APPLICATION CERTIFICATION
On Behalf of
Fine Offset Electronics Co., Ltd.

Wireless weather station (Transmitter)
Model No.: WH4

FCC ID: WA5WH4

Prepared for	:	Fine Offset Electronics Co., Ltd.
Address	:	4/F., Block B3, Eastern Industrial Park, Overseas Chinese Town, Shenzhen, 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	:	ATE20101233
Date of Test	:	June 10-11, 2010
Date of Report	:	June 12, 2010

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 12
5.1. Block Diagram of Test Setup 12
5.2. The Bandwidth of Emission Limit According To FCC Part 15 Section 15.231(c) 12
5.3. EUT Configuration on Measurement 13
5.4. Operating Condition of EUT 13
5.5. Test Procedure 13
5.6. Measurement Result 14
6. DURATION TIME AND SILENT PERIOD MEASUREMENT 15
6.1. Block Diagram of Test Setup 15
6.2. Duration Time and silent period measurement according to FCC Part 15 Section 15.231(e) 15
6.3. EUT Configuration on Measurement 16
6.4. Operating Condition of EUT 16
6.5. Test Procedure 16
6.6. Measurement Result 17
7. AVERAGE FACTOR MEASUREMENT 18
7.1. Block Diagram of Test Setup 18
7.2. Average factor Measurement according to ANSI 63.4: 2003 18
7.3. EUT Configuration on Measurement 19
7.4. Operating Condition of EUT 19
7.5. Test Procedure 19
7.6. Measurement Result 20

APPENDIX I (TEST CURVES) (7 pages)

Test Report Certification

Applicant	:	Fine Offset Electronics Co., Ltd.
Manufacturer	:	Fine Offset Electronics Co., Ltd.
EUT Description	:	Wireless weather station (Transmitter)
		(A) MODEL NO.: WH4
		(B) SERIAL NO.: N/A
		(C) POWER SUPPLY: DC 3V ("AAA" batteries 2×)

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.

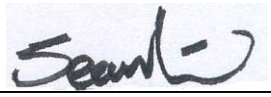
This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : June 10-11, 2010

Prepared by :

(Engineer)

Approved & Authorized Signer :



(Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	Wireless weather station (Transmitter)
Model Number	:	WH4
Operation Frequency	:	433.92MHz
Power Supply	:	DC 3V ("AAA" batteries 2×)
Applicant	:	Fine Offset Electronics Co., Ltd.
Address	:	4/F., Block B3, Eastern Industrial Park, Overseas Chinese Town, Shenzhen, China
Manufacturer	:	Fine Offset Electronics Co., Ltd.
Address	:	4/F., Block B3, Eastern Industrial Park, Overseas Chinese Town, Shenzhen, China
Date of sample received	:	June 7, 2010
Date of Test	:	June 10-11, 2010

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 (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

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 9, 2011
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 9, 2011
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 9, 2011
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 9, 2011
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 9, 2011
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 9, 2011
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 9, 2011
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 9, 2011
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 9, 2011
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 9, 2011

3. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
Section 15.207	Conducted Emission	N/A
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

Remark: “N/A” means “Not applicable”.

4. THE FIELD STRENGTH OF RADIATION EMISSION

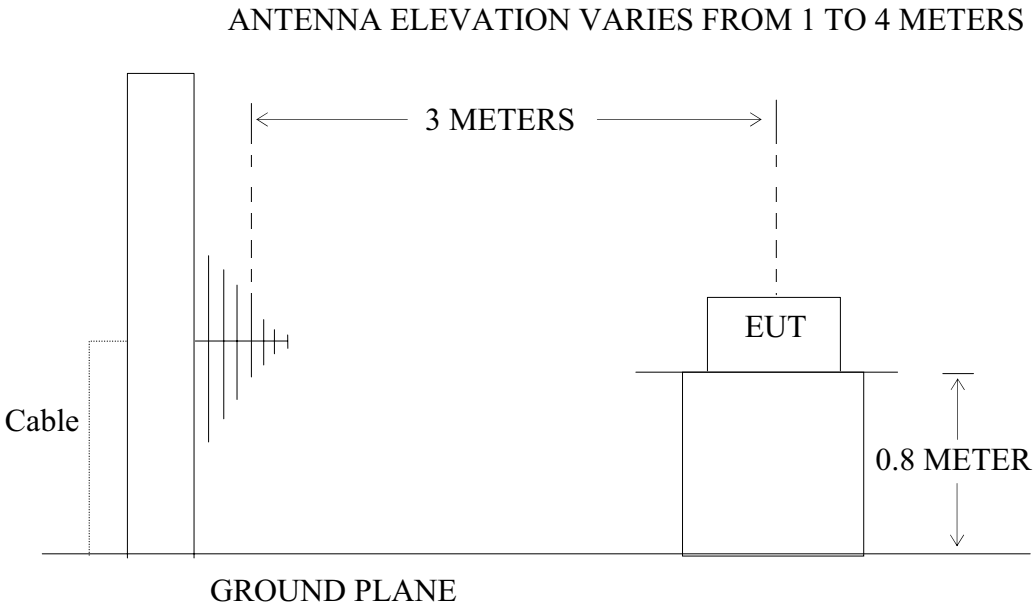
4.1.Block Diagram of Test Setup

4.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Wireless weather station (Transmitter))

4.1.2.Semi-anechoic Chamber Test Setup Diagram



(EUT: Wireless weather station (Transmitter))

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, μV/m at 3 meters=22.72727(F)-2454.545; For the band 260-470MHz, μV/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. Wireless weather station (Transmitter) (EUT)

Model Number : WH4
Serial Number : N/A
Manufacturer : Fine Offset Electronics 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:	June 10, 2010	Temperature:	25°C
EUT:	Wireless weather station (Transmitter)	Humidity:	50%
Model No.:	WH4	Power Supply:	DC 3V
Test Mode:	TX	Test Engineer:	Joe

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	
433.8145	**60.12**	**22.95**	**-13.4**	**69.67**	**83.07**	**72.8**	**92.8**	**-3.13**	**-9.73**	Horizontal
867.6291	30.41	28.64	-13.4	45.65	59.05	52.8	72.8	-7.15	-13.75	
*1301.444	65.34	-12.20	-13.4	39.74	53.14	54.0	74.0	-14.26	-20.86	
1735.258	65.22	-10.39	-13.4	41.43	54.83	52.8	72.8	-11.37	-17.97	
3036.702	64.20	-4.91	-13.4	45.89	59.29	52.8	72.8	-6.91	-13.51	
3470.516	59.52	-3.31	-13.4	42.81	56.21	52.8	72.8	-9.99	-16.59	
433.8145	**58.13**	**22.95**	**-13.4**	**67.68**	**81.08**	**72.8**	**92.8**	**-5.12**	**-11.72**	Vertical
867.6291	22.20	28.64	-13.4	37.44	50.84	52.8	72.8	-15.36	-21.96	
*1301.444	66.91	-12.20	-13.4	41.31	54.71	54.0	74.0	-12.69	-19.19	
1735.258	63.49	-10.39	-13.4	39.70	53.10	52.8	72.8	-13.10	-19.70	
3036.702	63.64	-4.91	-13.4	45.33	58.73	52.8	72.8	-7.47	-14.07	
3470.516	59.75	-3.31	-13.4	43.04	56.44	52.8	72.8	-9.76	-16.36	

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(433.92)-2833.3333 = 4398.68μV/m= 72.8dBμV/m
5. The spectral diagrams in appendix I display the measurement of peak values.

5. 20DB OCCUPIED BANDWIDTH

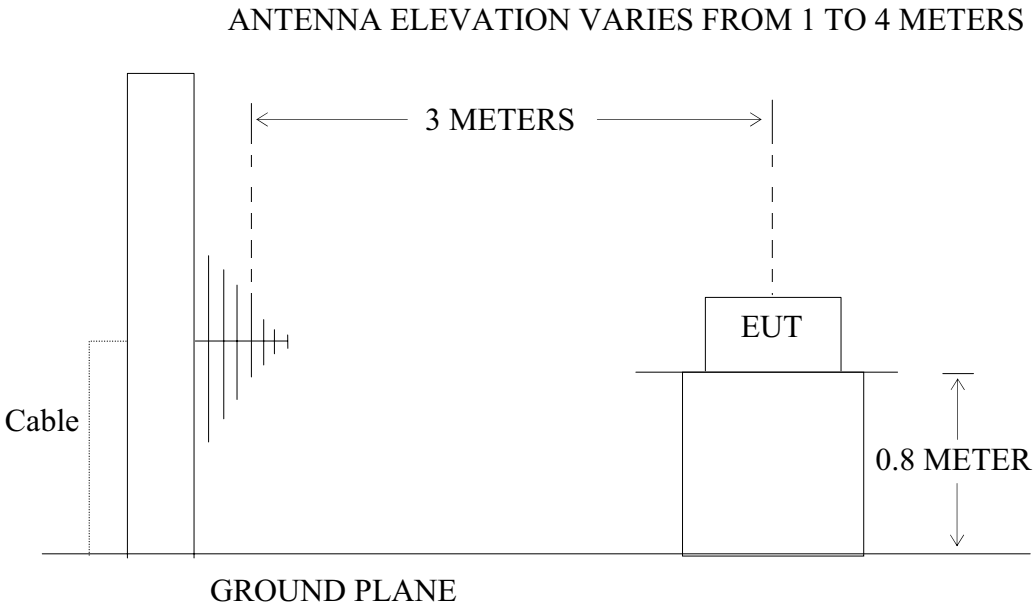
5.1.Block Diagram of Test Setup

5.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Wireless weather station (Transmitter))

5.1.2.Semi-anechoic Chamber Test Setup Diagram



(EUT: Wireless weather station (Transmitter))

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 433.92MHz×0.25% = 1084.8kHz.
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. Wireless weather station (Transmitter) (EUT)

Model Number	:	WH4
Serial Number	:	N/A
Manufacturer	:	Fine Offset Electronics 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 = 29.0 kHz < 1084.8 kHz.

The spectral diagrams in appendix I.

6. DURATION TIME AND SILENT PERIOD MEASUREMENT

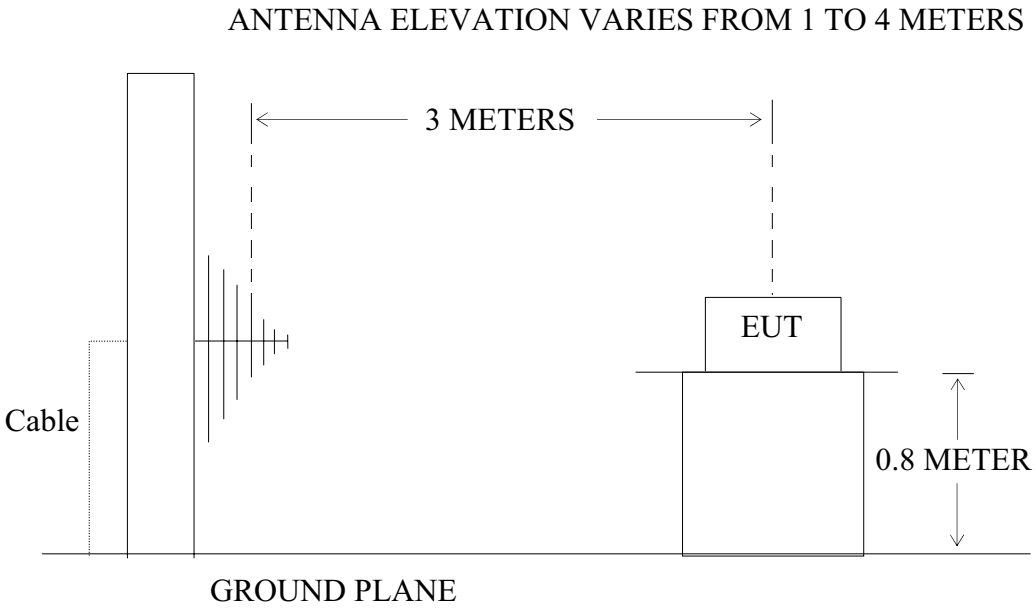
6.1.Block Diagram of Test Setup

6.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Wireless weather station (Transmitter))

6.1.2.Semi-anechoic Chamber Test Setup Diagram



(EUT: Wireless weather station (Transmitter))

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.Wireless weather station (Transmitter) (EUT)

Model Number	**:**	WH4
Serial Number	**:**	N/A
Manufacturer	**:**	Fine Offset Electronics 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 = 21.4 ms <1 s

Silent period = 12.28 seconds >10 seconds > 30 times the duration of the transmission

The spectral diagrams in appendix I.

7. AVERAGE FACTOR MEASUREMENT

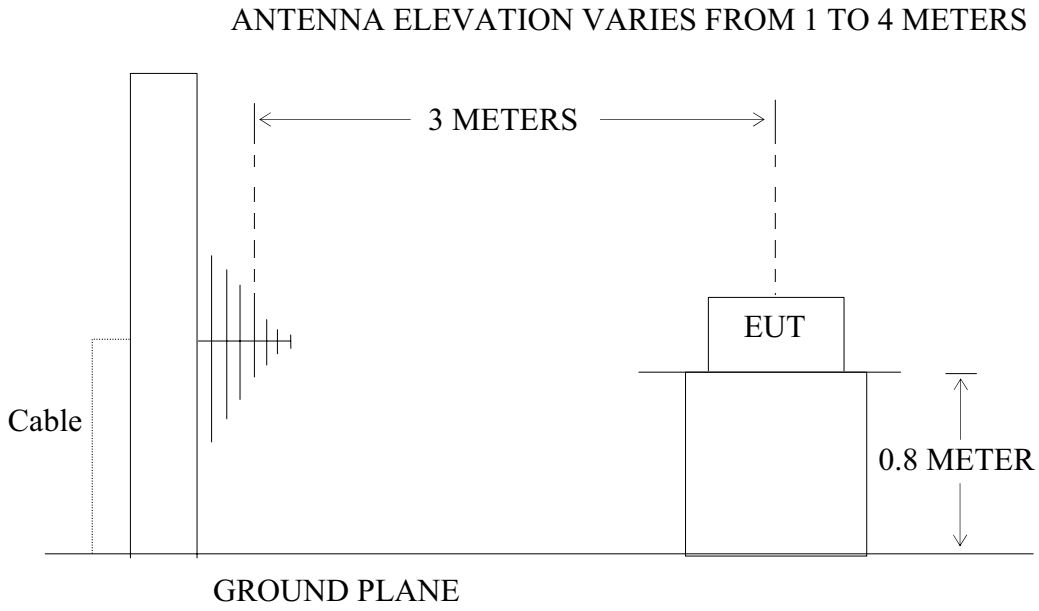
7.1.Block Diagram of Test Setup

7.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Wireless weather station (Transmitter))

7.1.2.Semi-anechoic Chamber Test Setup Diagram



(EUT: Wireless weather station (Transmitter))

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 (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. Wireless weather station (Transmitter) (EUT)

Model Number	:	WH4
Serial Number	:	N/A
Manufacturer	:	Fine Offset Electronics 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 = 21.4ms

Duty Cycle = 21.4ms/100ms = 0.214

Therefore, the average factor is found by 20log0.214 = -13.4dB

The spectral diagrams in appendix I.

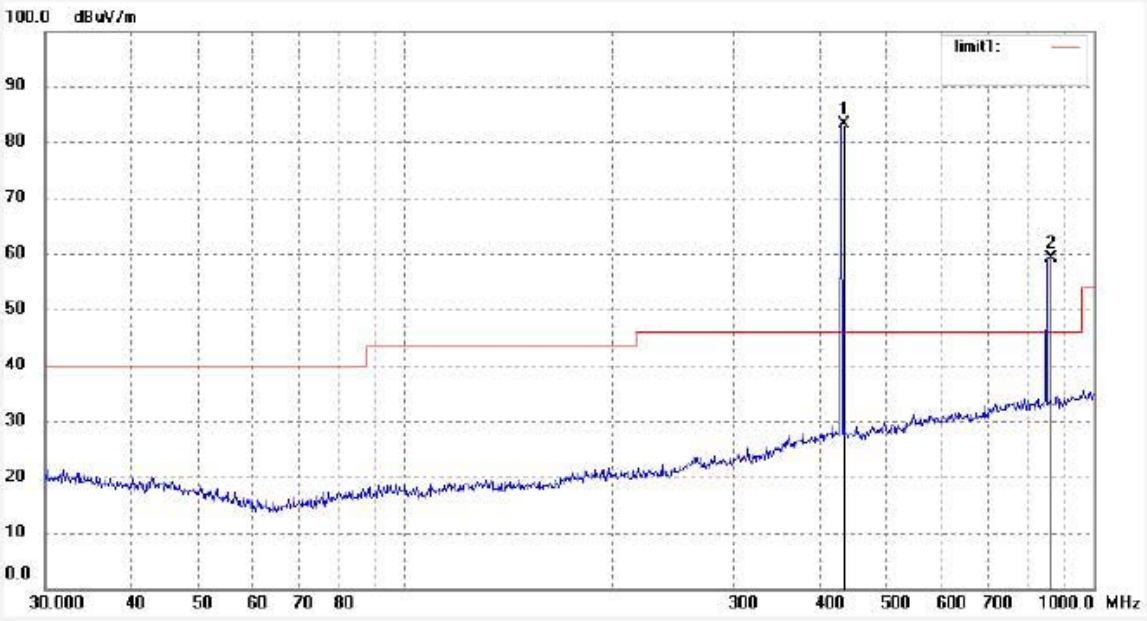
APPENDIX I
(Test Curves)

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.: RTTE #5104
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 50 %
EUT: Wireless weather station (transmitter)
Mode: TX
Model: WH4
Manufacturer: Fine Offset Electronics Co., Ltd.

Polarization: Horizontal
Power Source: DC 3V
Date: 10/06/10/
Time: 9/01/05
Engineer Signature: Joe
Distance: 3m

Note: Sample No:101414 Report No.:ATE20101233



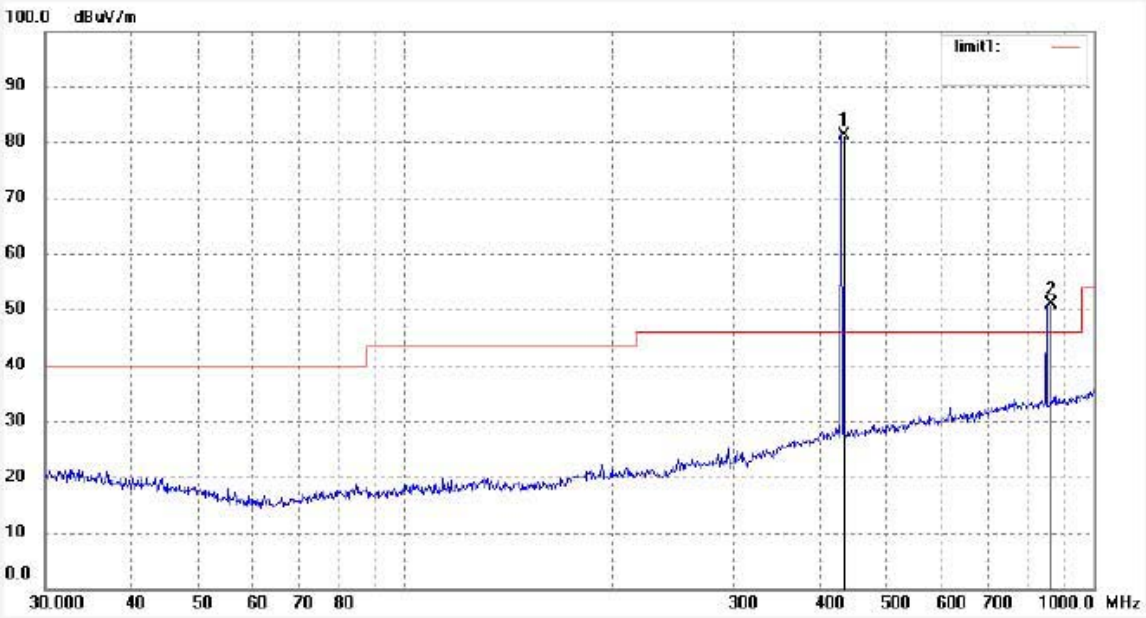
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	433.8145	60.12	22.95	83.07	92.80	-9.73	peak			
2	867.6291	30.41	28.64	59.05	72.80	-13.75	peak			

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.: RTTE #5105
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 50 %
EUT: Wireless weather station (transmitter)
Mode: TX
Model: WH4
Manufacturer: Fine Offset Electronics Co., Ltd.

Polarization: Vertical
Power Source: DC 3V
Date: 10/06/10/
Time: 9/04/20
Engineer Signature: Joe
Distance: 3m

Note: Sample No:101414 Report No.:ATE20101233



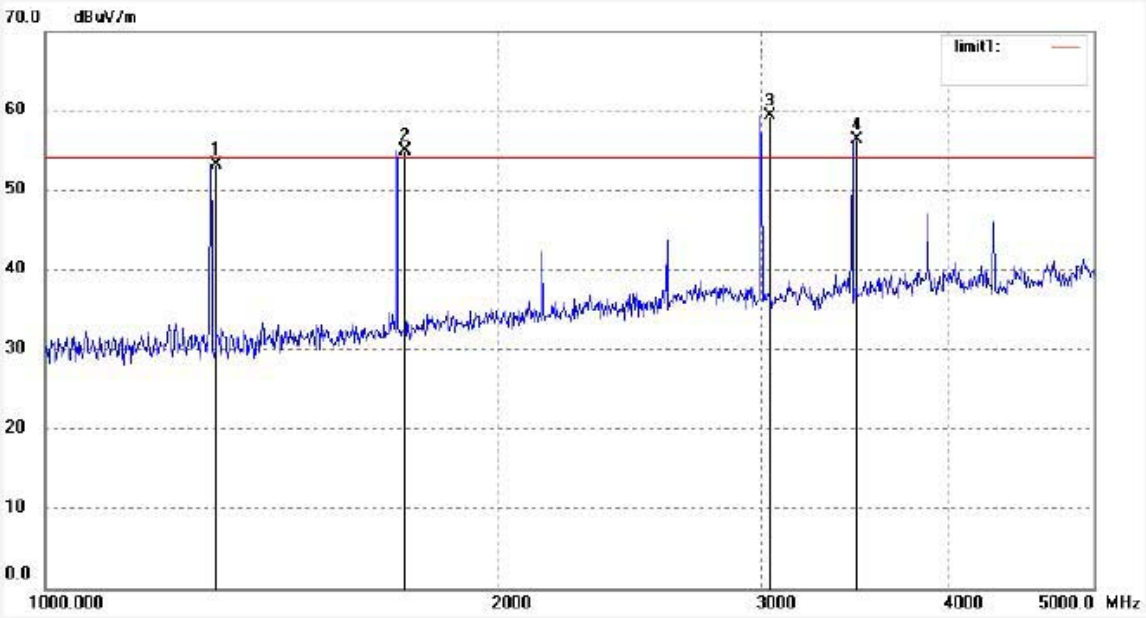
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	433.8145	58.13	22.95	81.08	92.80	-11.72	peak			
2	867.6291	22.20	28.64	50.84	72.80	-21.96	peak			

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.: RTTE #5107
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 50 %
EUT: Wireless weather station (transmitter)
Mode: TX
Model: WH4
Manufacturer: Fine Offset Electronics Co., Ltd.

Polarization: Horizontal
Power Source: DC 3V
Date: 10/06/10/
Time: 9/16/50
Engineer Signature: Joe
Distance: 3m

Note: Sample No:101414 Report No.:ATE20101233



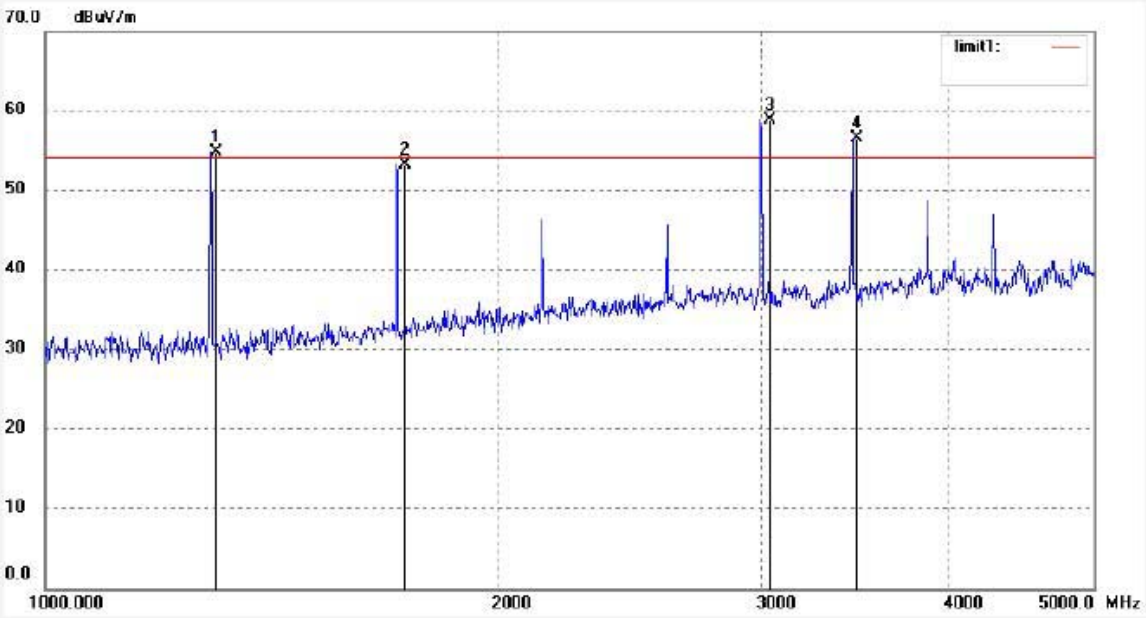
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1301.444	65.34	-12.20	53.14	74.00	-20.86	peak			
2	1735.258	65.22	-10.39	54.83	72.80	-17.97	peak			
3	3036.702	64.20	-4.91	59.29	72.80	-13.51	peak			
4	3470.516	59.52	-3.31	56.21	72.80	-16.59	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

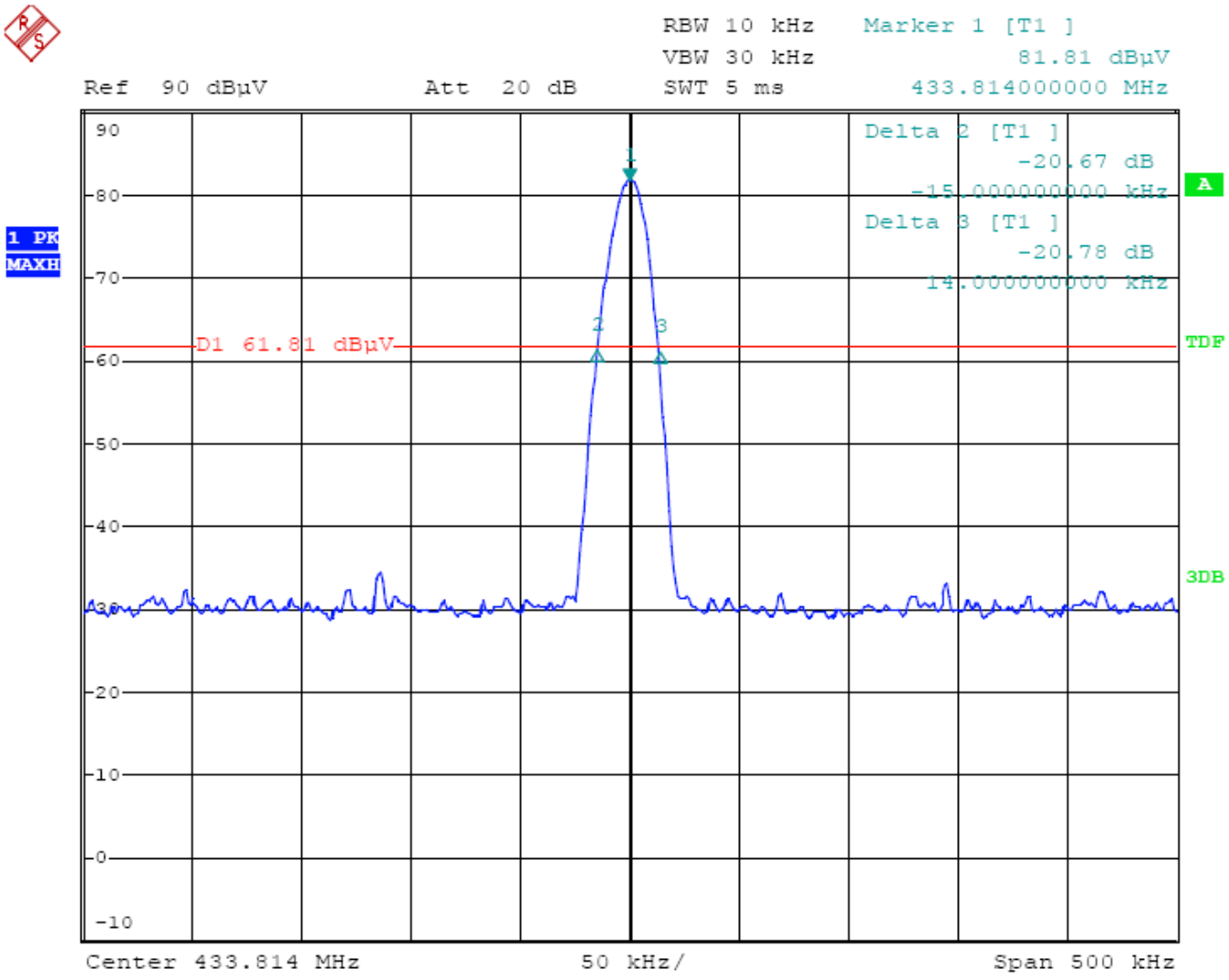
Job No.: RTTE #5106
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 50 %
EUT: Wireless weather station (transmitter)
Mode: TX
Model: WH4
Manufacturer: Fine Offset Electronics Co., Ltd.

Polarization: Vertical
Power Source: DC 3V
Date: 10/06/10/
Time: 9/12/58
Engineer Signature: Joe
Distance: 3m

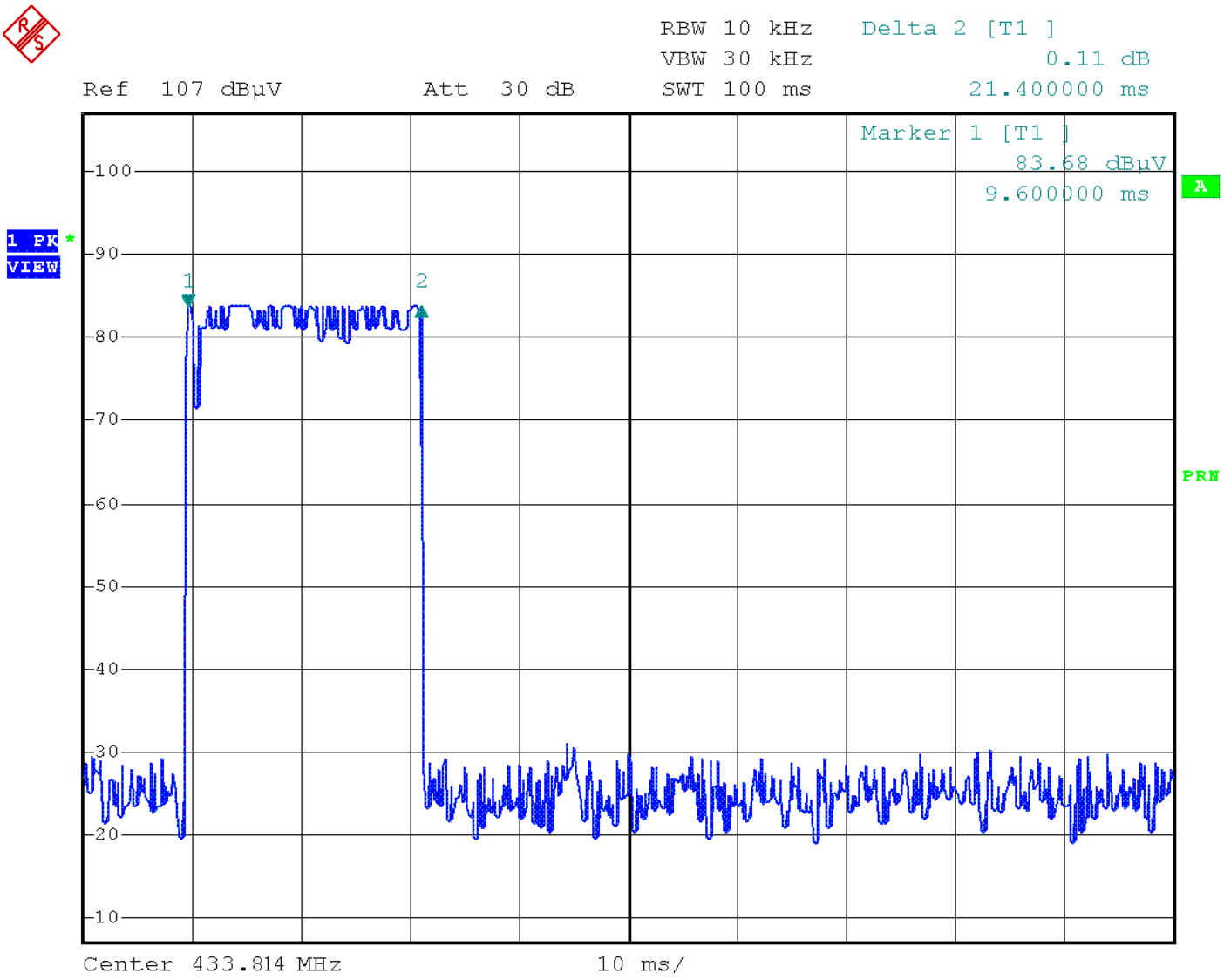
Note: Sample No:101414 Report No.:ATE20101233



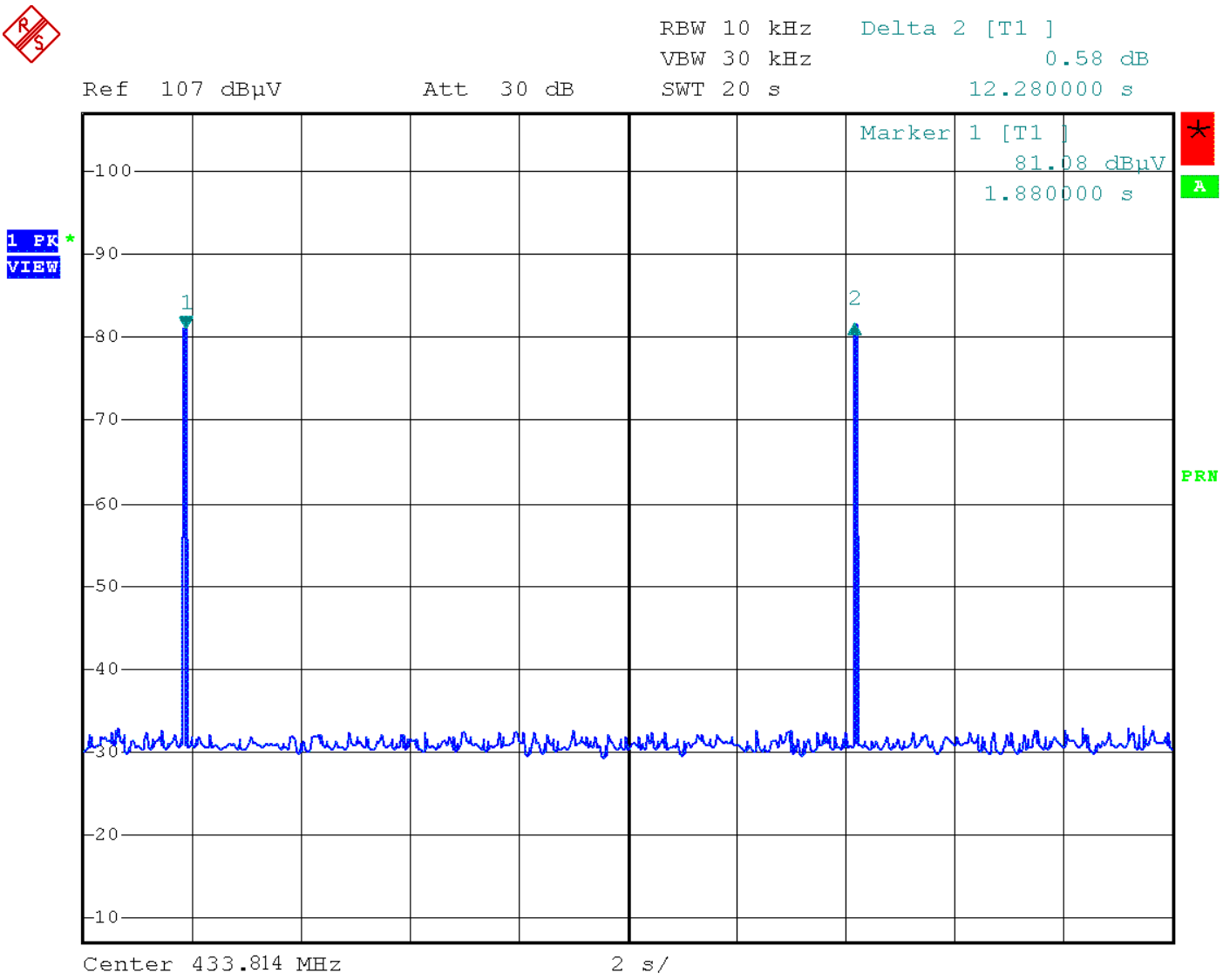
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1301.444	66.91	-12.20	54.71	74.00	-19.29	peak			
2	1735.258	63.49	-10.39	53.10	72.80	-19.70	peak			
3	3036.702	63.64	-4.91	58.73	72.80	-14.07	peak			
4	3470.516	59.75	-3.31	56.44	72.80	-16.36	peak			



-20dB bandwidth is 29.0 kHz.



The graphs show the duration of 'on' signal, duration is 21.4 ms.
Duty Cycle = 21.4ms/100ms = 0.214.



The graphs show the silent period of ‘off’ signal, silent period is 12.28 s.