FCC CERTIFICATION
On Behalf of
Spectra Merchandising International Inc.

Weather Station Transmitter
Model No.: JCR570

FCC ID: IGFJCR570

Prepared for	:	Spectra Merchandising International Inc.
Address	:	4230 North Normandy Avenue, Chicago, Illinois 60634 USA
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
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Report Number	:	ATE20051397
Date of Test	:	August 23, 2005
Date of Report	:	August 26 , 2005

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Description Page

Test Report Certification

Applicant	:	Spectra Merchandising International Inc.
Manufacturer	:	Mei Hua Electronics Ltd.
EUT Description	:	Weather Station Transmitter
		(A) MODEL NO.: JCR570
		(B) SERIAL NO.: N/A
		(C) POWER SUPPLY: DC 4.5V ("AAA" battery Type×3)

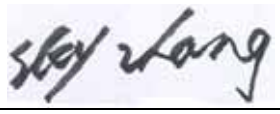
Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.231: 2004 & ANSI C63.4: 2003

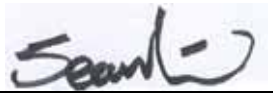
The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.231 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY 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 : August 23, 2005

Prepared by : 

(Engineer)

Reviewer : 

(Quality Manager)

Approved & Authorized Signer : 

(Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	Weather Station Transmitter
Model Number	:	JCR570
Power Supply	:	DC 4.5V ("AAA" battery Type×3)
Memo	:	This submittal is transmitter of Weather Station, The receiver is compliance with Subpart B is authorized under a DOC procedure.
Applicant	:	Spectra Merchandising International Inc.
Address	:	4230 North Normandy Avenue, Chicago, Illinois 60634 USA
Manufacturer	:	Mei Hua Electronics Ltd.
Address	:	Kwai Chen Tow Village, Industrial Zone, Fung Gang Dongguan City, Guangdong, China
Date of sample received	:	August 20, 2005
Date of Test	:	August 23, 2005

1.2.Description of Test Facility

EMC Lab	:	Accredited by TUV Rheinland Shenzhen, May 10, 2004 Accredited by FCC, May 10, 2004 The Certificate Registration Number is 253065 Accredited by Industry Canada, May 18, 2004 The Certificate Registration Number is IC 5077
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 Uncertainty = ±2.66dB

Radiated Emission Uncertainty = ±4.26dB

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	ESI26	838786/013	01.02.2006
Bilog Antenna	Schwarzbeck	VULB9163	9163-194	01.02.2006
Bilog Antenna	Chase	CBL6112B	2591	01.02.2006
Horn Antenna	Rohde&Schwarz	HF906	100013	01.02.2006
Spectrum Analyzer	Anritsu	MS2651B	6200238856	01.02.2006
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	01.02.2006
L.I.S.N.	Rohde&Schwarz	ESH3-Z5	100305	01.02.2006
L.I.S.N.	Rohde&Schwarz	ESH3-Z5	100310	01.02.2006
Signal Generator	GW	GAG-810	0913317	01.02.2006

3. THE FIELD STRENGTH OF RADIATION EMISSION

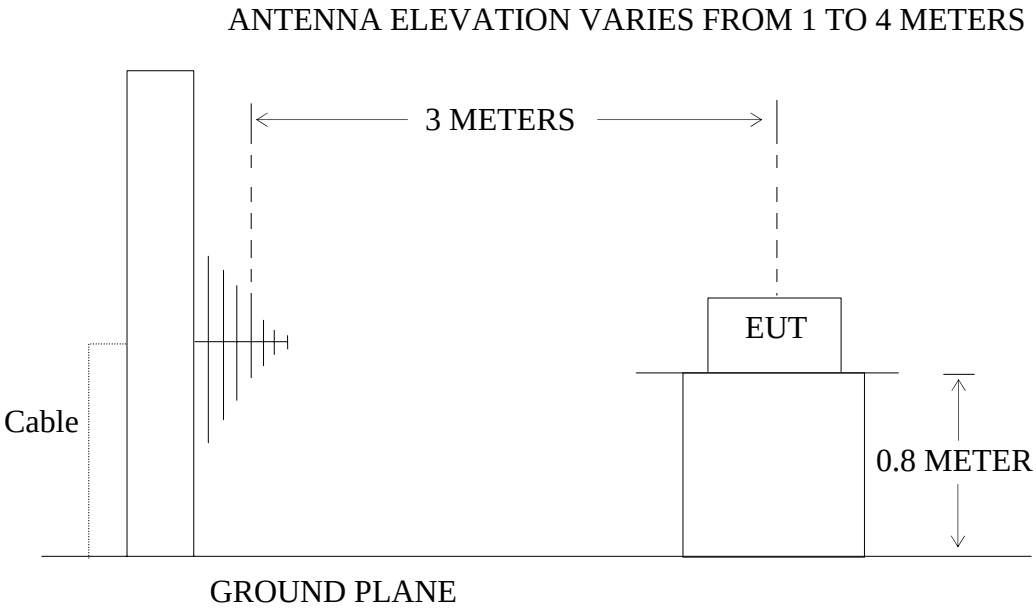
3.1.Block Diagram of Test Setup

3.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Weather Station Transmitter)

3.1.2.Anechoic Chamber Test Setup Diagram



(EUT: Weather Station Transmitter)

3.2.The Field Strength of Radiation Emission Measurement Limits

3.2.1 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.

3.2.2 Restricted Band Radiation Emission Measurement Limits According to Section 15.205 and Section15.209

3.3. 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.

3.3.1. Weather Station Transmitter(EUT)

Model Number	**:**	JCR570
Serial Number	**:**	N/A
Manufacturer	**:**	Mei Hua Electronics Ltd.

3.4. Operating Condition of EUT

3.4.1. Setup the EUT and simulator as shown as Section 3.1.

3.4.2. Turn on the power of all equipment.

3.4.3. Let the EUT work in measuring modes (TX) measure it.

3.5. 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 (R&S ESI26) is set at 120KHz in 30-1000MHz, and 1MHz in 1000-5000MHz.
The frequency range from 30MHz to 5000MHz is checked.

3.6. The Field Strength of Radiation Emission Measurement Results

PASS.

The frequency range 30MHz to 5000MHz is investigated.

Date of Test:	August 23, 2005	Temperature:	22°C
EUT:	Weather Station Transmitter	Humidity:	50%
Model No.:	JCR570	Power Supply:	DC4.5V("AAA" battery ×3)
Test Mode:	TX	Test Engineer:	Andy

Frequency (MHz)	Reading (dBμV/m)	Factor Corr.	Average Factor	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	PEAK	(dB)	(dB)	AV	PEAK	AV	PEAK	AV	PEAK	
433.723	60.3	16.6	-6.0	70.9	76.9	72.8	92.8	1.9	15.9	Horizontal
465.431	18.2	17.4	-6.0	29.6	35.6	52.8	72.8	23.2	37.2	
*3903.507	24.5	25.7	-6.0	44.2	50.2	54	74	9.8	23.8	
*4337.231	29.5	26.4	-6.0	49.9	55.9	54	74	4.1	18.1	
433.723	25.2	16.6	-6.0	35.8	41.8	72.8	92.8	37.0	51.0	Vertical
445.992	19.9	16.9	-6.0	30.8	36.8	52.8	72.8	22.0	36.0	
459.499	13.9	17.2	-6.0	25.1	31.1	52.8	72.8	27.7	41.7	
3469.784	37.6	21.2	-6.0	51.2	57.2	52.8	72.8	1.6	15.6	
*3903.507	16.2	25.7	-6.0	35.9	41.9	54	74	18.1	32.1	
*4337.231	32.1	26.4	-6.0	51.5	57.5	54	74	2.5	16.5	

Note:

1. *: Denotes restricted band of operation.
   Measurements were made using a peak detector and average detector. Any emission Above 1000MHz and 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.

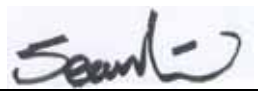
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

   Result = Reading + Corrected Factor + Average factor

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

   Average factor is calculated see section 5.

3. FCC Limit for Average Measurement = 16.6667(433.723)-2833.3333 = 4395.3978μV/m=72.8dBμV/m

Reviewer **:** 

4. OCCUPIED BANDWIDTH

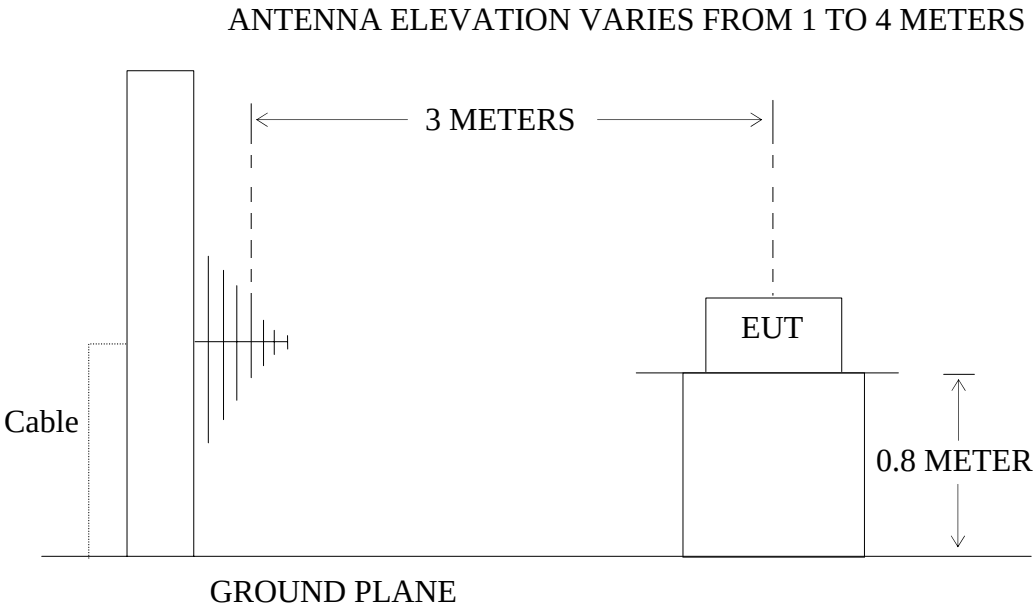
4.1.Block Diagram of Test Setup

4.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Weather Station Transmitter)

4.1.2.Anechoic Chamber Test Setup Diagram



(EUT: Weather Station Transmitter)

4.2.The Bandwidth of Emission Limit According To 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 433.723×0.25% = 1084.3KHz.
Bandwidth is determined at the two points 20 dB down from the top of modulated carrier.

4.3.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.

4.3.1. Weather Station Transmitter (EUT)

Model Number	**:**	JCR570
Serial Number	**:**	N/A
Manufacturer	**:**	Mei Hua Electronics 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

4.5.1. Set SPA Center Frequency = Fundamental frequency, RBW = 3kHz, VBW = 10kHz, Span = 200kHz.

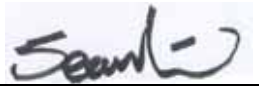
4.5.2. Set SPA Max hold. Mark peak, -20dB

4.6. Measurement Result

The EUT does meet the FCC requirement.

-20dB bandwidth = 16.4KHz < 1084.3KHz.

The spectral diagrams in appendix I.

Reviewer **:** 

5. AVERAGE FACTOR MEASUREMENT

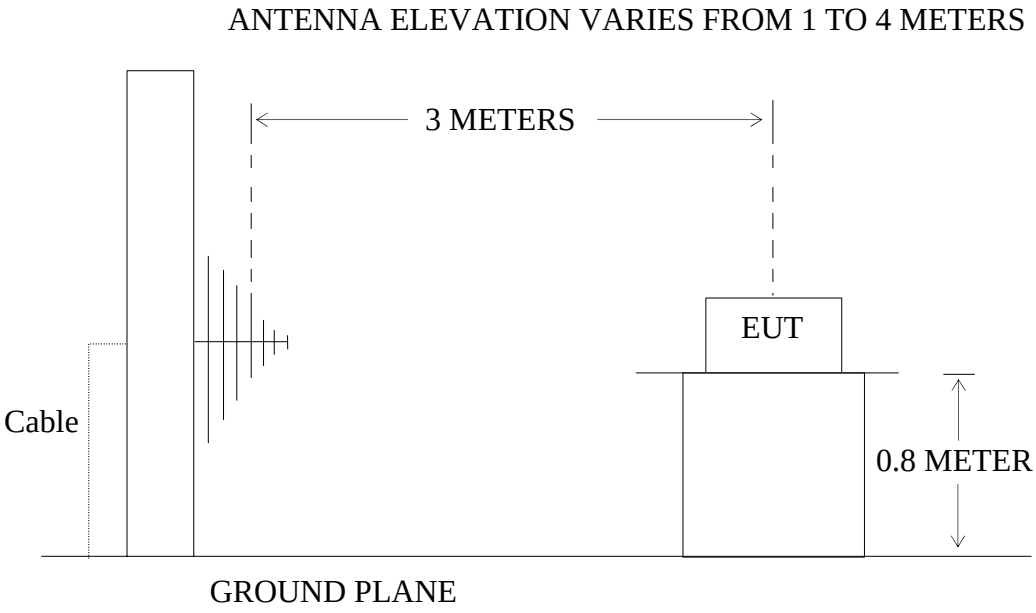
5.1.Block Diagram of Test Setup

5.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Weather Station Transmitter)

5.1.2.Anechoic Chamber Test Setup Diagram



(EUT: Weather Station Transmitter)

5.2. Average factor Measurement

Average factor in dB = 20 log (duty cycle)

5.2.1.The specification for output field strengths in accordance with the FCC rules specify measurements with an average detector. During testing, a spectrum analyzer incorporating a peak detector was used. Therefore, a reduction factor can be applied to the resultant peak signal level and compared to the limit for measurement instrumentation incorporating an average detector.

5.3.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.

5.3.1. Weather Station Transmitter (EUT)

Model Number	**:**	JCR570
Serial Number	**:**	N/A
Manufacturer	**:**	Mei Hua Electronics 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. 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.

5.5.2. Set EUT as normal operation.

5.5.3. Set SPA View. Delta Mark time.

5.6. Measurement Result

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

The duration of one cycle = 100ms
Effective period of the cycle = (30×1.39+19×0.46) ms= 50.4ms

DC = 50.4ms/100ms = 0.504

Therefore, the average factor is found by 20log0.504 = -6.0dB

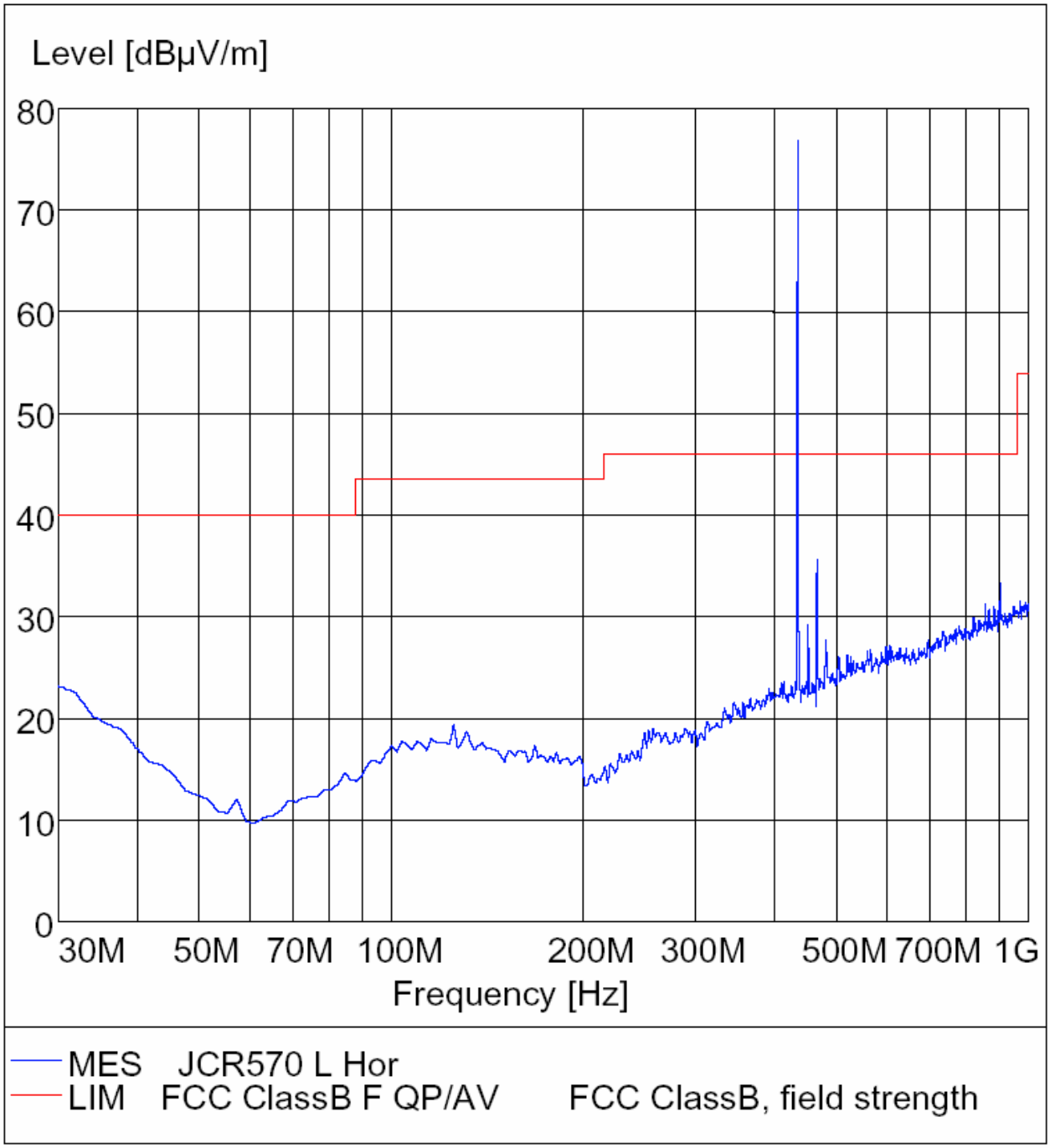
The spectral diagrams in appendix I.

APPENDIX I
(Test Curves)

Radiated Disturbance

FCCPart15

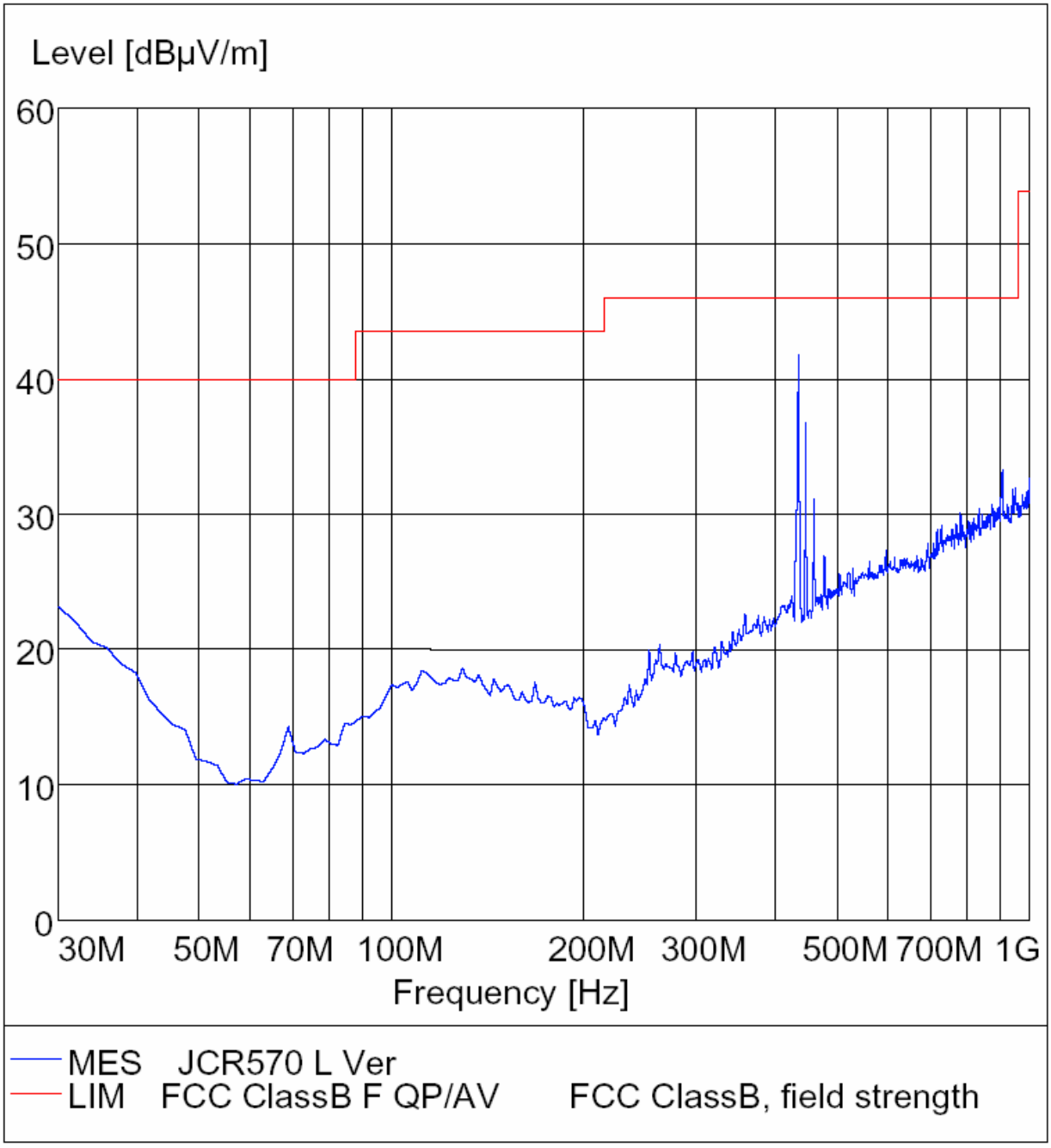
EUT: Weather Station Transmitter
MN: JCR570
Manufacturer: Spectra Merchandising International Inc.
Operating Condition: TX
Test Site: ATC EMC Lab.SAC
Operator: Andy
Test Specification: Horizontal
Commend: DC 4.5V Power By Battery



Radiated Disturbance

FCCPart15

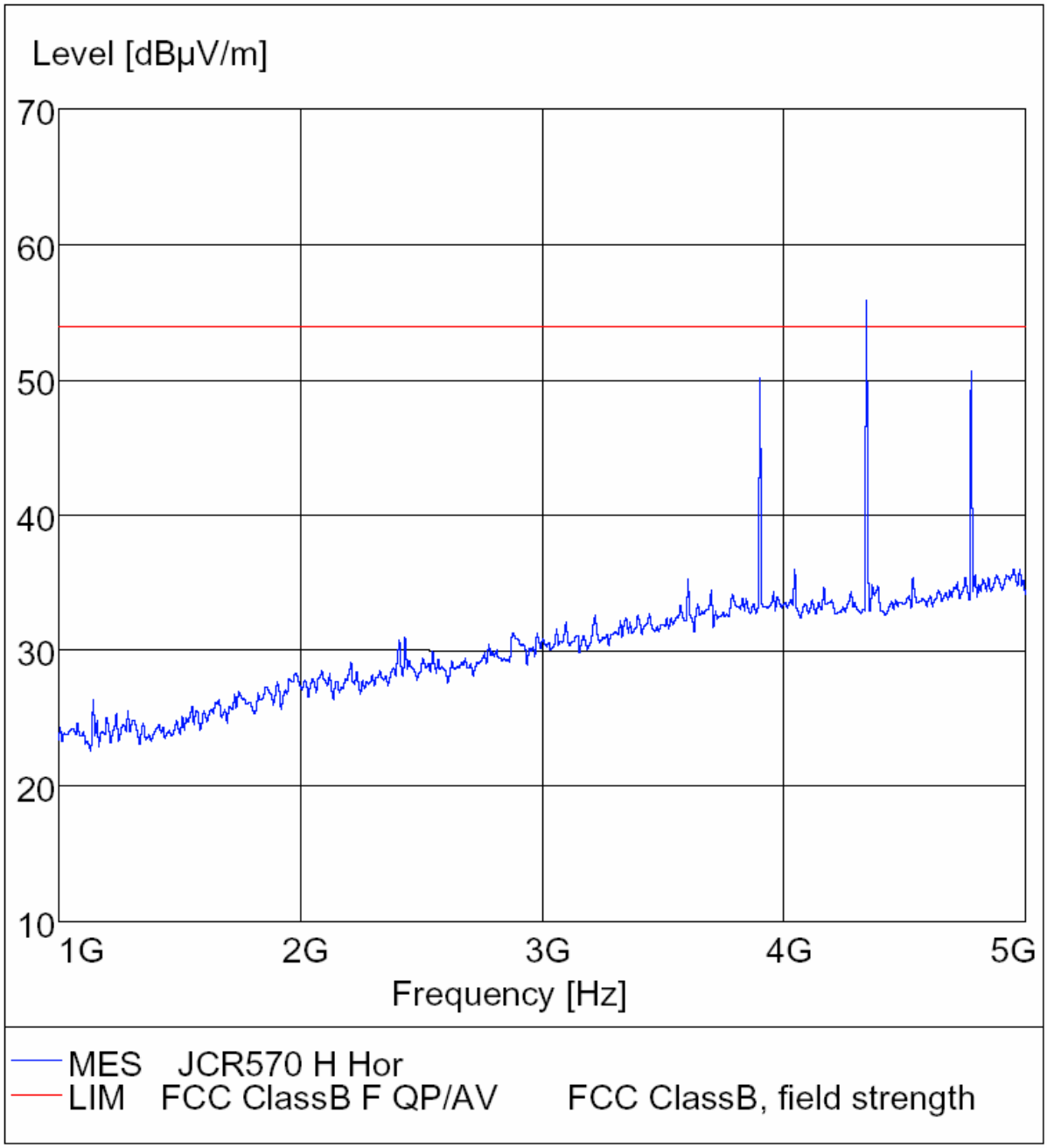
EUT: Weather Station Transmitter
MN: JCR570
Manufacturer: Spectra Merchandising International Inc.
Operating Condition: TX
Test Site: ATC EMC Lab.SAC
Operator: Andy
Test Specification: Vertical
Commend: DC 4.5V Power By Battery



Radiated Disturbance

FCCPart15

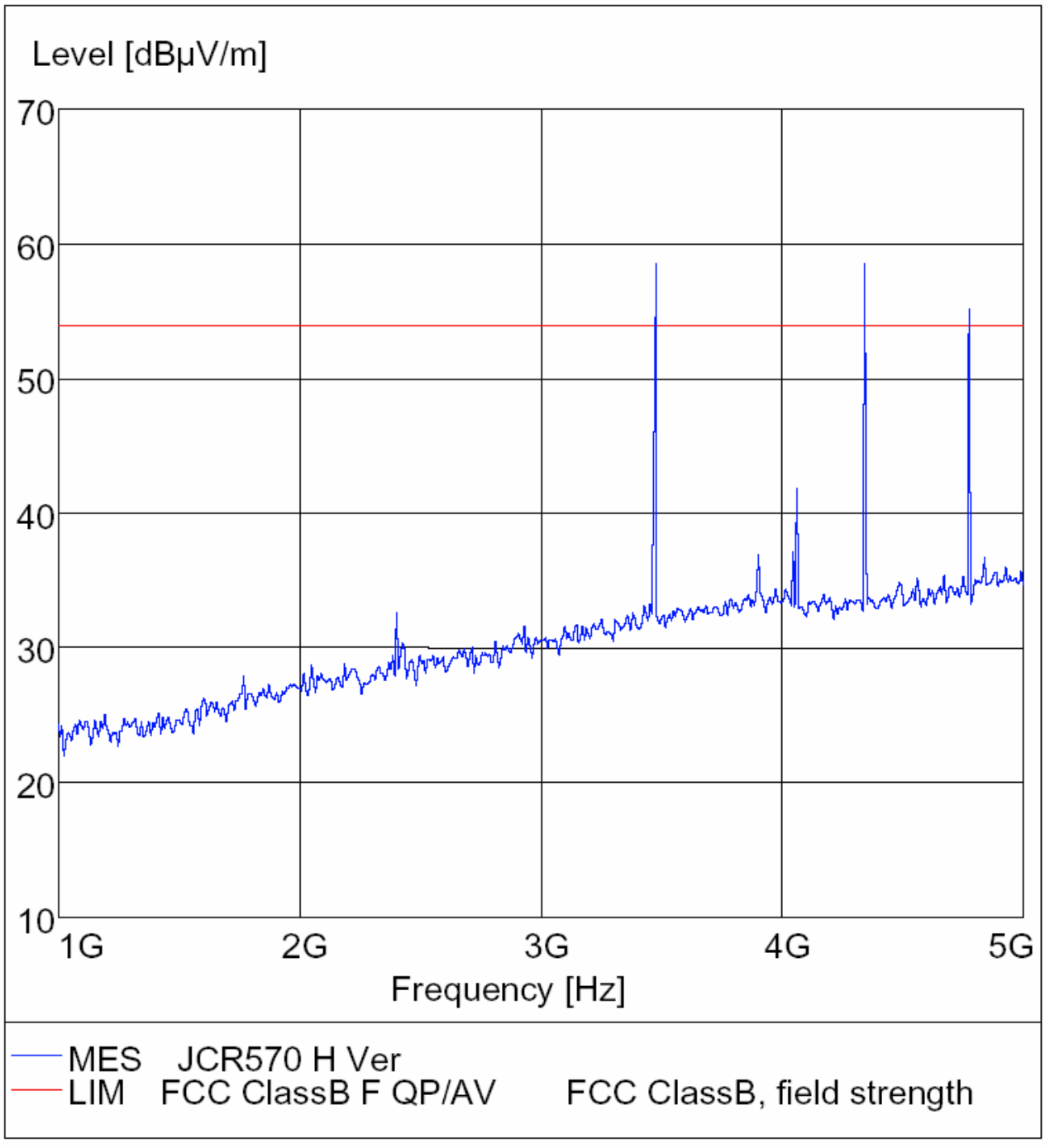
```
EUT: Weather Station Transmitter
MN: JCR570
Manufacturer:        Spectra Merchandising International Inc.
Operating Condition: TX
Test Site:          ATC EMC Lab.SAC
Operator:           Andy
Test Specification:  Horizontal
Commend:            DC 4.5V Power By Battery
```

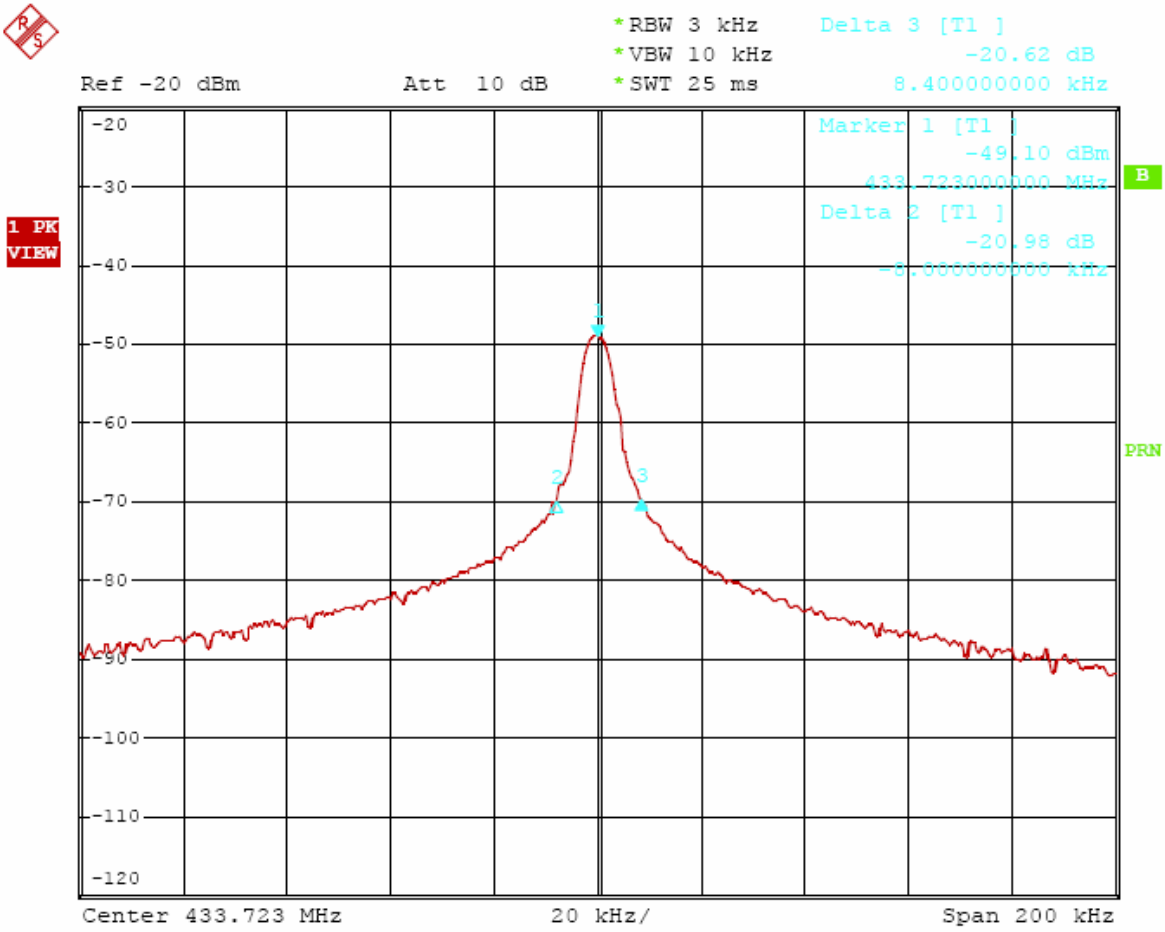


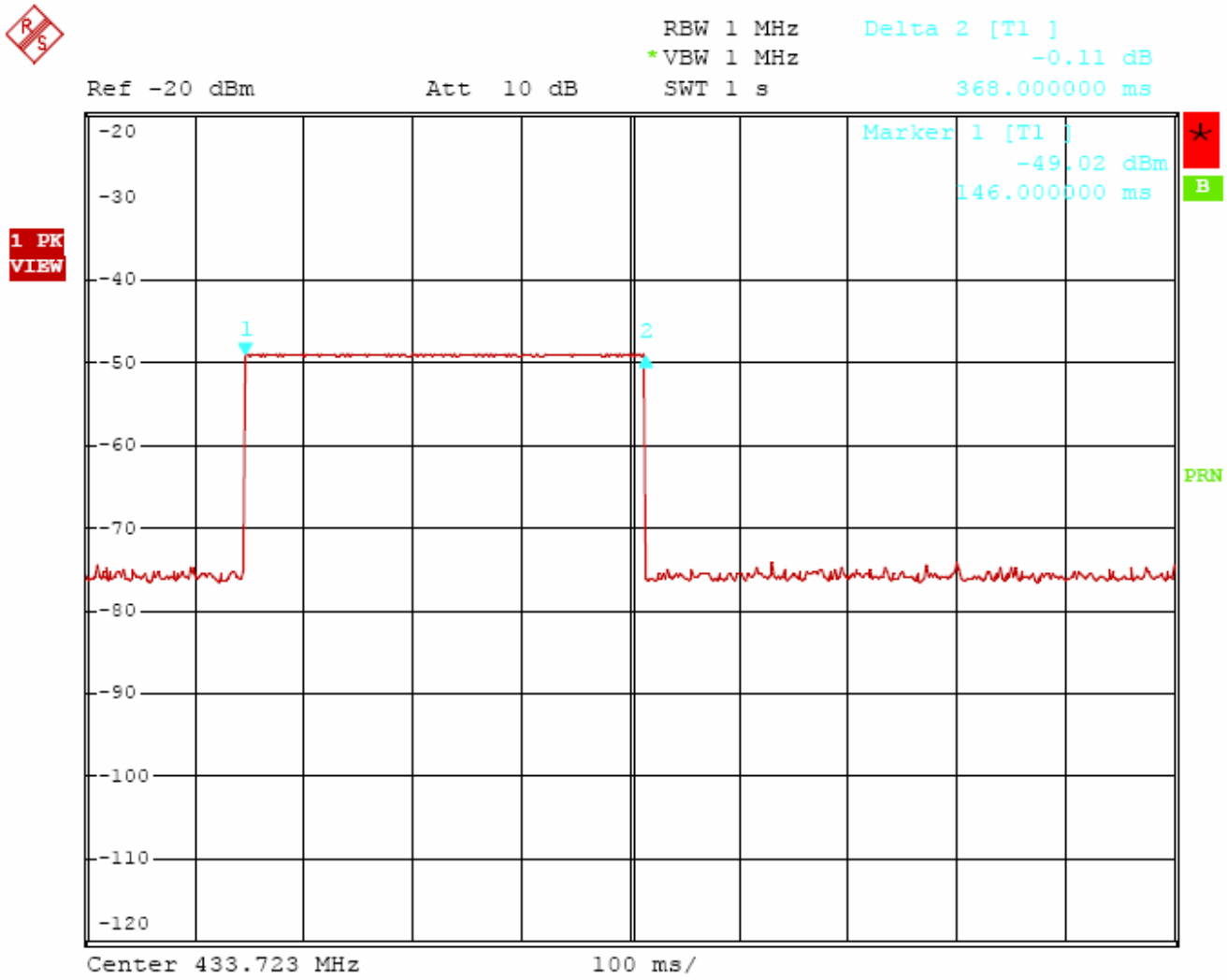
Radiated Disturbance

FCCPart15

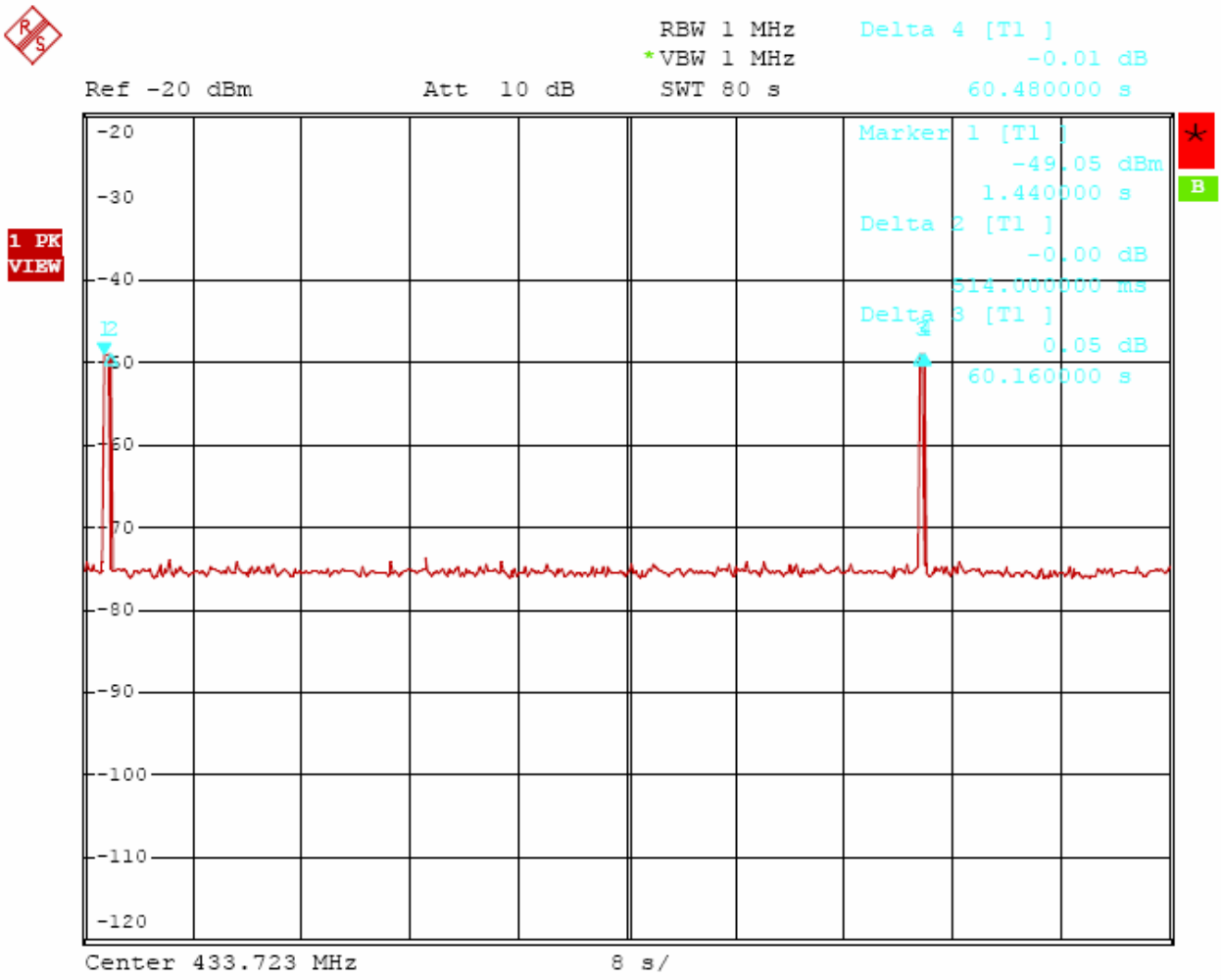
EUT: Weather Station Transmitter
MN: JCR570
Manufacturer: Spectra Merchandising International Inc.
Operating Condition: TX
Test Site: ATC EMC Lab.SAC
Operator: Andy
Test Specification: Vertical
Commend: DC 4.5V Power By Battery



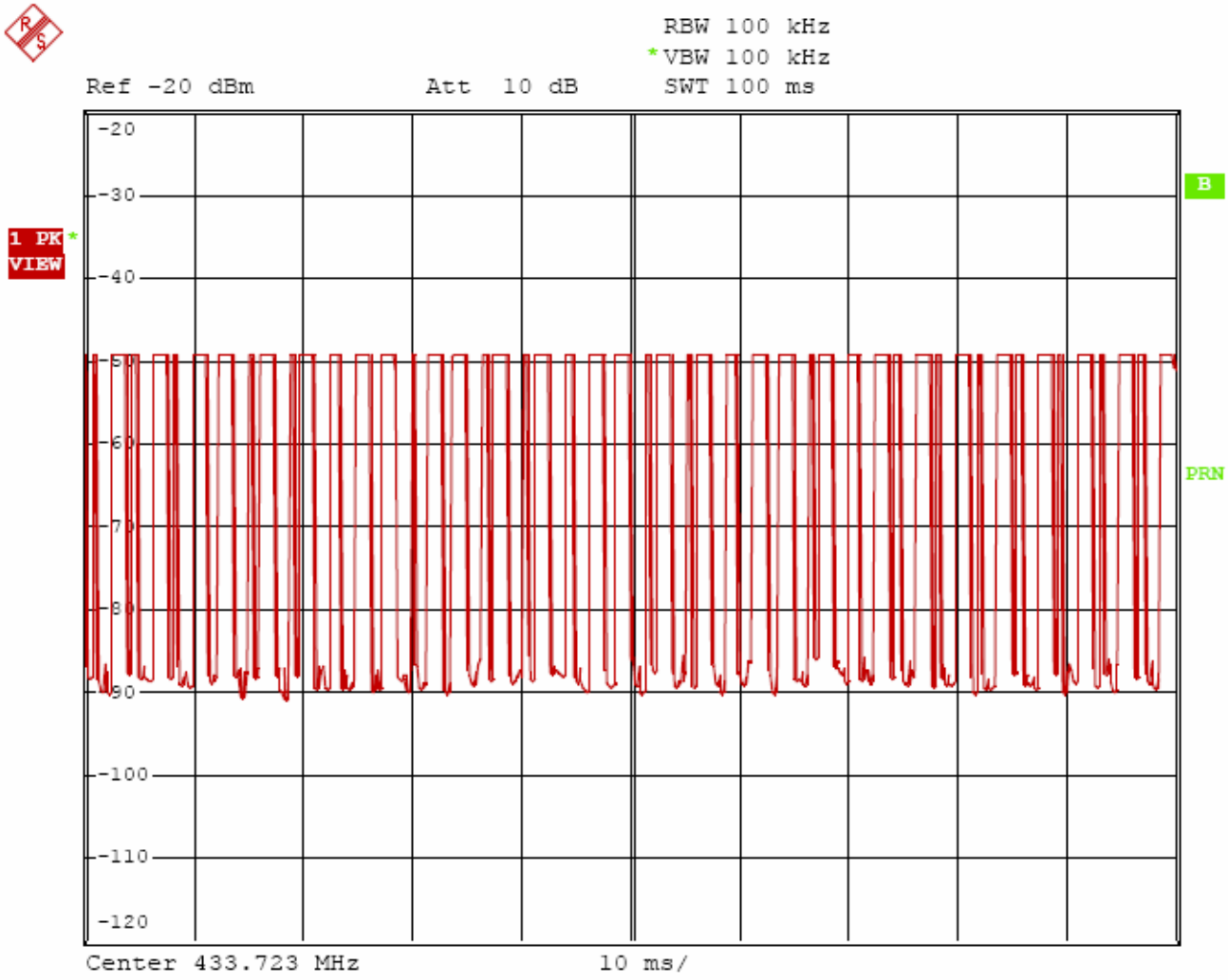

*RBW 3 kHz
*VBW 10 kHz
*SWT 25 ms
Delta 3 [T1]
-20.62 dB
8.400000000 kHz
Ref -20 dBm
Att 10 dB
Marker 1 [T1]
-49.10 dBm
433.723000000 MHz
Delta 2 [T1]
-20.98 dB
-8.000000000 kHz
1 PK
VIEW
B
PRN
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
Center 433.723 MHz
20 kHz/
Span 200 kHz



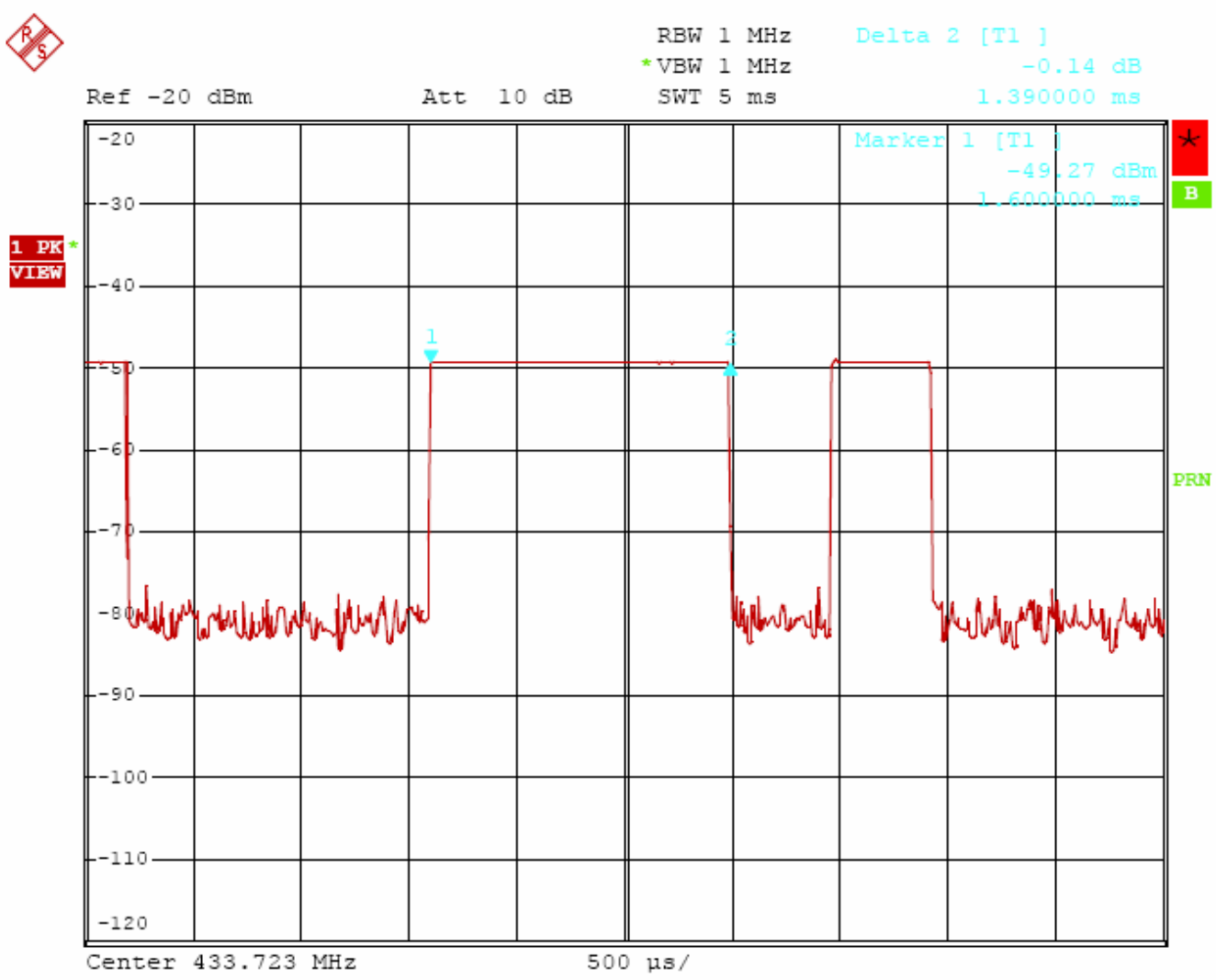
From marker 1 to marker 2, the total “on” time is 368ms.
The time does meet FCC PART15 SECTION 231(e)-“the duration of each transmission shall not be greater than one second.”



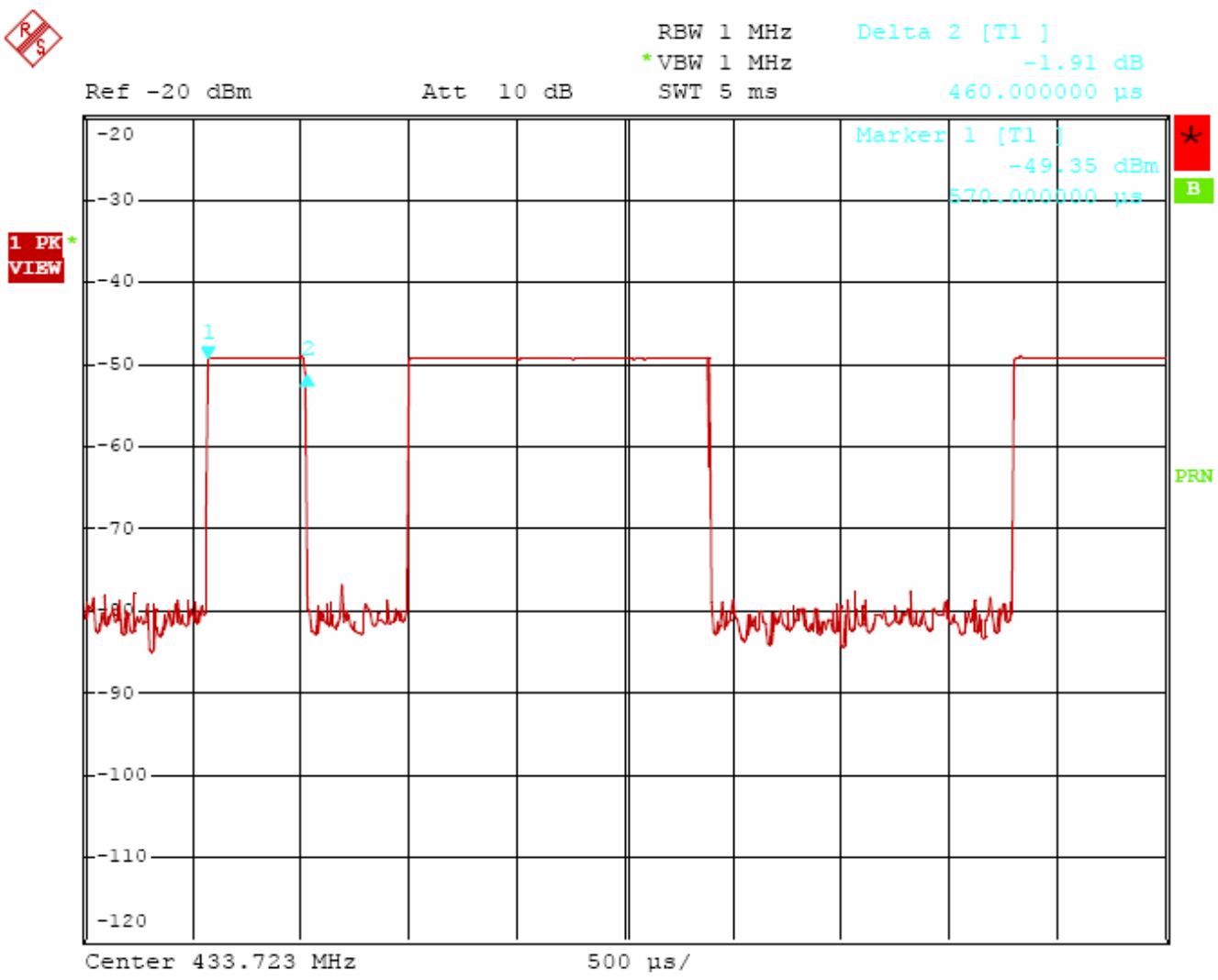
The silent period between transmissions is 58.206seconds.
The time does meet FCC PART15 SECTION 231(e)-“ the silent period between transmission shall be at least 30 times the duration of the transmission but in no case less than 10 seconds”



The time period are 100ms.
It sums of 30 long and 19 short “on” signals.



The graph shows the duration of long “on” signal.
From marker 1 to marker 2, duration is 1.39ms.



The graph shows the duration of short “on” signal.
From marker 1 to marker 2, duration is 0.46ms.