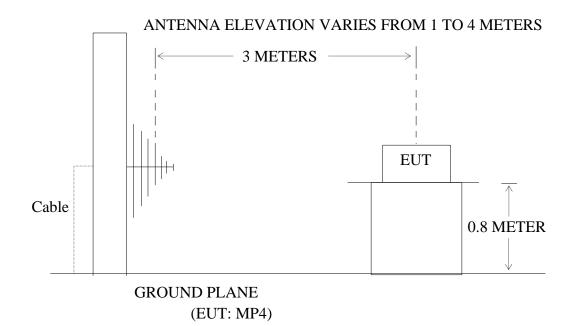


6.1.1.2.For Transfer data



(EUT: MP4)

6.1.2.Semi-Anechoic Chamber Test Setup Diagram



6.2. The Emission Limit For Section 15.109 (a)

	Limit						
Frequency (MHz)	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dBµV/m)					
30 - 88	100	40					
88 - 216	150	43.5					
216 - 960	200	46					
Above 960	500	54					

6.2.1.Radiation Emission Measurement Limits According to Section 15.109 (a).

6.3.EUT Configuration on Measurement

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.3.1.MP4 (EUT)

Model Number	:	ID2450
Serial Number	:	N/A
Manufacturer	:	Natural Sound Electronics (Shenzhen) Co., Ltd.

6.4. Operating Condition of EUT

6.4.1.Setup the EUT and simulator as shown as Section 6.1.

6.4.2.Turn on the power of all equipment.

6.4.3. Let the EUT work in (Playing, Transfer data, FM) mode measures it.

6.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated emission measurement.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz

The frequency range from 30MHz to 1000MHz is checked.

The highest frequency of the internal sources of the EUT is less than 108MHz; The measurement shall only be made up to 1GHz.

6.6. The Emission Measurement Result

PASS.

Test mode:	Playin	g						
Polarization								
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Horizontal	1	239.9874	62.56	-19.80	42.76	46.00	-3.24	QP
	2	287.9904	61.10	-18.12	42.98	46.00	-3.02	QP
	3	432.5457	57.94	-15.10	42.84	46.00	-3.16	QP
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Vertical	1	222.9501	56.90	-19.91	36.99	46.00	-9.01	QP
	2	239.9874	57.83	-19.80	38.03	46.00	-7.97	QP
	3	480.5276	57.08	-14.16	42.92	46.00	-3.08	QP
Test mode:	Trans	fer data						
Polarization								
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Horizontal	1	167.8242	56.19	-22.03	34.16	43.50	-9.34	QP
	2	252.0627	61.90	-19.62	42.28	46.00	-3.72	QP
	3	336.0351	57.99	-16.71	41.28	46.00	-4.72	QP
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Vertical	1	83.8156	56.47	-21.51	34.96	40.00	-5.04	QP
, or doal	2	167.8242	58.03	-22.03	36.00	43.50	-7.50	QP
	3	252.0627	62.12	-19.62	42.50	46.00	-3.50	QP

Test mode:	FM88	MHz						
Polarization								
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Horizontal	1	167.8243	57.26	-22.02	35.24	43.50	-8.26	QP
	2	360.4476	55.65	-15.92	39.73	46.00	-6.27	QP
	3	408.9460	56.06	-15.48	40.58	46.00	-5.42	QP
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Vertical	1	119.8556	55.09	-22.52	32.57	43.50	-10.93	QP
	2	167.8243	55.02	-22.02	33.00	43.50	-10.50	QP
	3	360.4476	47.93	-15.92	32.01	46.00	-13.99	QP
Test mode:	FM98	MHz						
Polarization								
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Horizontal	1	119.8556	53.14	-22.52	30.62	43.50	-12.88	QP
	2	263.8190	53.38	-18.92	34.46	46.00	-11.54	QP
	3	360.4476	53.22	-15.92	37.30	46.00	-8.70	QP
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Vertical	1	119.8556	54.58	-22.52	32.06	43.50	-11.44	QP
	2	167.8243	54.84	-22.02	32.82	43.50	-10.68	QP
	3	360.4476	47.78	-15.92	31.86	46.00	-14.14	QP
Test mode:	FM10	8MHz						
Polarization								
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Horizontal	1	119.8556	53.34	-22.52	30.82	43.50	-12.68	QP
	2	263.8190	52.79	-18.92	33.87	46.00	-12.13	QP
	3	360.4476	53.32	-15.92	37.40	46.00	-8.60	QP
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Vertical	1	119.8556	54.42	-22.52	31.90	43.50	-11.60	QP
	2	167.8243	54.78	-22.02	32.76	43.50	-10.74	QP
	3	360.4476	45.50	-15.92	29.58	46.00	-16.42	QP

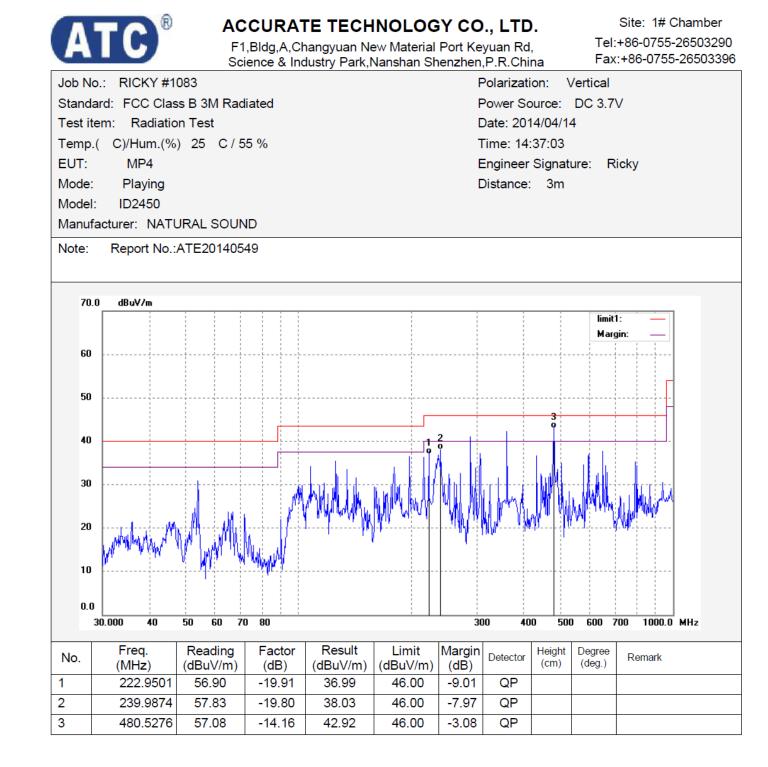
Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

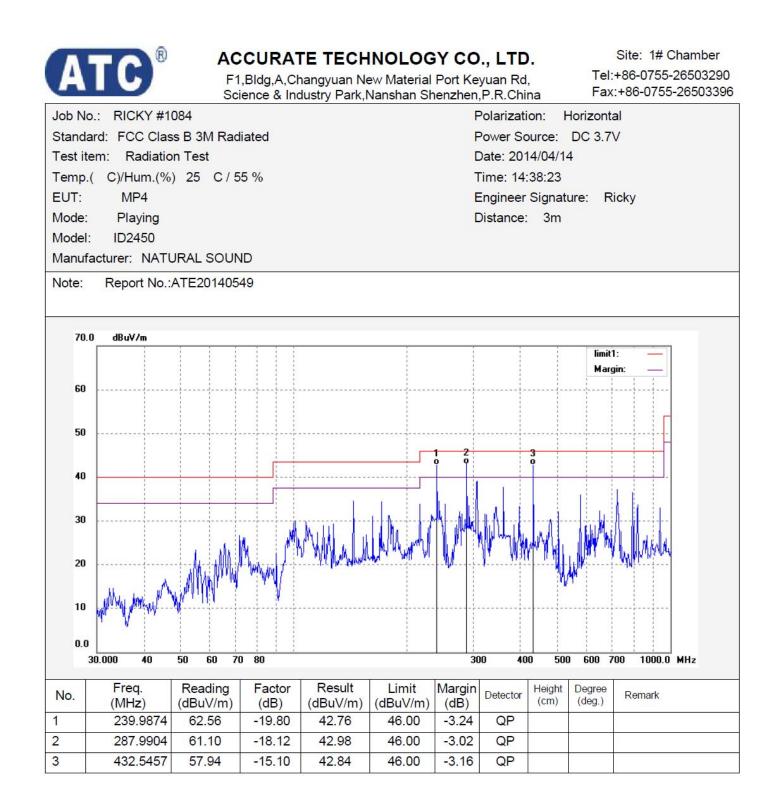
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

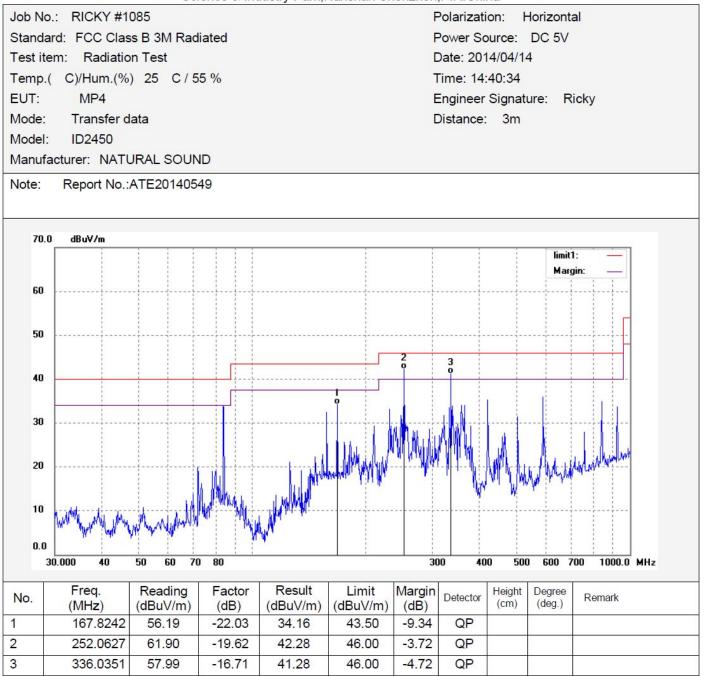
3. The spectral diagrams are attached as below display the measurement of peak values





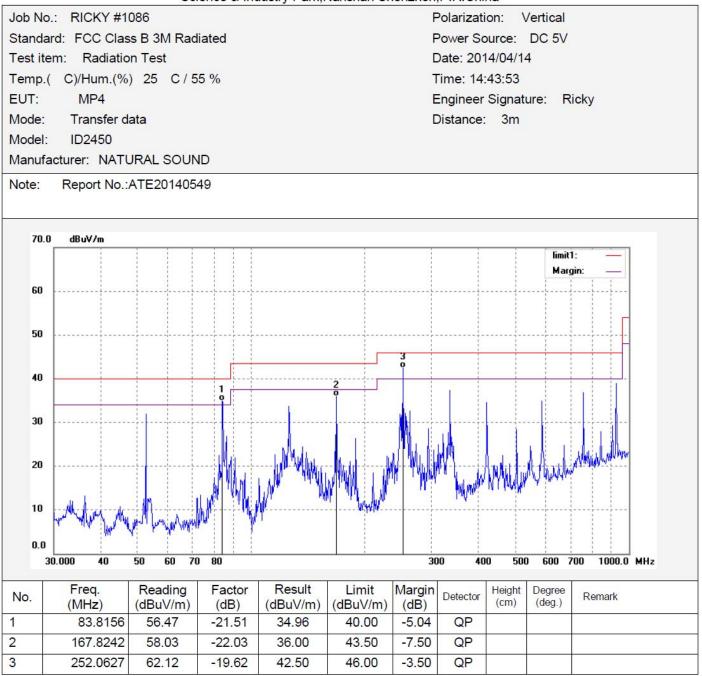


F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China



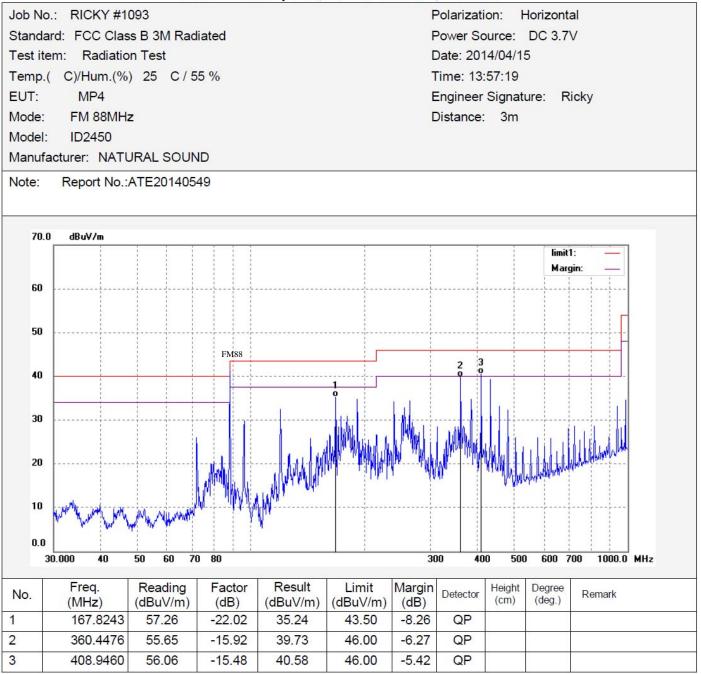


F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China



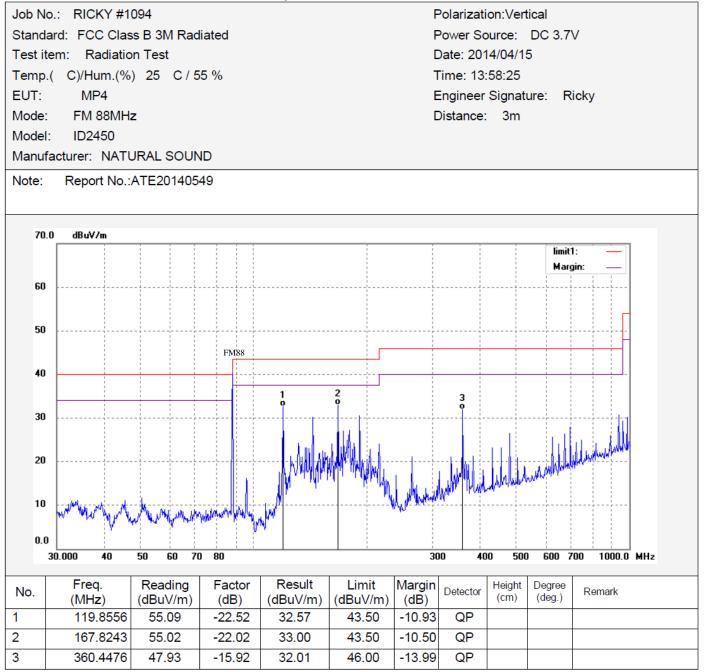


F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China



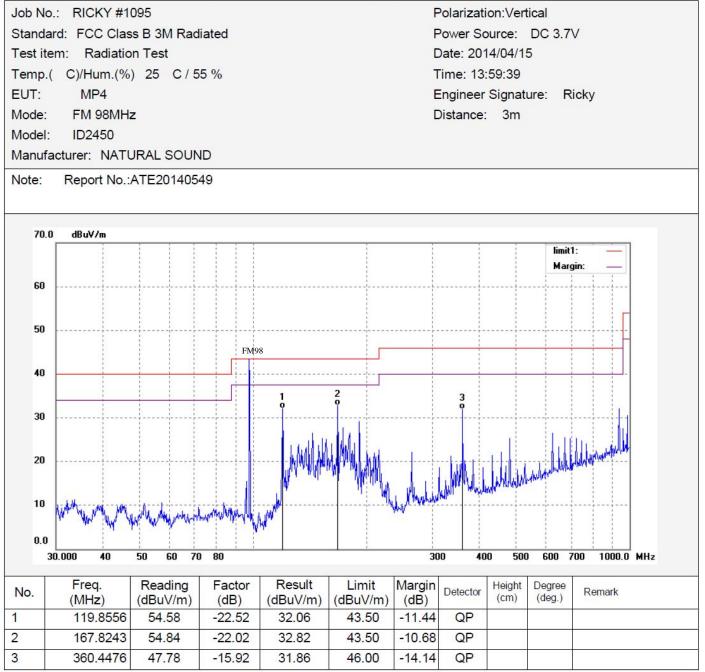


F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China



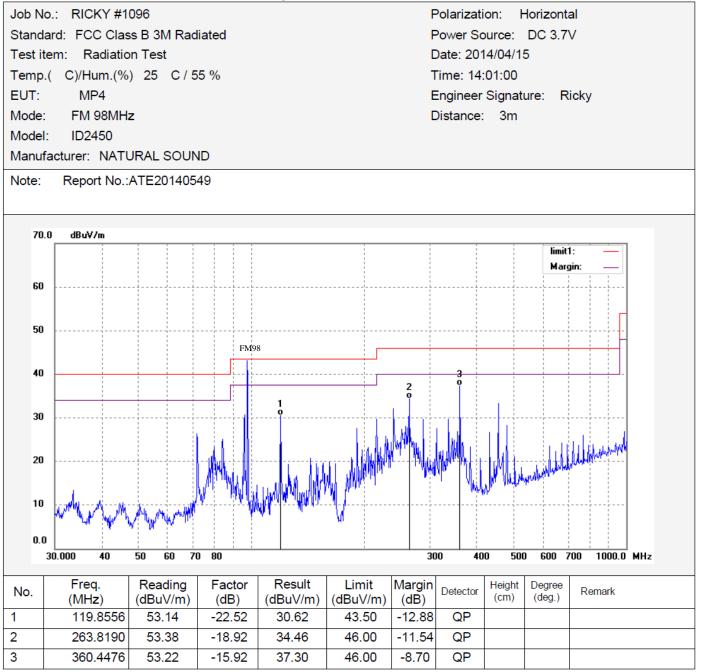


F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China



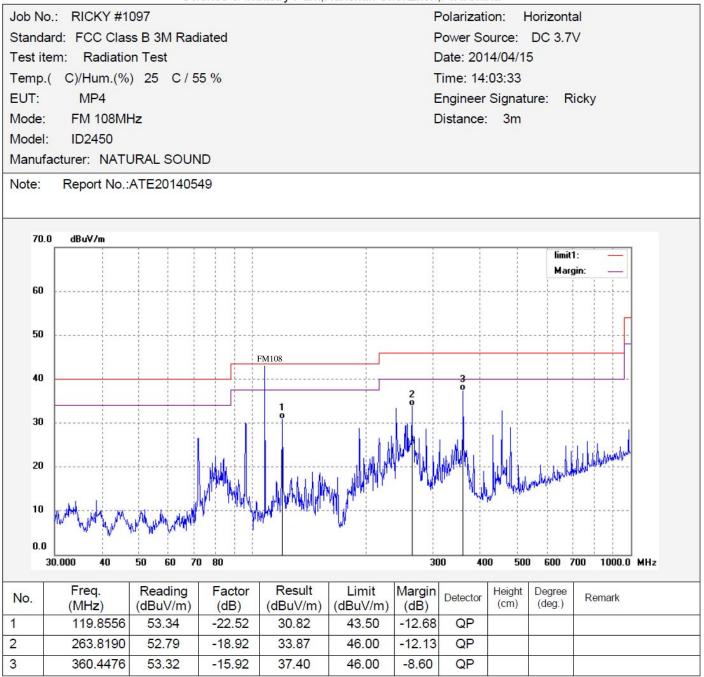


F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China





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





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

