

APPLICATION CERTIFICATION
On Behalf of
GROWATT New Energy Co., Ltd.

ShineVision
Model No.: RCS-S370

FCC ID: AZURCS-S370

Prepared for : GROWATT New Energy Co., Ltd.
Address : No.12 Building, Xicheng Industrial Zone, Bao'an District,
Shenzhen, P.R. China

Prepared by : ACCURATE TECHNOLOGY CO. LTD
Address : 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 : ATE20120135
Date of Test : February 14-20, 2012
Date of Report : February 20, 2012

TABLE OF CONTENTS

Description	Page
Test Report Certification	
1. GENERAL INFORMATION	4
1.1. Description of Device (EUT).....	4
1.2. Description of Test Facility	5
1.3. Measurement Uncertainty	5
2. MEASURING DEVICE AND TEST EQUIPMENT	6
3. SUMMARY OF TEST RESULTS.....	7
4. THE FIELD STRENGTH OF RADIATION EMISSION	8
4.1. Block Diagram of Test Setup.....	8
4.2. The Field Strength of Radiation Emission Measurement Limits.....	9
4.3. Configuration of EUT on Measurement	9
4.4. Operating Condition of EUT	9
4.5. Test Procedure	10
4.6. The Field Strength of Radiation Emission Measurement Results	11
5. 20DB OCCUPIED BANDWIDTH	13
5.1. Block Diagram of Test Setup.....	13
5.2. The Bandwidth of Emission Limit According To FCC Part 15 Section 15.231(c).....	13
5.3. EUT Configuration on Measurement	14
5.4. Operating Condition of EUT	14
5.5. Test Procedure	14
5.6. Measurement Result	15
6. DURATION TIME AND SILENT PERIOD MEASUREMENT.....	16
6.1. Block Diagram of Test Setup.....	16
6.2. Duration Time and silent period measurement according to FCC Part 15 Section 15.231(e).....	16
6.3. EUT Configuration on Measurement	17
6.4. Operating Condition of EUT	17
6.5. Test Procedure	17
6.6. Measurement Result	18
7. AVERAGE FACTOR MEASUREMENT	19
7.1. Block Diagram of Test Setup.....	19
7.2. Average factor Measurement according to ANSI 63.4: 2003.....	19
7.3. EUT Configuration on Measurement	20
7.4. Operating Condition of EUT	20
7.5. Test Procedure	20
7.6. Measurement Result	21
8. AC POWER LINE CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.207(A) ..	22
8.1. Block Diagram of Test Setup.....	22
8.2. The Emission Limit	22
8.3. Configuration of EUT on Measurement	23
8.4. Operating Condition of EUT	23
8.5. Test Procedure	23
8.6. Power Line Conducted Emission Measurement Results	24
9. ANTENNA REQUIREMENT.....	25
9.1. The Requirement	25
9.2. Antenna Construction	25
APPENDIX I (TEST CURVES) (9 pages)	

Test Report Certification

Applicant : GROWATT New Energy Co., Ltd.
Manufacturer : GROWATT New Energy Co., Ltd.
EUT Description : ShineVision
(A) MODEL NO.: RCS-S370
(B) SERIAL NO.: N/A
(C) POWER SUPPLY: DC 5V (Power By RS232 Port)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.231
ANSI 63.4: 2003

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 15.231 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 : February 14-20, 2012

Prepared by : Apple Lv
(Engineer)

Approved & Authorized Signer : Heunb
(Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	ShineVision
Model Number	:	RCS-S370
Operation Frequency	:	433.9770MHz
Power Supply	:	DC 5V (Power By RS232 Port)
Applicant	:	GROWATT New Energy Co., Ltd.
Address	:	No.12 Building, Xicheng Industrial Zone, Bao'an District, Shenzhen, P.R. China
Manufacturer	:	GROWATT New Energy Co., Ltd.
Address	:	No.12 Building, Xicheng Industrial Zone, Bao'an District, Shenzhen, P.R. China
Date of sample received	:	February 14, 2012
Date of Test	:	February 14-20, 2012

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. 7, 2012	Jan. 6, 2013
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 7, 2012	Jan. 6, 2013
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 7, 2012	Jan. 6, 2013
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 7, 2012	Jan. 6, 2013
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 7, 2012	Jan. 6, 2013
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 7, 2012	Jan. 6, 2013
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 7, 2012	Jan. 6, 2013
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 7, 2012	Jan. 6, 2013
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 7, 2012	Jan. 6, 2013
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 7, 2012	Jan. 6, 2013

3. SUMMARY OF TEST RESULTS

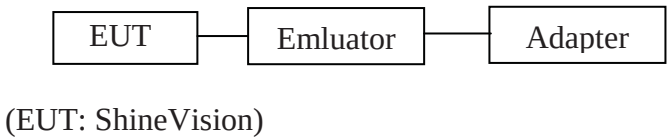
FCC Rules	Description of Test	Result
Section 15.207	Conducted Emission	Compliant
Section 15.231(e)	Radiated Emission	Compliant
Section 15.231(c)	20dB Bandwidth	Compliant
Section 15.231(e)	Duration time and silent period measurement	Compliant
Section 15.203	Antenna Requirement	Compliant

Remark: “N/A” means “Not applicable”.

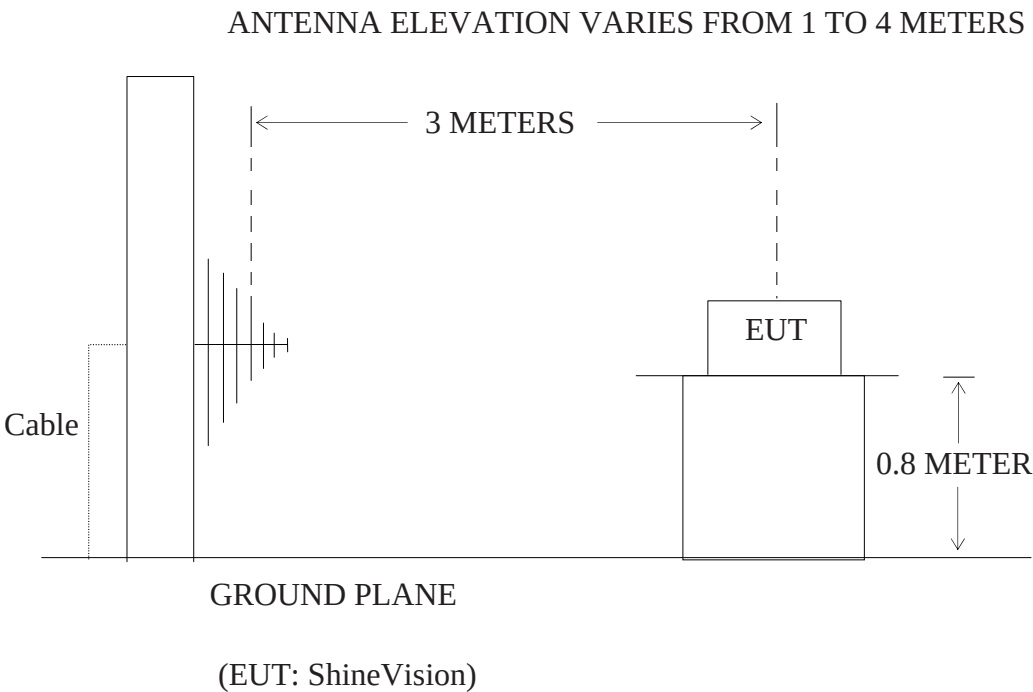
4. THE FIELD STRENGTH OF RADIATION EMISSION

4.1. Block Diagram of Test Setup

4.1.1. Block diagram of connection between the EUT and simulators



4.1.2. Semi-anechoic Chamber Test Setup Diagram



4.2.The Field Strength of Radiation Emission Measurement Limits

4.2.1.Radiation Emission Measurement Limits According to Section 15.231(e)

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Average] [μV/m]	Field Strength of Spurious Emission [Average] [μV/m]
40.66-40.70	1000	100
70-130	500	50
130-174	500 - 1500	50-150
174-260	1500	150
260-470	1500-5000	150-500
Above 470	5000	500

Where F is the frequency in MHz, The formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174MHz, $\mu\text{V/m}$ at 3 meters= $22.72727(F)-2454.545$; For the band 260-470MHz, $\mu\text{V/m}$ at 3 meters= $16.6667(F)-2833.3333$. The maximum permissible unwanted emission level is 20dB below the maximum permitted fundamental level.

4.2.2.Restricted Band Radiation Emission Measurement Limits According to FCC part 15 Section 15.205 and Section15.209.

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. ShineVision (EUT)

Model Number : RCS-S370
 Serial Number : N/A
 Manufacturer : GROWATT New Energy Co., Ltd.

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 measuring mode (TX) measure it.

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 EUT location must be manipulated according to ANSI 63.4 on radiated emission measurement.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz, and 1MHz in 1000-5000MHz.

The frequency range from 30MHz to 5000MHz is checked.

4.6.The Field Strength of Radiation Emission Measurement Results

PASS.

The frequency range 30MHz to 5000MHz is investigated.

Date of Test:	February 18, 2012	Temperature:	25°C
EUT:	ShineVision	Humidity:	50%
Model No.:	RCS-S370	Power Supply:	DC 5V
Test Mode:	TX	Test Engineer:	PEI

Frequency (MHz)	Reading (dBμV/m)	Factor Corr.	Average Factor	Result(dBμV/m)		Limit(dBμV/m)		Margin(dB)		Polarization
	PEAK	(dB)	(dB)	AV	PEAK	AV	PEAK	AV	PEAK	
433.9770	51.69	22.95	-11.84	62.8	74.64	72.8	92.8	-10.0	-18.16	Horizontal
867.0360	28.54	28.63	-11.84	45.33	57.17	52.8	72.8	-7.47	-15.63	
*1300.110	61.03	-12.20	-11.84	36.99	48.83	54.0	74.0	-17.01	-25.17	
1733.790	59.39	-10.39	-11.84	37.16	49.00	52.8	72.8	-15.64	-23.80	
2167.419	57.86	-8.40	-11.84	37.62	49.46	52.8	72.8	-15.18	-23.34	
2600.245	55.08	-6.72	-11.84	36.52	48.36	52.8	72.8	-16.28	-24.44	
3034.521	54.77	-4.93	-11.84	38.00	49.84	52.8	72.8	-14.8	-22.96	
3467.375	47.84	-3.33	-11.84	32.67	44.51	52.8	72.8	-20.13	-28.29	
*3901.383	49.35	-2.10	-11.84	35.41	47.25	54.0	74.0	-18.59	-26.75	
*4334.198	48.58	-1.94	-11.84	34.80	46.64	54.0	74.0	-19.2	-27.36	
*4767.852	50.22	-0.49	-11.84	47.89	49.73	54.0	74.0	-6.11	-24.27	
433.9770	52.29	22.95	-11.84	63.40	75.24	72.8	92.8	-9.40	-17.56	Vertical
867.1340	31.32	28.63	-11.84	48.14	59.95	52.8	72.8	-4.66	-12.85	
*1300.439	61.60	-12.20	-11.84	37.56	49.40	54.0	74.0	-16.44	-24.60	
1733.597	58.44	-10.39	-11.84	36.21	48.05	52.8	72.8	-16.59	-24.75	
2167.419	57.15	-8.40	-11.84	36.91	48.75	52.8	72.8	-15.89	-24.05	
2600.245	55.87	-6.72	-11.84	37.31	49.15	52.8	72.8	-15.49	-23.65	
3034.521	54.21	-4.93	-11.84	37.44	49.28	52.8	72.8	-15.36	-23.52	
3467.375	50.81	-3.33	-11.84	35.64	47.48	52.8	72.8	-17.16	-25.32	
*3901.383	50.17	-2.10	-11.84	36.23	48.07	54.0	74.0	-17.77	-25.93	
*4334.198	52.15	-1.94	-11.84	38.37	50.21	54.0	74.0	-15.63	-23.79	
*4767.852	49.82	-0.49	-11.84	37.49	49.33	54.0	74.0	-16.51	-24.67	

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. *: Denotes restricted band of operation.

Measurements were made using a peak detector. Average results were calculated by using average factor calculation method. Any emission falling within the restricted bands of FCC Part 15 Section 15.205 were compliance with the emission limit of FCC Part 15 Section 15.209.

3. 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

4. FCC Limit for Average Measurement = $16.6667(433.9) - 2833.3333 = 4398.68 \mu\text{V/m} = 72.8 \text{ dB}\mu\text{V/m}$

5. Pulse Desensitization Correction Factor

Pulse Width (PW) = 25.6ms

$1/\text{PW} = 1/25.6\text{ms} = 0.0391 \text{ kHz}$

RBW (10 kHz) > $1/\text{PW}$ (0.0391 kHz)

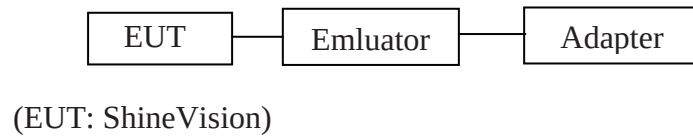
Therefore PDCF is not needed

6. The spectral diagrams in appendix I display the measurement of peak values.
7. The lab use average detector to perform average measurement. The report shows average factor and average results were calculated by using average factor calculation method.

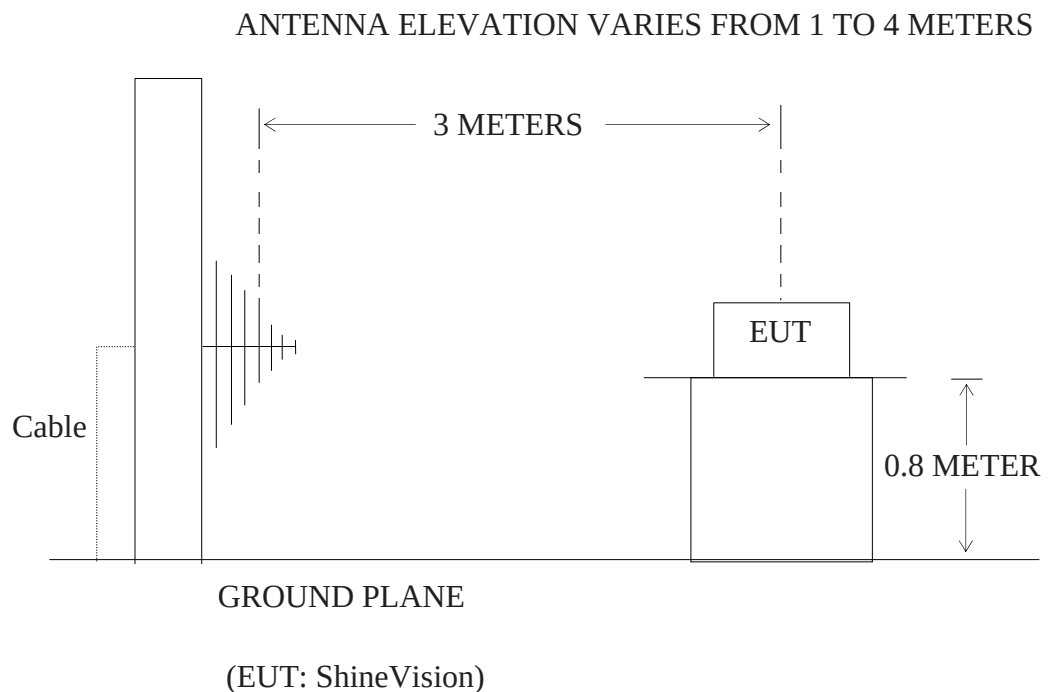
5. 20DB OCCUPIED BANDWIDTH

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 Bandwidth of Emission Limit According To FCC Part 15 Section

15.231(c)

The bandwidth of emission shall be no wider than 0.25% of the center frequency. Therefore, the bandwidth of the emission limit is $433.9\text{MHz} \times 0.25\% = 1084.8\text{kHz}$. Bandwidth is determined at the two points 20 dB down from the top of modulated carrier.

5.3.EUT Configuration on Measurement

The following equipment are installed on the bandwidth of 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. ShineVision (EUT)

Model Number : RCS-S370
Serial Number : N/A
Manufacturer : GROWATT New Energy 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 measuring mode (TX) measure it.

5.5.Test Procedure

5.5.1.Set SPA Center Frequency = Fundamental frequency, RBW = 10kHz, VBW = 30kHz, Span = 500kHz.

5.5.2.Set SPA Max hold. Mark peak, -20dB

5.6. Measurement Result

The EUT does meet the FCC requirement.

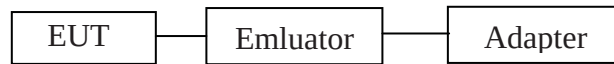
-20dB bandwidth = 256.0 kHz < 1084.8 kHz.

The spectral diagrams in appendix I.

6. DURATION TIME AND SILENT PERIOD MEASUREMENT

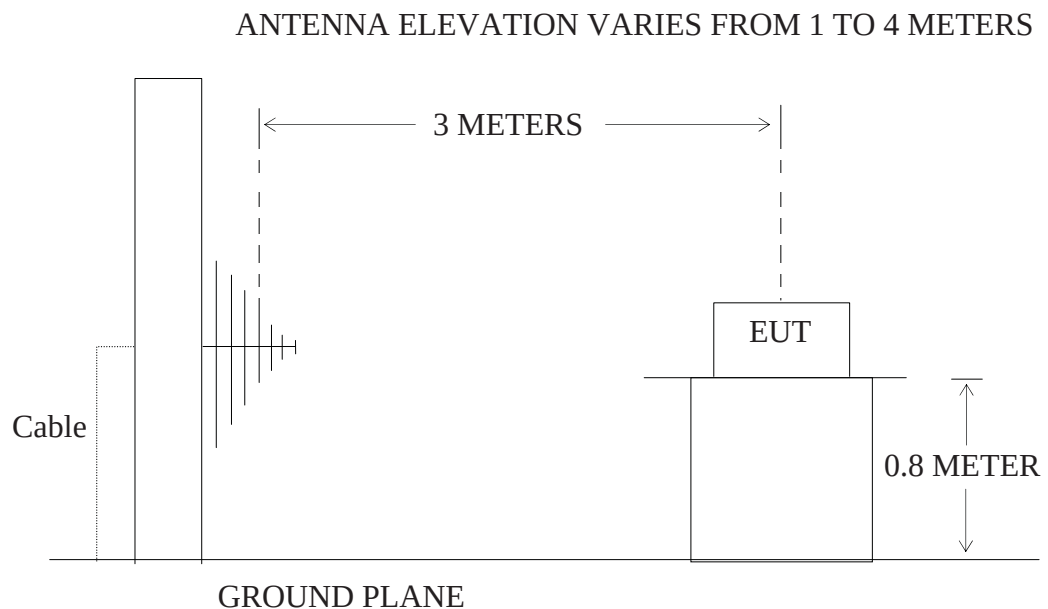
6.1. Block Diagram of Test Setup

6.1.1. Block diagram of connection between the EUT and simulators



(EUT: ShineVision)

6.1.2. Semi-anechoic Chamber Test Setup Diagram



(EUT: ShineVision)

6.2. Duration Time and silent period measurement according to FCC Part 15

Section 15.231(e)

Section 15.231(e) In addition, devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

6.3.EUT Configuration on Measurement

The following equipment are installed on duration time and silent period 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.ShineVision (EUT)

Model Number : RCS-S370
Serial Number : N/A
Manufacturer : GROWATT New Energy 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 measuring mode (TX) measure it.

6.5.Test Procedure

6.5.1.Set SPA Center Frequency = Fundamental frequency, RBW = 10kHz,

VBW =30kHz, Span = 0Hz.

6.5.2.Set EUT as normal operation.

6.5.3.Set SPA View. Delta Mark time.

6.6. Measurement Result

The EUT does meet the FCC requirement.

Duration time = 25.6 ms < 1 s

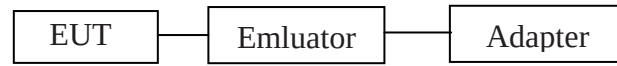
Silent period = 11.24 seconds > 10 seconds > 30 times the duration of the transmission

The spectral diagrams in appendix I.

7. AVERAGE FACTOR MEASUREMENT

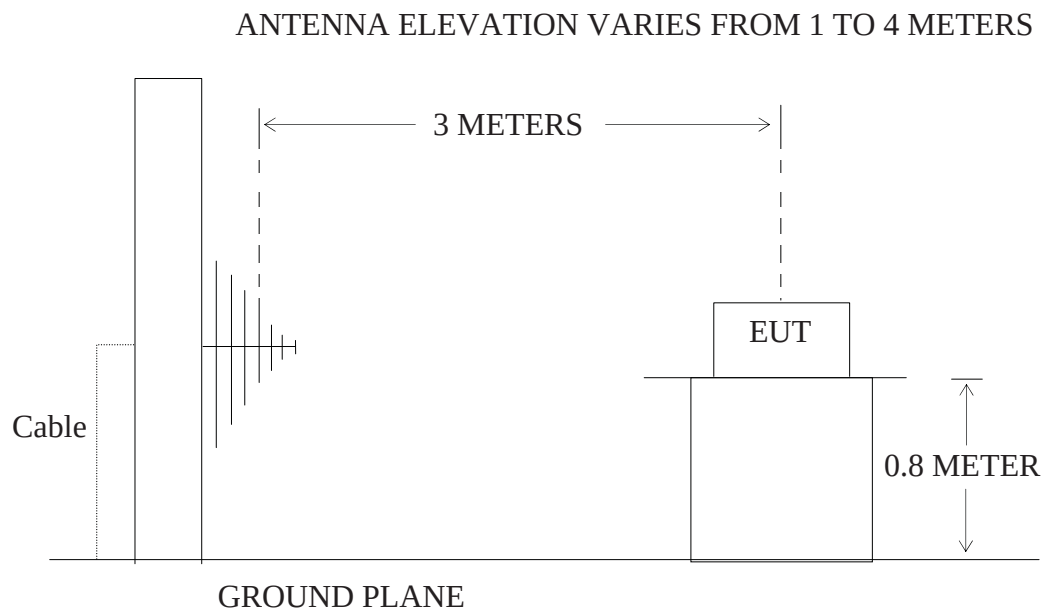
7.1. Block Diagram of Test Setup

7.1.1. Block diagram of connection between the EUT and simulators



(EUT: ShineVision)

7.1.2. Semi-anechoic Chamber Test Setup Diagram



(EUT: ShineVision)

7.2. Average factor Measurement according to ANSI 63.4: 2003

ANSI 63.4: 2003 Section 13.1.4.2 Devices transmitting pulsed emissions and subject to a limit requiring an average detector function for radiated emissions shall initially be measured with an instrument that uses a peak detector. A radiated emission measured with a peak detector may then be corrected to a true average using the appropriate factor for emission duty cycle. This correction factor relates the measured peak level to the average limit and is derived by averaging absolute field strength over one complete pulse train that is 0.1 s, or less, in length. If the pulse train is longer than 0.1 s, the average shall be determined from the average absolute field strength during the 0.1 s interval in which the field strength is at a maximum. Instructions on calculating the duty cycle of a transmitter with pulsed emissions are provided in ANSI 63.4 H.4, step j.

Average factor in dB = $20 \log (\text{duty cycle})$

7.3.EUT Configuration on Measurement

The following equipment are installed on average factor 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. ShineVision (EUT)

Model Number : RCS-S370
Serial Number : N/A
Manufacturer : GROWATT New Energy Co., Ltd.

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 measuring mode (TX) measure it.

7.5.Test Procedure

7.5.1.The time period over which the duty cycle is measured is 100 milliseconds, or the repetition cycle, whichever is a shorter time frame. The worst case (highest percentage on) duty cycle is used for the calculation.

7.5.2.Set SPA Center Frequency = Fundamental frequency, RBW = 10kHz,

VBW =30kHz, Span = 0Hz.

7.5.3.Set EUT as normal operation.

7.5.4.Set SPA View. Delta Mark time.

7.6. Measurement Result

The duty cycle is simply the on time divided by the period:

Effective period of one cycle = 100ms

Sum of pulse width = 25.6ms

Duty Cycle = $25.6\text{ms}/100\text{ms} = 0.256$

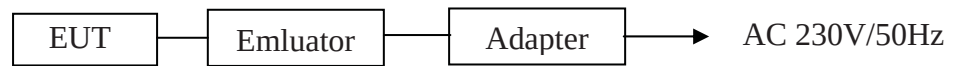
Therefore, the average factor is found by $20\log 0.256 = -11.84\text{dB}$

The spectral diagrams in appendix I.

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

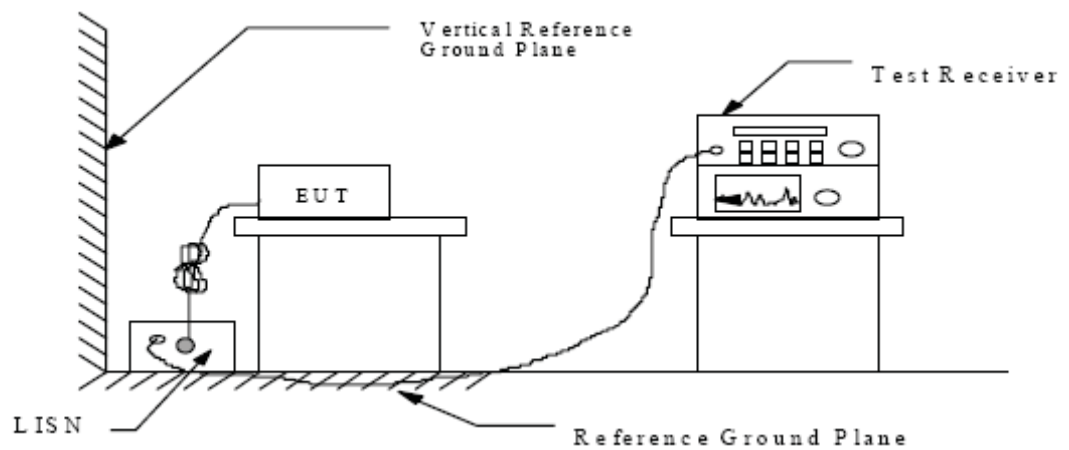
8.1. Block Diagram of Test Setup

8.1.1. Block diagram of connection between the EUT and simulators



(EUT: ShineVision)

8.1.2. Shielding Room Test Setup Diagram



(EUT: ShineVision)

8.2. The Emission Limit

8.2.1. 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.

8.3.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.

8.3.1.ShineVision (EUT)

Model Number	:	RCS-S370
Serial Number	:	N/A
Manufacturer	:	GROWATT New Energy Co., Ltd.

8.4.Operating Condition of EUT

8.4.1.Setup the EUT and simulator as shown as Section 8.1.

8.4.2.Turn on the power of all equipment.

8.4.3. Let the EUT work in Tx mode measure it.

8.5.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.

8.6.Power Line Conducted Emission Measurement Results

PASS.

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

Date of Test:	<u>February 18, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>ShineVision</u>	Humidity:	<u>50%</u>
Model No.:	<u>RCS-S370</u>	Power Supply:	<u>AC 120V/ 60Hz</u>
Test Mode:	<u>Tx</u>	Test Engineer:	<u>Kai</u>

Frequency (MHz)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector	Line
0.169084	57.10	65	-7.9	QP	Neutral
0.337314	46.70	59	-12.3	QP	
2.798355	35.60	56	-20.4	QP	
0.310189	41.30	50	-8.7	AV	
0.340018	40.00	49	-9.0	AV	
2.900722	34.00	46	-12.0	AV	
0.169084	56.20	65	-8.8	QP	Live
0.335971	45.90	59	-13.1	QP	
2.832069	45.20	56	-10.8	QP	
0.310189	40.90	50	-9.1	AV	
0.338664	39.90	49	-9.1	AV	
3.116829	33.60	46	-12.4	AV	

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

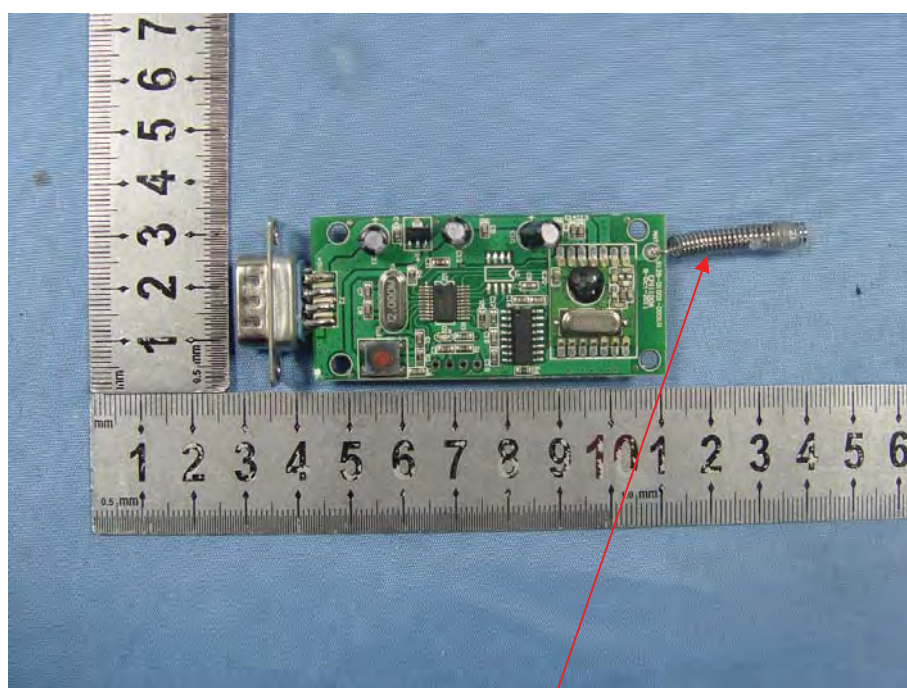
9. ANTENNA REQUIREMENT

9.1.The Requirement

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.

9.2.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)


ACCURATE TECHNOLOGY CO., LTD.

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

Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Kevin #189

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Shine Vision

Mode: TX

Model: RCS-S370

Manufacturer: GROWATT

Polarization: Horizontal

Power Source: DC 5V

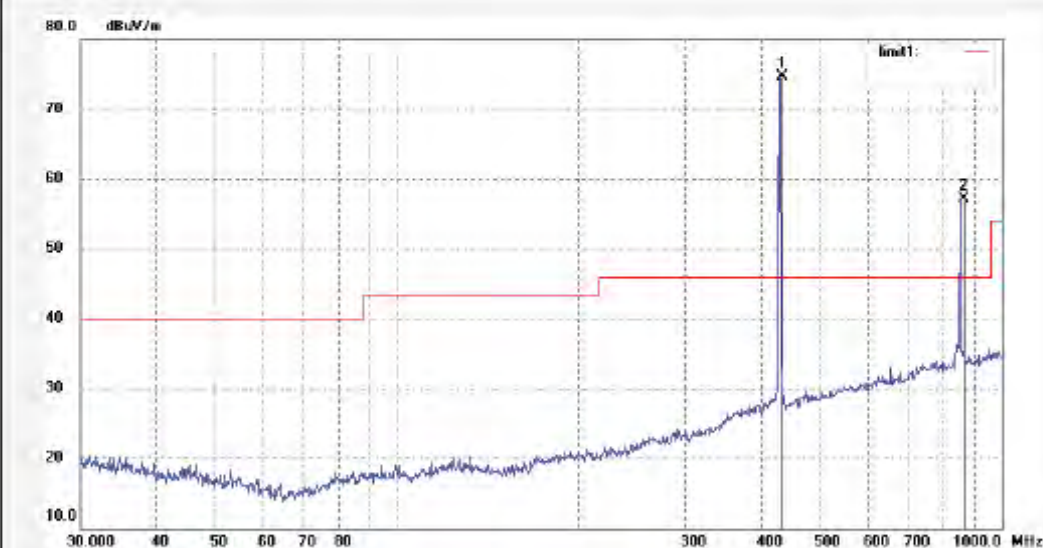
Date: 2012/02/18

Time: 13:30:18

Engineer Signature: Kevin

Distance: 3m

Note: Report No.: ATE20120135



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	433.9200	51.69	22.95	74.64	92.8	-18.16	peak			
2	867.0360	28.54	28.63	57.17	72.8	-15.63	peak			


ACCURATE TECHNOLOGY CO., LTD.

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

Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Kevin #170

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Shine Vision

Mode: TX

Model: RCS-S370

Manufacturer: GROWATT

Polarization: Vertical

Power Source: DC 5V

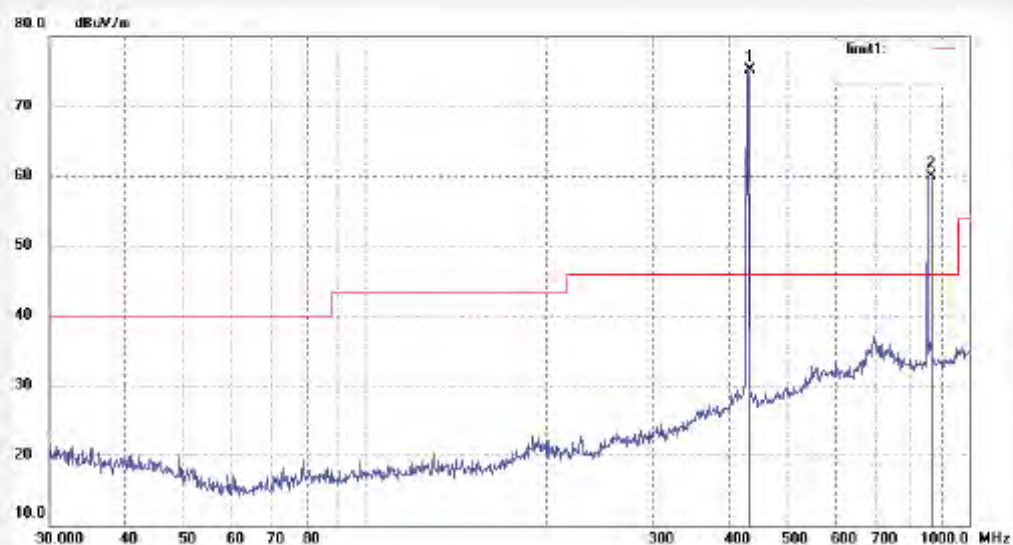
Date: 2012/02/18

Time: 13:35:25

Engineer Signature: Kevin

Distance: 3m

Note: Report No.:ATE20120135



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	433.9200	52.29	22.95	75.24	92.8	-17.56	peak			
2	867.1340	31.32	28.63	59.95	72.8	-12.85	peak			


ACCURATE TECHNOLOGY CO., LTD.

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

Site: 988 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Kevin #171

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Shine Vision

Mode: TX

Model: RCS-S370

Manufacturer: GROWATT

Polarization: Horizontal

Power Source: DC 5V

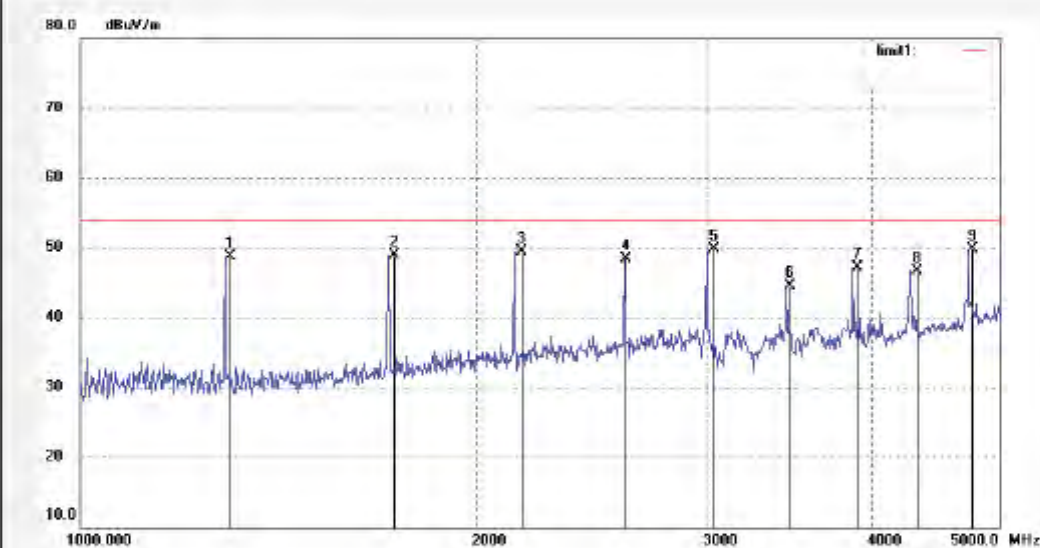
Date: 2012/02/18

Time: 13:44:31

Engineer Signature: Kevin

Distance: 3m

Note: Report No.: ATE20120135



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1300.110	61.03	-12.20	48.83	74.0	-25.17	peak			
2	1733.790	59.39	-10.39	49.00	72.8	-23.80	peak			
3	2167.419	57.86	-8.40	49.46	72.8	-23.34	peak			
4	2600.245	55.08	-8.72	46.36	72.8	-24.44	peak			
5	3034.521	54.77	-4.93	49.84	72.8	-22.96	peak			
6	3467.375	47.84	-3.33	44.51	72.8	-28.29	peak			
7	3901.383	49.35	-2.10	47.25	74.0	-26.75	peak			
8	4334.198	48.58	-1.94	46.64	74.0	-27.36	peak			
9	4767.852	50.22	-0.49	49.73	74.0	-24.27	peak			


ACCURATE TECHNOLOGY CO., LTD.

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

Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Kevin #172

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Shine Vision

Mode: TX

Model: RCS-S370

Manufacturer: GROWATT

Polarization: Vertical

Power Source: DC 5V

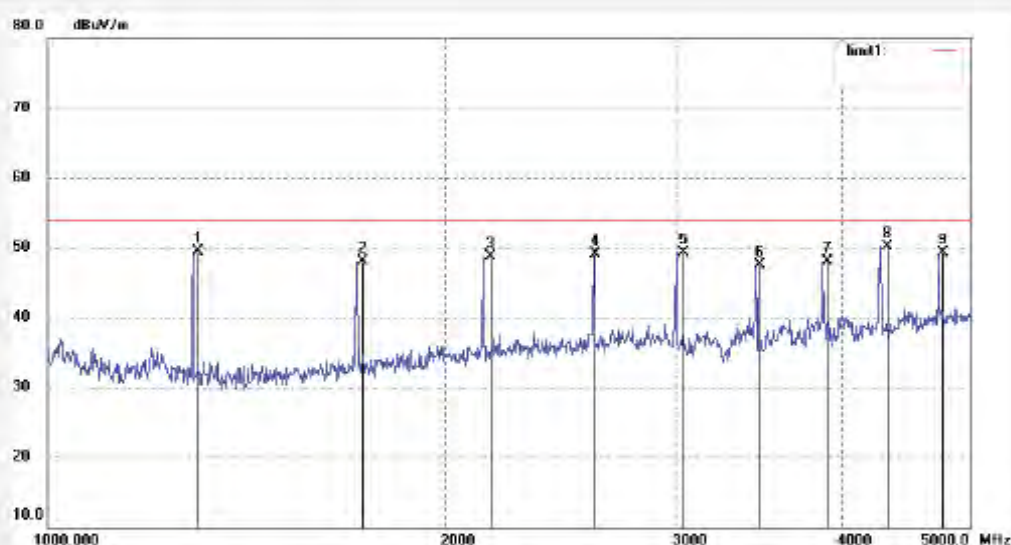
Date: 2012/02/18

Time: 13:50:46

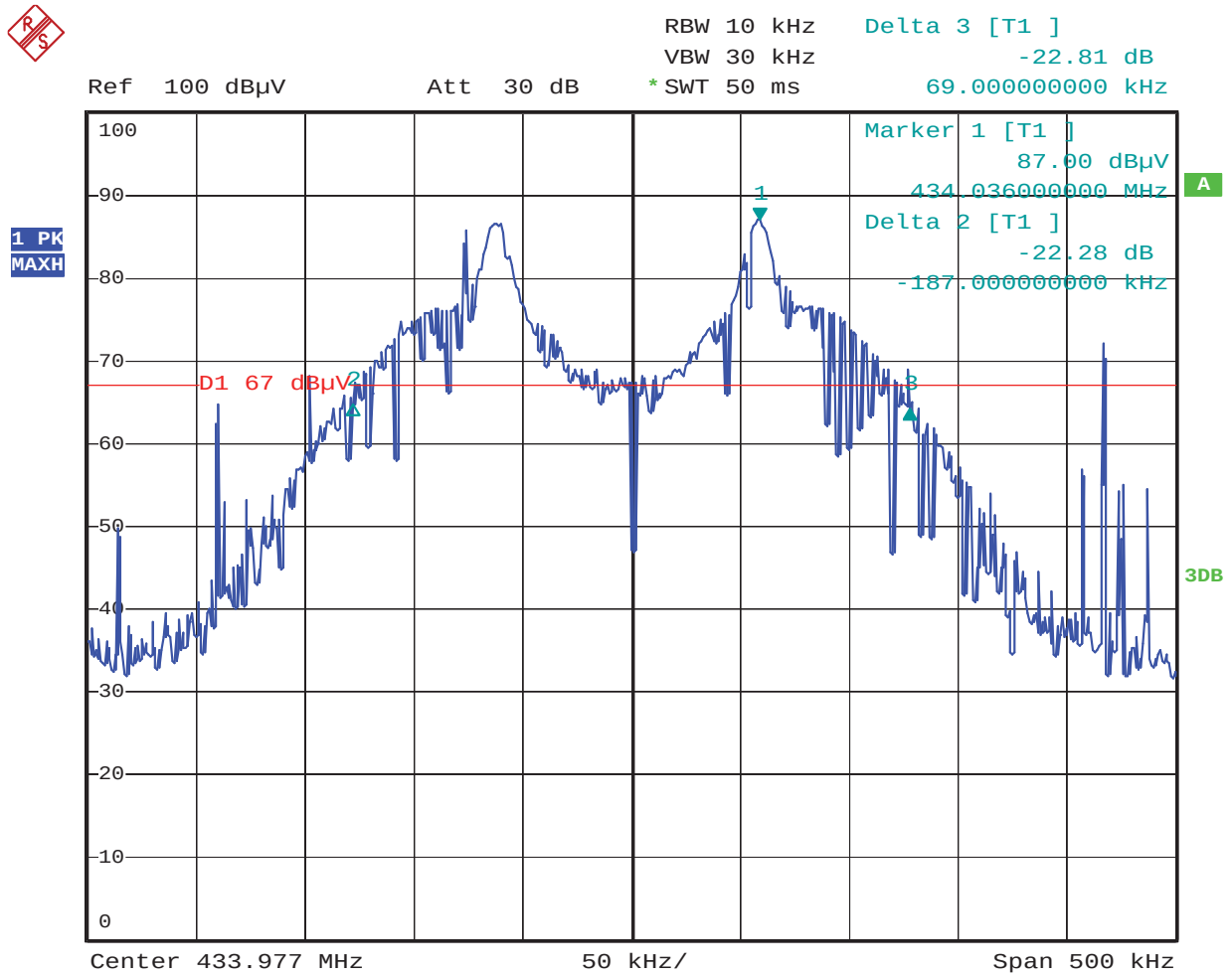
Engineer Signature: Kevin

Distance: 3m

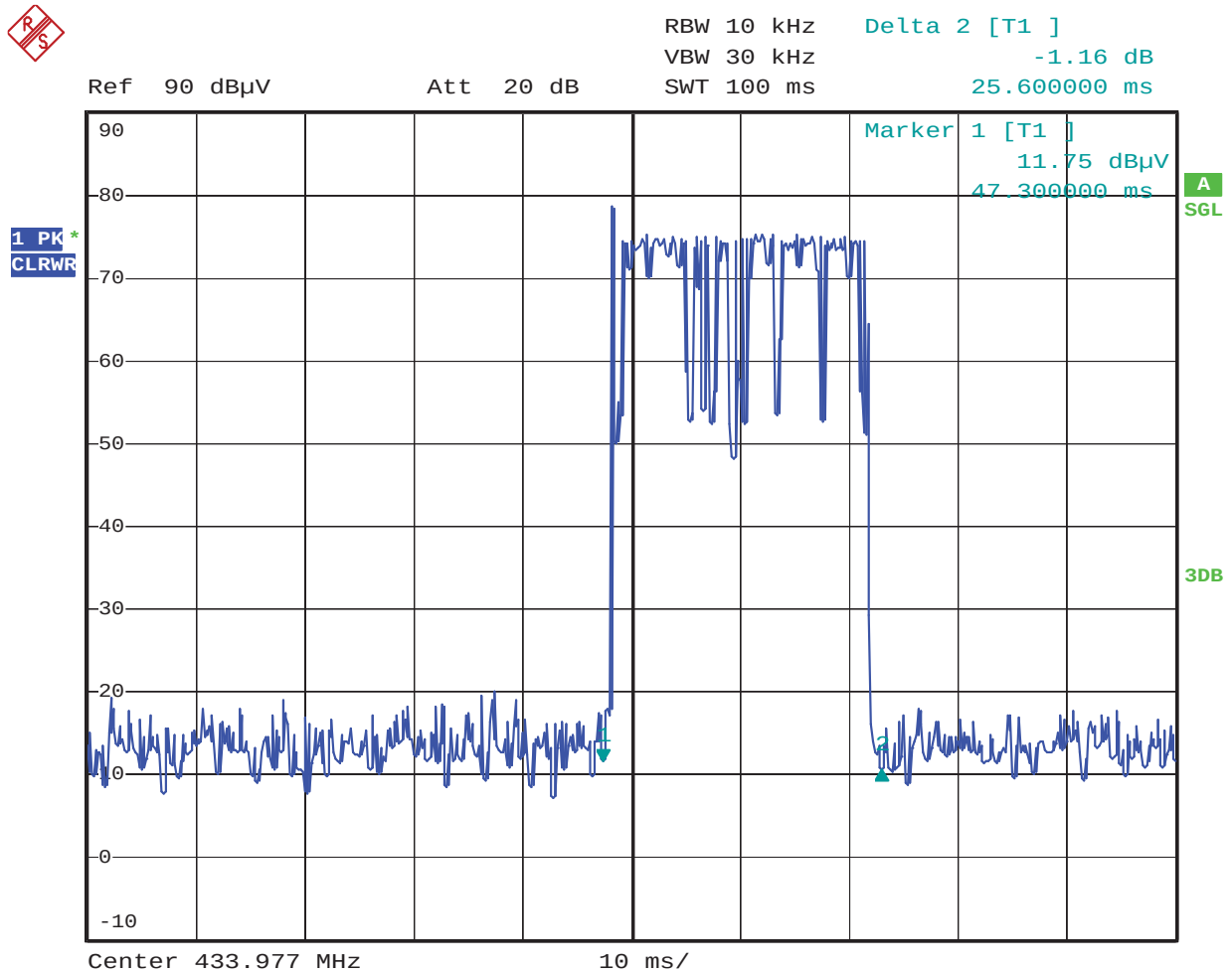
Note: Report No.: ATE20120135



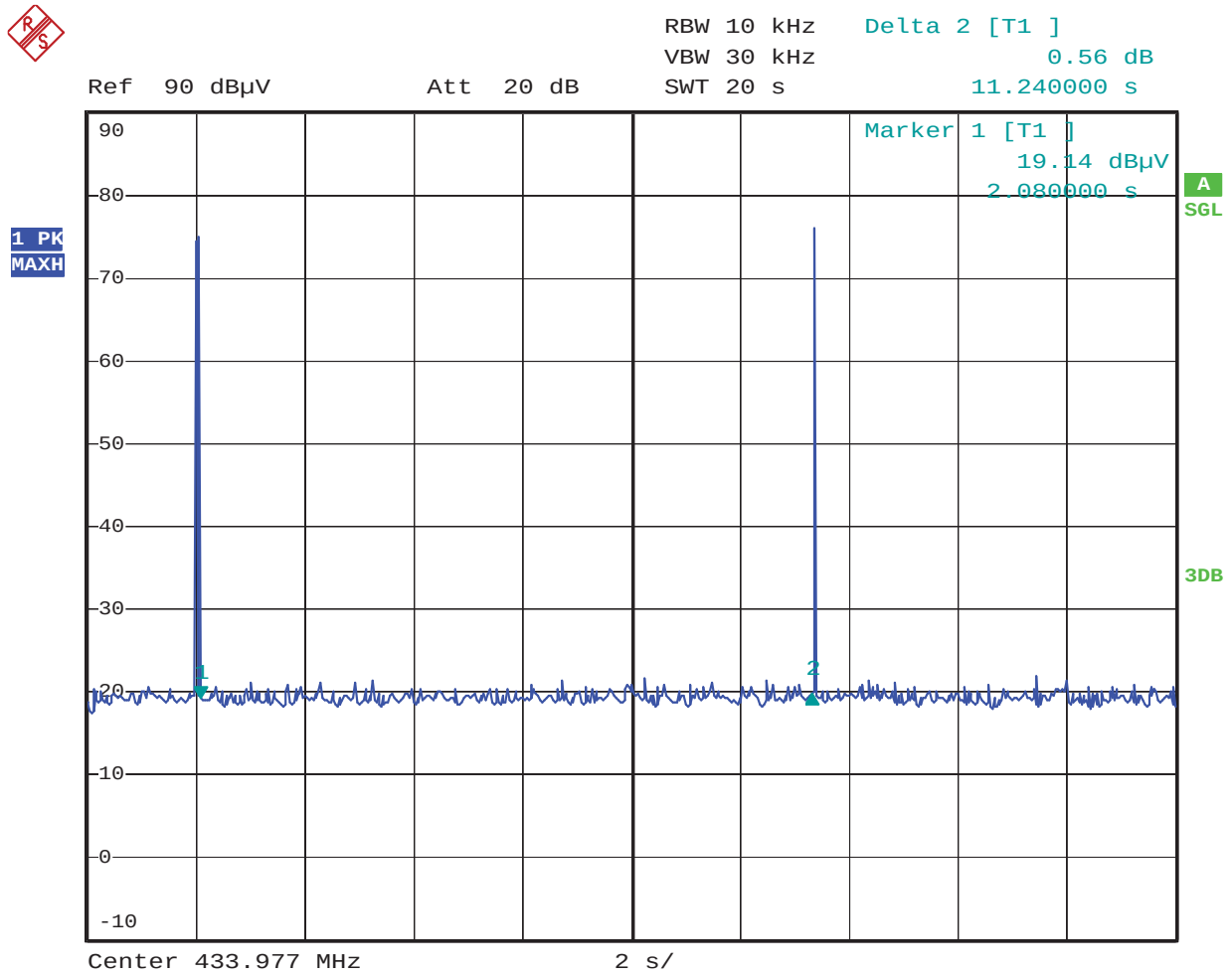
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1300.439	61.60	-12.20	49.40	74.0	-24.60	peak			
2	1733.597	58.44	-10.39	48.05	72.8	-24.75	peak			
3	2167.419	57.15	-8.40	48.75	72.8	-24.05	peak			
4	2600.245	55.87	-6.72	49.15	72.8	-23.65	peak			
5	3034.521	54.21	-4.93	49.28	72.8	-23.52	peak			
6	3467.375	50.81	-3.33	47.48	72.8	-25.32	peak			
7	3901.383	50.17	-2.10	48.07	74.0	-25.93	peak			
8	4334.198	52.15	-1.94	50.21	74.0	-23.79	peak			
9	4767.852	49.82	-0.49	49.33	74.0	-24.67	peak			



-20dB bandwidth is 256.0 kHz.



The graphs show the duration of 'on' signal, duration is 25.6 ms.
Duty Cycle = 25.6ms/100ms = 0.256.



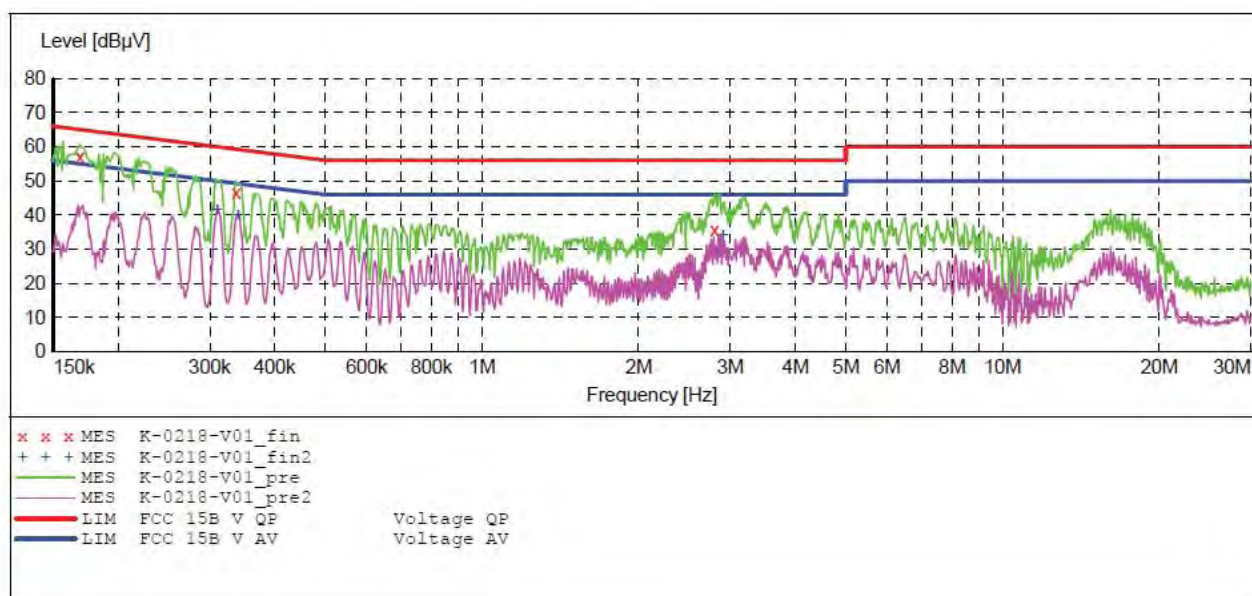
The graphs show the silent period of ‘off’ signal, silent period is 11.24 s.

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

EUT: Shine Vision M/N:RCS-S370
 Manufacturer: GROWATT
 Operating Condition: On
 Test Site: 1#Shielding Room
 Operator: Kevin
 Test Specification: L 120V/60Hz
 Comment: Report No.:ATE20120135
 Start of Test: 2/18/2012 / 11:15:22AM

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 0.8 % QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average

**MEASUREMENT RESULT: "K-0218-V01_fin"**

2/18/2012 11:17AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.169084	57.10	11.1	65	7.9	QP	L1	GND
0.337314	46.70	11.7	59	12.3	QP	L1	GND
2.798355	35.60	11.6	56	20.4	QP	L1	GND

MEASUREMENT RESULT: "K-0218-V01_fin2"

2/18/2012 11:17AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.310189	41.30	11.6	50	8.7	AV	L1	GND
0.340018	40.00	11.7	49	9.0	AV	L1	GND
2.900722	34.00	11.6	46	12.0	AV	L1	GND

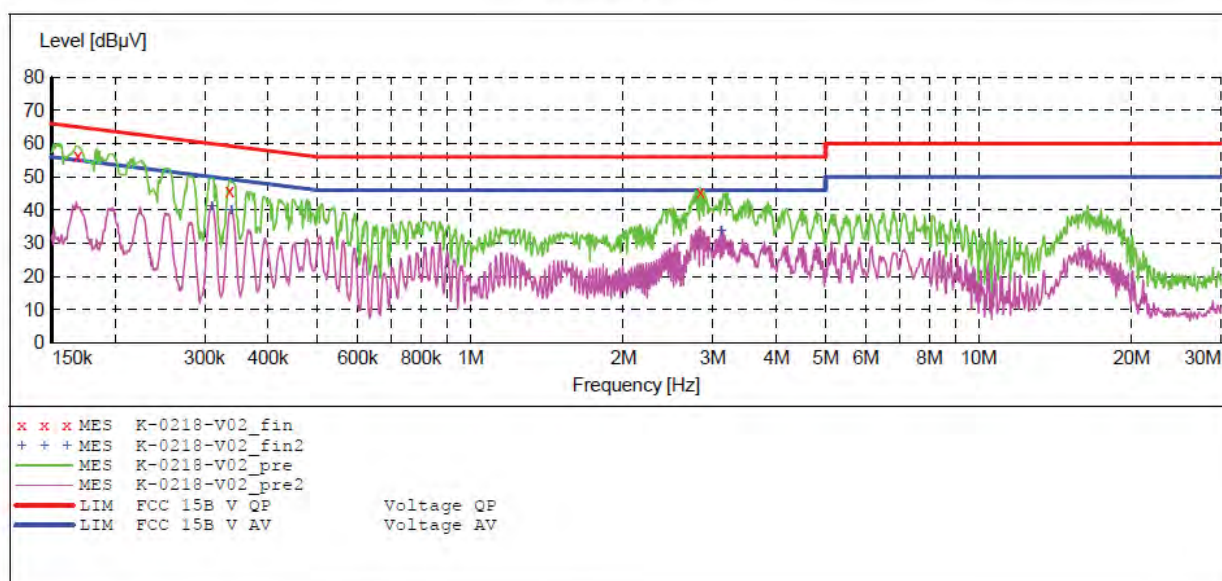
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Shine Vision M/N:RCS-S370
 Manufacturer: GROWATT
 Operating Condition: On
 Test Site: 1#Shielding Room
 Operator: Kevin
 Test Specification: N 120V/60Hz
 Comment: Report No.:ATE20120135
 Start of Test: 2/18/2012 / 11:18:23AM

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 0.8 % QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "K-0218-V02_fin"

2/18/2012 11:21AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.169084	56.20	11.1	65	8.8	QP	L1	GND
0.335971	45.90	11.7	59	13.1	QP	L1	GND
2.832069	45.20	11.6	56	10.8	QP	L1	GND

MEASUREMENT RESULT: "K-0218-V02_fin2"

2/18/2012 11:21AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.310189	40.90	11.6	50	9.1	AV	L1	GND
0.338664	39.90	11.7	49	9.1	AV	L1	GND
3.116829	33.60	11.6	46	12.4	AV	L1	GND