

FCC CERTIFICATION
On Behalf of
Interactive Toy Concepts Limited

2.4G Helicopter
Model No.: 50418

FCC ID: RSD-50418RX

Prepared for : Interactive Toy Concepts Limited
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Cheung Sha Wan Rd., Kowloon, Hong Kong

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APPENDIX I (TEST CURVES) (27 pages)

Test Report Certification

Applicant : Interactive Toy Concepts Limited

Manufacturer : Interactive Toy Concepts Limited

EUT Description : 2.4G Helicopter

(A) MODEL NO.: 50418

(B) POWER SUPPLY: 3.7V DC (Power by Li-Ion battery) and
AC120V/60Hz (Power by USB Port)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.249
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 C Section 15.249 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 : April 10-15, 2014

Prepared by : 

(Engineer)

Approved & Authorized Signer : 
(Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	2.4G Helicopter
Model Number	:	50418
Power Supply	:	3.7V DC (Power by Li-Ion battery) and AC120V/60Hz (Power by USB Port)
Operate Frequency	:	2414.000-2473.000MHz
Applicant	:	Interactive Toy Concepts Limited
Address	:	Unit 709, 7/F., Tower 2, Cheung Sha Wan Plaza, No.833 Cheung Sha Wan Rd., Kowloon, Hong Kong
Manufacturer	:	Interactive Toy Concepts Limited
Address	:	Unit 709, 7/F., Tower 2, Cheung Sha Wan Plaza, No.833 Cheung Sha Wan Rd., Kowloon, Hong Kong
Date of sample received	:	April 8, 2014
Date of Test	:	April 10-15, 2014

1.2. 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

1.3.Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2
(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2
(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2
(Above 1GHz)

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	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

3. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
Section 15.207	Conducted Emission	Compliant
Section 15.249(a)	Fundamental and Harmonics Radiated Emission	Compliant
Section 15.249(d)	Spurious Radiated Emission	Compliant
Section 15.249(d)	Band Edge	Compliant
Section 15.203	Antenna Requirement	Compliant
Section 15.207	AC Power Line Conducted Emission Test	Compliant

Remark: "N/A" means "Not applicable".

4. FUNDAMENTAL AND HARMONICS RADIATED EMISSION FOR SECTION 15.249(A)

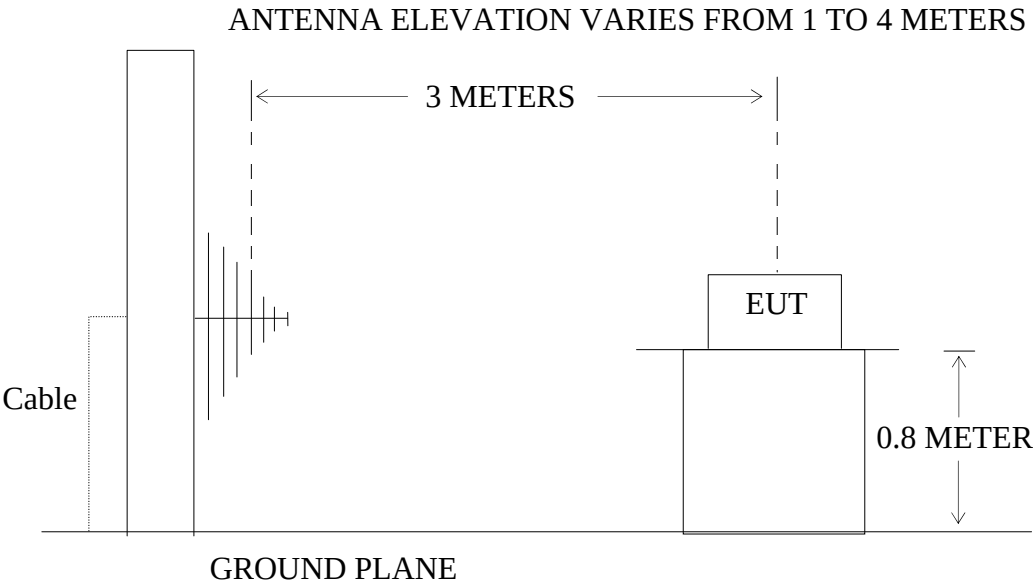
4.1. Block Diagram of Test Setup

4.1.1. Block diagram of connection between the EUT and simulators



(EUT: 2.4G Helicopter)

4.1.2. Semi-Anechoic Chamber Test Setup Diagram



(EUT: 2.4G Helicopter)

4.2.The Emission Limit

4.2.1.For intentional radiators, According to section 15.249(a), Operation within the frequency band of 2.4 to 2.4835GHz, The fundamental field strength shall not exceed 94 dB μ V/m and the harmonics shall not exceed 54 dB μ V/m.

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of harmonics (microvolts/meter)
902-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

4.2.2.According to section 15.249(e), as shown in section 15.35(b), the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

4.3.Configuration of EUT on Measurement

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

4.3.1. 2.4G Helicopter (EUT)

Model Number : 50418
 Serial Number : N/A
 Manufacturer : Interactive Toy Concepts Limited

4.4.Operating Condition of EUT

4.4.1.Setup the EUT and simulator as shown as Section 4.1.

4.4.2.Turn on the power of all equipment.

4.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2414.000 - 2473.000 MHz. We are select 2414.000MHz, 2447.000MHz, 2473.000MHz TX frequency to transmit.

4.5. 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 bi-log 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 EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz. and set at 1MHz in above 1000MHz.

The frequency range from 30MHz to 25000MHz is checked.

4.6.The Field Strength of Radiation Emission Measurement Results

PASS.

Date of Test:	April 15, 2014	Temperature:	25°C
EUT:	2.4G Helicopter	Humidity:	50%
Model No.:	50418	Power Supply:	DC 3.7V
Test Mode:	TX 2414.000MHz	Test Engineer:	Pei

Fundamental Radiated Emissions

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2414.000	85.69	92.62	-6.73	78.96	85.89	94.00	114.00	-15.04	-28.11	Vertical
2414.000	82.70	89.42	-6.73	75.97	82.69	94.00	114.00	-18.03	-31.31	Horizontal

Harmonics Radiated Emissions

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
4828.000	45.20	57.96	-0.50	44.70	57.46	54.00	74.00	-9.30	-16.54	Vertical
7242.000	38.63	46.59	3.00	41.63	49.59	54.00	74.00	-12.37	-24.41	Vertical
4828.000	43.15	50.11	-0.50	42.65	49.61	54.00	74.00	-11.35	-24.39	Horizontal
7242.000	42.71	49.59	3.00	45.71	52.59	54.00	74.00	-8.29	-21.41	Horizontal

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:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

$$\text{Where Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} + \text{High Pass Filter Loss} - \text{Amplifier Gain}$$

3. The spectral diagrams in appendix I display the measurement of peak values.

Date of Test:	April 15, 2014	Temperature:	25°C
EUT:	2.4G Helicopter	Humidity:	50%
Model No.:	50418	Power Supply:	DC 3.7V
Test Mode:	TX 2447.000MHz	Test Engineer:	Pei

Fundamental Radiated Emissions

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2447.000	84.25	91.21	-6.62	77.63	84.59	94.00	114.00	-16.37	-29.41	Vertical
2447.000	79.50	86.70	-6.62	72.88	80.08	94.00	114.00	-21.12	-33.92	Horizontal

Harmonics Radiated Emissions

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
4894.000	47.25	54.81	-0.06	47.19	54.75	54.00	74.00	-6.81	-19.25	Vertical
7341.000	36.73	44.28	3.30	40.03	47.58	54.00	74.00	-13.97	-26.42	Vertical
4894.000	45.60	53.78	-0.06	45.54	53.72	54.00	74.00	-8.46	-20.28	Horizontal
7341.000	38.40	44.61	3.30	41.70	47.91	54.00	74.00	-12.30	-26.09	Horizontal

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:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

$$\text{Where Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} + \text{High Pass Filter Loss} - \text{Amplifier Gain}$$

3. The spectral diagrams in appendix I display the measurement of peak values.

Date of Test:	April 15, 2014	Temperature:	25°C
EUT:	2.4G Helicopter	Humidity:	50%
Model No.:	50418	Power Supply:	DC 3.7V
Test Mode:	TX 2473.000MHz	Test Engineer:	Pei

Fundamental Radiated Emissions

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2473.000	84.24	91.05	-6.56	77.68	84.49	94.00	114.00	-16.32	-29.51	Vertical
2473.000	80.54	87.58	-6.56	73.98	81.02	94.00	114.00	-20.02	-32.98	Horizontal

Harmonics Radiated Emissions

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
4946.000	45.62	53.15	0.20	45.82	53.35	54.00	74.00	-8.18	-20.65	Vertical
7419.000	36.40	44.68	3.45	39.85	48.13	54.00	74.00	-14.15	-25.87	Vertical
4946.000	43.50	50.41	0.20	43.70	50.61	54.00	74.00	-10.30	-23.39	Horizontal
7419.000	36.20	44.76	3.45	39.65	48.21	54.00	74.00	-14.35	-25.79	Horizontal

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:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

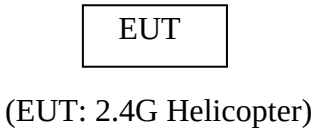
$$\text{Where Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} + \text{High Pass Filter Loss} - \text{Amplifier Gain}$$

3. The spectral diagrams in appendix I display the measurement of peak values.

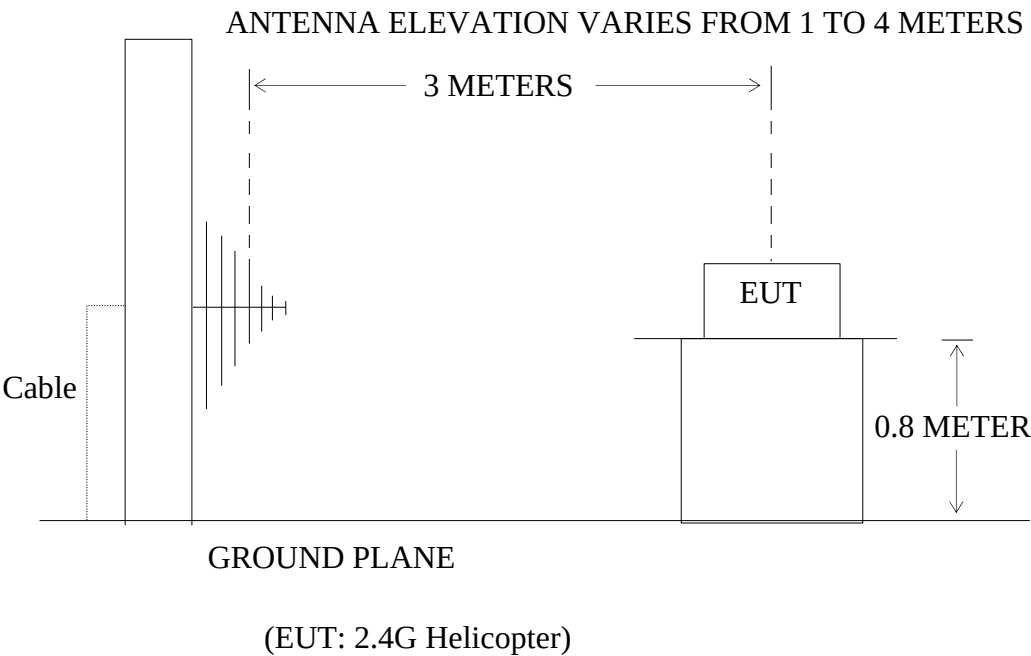
5. SPURIOUS RADIATED EMISSION FOR SECTION 15.249(D)

5.1. Block Diagram of Test Setup

5.1.1. Block diagram of connection between the EUT and simulators



5.1.2. Semi-Anechoic Chamber Test Setup Diagram



5.2. The Emission Limit For Section 15.249(d)

5.2.1. Emission radiated outside of the specified frequency bands, except for harmonics, shall be comply with the general radiated emission limits in Section 15.209.

Radiation Emission Measurement Limits According to Section 15.209

Frequency (MHz)	Limit		The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector.
	Field Strength (microvolts/meter)	Measurement Distance (meters)	
0.009 – 0.490	2400/F(kHz)	300	

0.490 – 1.705	24000/F(kHz)	30	Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.
1.705 – 30.0	30	30	
30 - 88	100	3	
88 - 216	150	3	
216 - 960	200	3	
Above 960	500	3	

5.3.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.

5.3.1. 2.4G Helicopter (EUT)

Model Number : 50418
 Serial Number : N/A
 Manufacturer : Interactive Toy Concepts Limited

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 TX modes measure it. The transmit frequency are 2414.000 - 2473.000 MHz. We are select 2414.000MHz, 2447.000MHz, 2473.000MHz TX frequency to transmit.

5.5. 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 EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 9kHz in below 30MHz. and set at 120kHz in 30-1000MHz, and 1MHz in above 1000MHz.

The frequency range from 9kHz to 25GHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

5.6.The Emission Measurement Result

PASS.

Date of Test:	April 15, 2014	Temperature:	25°C
EUT:	2.4G Helicopter	Humidity:	50%
Model No.:	50418	Power Supply:	DC 3.7V
Test Mode:	TX 2414.000MHz	Test Engineer:	Pei

30MHz-25GHz

Frequency (MHz)	Reading (dBμV/m)	Factor(dB) Corr.	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
38.0965	25.40	-11.11	14.29	40.00	-25.71	Vertical
343.6506	25.99	-7.93	18.06	46.00	-27.94	
644.5531	25.01	-2.52	22.49	46.00	-23.51	
322.5896	38.88	-8.64	30.24	46.00	-15.76	Horizontal
343.6506	38.60	-7.93	30.67	46.00	-15.33	
531.2910	31.84	-4.14	27.70	46.00	-18.30	

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:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

$$\text{Where Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} + \text{High Pass Filter Loss} - \text{Amplifier Gain}$$

3. The spectral diagrams in appendix I display the measurement of peak values.

Date of Test:	April 15, 2014	Temperature:	25°C
EUT:	2.4G Helicopter	Humidity:	50%
Model No.:	50418	Power Supply:	DC 3.7V
Test Mode:	TX 2447.000MHz	Test Engineer:	Pei

30MHz-25GH

Frequency (MHz)	Reading (dBμV/m)	Factor(dB) Corr.	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
46.2180	24.90	-12.63	12.27	40.00	-27.73	Vertical
282.2701	26.10	-9.77	16.33	46.00	-29.67	
596.6068	25.69	-3.00	22.69	46.00	-23.31	
216.1196	34.13	-11.85	22.28	46.00	-23.72	Horizontal
322.5896	40.40	-8.64	31.76	46.00	-14.24	
343.6505	37.65	-7.93	29.72	46.00	-16.28	

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:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

$$\text{Where Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} + \text{High Pass Filter Loss} - \text{Amplifier Gain}$$

3. The spectral diagrams in appendix I display the measurement of peak values.

Date of Test:	April 15, 2014	Temperature:	25°C
EUT:	2.4G Helicopter	Humidity:	50%
Model No.:	50418	Power Supply:	DC 3.7V
Test Mode:	TX 2473.000MHz	Test Engineer:	Pei

30MHz-25GH

Frequency (MHz)	Reading (dBμV/m)	Factor(dB) Corr.	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
83.9883	25.90	-15.61	10.29	40.00	-29.71	Vertical
226.2202	24.77	-11.41	13.36	46.00	-32.64	
488.3263	25.31	-5.21	20.10	46.00	-25.90	
226.2202	34.91	-11.41	23.50	46.00	-22.50	Horizontal
322.5896	38.83	-8.64	30.19	46.00	-15.81	
343.6506	38.83	-7.93	30.90	46.00	-15.10	

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:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

$$\text{Where Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} + \text{High Pass Filter Loss} - \text{Amplifier Gain}$$

3. The spectral diagrams in appendix I display the measurement of peak values.

6. BAND EDGES

6.1.The Requirement

6.1.1.Band Edge from 2400MHz to 2483.5MHz. Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

6.2.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.

6.2.1. 2.4G Helicopter (EUT)

Model Number : 50418
Serial Number : N/A
Manufacturer : Interactive Toy Concepts Limited

6.3.Operating Condition of EUT

6.3.1.Setup the EUT and simulator as shown as Section 4.1.

6.3.2.Turn on the power of all equipment.

6.3.3. Let the EUT work in TX modes measure it. The transmit frequency are 2414.000-2473.000MHz MHz. We are select 2414.000MHz, 2473.000MHz TX frequency to transmit.

6.4.Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
RBW=1MHz, VBW=1MHz

6.5.The Measurement Result

Pass.

Date of Test:	April 15, 2014	Temperature:	25°C
EUT:	2.4G Helicopter	Humidity:	50%
Model No.:	50418	Power Supply:	DC 3.7V
Test Mode:	TX 2414.000MHz	Test Engineer:	Pei

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2310.000	36.28	44.66	-6.99	29.29	37.67	54.00	74.00	-24.71	-36.33	Vertical
2390.000	37.14	44.23	-6.78	30.36	37.45	54.00	74.00	-23.64	-36.55	Vertical
2310.000	35.88	44.63	-6.99	28.89	37.64	54.00	74.00	-25.11	-36.36	Horizontal
2390.000	36.92	43.62	-6.78	30.14	36.84	54.00	74.00	-23.86	-37.16	Horizontal

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 in appendix I display the measurement of peak values.

Date of Test:	April 15, 2014	Temperature:	25°C
EUT:	2.4G Helicopter	Humidity:	50%
Model No.:	50418	Power Supply:	DC 3.7V
Test Mode:	TX 2473.000MHz	Test Engineer:	Pei

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2483.500	40.28	47.05	-6.54	33.74	40.41	54.00	74.00	-20.26	-33.49	Vertical
2500.000	37.82	43.87	-6.50	31.32	37.37	54.00	74.00	-22.68	-36.63	Vertical
2483.500	37.28	45.69	-6.54	30.74	39.15	54.00	74.00	-23.26	-34.85	Horizontal
2500.000	36.77	44.40	-6.50	30.27	37.90	54.00	74.00	-23.73	-36.10	Horizontal

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:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

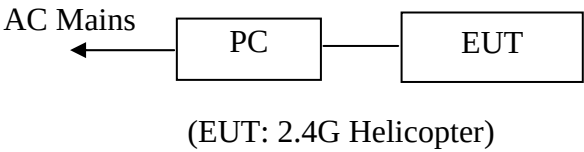
$$\text{Where Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} + \text{High Pass Filter Loss} - \text{Amplifier Gain}$$

3. The spectral diagrams in appendix I display the measurement of peak values.

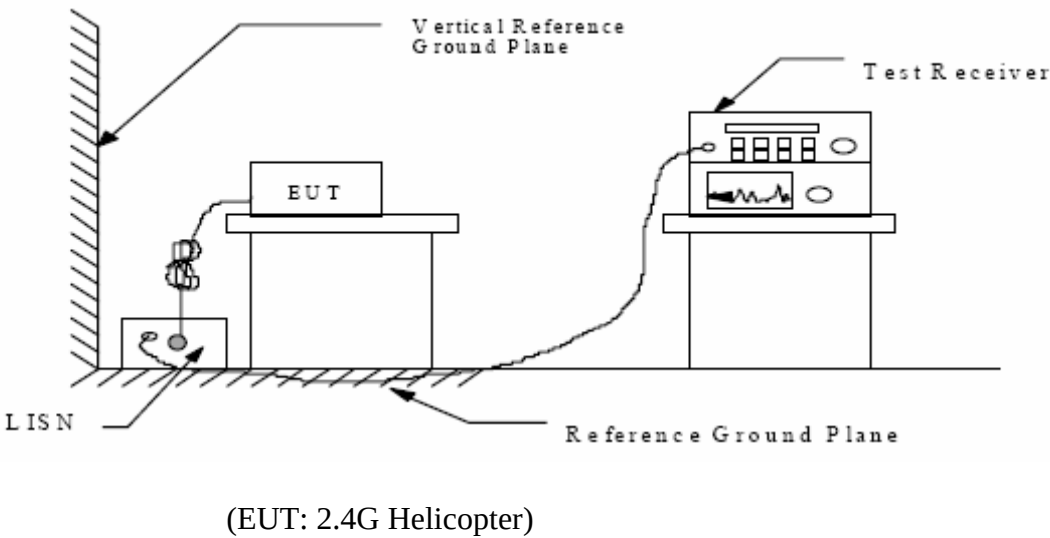
7. AC POWER LINE CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.207(A)

7.1. Block Diagram of Test Setup

7.1.1. Block diagram of connection between the EUT and simulators



7.1.2. Shielding Room Test Setup Diagram



7.2. The Emission Limit

7.2.1. Conducted Emission Measurement Limits According to Section 15.207(a)

Frequency (MHz)	Limit dB(μV)	
	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

* Decreases with the logarithm of the frequency.

7.3.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.

7.3.1.2.4G Helicopter (EUT)

Model Number : 50418
Serial Number : N/A
Manufacturer : Interactive Toy Concepts Limited

7.4.Operating Condition of EUT

7.4.1. Setup the EUT and simulator as shown as Section 7.1.

7.4.2. Turn on the power of all equipment.

7.4.3. Let the EUT work in charging mode measure it.

7.5.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 50ohm 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: 2003 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.

7.6. Power Line Conducted Emission Measurement Results

PASS.

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

Date of Test:	<u>April 10, 2014</u>	Temperature:	<u>25°C</u>
EUT:	<u>2.4G Helicopter</u>	Humidity:	<u>50%</u>
Model No.:	<u>50418</u>	Power Supply:	<u>AC 120/60Hz</u>
Test Mode:	<u>Charging</u>	Test Engineer:	<u>Pei</u>

Frequency (MHz)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector	Line
0.175283	58.40	65	-6.3	QP	Neutral
0.234385	51.20	62	-11.1	QP	
3.432150	36.20	56	-19.8	QP	
0.175283	42.50	55	-12.2	AV	
0.234385	34.50	52	-17.8	AV	
3.432150	27.10	46	-18.9	AV	
0.160699	58.80	65	-6.6	QP	Live
0.228151	48.30	63	-14.2	QP	
3.053725	32.90	56	-23.1	QP	
0.162149	40.60	55	-14.8	AV	
0.227468	32.30	53	-20.2	AV	
3.072075	26.80	46	-19.2	AV	

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

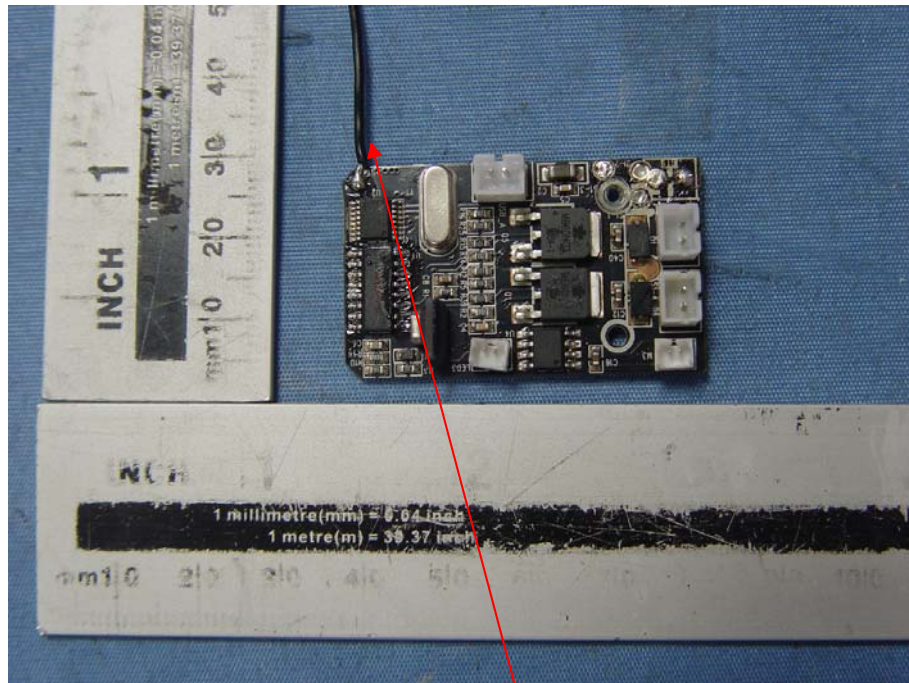
8. ANTENNA REQUIREMENT

8.1.The Requirement

8.1.1. According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

8.2.Antenna Construction

Device is equipped with unique antenna, which isn't displaced by other antenna. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna

APPENDIX I (Test Curves)



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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2014 #102

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: 2.4G Helicopter

Mode: TX 2414MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal

Power Source: DC 3.7V

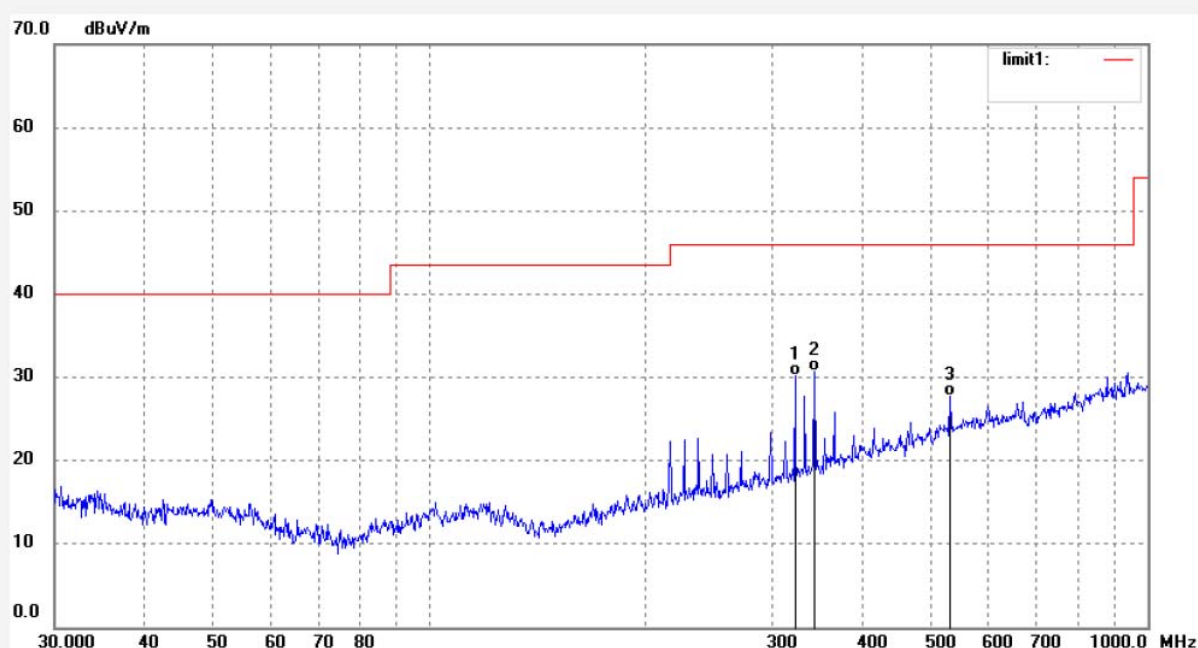
Date: 2014-4-15

Time: 17:49:04

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	322.5896	38.88	-8.64	30.24	46.00	-15.76	QP			
2	343.6506	38.60	-7.93	30.67	46.00	-15.33	QP			
3	531.2910	31.84	-4.14	27.70	46.00	-18.30	QP			



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Fax:+86-0755-26503396

Job No.: STAR2014 #103

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: 2.4G Helicopter

Mode: TX 2414MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Vertical

Power Source: DC 3.7V

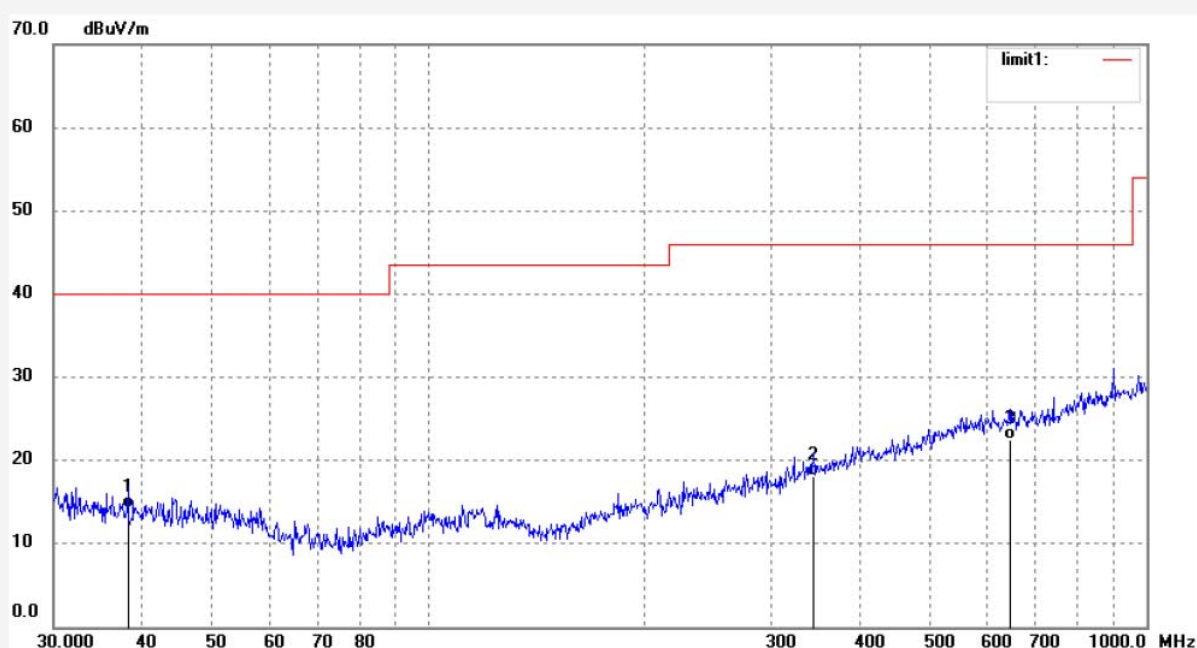
Date: 2014-4-15

Time: 17:52:45

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	38.0965	25.40	-11.11	14.29	40.00	-25.71	QP			
2	343.6506	25.99	-7.93	18.06	46.00	-27.94	QP			
3	644.5531	25.01	-2.52	22.49	46.00	-23.51	QP			



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Site: 1# Chamber
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Job No.: star2014 #55

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: 2.4G Helicopter

Mode: TX 2414MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal

Power Source: DC 3.7V

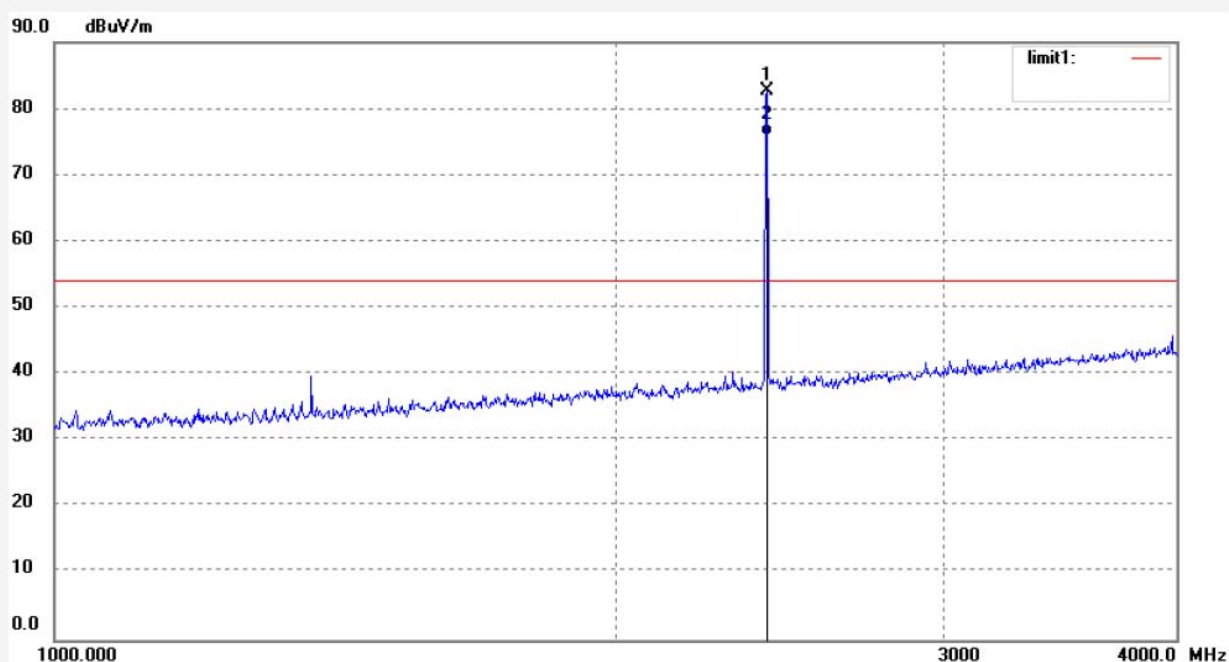
Date: 2014/04/15

Time: 16:35:49

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2414.000	89.42	-6.73	82.69	114.00	-31.31	peak			
2	2414.000	82.70	-6.73	75.97	94.00	-18.03	AVG			


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Job No.: star2014 #56

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: 2.4G Helicopter

Mode: TX 2414MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Vertical

Power Source: DC 3.7V

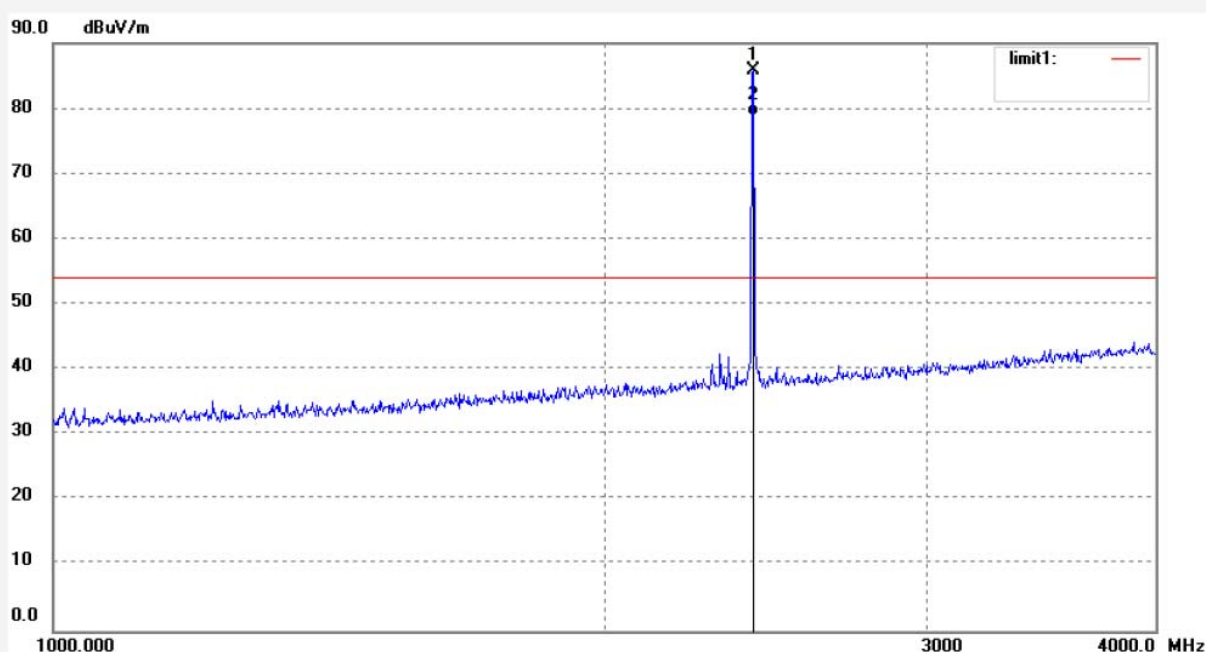
Date: 2014/04/15

Time: 16:39:39

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2414.000	92.62	-6.73	85.89	114.00	-28.11	peak			
2	2414.000	85.69	-6.73	78.96	94.00	-15.04	AVG			


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Fax:+86-0755-26503396

Job No.: STAR2014 #71

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: 2.4G Helicopter

Mode: TX 2414MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Vertical

Power Source: DC 3.7V

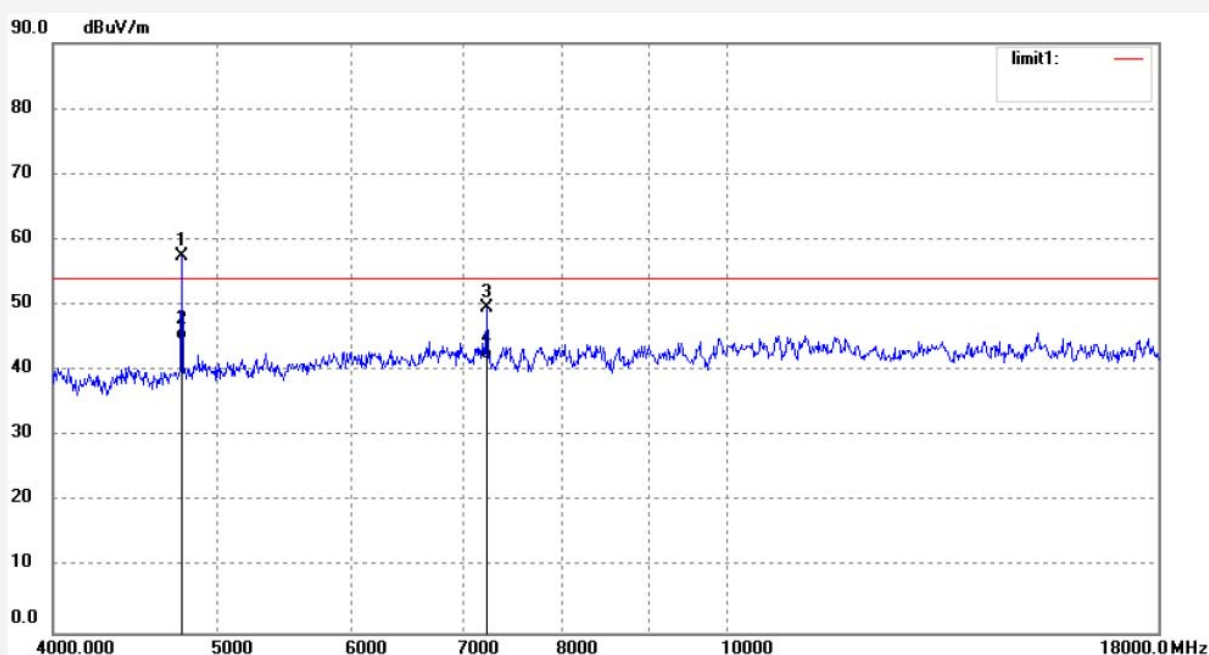
Date: 2014-4-15

Time: 16:59:06

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4828.000	57.96	-0.50	57.46	74.00	-16.54	peak			
2	4828.000	45.20	-0.50	44.70	54.00	-9.30	AVG			
3	7242.000	46.59	3.00	49.59	74.00	-24.41	peak			
4	7242.000	38.63	3.00	41.63	54.00	-12.37	AVG			


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Job No.: STAR2014 #72

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: 2.4G Helicopter

Mode: TX 2414MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal

Power Source: DC 3.7V

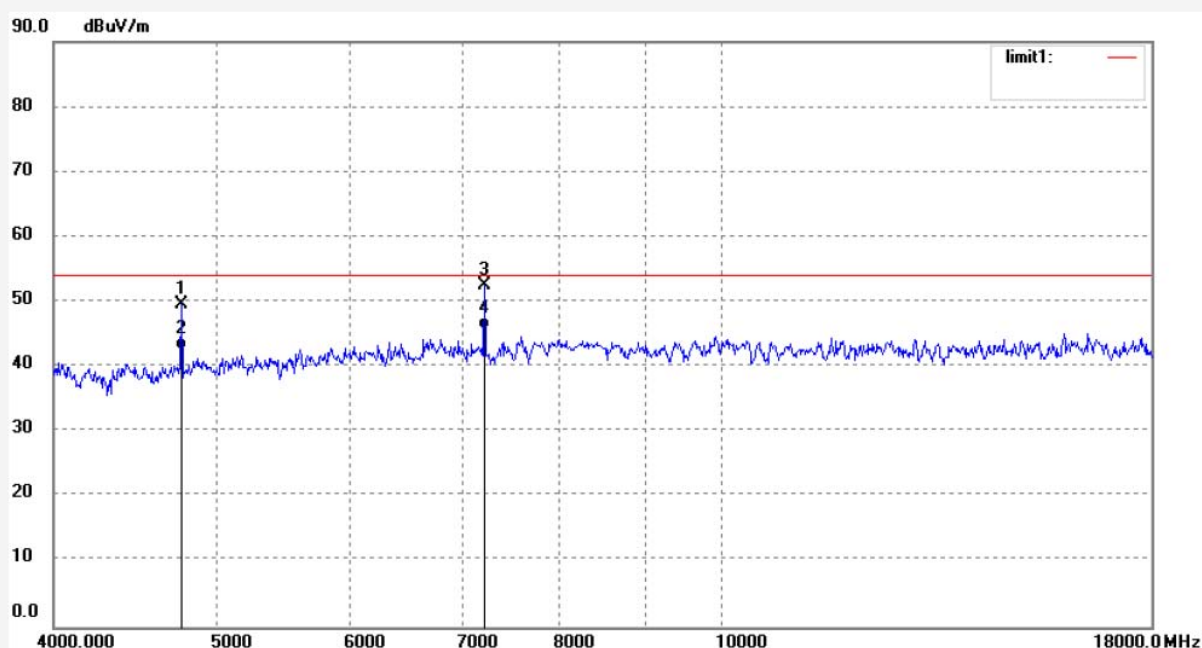
Date: 2014-4-15

Time: 17:02:21

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4828.000	50.11	-0.50	49.61	74.00	-24.39	peak			
2	4828.000	43.15	-0.50	42.65	54.00	-11.35	AVG			
3	7242.000	49.59	3.00	52.59	74.00	-21.41	peak			
4	7242.000	42.71	3.00	45.71	54.00	-8.29	AVG			


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Job No.: STAR2014 #77

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: 2.4G Helicopter

Mode: TX 2414MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal

Power Source: DC 3.7V

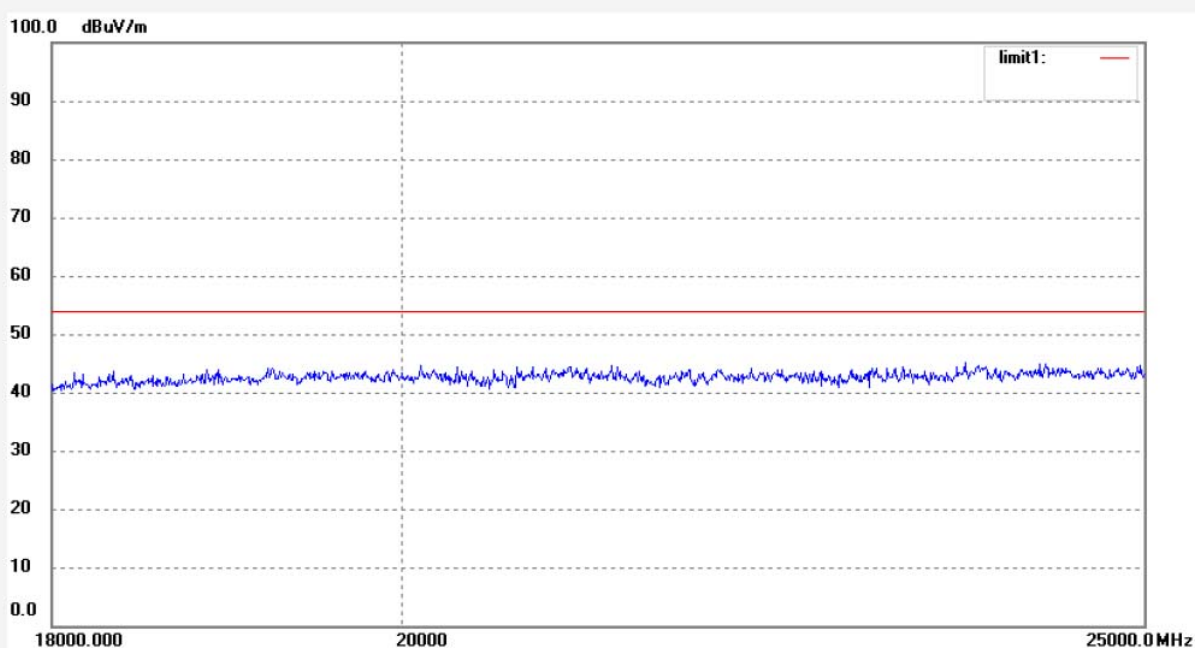
Date: 14-4-15

Time: 9/19/50

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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Job No.: STAR2014 #78

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: 2.4G Helicopter

Mode: TX 2414MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Vertical

Power Source: DC 3.7V

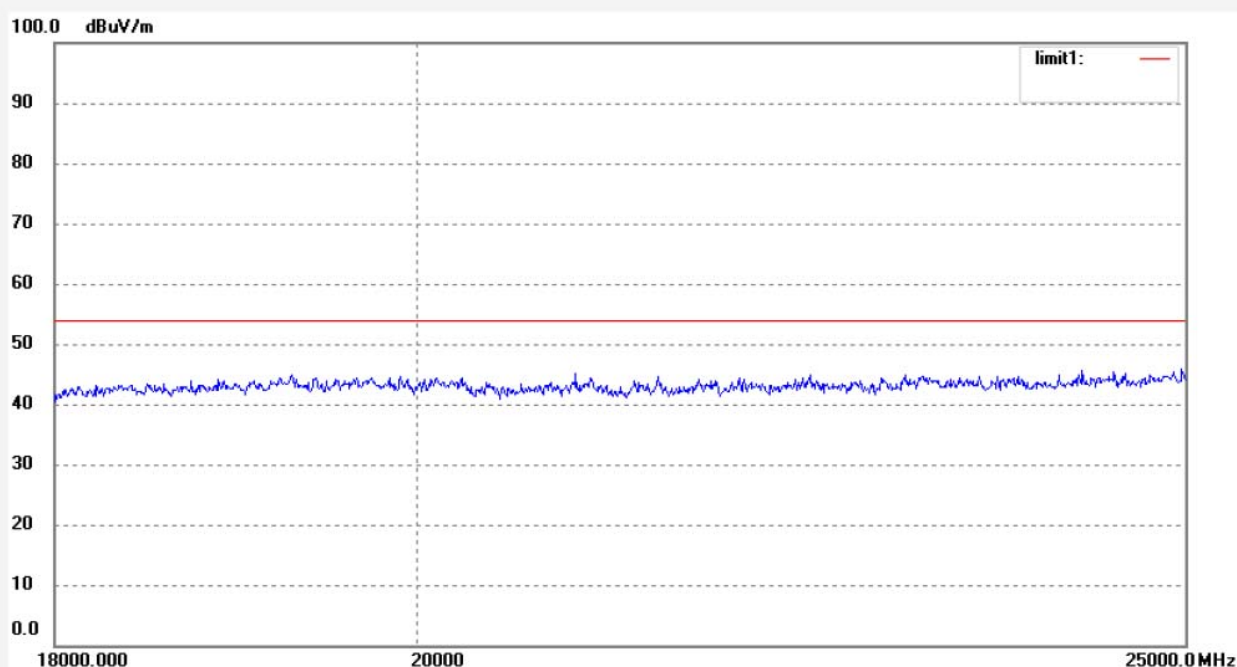
Date: 14-4-15

Time: 9/23/45

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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Site: 2# Chamber

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Job No.: STAR2014 #104

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: 2.4G Helicopter

Mode: TX 2447MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Vertical

Power Source: DC 3.7V

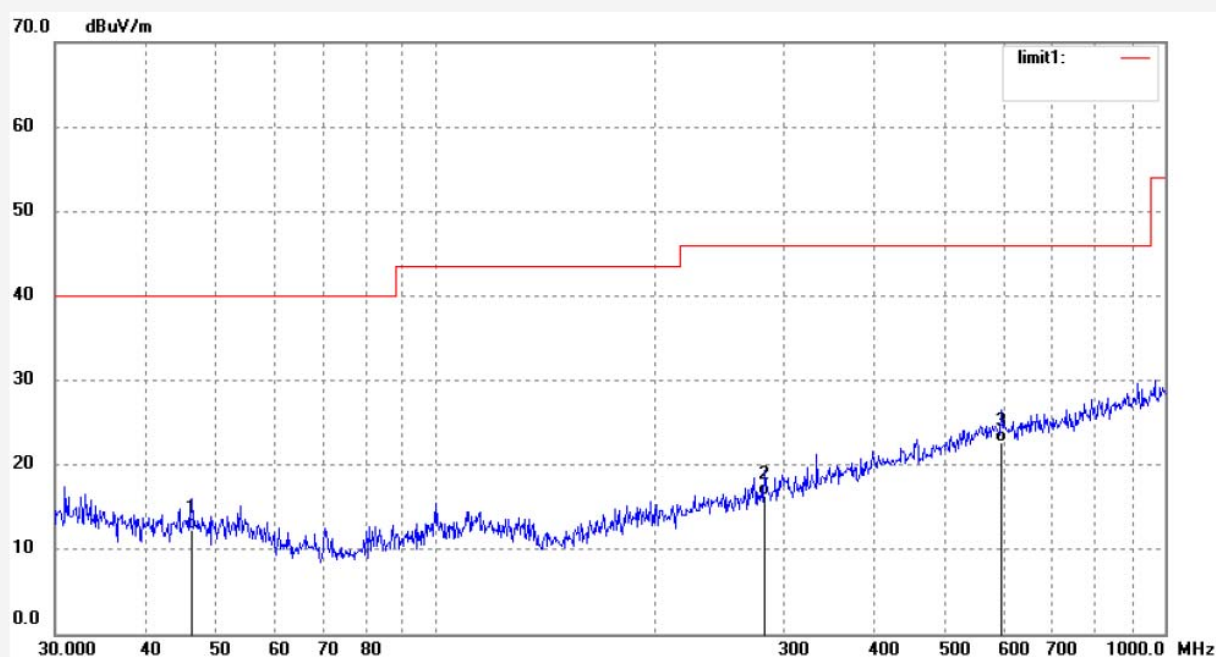
Date: 2014-4-15

Time: 17:56:32

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	46.2180	24.90	-12.63	12.27	40.00	-27.73	QP			
2	282.2701	26.10	-9.77	16.33	46.00	-29.67	QP			
3	596.6068	25.69	-3.00	22.69	46.00	-23.31	QP			


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Job No.: STAR2014 #105

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: 2.4G Helicopter

Mode: TX 2447MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal

Power Source: DC 3.7V

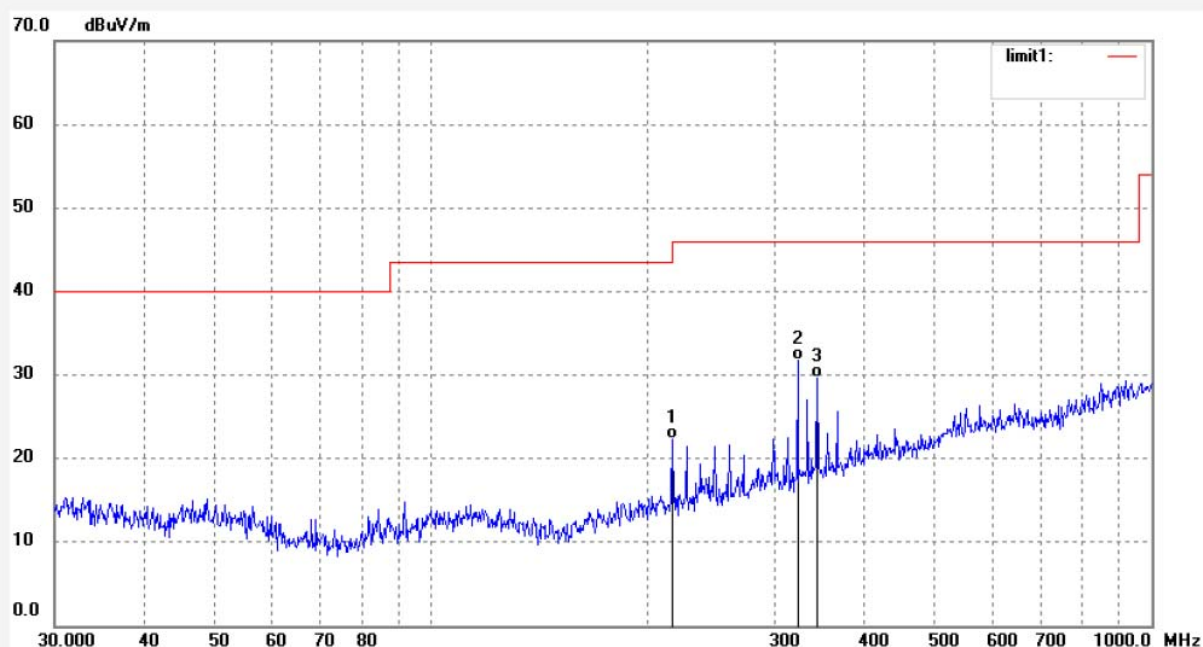
Date: 2014-4-15

Time: 18:01:57

Engineer Signature:

Distance: 3m

Note: Report No.: ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	216.1196	34.13	-11.85	22.28	46.00	-23.72	QP			
2	322.5896	40.40	-8.64	31.76	46.00	-14.24	QP			
3	343.6505	37.65	-7.93	29.72	46.00	-16.28	QP			


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Site: 1# Chamber

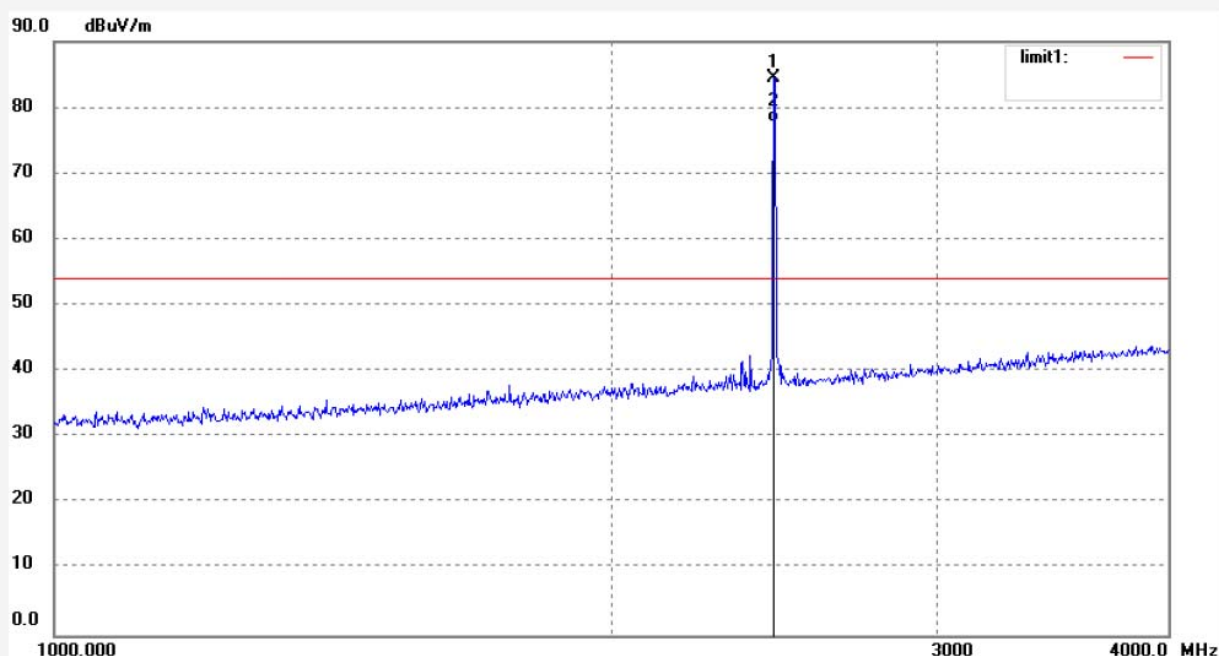
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: star2014 #57
Standard: FCC PART 15 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 2.4G Helicopter
Mode: TX 2447MHz
Model: 50418
Manufacturer: Interactive Toy Concepts Limited

Polarization: Vertical
Power Source: DC 3.7V
Date: 2014/04/15
Time: 16:43:31
Engineer Signature: STAR
Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2447.000	91.21	-6.62	84.59	114.00	-29.41	peak			
2	2447.000	84.25	-6.62	77.63	94.00	-16.37	AVG			



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Fax:+86-0755-26503396

Job No.: star2014 #58

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: 2.4G Helicopter

Mode: TX 2447MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal

Power Source: DC 3.7V

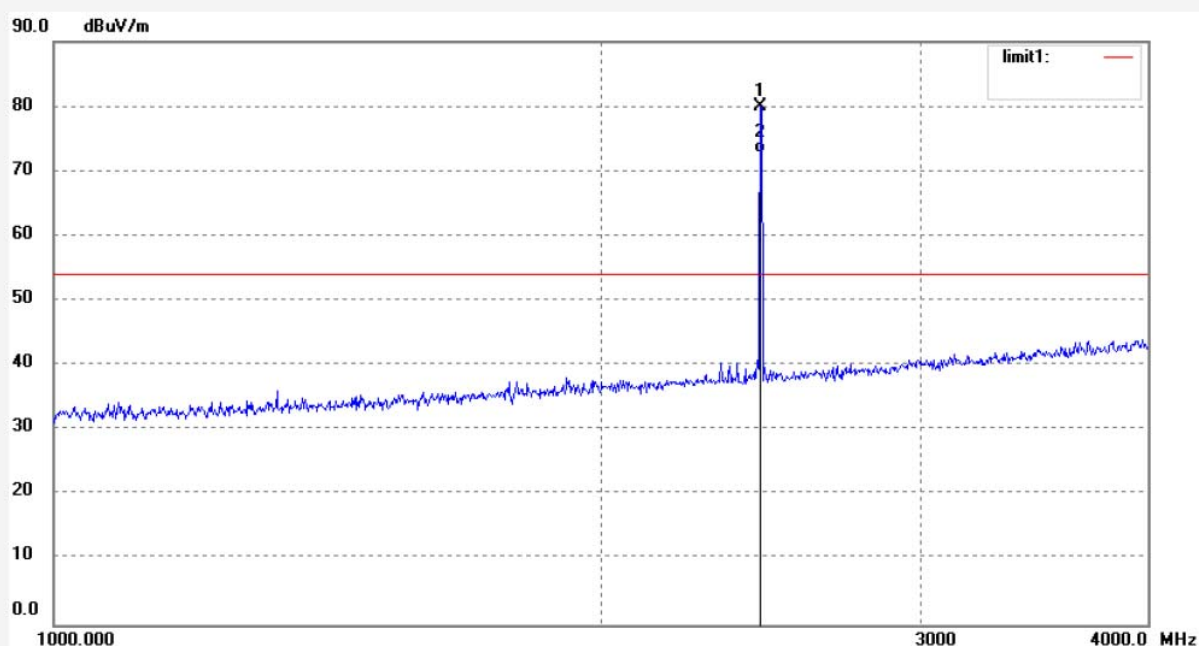
Date: 2014/04/15

Time: 16:48:47

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2447.000	86.70	-6.62	80.08	114.00	-33.92	peak			
2	2447.000	79.50	-6.62	72.88	94.00	-21.12	AVG			


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Site: 2# Chamber

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Job No.: STAR2014 #73

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: 2.4G Helicopter

Mode: TX 2447MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal

Power Source: DC 3.7V

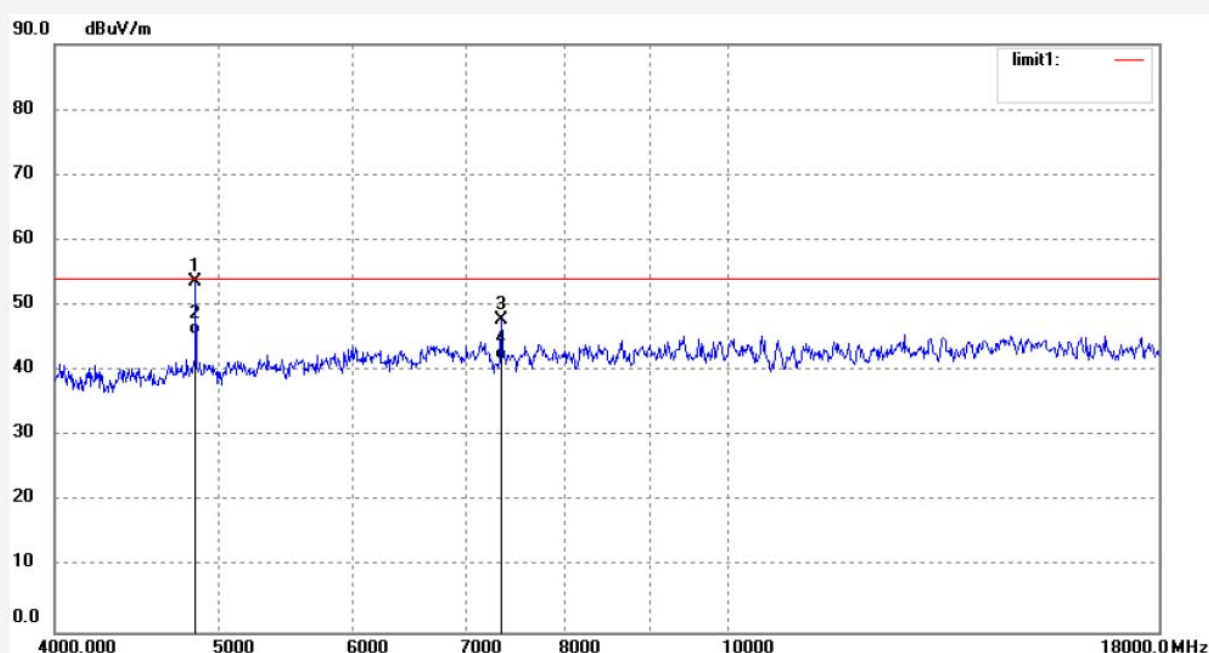
Date: 2014-4-15

Time: 17:06:41

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4894.000	53.78	-0.06	53.72	74.00	-20.28	peak			
2	4894.000	45.60	-0.06	45.54	54.00	-8.46	AVG			
3	7341.000	44.61	3.30	47.91	74.00	-26.09	peak			
4	7341.000	38.40	3.30	41.70	54.00	-12.30	AVG			



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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2014 #74

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: 2.4G Helicopter

Mode: TX 2447MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Vertical

Power Source: DC 3.7V

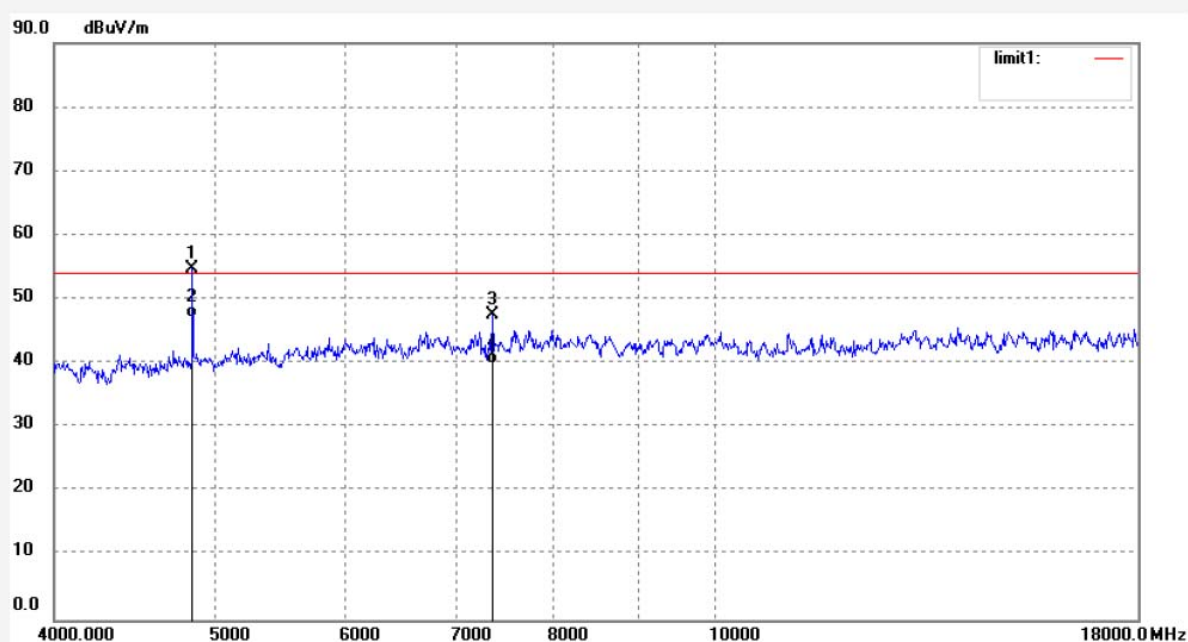
Date: 2014-4-15

Time: 17:10:43

Engineer Signature:

Distance: 3m

Note: Report No.: ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4894.000	54.81	-0.06	54.75	74.00	-19.25	peak			
2	4894.000	47.25	-0.06	47.19	54.00	-6.81	AVG			
3	7341.000	44.28	3.30	47.58	74.00	-26.42	peak			
4	7341.000	36.73	3.30	40.03	54.00	-13.97	AVG			


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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2014 #79

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: 2.4G Helicopter

Mode: TX 2447MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Vertical

Power Source: DC 3.7V

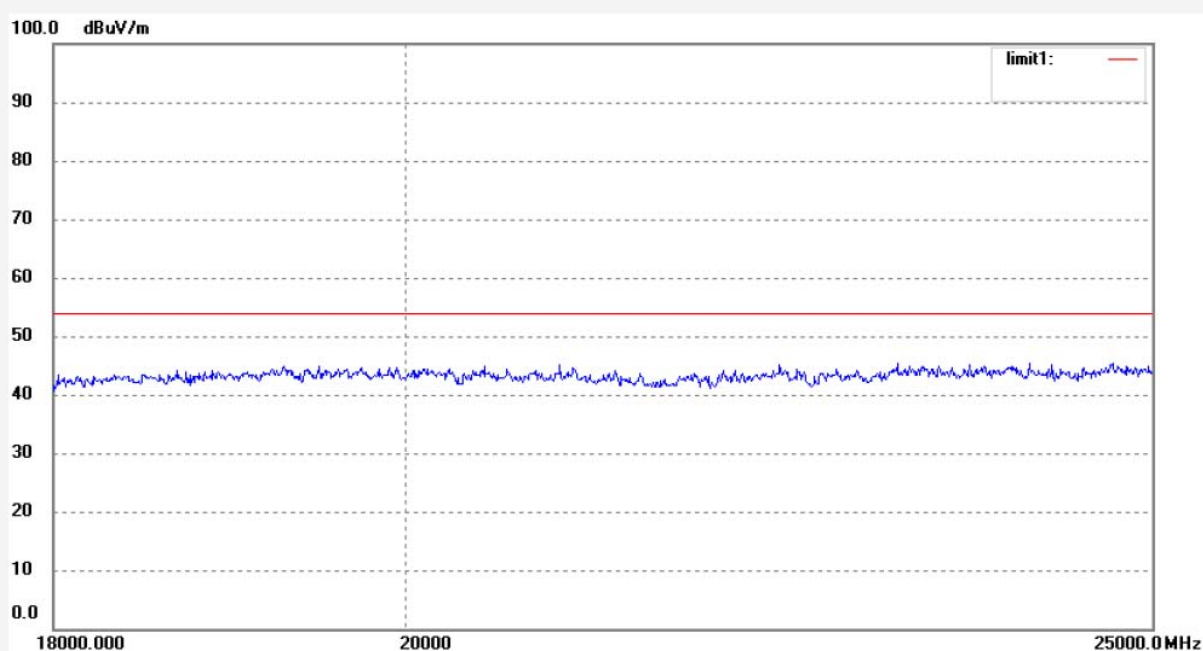
Date: 14-4-15

Time: 9/28/44

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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Site: 1# Chamber

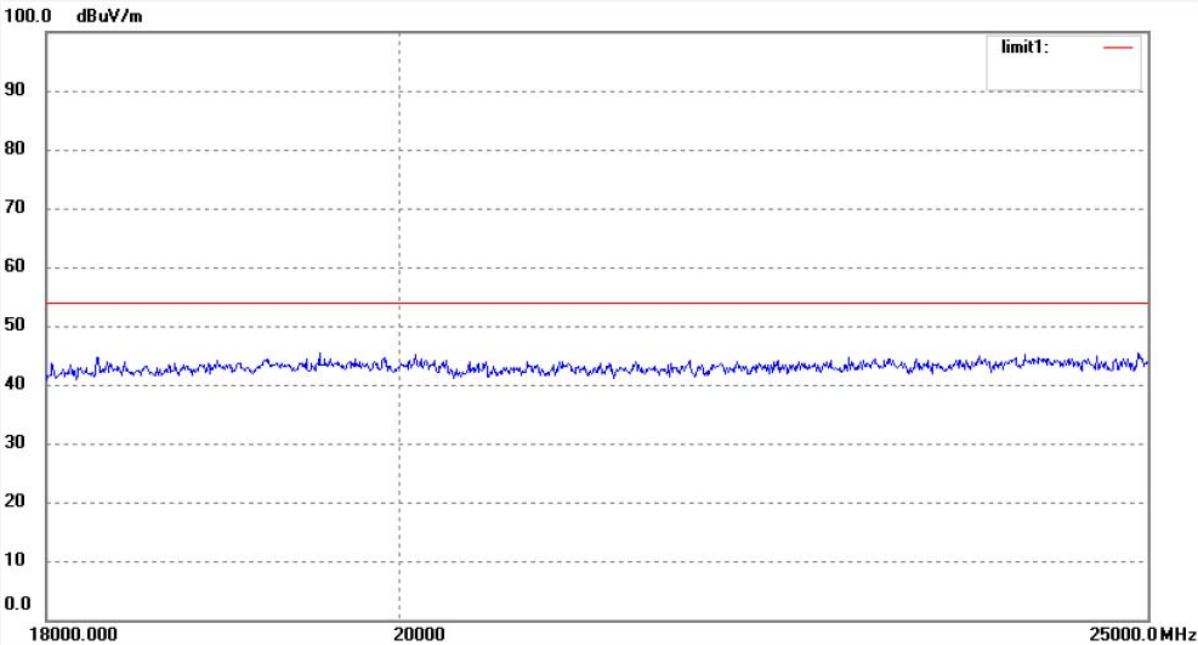
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2014 #80
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 2.4G Helicopter
Mode: TX 2447MHz
Model: 50418
Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal
Power Source: DC 3.7V
Date: 14-4-15
Time: 9/32/39
Engineer Signature: STAR
Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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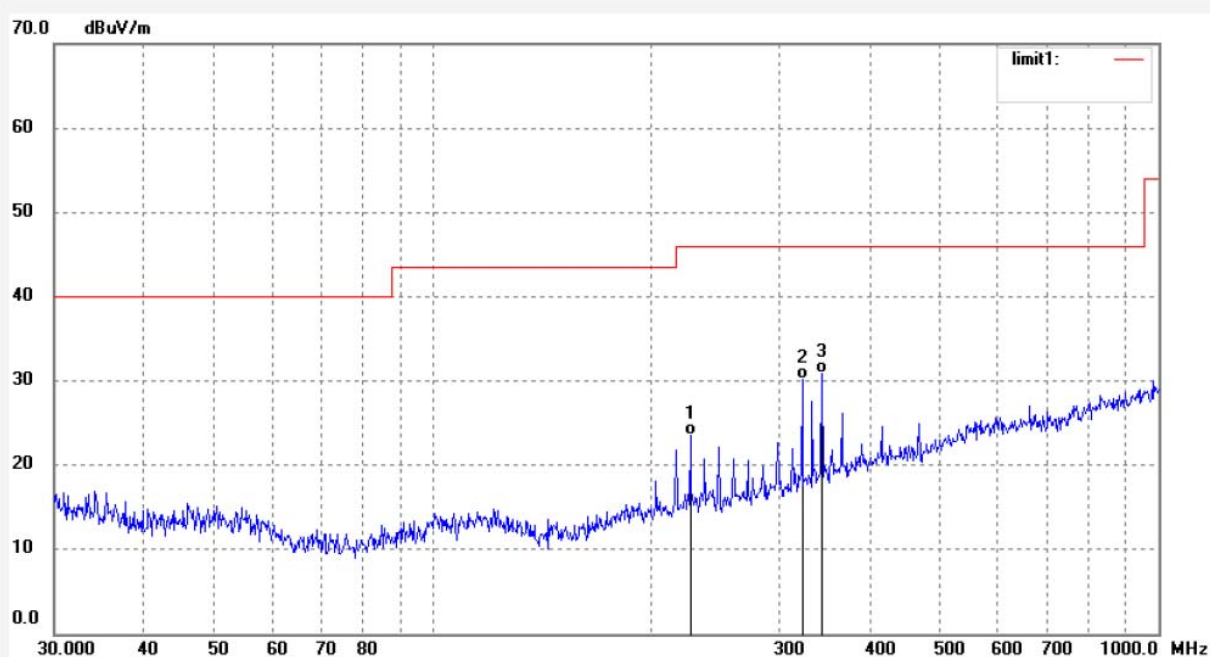
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR2014 #106
Standard: FCC PART 15 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: 2.4G Helicopter
Mode: TX 2473MHz
Model: 50418
Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2014-4-15
Time: 18:05:40
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	226.2202	34.91	-11.41	23.50	46.00	-22.50	QP			
2	322.5896	38.83	-8.64	30.19	46.00	-15.81	QP			
3	343.6506	38.83	-7.93	30.90	46.00	-15.10	QP			



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Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR2014 #107

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: 2.4G Helicopter

Mode: TX 2473MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Vertical

Power Source: DC 3.7V

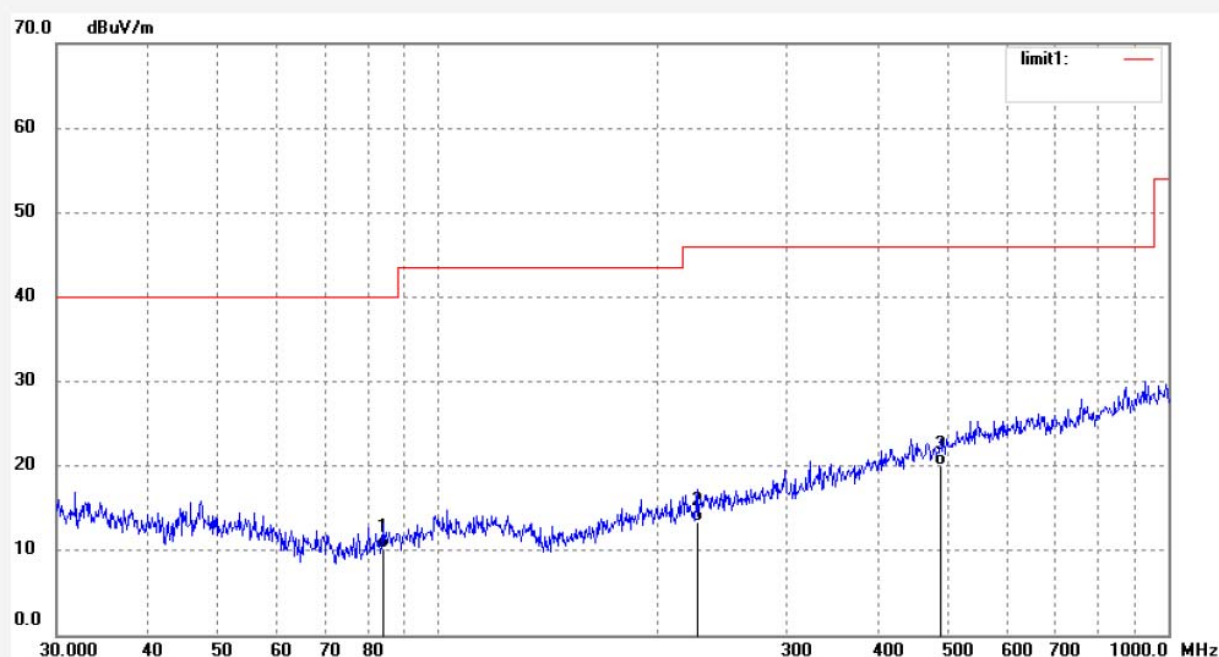
Date: 2014-4-15

Time: 18:09:12

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	83.9883	25.90	-15.61	10.29	40.00	-29.71	QP			
2	226.2202	24.77	-11.41	13.36	46.00	-32.64	QP			
3	488.3263	25.31	-5.21	20.10	46.00	-25.90	QP			


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Site: 1# Chamber

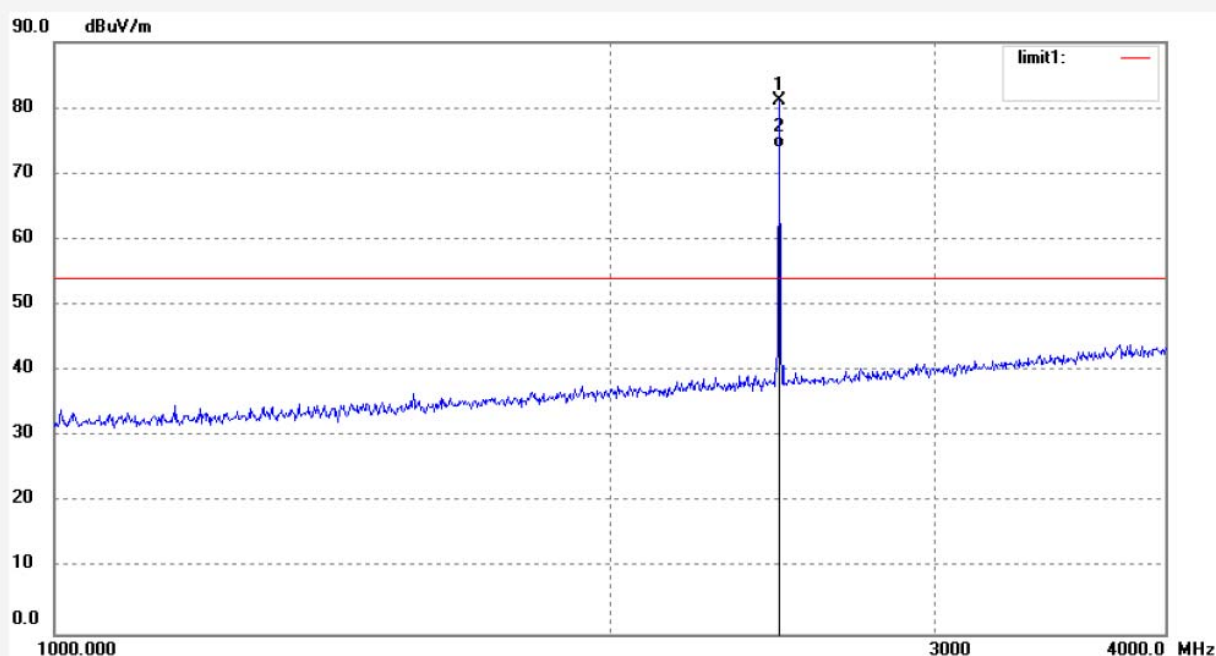
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: star2014 #59
 Standard: FCC PART 15 3M Radiated
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 25 C / 55 %
 EUT: 2.4G Helicopter
 Mode: TX 2473MHz
 Model: 50418
 Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal
 Power Source: DC 3.7V
 Date: 2014/04/15
 Time: 16:51:51
 Engineer Signature: STAR
 Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2473.000	87.58	-6.56	81.02	114.00	-32.98	peak			
2	2473.000	80.54	-6.56	73.98	94.00	-20.02	AVG			

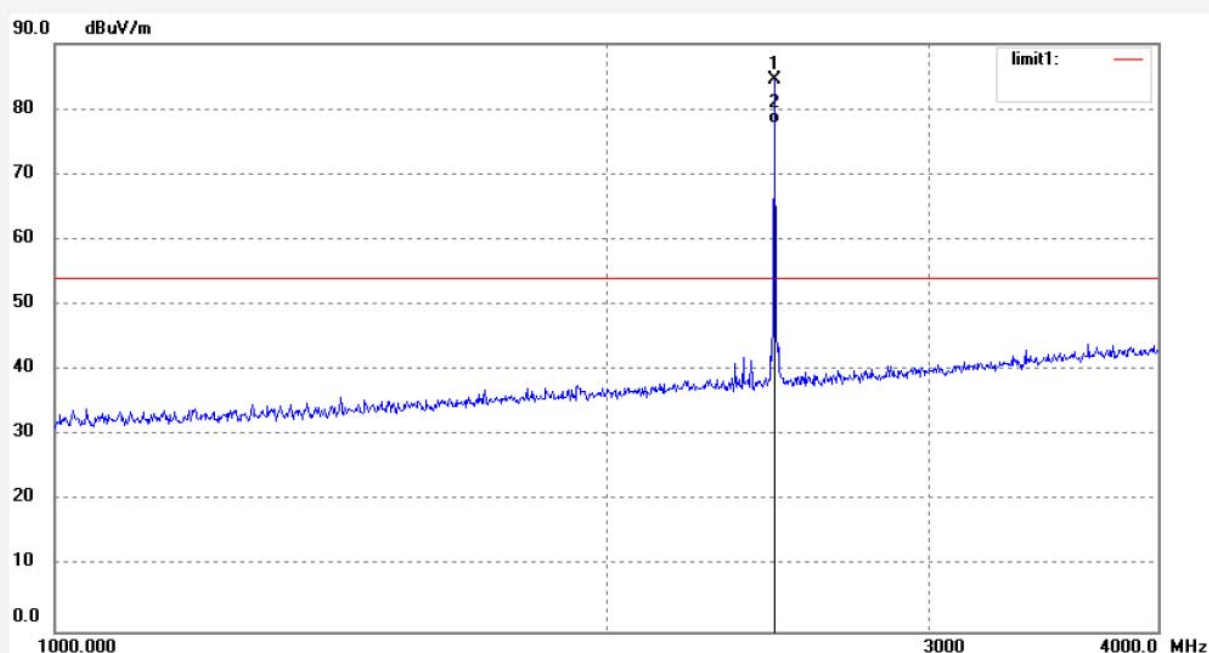

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: star2014 #60	Polarization: Vertical
Standard: FCC PART 15 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 2014/04/15
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 16:55:57
EUT: 2.4G Helicopter	Engineer Signature: STAR
Mode: TX 2473MHz	Distance: 3m
Model: 50418	
Manufacturer: Interactive Toy Concepts Limited	

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2473.000	91.05	-6.56	84.49	114.00	-29.51	peak			
2	2473.000	84.24	-6.56	77.68	94.00	-16.32	AVG			



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Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR2014 #75

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: 2.4G Helicopter

Mode: TX 2473MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Vertical

Power Source: DC 3.7V

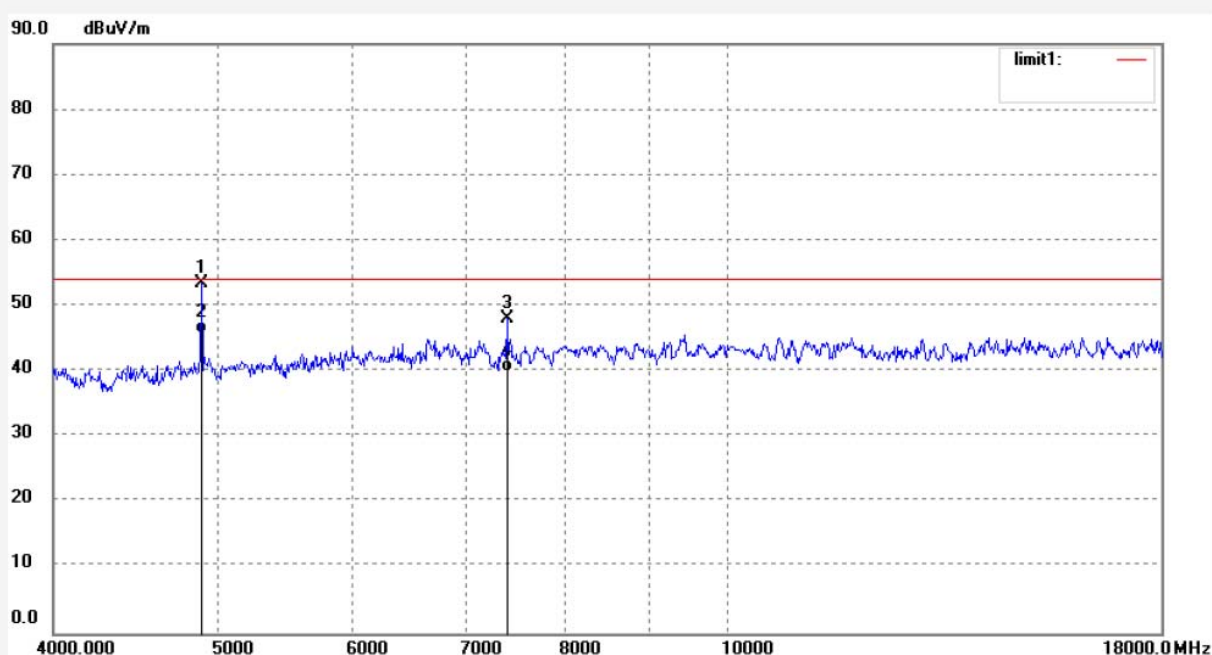
Date: 2014-4-15

Time: 17:14:30

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4946.000	53.15	0.20	53.35	74.00	-20.65	peak			
2	4946.000	45.62	0.20	45.82	54.00	-8.18	AVG			
3	7419.000	44.68	3.45	48.13	74.00	-25.87	peak			
4	7419.000	36.40	3.45	39.85	54.00	-14.15	AVG			


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Site: 2# Chamber

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Fax:+86-0755-26503396

Job No.: STAR2014 #76

Standard: FCC PART 15 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: 2.4G Helicopter

Mode: TX 2473MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal

Power Source: DC 3.7V

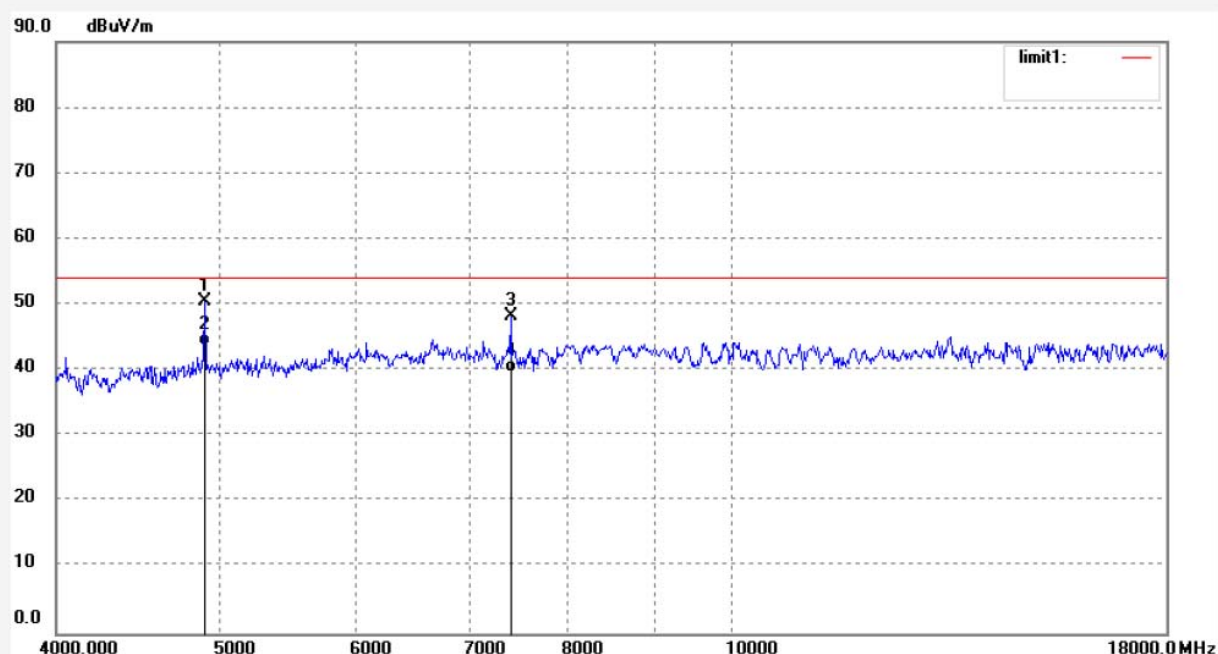
Date: 2014-4-15

Time: 17:18:01

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4946.000	50.41	0.20	50.61	74.00	-23.39	peak			
2	4946.000	43.50	0.20	43.70	54.00	-10.30	AVG			
3	7419.000	44.76	3.45	48.21	74.00	-25.79	peak			
4	7419.000	36.20	3.45	39.65	54.00	-14.35	AVG			


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Site: 1# Chamber

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Fax:+86-0755-26503396

Job No.: STAR2014 #81

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: 2.4G Helicopter

Mode: TX 2473MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal

Power Source: DC 3.7V

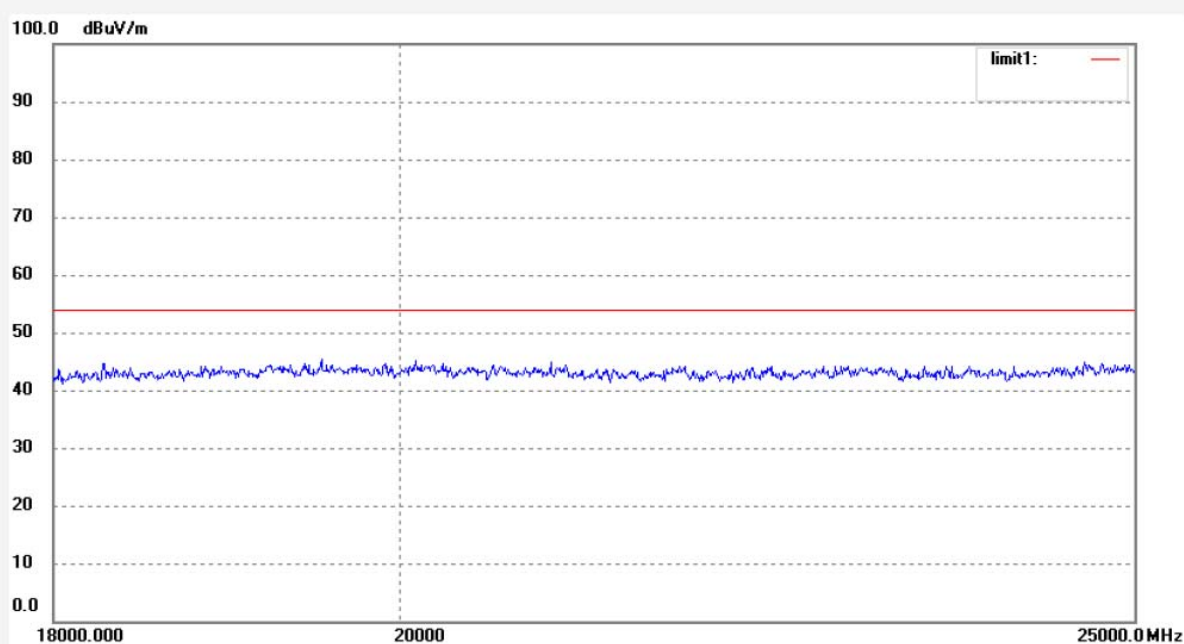
Date: 14-4-15

Time: 9/36/37

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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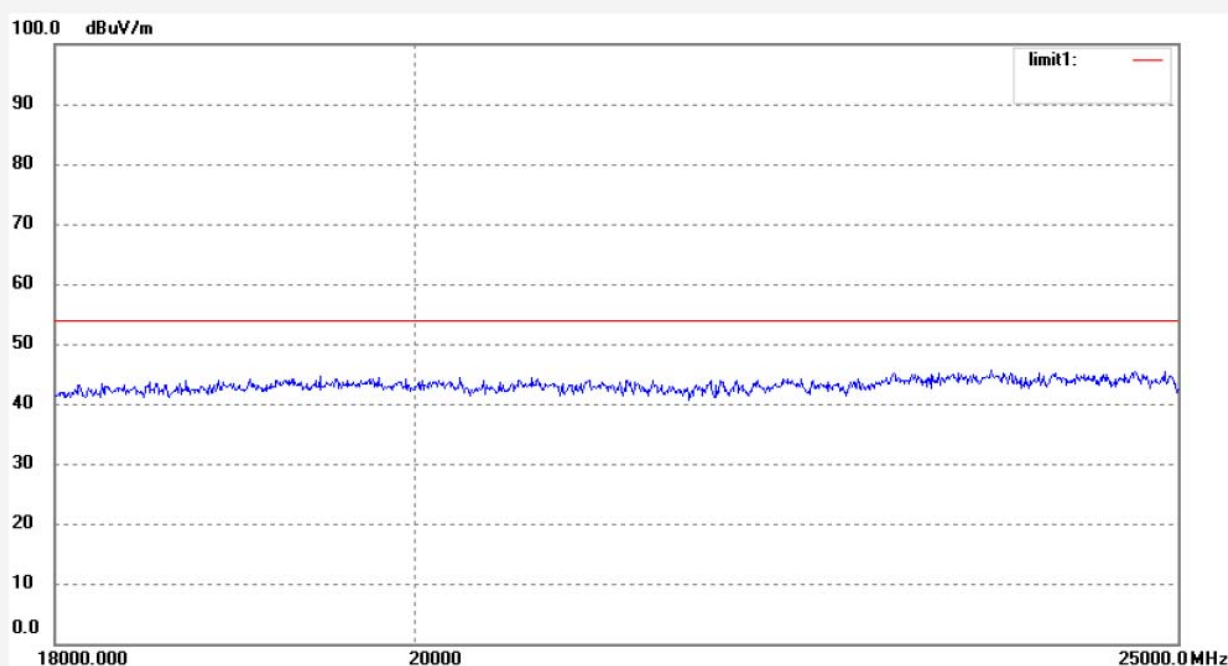
Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2014 #82	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14-4-15
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/40/23
EUT: 2.4G Helicopter	Engineer Signature: STAR
Mode: TX 2473MHz	Distance: 3m
Model: 50418	
Manufacturer: Interactive Toy Concepts Limited	

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: star2014 #61

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: 2.4G Helicopter

Mode: TX 2414MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Vertical

Power Source: DC 3.7V

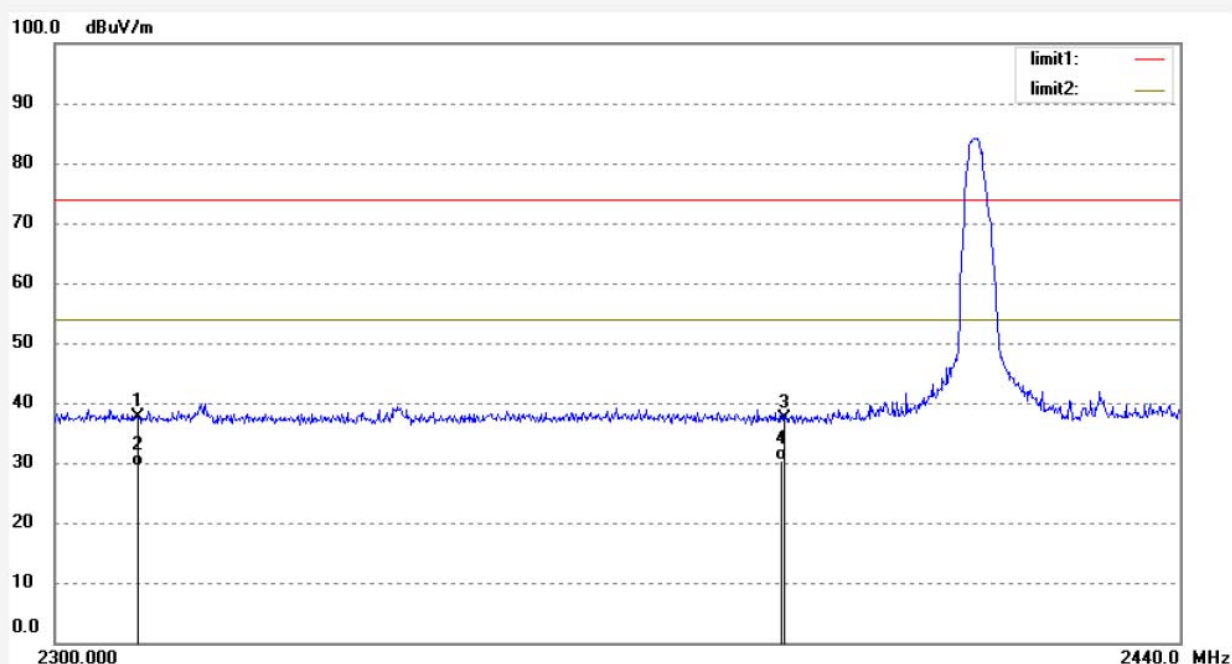
Date: 14/04/15/

Time: 8/37/06

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2310.000	44.66	-6.99	37.67	74.00	-36.33	peak			
2	2310.000	36.28	-6.99	29.29	54.00	-24.71	AVG			
3	2390.000	44.23	-6.78	37.45	74.00	-36.55	peak			
4	2390.000	37.14	-6.78	30.36	54.00	-23.64	AVG			


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Site: 1# Chamber

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Fax:+86-0755-26503396

Job No.: star2014 #62

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: 2.4G Helicopter

Mode: TX 2414MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal

Power Source: DC 3.7V

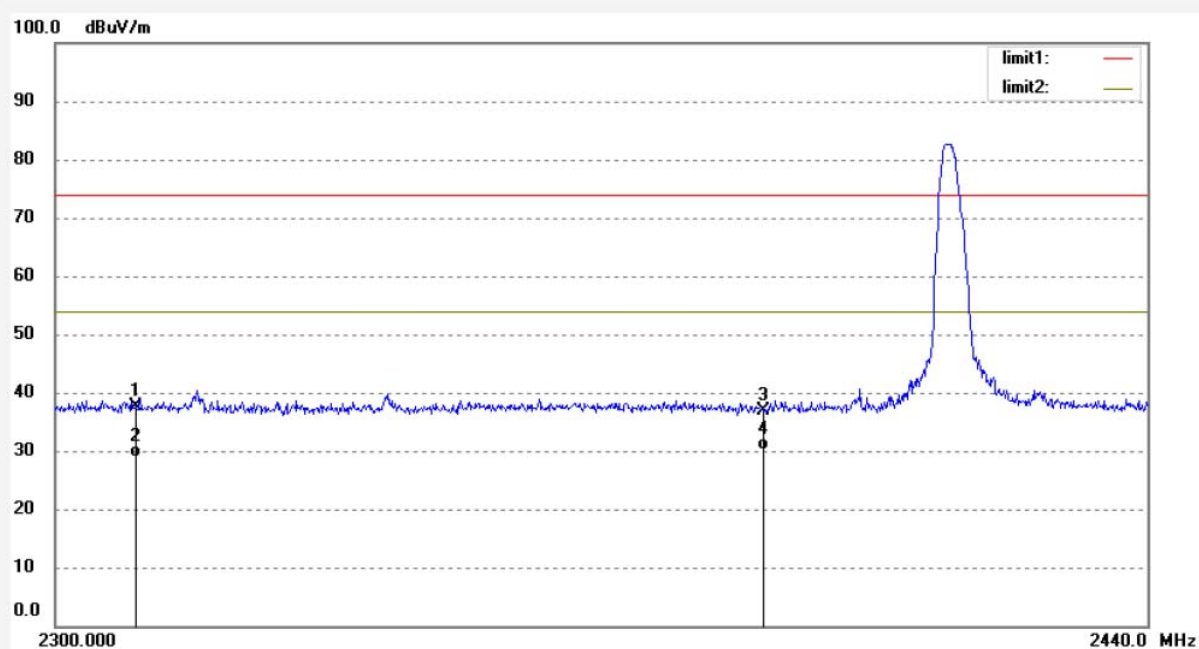
Date: 14/04/15/

Time: 8/49/16

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2310.000	44.63	-6.99	37.64	74.00	-36.36	peak			
2	2310.000	35.88	-6.99	28.89	54.00	-25.11	AVG			
3	2390.000	43.62	-6.78	36.84	74.00	-37.16	peak			
4	2390.000	36.92	-6.78	30.14	54.00	-23.86	AVG			



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Site: 1# Chamber

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Fax:+86-0755-26503396

Job No.: star2014 #63

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: 2.4G Helicopter

Mode: TX 2473MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Horizontal

Power Source: DC 3.7V

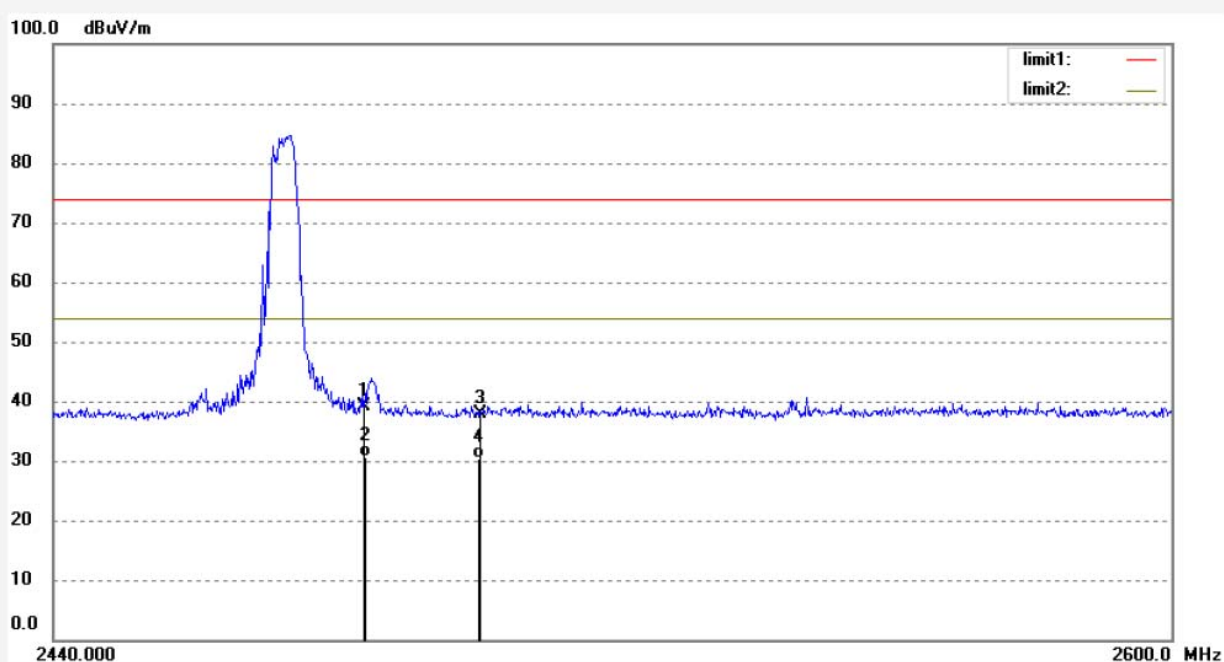
Date: 14/04/15/

Time: 8/53/54

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	45.69	-6.54	39.15	74.00	-34.85	peak			
2	2483.500	37.28	-6.54	30.74	54.00	-23.26	AVG			
3	2500.000	44.40	-6.50	37.90	74.00	-36.10	peak			
4	2500.000	36.77	-6.50	30.27	54.00	-23.73	AVG			


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Fax:+86-0755-26503396

Job No.: star2014 #64

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: 2.4G Helicopter

Mode: TX 2473MHz

Model: 50418

Manufacturer: Interactive Toy Concepts Limited

Polarization: Vertical

Power Source: DC 3.7V

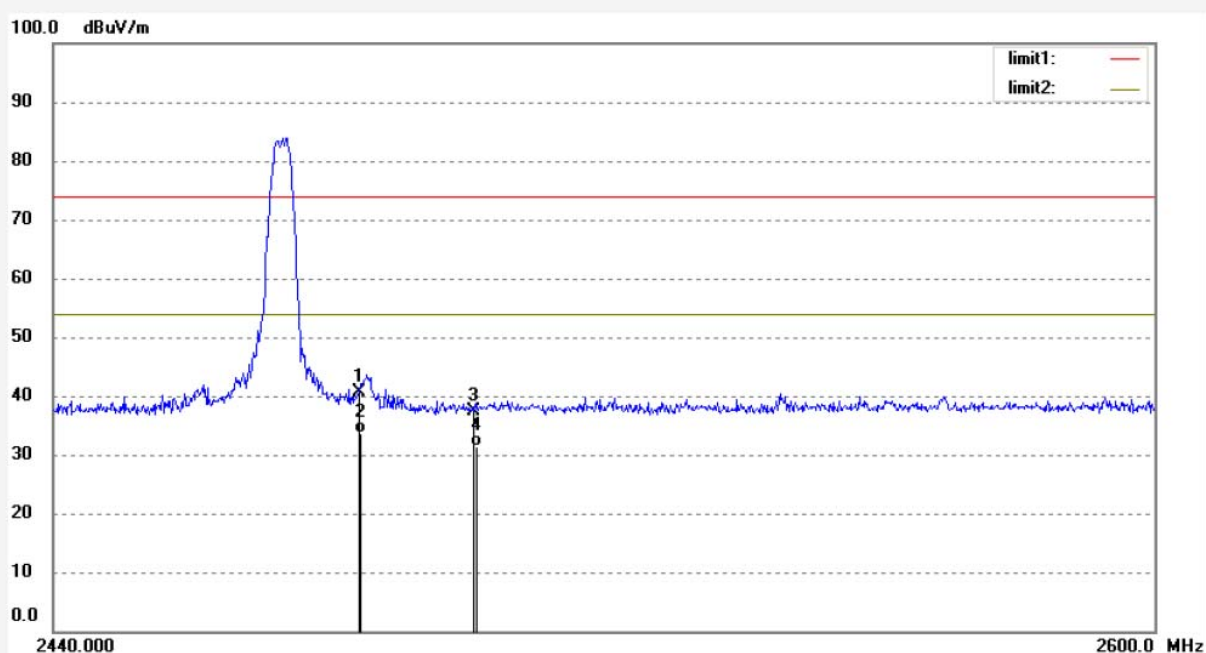
Date: 14/04/15/

Time: 8/45/25

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20140501



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	47.05	-6.54	40.51	74.00	-33.49	peak			
2	2483.500	40.28	-6.54	33.74	54.00	-20.26	AVG			
3	2500.000	43.87	-6.50	37.37	74.00	-36.63	peak			
4	2500.000	37.82	-6.50	31.32	54.00	-22.68	AVG			

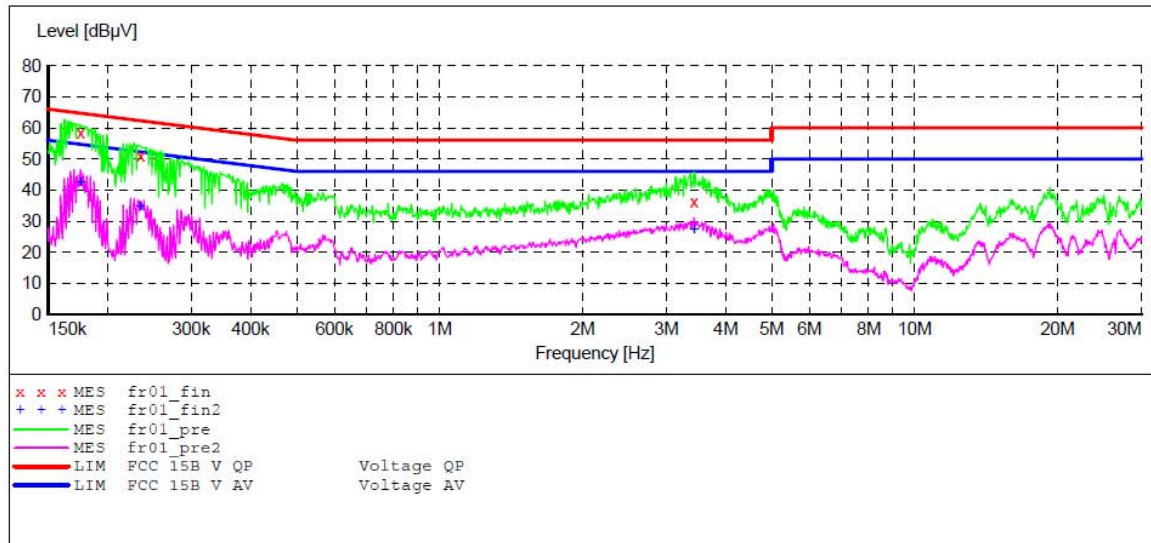
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: 2.4G Helicopter M/N:50418
 Manufacturer: Interactive Toy Concepts Limited
 Operating Condition: Charging
 Test Site: 2#Shielding Room
 Operator: star
 Test Specification: N 120V/60Hz
 Comment: Report No.:ATE20140501
 Start of Test: 2014-04-10 / 13:50:48

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

Short Description: _SUB_STD_VTERM2 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: "fr01_fin"

2014-04-10 13:53

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.175283	58.40	10.6	65	6.3	QP	N	GND
0.234385	51.20	11.1	62	11.1	QP	N	GND
3.432150	36.20	12.3	56	19.8	QP	N	GND

MEASUREMENT RESULT: "fr01_fin2"

2014-04-10 13:53

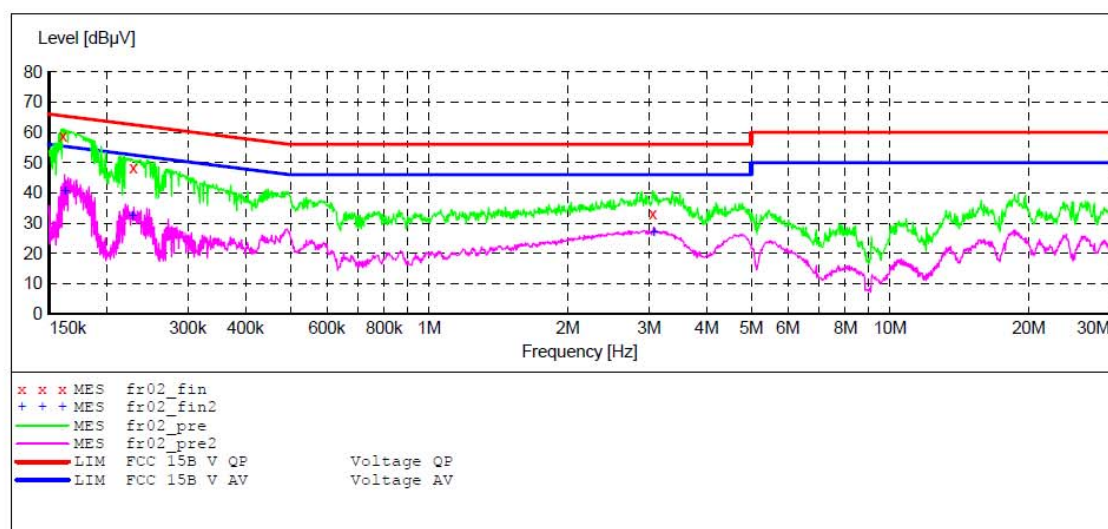
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.175283	42.50	10.6	55	12.2	AV	N	GND
0.234385	34.50	11.1	52	17.8	AV	N	GND
3.432150	27.10	12.3	46	18.9	AV	N	GND

ACCURATE TECHNOLOGY CO.,LTD**CONDUCTED EMISSION STANDARD FCC PART 15B**

EUT: 2.4G Helicopter M/N:50418
 Manufacturer: Interactive Toy Concepts Limited
 Operating Condition: Charging
 Test Site: 2#Shielding Room
 Operator: star
 Test Specification: L 120V/60Hz
 Comment: Report No.:ATE20140501
 Start of Test: 2014-04-10 / 13:53:47

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

Short Description: _SUB_STD_VTERM2 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: "fr02_fin"**

2014-04-10 13:55

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.160699	58.80	10.5	65	6.6	QP	L1	GND
0.228151	48.30	11.1	63	14.2	QP	L1	GND
3.053725	32.90	12.3	56	23.1	QP	L1	GND

MEASUREMENT RESULT: "fr02_fin2"

2014-04-10 13:55

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.162149	40.60	10.5	55	14.8	AV	L1	GND
0.227468	32.30	11.1	53	20.2	AV	L1	GND
3.072075	26.80	12.3	46	19.2	AV	L1	GND