FCC RADIO TEST REPORT
FCC ID: 2AKCLBEST

Product： Wireless Dog Fence System

Trade Name： BEST

Model Name： Best-2Acre

Serial Model： N/A

Report No.： POCE-1611124171F

Prepared for

Best Suppliers LLC

10115 E. Bell Road #107 Scottsdale, AZ 85260

Prepared by

Shenzhen POCE Technology Co.,Ltd.

Room 502, Bldg. 1, Xinghua Garden, Baoan Road Xixiang,
Baoan District,Shenzhen, China

TEST RESULT CERTIFICATION

Applicant's name	:	Best Suppliers LLC
Address	:	10115 E. Bell Road #107 Scottsdale, AZ 85260
Manufacture's Name	:	Best Suppliers LLC
Address	:	10115 E. Bell Road #107 Scottsdale, AZ 85260

Product description

Product name	:	Wireless Dog Fence System
Model and/or type reference	:	Best-2Acre
Serial Model：		N/A
Standards	:	FCC Part15.231a
Test procedure		ANSI C63.10: 2013

This device described above has been tested by POCE, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of POCE, this document may be altered or revised by POCE , personal only, and shall be noted in the revision of the document.

Date of Test	:	
Date (s) of performance of tests	:	1 Nov 2016 ~12 Nov 2016
Date of Issue	:	12 Nov 2016
Test Result	:	**Pass**

Testing Engineer : 

(Ken Li)

Technical Manager : 

(Jimmy Yao)

Authorized Signatory : 

Table of Contents Page

-

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C (15.231)			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	Pass	
15.203	Antenna Requirement	Pass	
15.231	Radiated Spurious Emission	Pass	
15.231	Occupied Bandwidth	Pass	
15.231	Deactivation Time	Pass	

1.1 TEST FACILITY

Shenzhen POCE Technology Co.,Ltd.

Add.: Room 502, Bldg. 1, Xinghua Garden, Baoan Road Xixiang, Baoan District, Shenzhen, China

FCC-Registration No.: 222278

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Wireless Dog Fence System
Trade Name	BEST
Model Name	Best-2Acre
Serial Model	N/A
Model Difference	N/A
Product Description	The EUT is a Wireless Dog Fence System Product Type: Remote Control Operation Frequency: 433.92MHz Modulation Type: FSK Number Of Channel: 1CH. Antenna Designation: External antenna Antenna Gain(Peak): 0.6dBi Output Power: 79.3dBuV/m @3m(AV Max.) Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE Device. More details of EUT technical specification, please refer to the User's Manual.
Adapter	
Battery	N/A

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	External antenna	NA	0.6	Antenna

2.2 DESCRIPTION OF TEST MODES

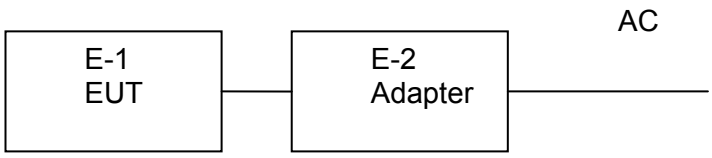
To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX

For Conducted Emission	
Final Test Mode	Description
Mode 1	TX

For Radiated Emission	
Final Test Mode	Description
Mode 1	TX

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Wireless Dog Fence System	BEST	Best-2Acre	N/A	EUT
E-2	Adapter	ANU	ANU-120100A	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C1	N/A	N/A	0.8m	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.4.1EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2016.07.06	2017.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2016.06.07	2017.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2016.07.06	2017.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2016.06.07	2017.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2016.06.07	2017.06.06	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2016.07.06	2017.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2016.07.06	2017.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2015.12.22	2016.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2016.06.08	2017.06.07	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2016.06.06	2017.06.05	1 year
2	LISN	R&S	ENV216	101313	2016.08.24	2017.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2016.08.24	2017.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2016.06.07	2017.06.06	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2016.06.07	2017.06.06	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2016.06.08	2017.06.07	1 year

3. ANTENNA REQUIREMENT

3.1 STANDARD REQUIREMENT

15.203 requirements: For intentional device, according to 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.

3.2 EUT ANTENNA

The EUT antenna is a external antenna. This external antenna and EUT are connected together, is not detachable, no connection port. It complies with the standard requirement.

3.3 CONDUCTED EMISSION MEASUREMENT

3.3.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

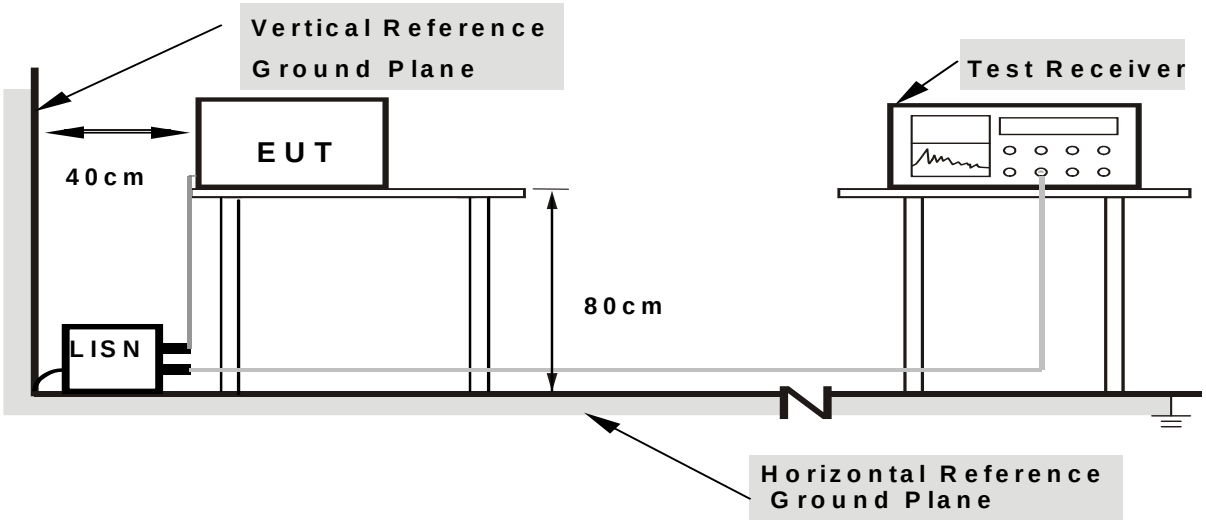
3.3.2 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP



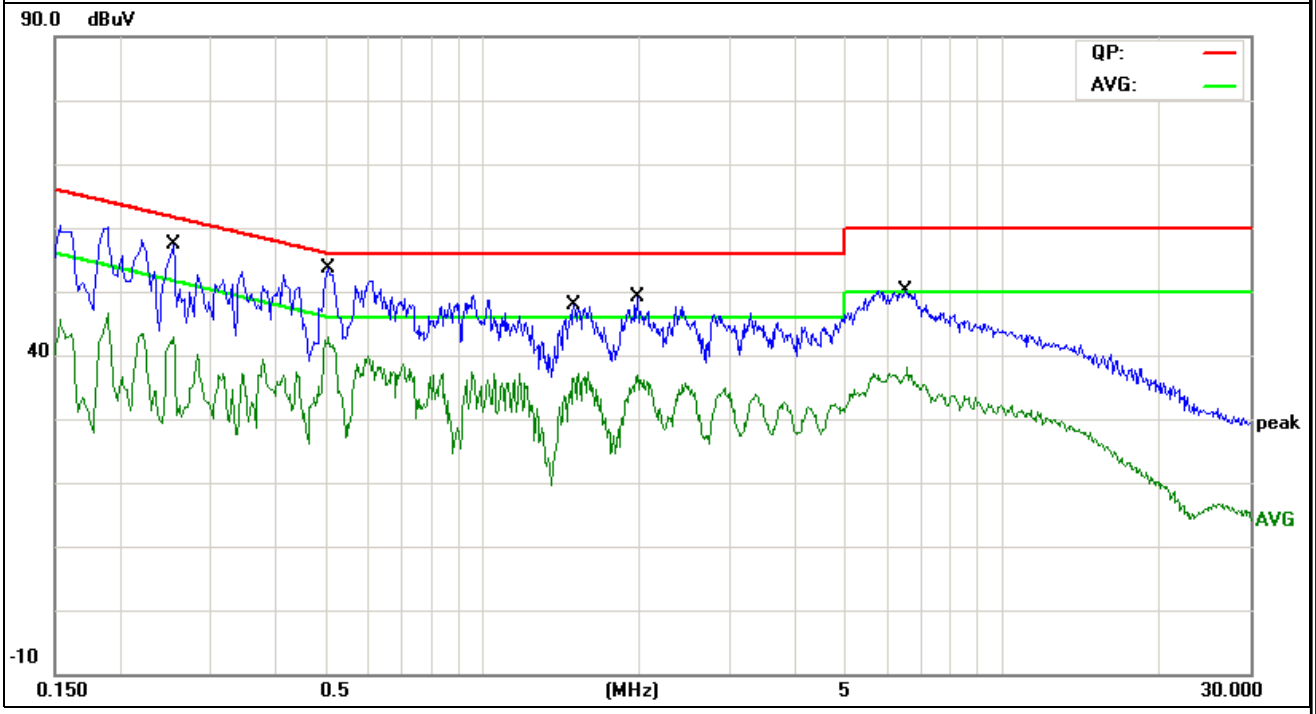
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.2.5 TEST RESULT

EUT：	Wireless Dog Fence System	Model Name. ：	Best-2Acre
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC12V by AC 120V adapter	Test Mode：	Mode 1

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.2540	47.25	10.02	57.27	61.62	-4.35	QP
0.2540	32.92	10.02	42.94	51.62	-8.68	AVG
0.5060	43.53	10.02	53.55	56.00	-2.45	QP
0.5060	32.85	10.02	42.87	46.00	-3.13	AVG
1.5020	37.70	10.06	47.76	56.00	-8.24	QP
1.5020	26.34	10.06	36.40	46.00	-9.60	AVG
1.9858	38.95	10.06	49.01	56.00	-6.99	QP
1.9858	26.91	10.06	36.97	46.00	-9.03	AVG

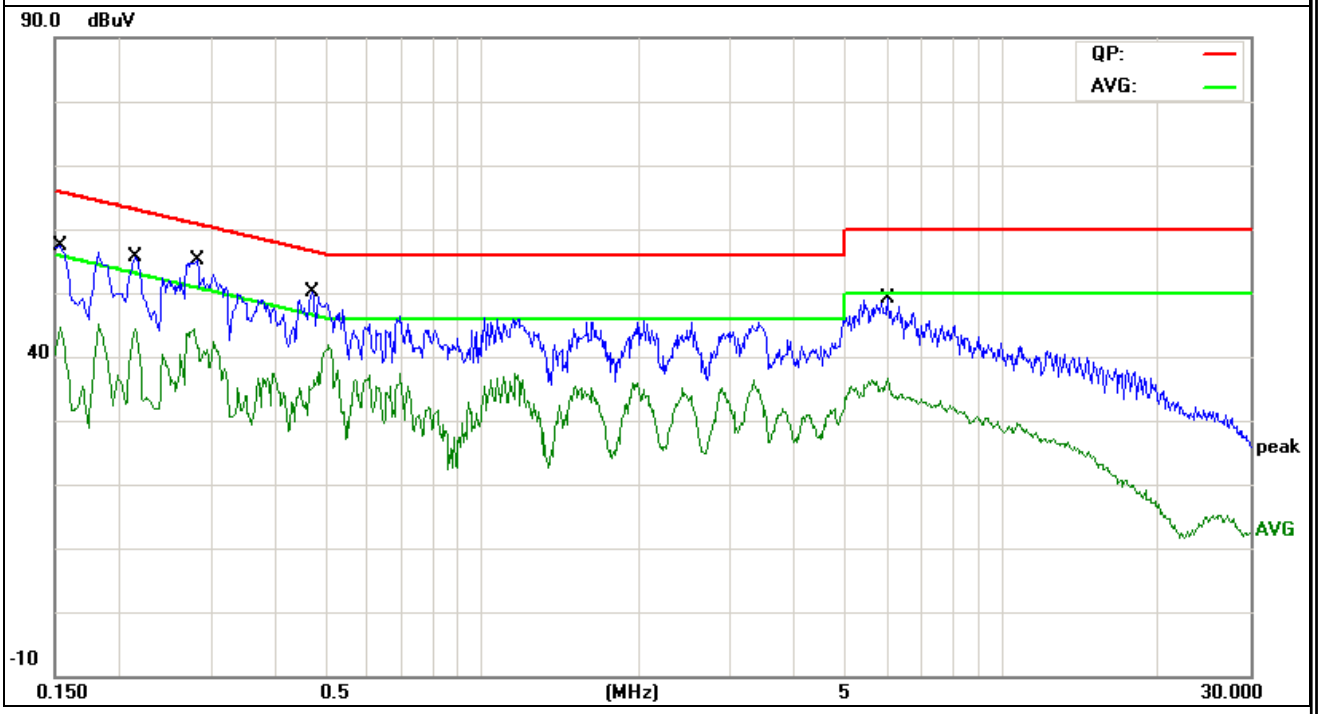
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



EUT：	Wireless Dog Fence System	Model Name. ：	Best-2Acre
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC12V by AC 120V adapter	Test Mode：	Mode 1

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1539	47.23	10.12	57.35	65.78	-8.43	QP
0.1539	34.58	10.12	44.70	55.78	-11.08	AVG
0.2140	45.40	10.12	55.52	63.04	-7.52	QP
0.2140	34.28	10.12	44.40	53.04	-8.64	AVG
0.2819	45.05	10.09	55.14	60.76	-5.62	QP
0.2819	31.36	10.09	41.45	50.76	-9.31	AVG
0.4700	40.17	10.03	50.20	56.51	-6.31	QP
0.4700	25.08	10.03	35.11	46.51	-11.40	AVG

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



3.4 RADIATED EMISSION MEASUREMENT

3.4.1 Radiated Emission Limits (FCC 15.209)

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note:

(1) The tighter limit applies at the band edges.

(2) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.231a)

Fundamental Frequency (MHz)	Field Strength of fundamental (microvolts/meter)	Field Strength of Unwanted Emissions (microvolts/meter)
40.66 - 40.70	2.250	225
70 - 130	1250	125
130 - 174	1250 to 3750	125 to 375
174 - 260	3750	375
260 - 470	3750-12500	375 to 1250
Above 470	12500	1250

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, μV/m at 3 meters = 56.81818(F) - 6136.3636; for the band 260-470 MHz, μV/m at 3 meters = 41.6667(F) - 7083.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.4.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than AV Mode Limit, the EUT shall be deemed to meet AV Limits and then no additional AV Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

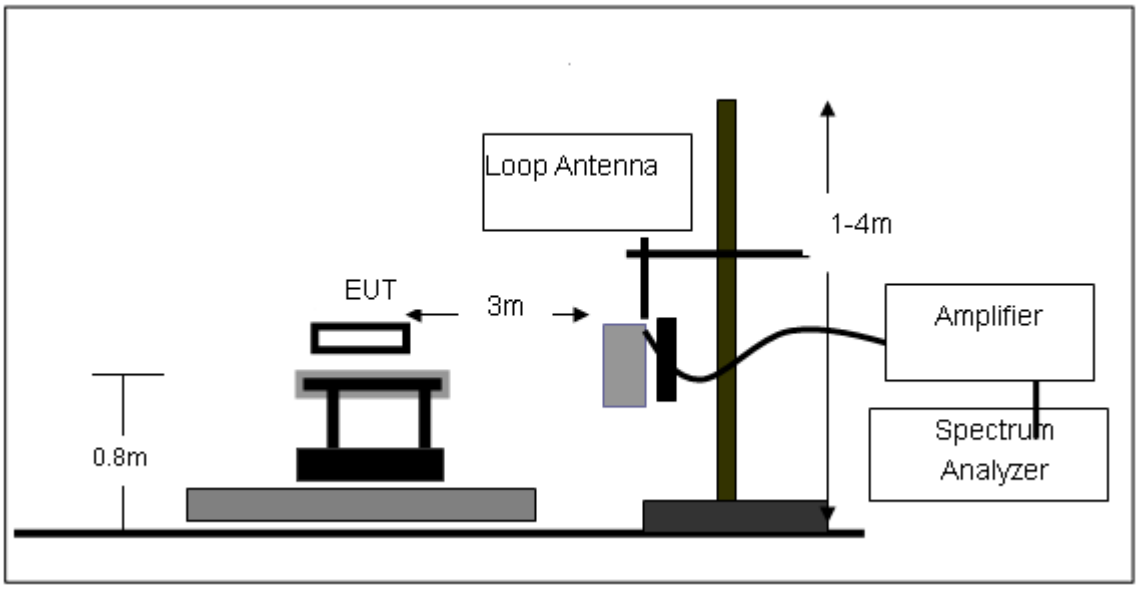
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.4.3 DEVIATION FROM TEST STANDARD

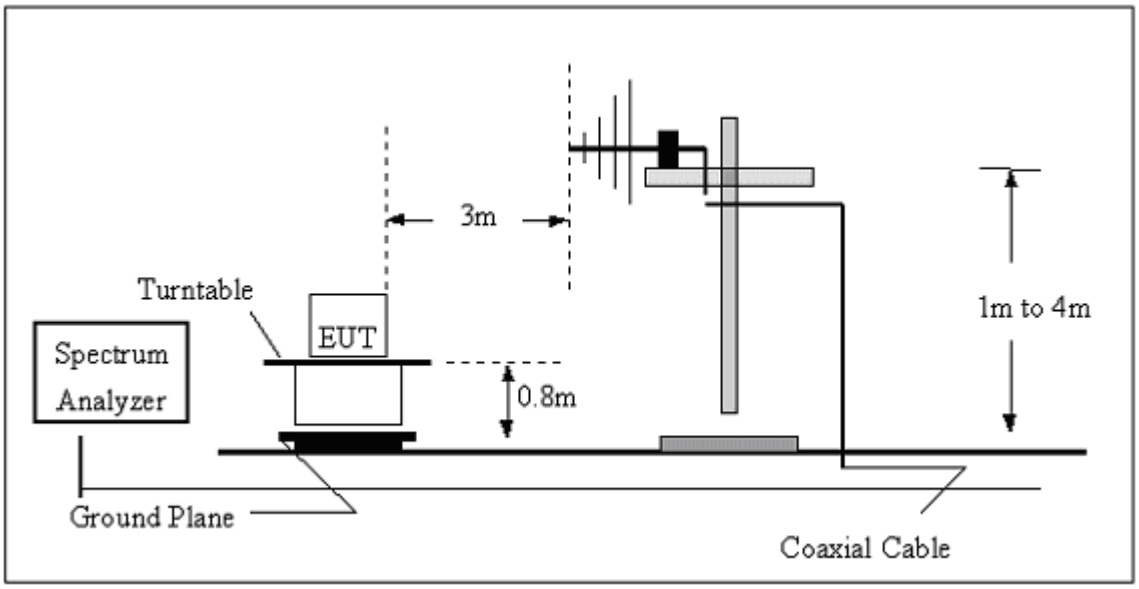
No deviation

3.4.4 TEST SETUP

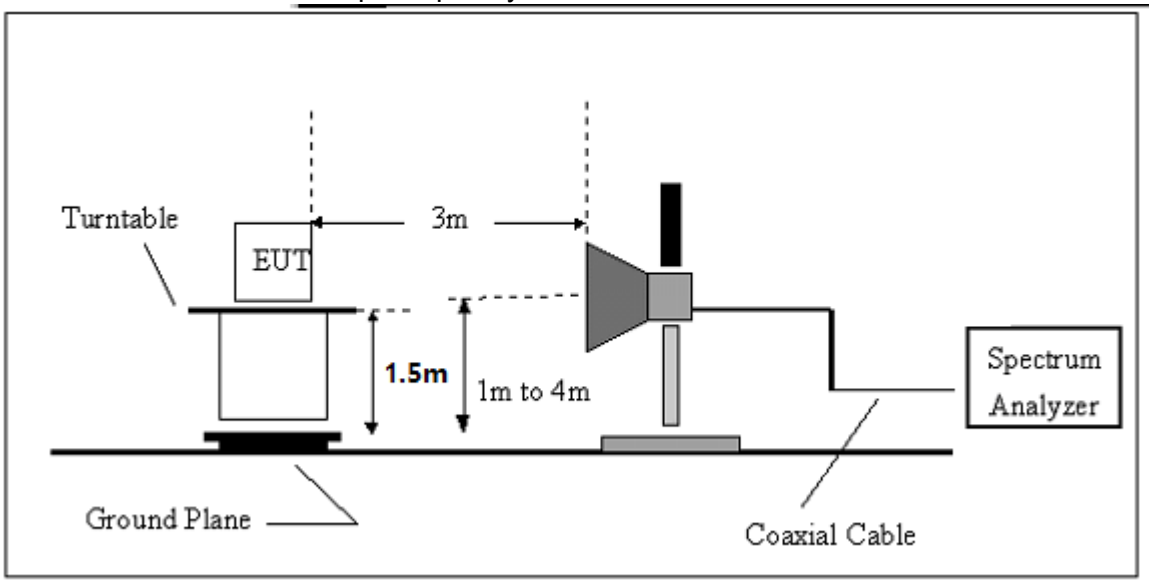
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.4.5 TEST RESULTS (BLOW 30MHz)

EUT：	Wireless Dog Fence System	Model Name. ：	Best-2Acre
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.4.6 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

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

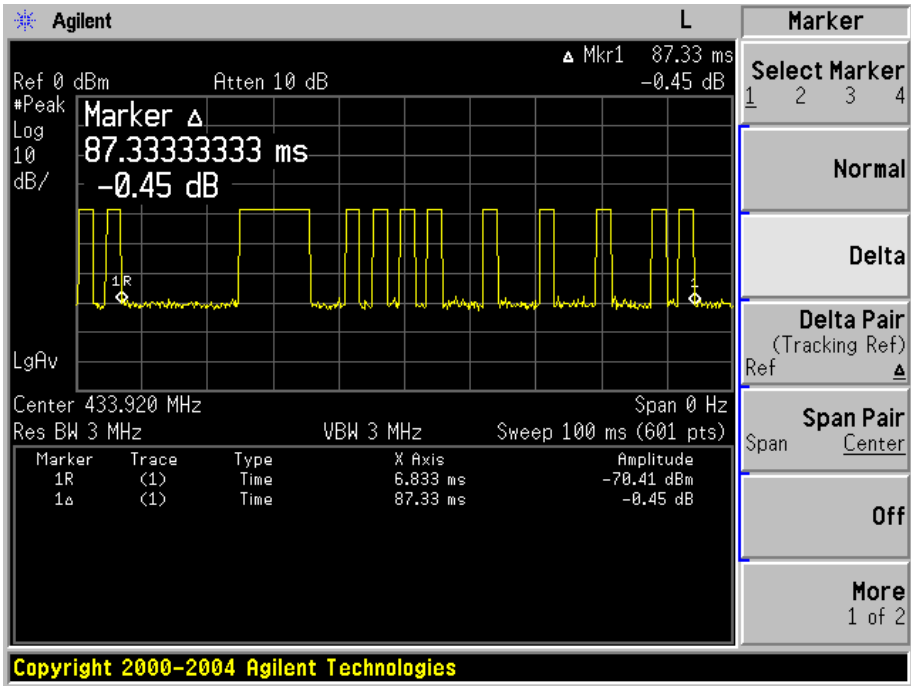
The duration of one cycle = 87.33ms

Effective period of the cycle = 11.5ms×1+2.5ms×9=34ms

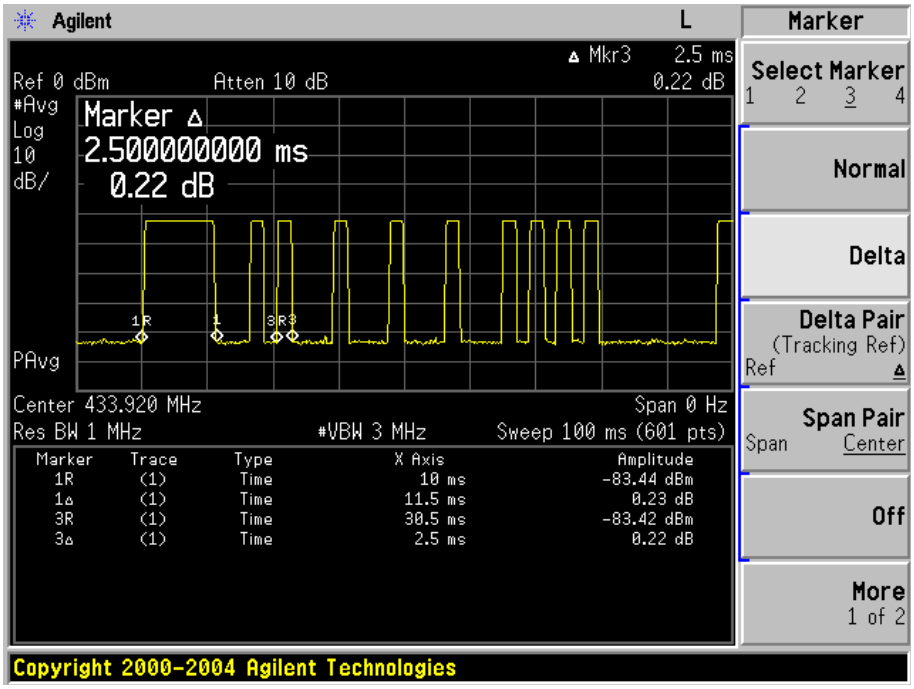
Duty Cycle = 34ms/87.33ms = 0.389

Therefore, the average factor is found by 20log0.389 = -8.20dB

The duration of one cycle



On time and off time of one signal

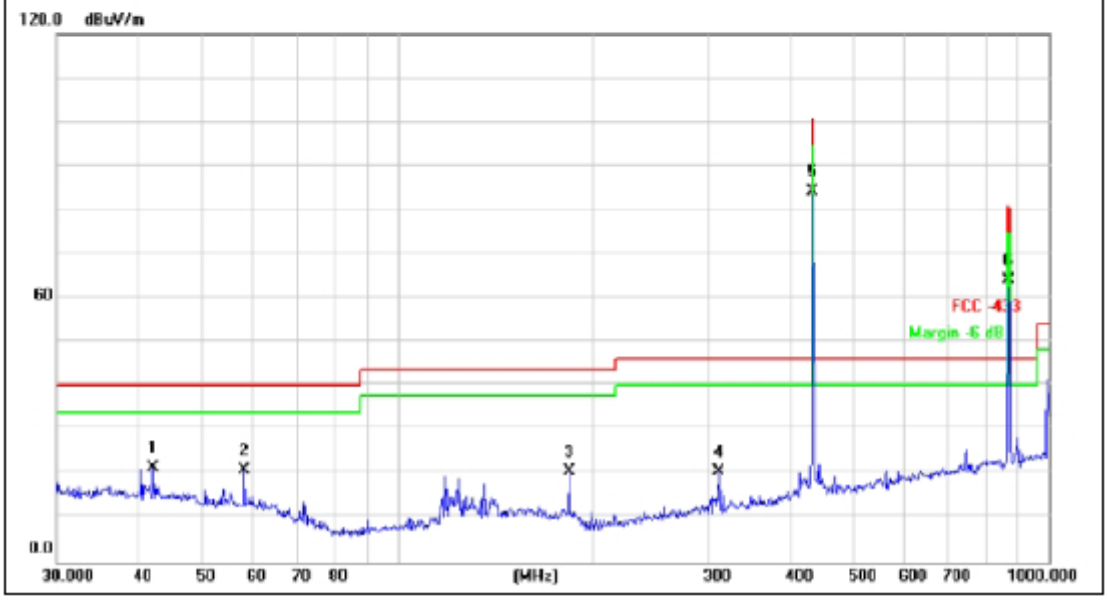


Radiated spurious emission(30M-1GHz)

EUT：	Wireless Dog Fence System	Model Name ：	Best-2Acre
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5.0V
Test Mode ：	TX	Polarization：	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
44.33	30.85	-8.83	22.02	40	-17.98	QP
58.51	43.82	-11.96	31.86	40	-8.14	QP
185.32	38.74	-14.11	24.63	43.5	-18.87	QP
314.13	38.77	-13.9	24.87	43.5	-18.63	QP
433.92	96.87	-9.37	87.50	100.8	-13.30	PK
867.84	68.21	-2.05	66.16	80.8	-14.64	PK

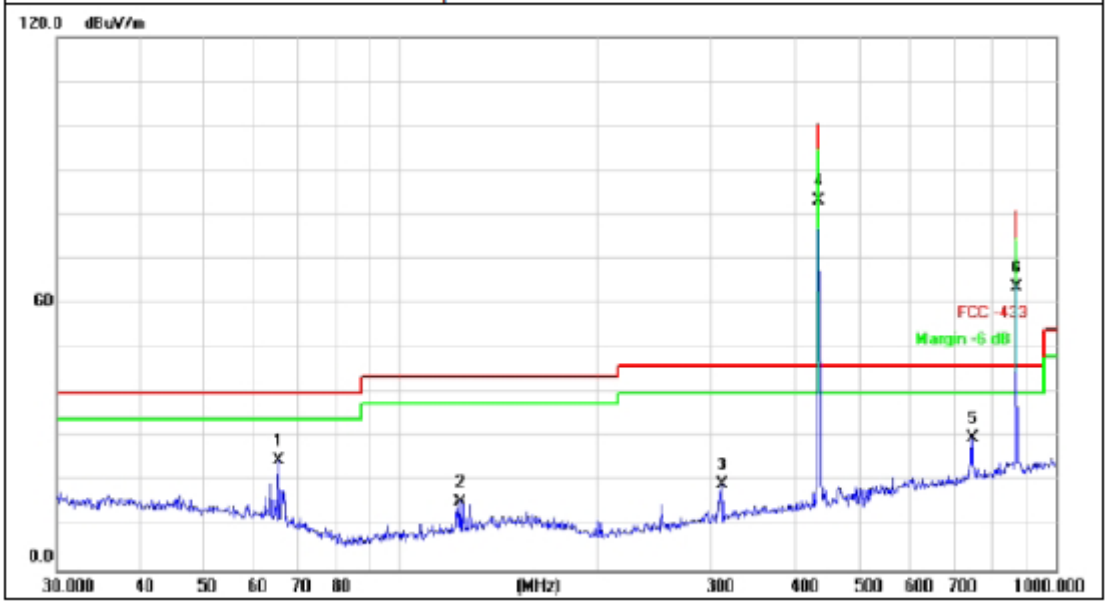
Remark:
Factor = Antenna Factor + Correct Factor.
Correct Factor= Cable Loss – Pre-amplifier



EUT：	Wireless Dog Fence System	Model Name ：	Best-2Acre
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5.0V
Test Mode ：	Mode 2	Polarization：	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
67.3367	30.85	-8.83	22.02	40	-17.98	QP
130.2153	43.82	-11.96	31.86	40	-8.14	QP
311.5223	38.74	-13.11	25.63	46	-20.37	QP
433.92	96.77	-9.37	87.4	100.8	-13.4	PK
746.821	36.86	-3.37	32.54	46	-13.46	QP
867.84	66.21	-2.05	64.16	80.8	-16.64	PK

Remark:
Factor = Antenna Factor + Correct Factor.
Correct Factor= Cable Loss – Pre-amplifier



Radiated spurious emission(1G-10th harmonics)

EUT：	Wireless Dog Fence System	Model Name ：	Best-2Acre
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5.0V
Test Mode ：	TX	Polarization：	Horizontal

Frequency	Average Factor	Field Strength	Field Strength	Limit(PK)	Limit(AV)	State
MHz	dB	dBuV/m (PK)	dBuV/m (AV)	dBuV/m	dBuV/m	
433.920	-8.20	87.50	79.30	100.82	80.82	pass
867.84	-8.20	66.16	57.96	80.82	60.82	pass
1737.500	-8.20	51.12	--	74.00	54.00	pass
2175.000	-8.20	42.21	--	80.82	60.82	pass
--	--	--	--	74.00	54.00	pass
--	--	--	--	74.00	54.00	pass

EUT：	Wireless Dog Fence System	Model Name ：	Best-2Acre
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5.0V
Test Mode ：	TX	Polarization：	Vertical

Frequency	Average Factor	Field Strength	Field Strength	Limit(PK)	Limit(AV)	State
MHz	dB	dBuV/m (PK)	dBuV/m (AV)	dBuV/m	dBuV/m	
433.920	-8.20	87.40	79.20	100.82	80.82	pass
867.84	-8.20	64.16	55.96	80.82	60.82	pass
1737.500	-8.20	42.13	--	74.00	54.00	pass
2175.000	-8.20	51.12	--	80.82	60.82	pass
--	--	--	--	74.00	54.00	pass
--	--	--	--	74.00	54.00	pass

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 and average detector. 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. FCC Limit for Average Measurement = 41.6667(433.92) – 7083.3333 = 10996.68uV/m =80.82dBuV/m

4.PK Field Strength -Average factor =AV Field Strength

5.Pulse Desensitization Correction Factor

Pulse Width (PW) = 87.33ms

2/PW = 2/87.33ms = 0.023kHz

RBW > 2/PW (0.023kHz)

Therefore PDCF is not needed

4. BANDWIDTH TEST

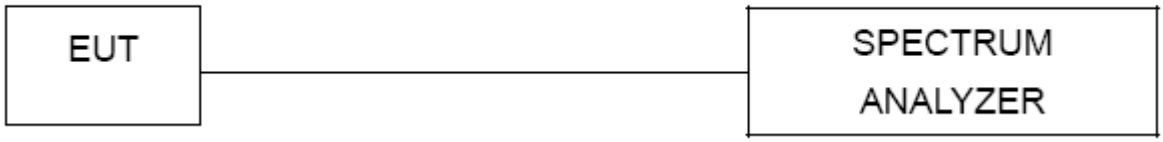
4.1 TEST PROCEDURE

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.
Limit: 433.92MHz*0.25%=1.08MHz

4.2 DEVIATION FROM STANDARD

No deviation.

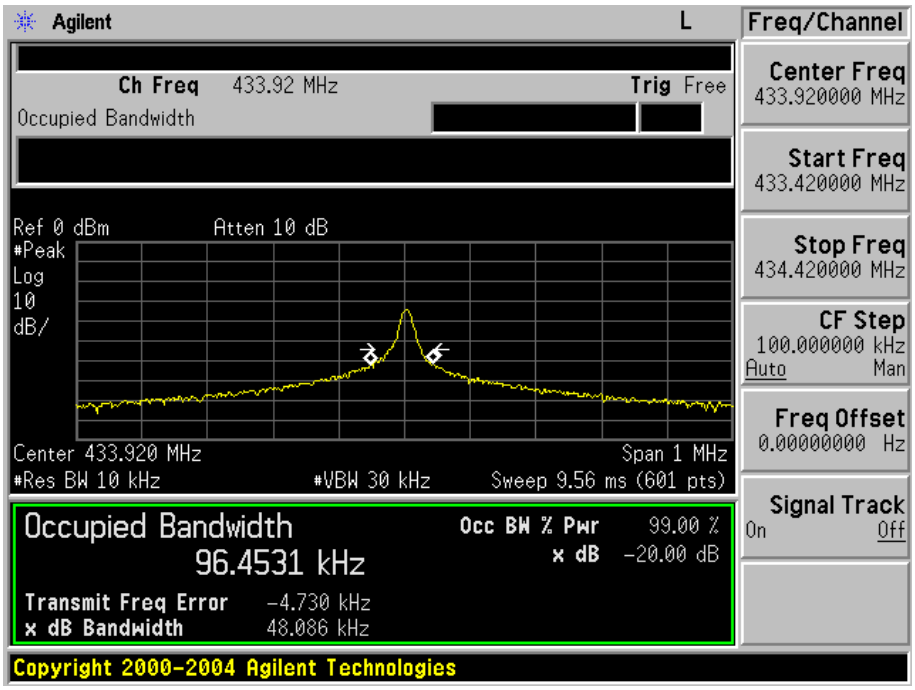
4.3 TEST SETUP



4.4 TEST RESULTS

EUT：	Wireless Dog Fence System	Model Name ：	Best-2Acre
Temperature：	26 ℃	Relative Humidity：	53%
Pressure：	1020 hPa	Test Power ：	DC 12V
Test Mode ：	TX CH 1		

Test Channel	Frequency (MHz)	20 dBc Bandwidth (MHz)	Limit (MHz)
CH01	433.92	0.048	1.08



5. PERIODIC RATE EXCEEDING

5.1 REQUIREMENTS

According to FCC 15.231(a) requirement:

(1)A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released

(1) A transmitter activated automatically shall cease transmission within 5 seconds after activation.

(2) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

5.2 TEST PROCEDURE

(1) Connect the EUT to the Spectrum and Power on.

(2) Set center frequency of spectrum analyzer = operating frequency.

(3) Set the spectrum analyzer as RBW=100kHz, VBW=100kHz, Span=0Hz, Adjust Sweep=130s.

(4) Record the duration time

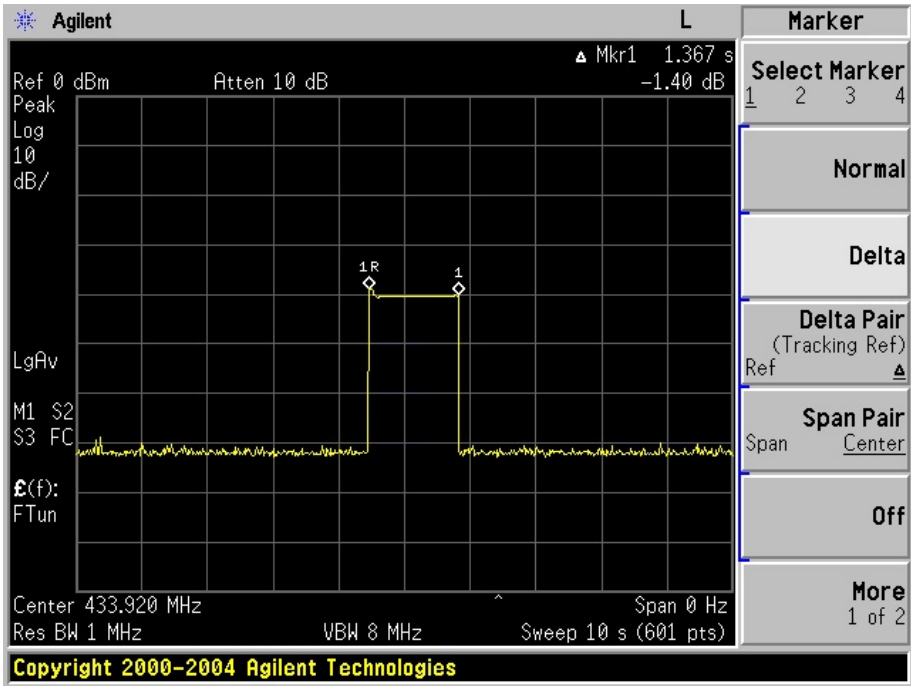
5.3 TEST SETUP

5.4 TEST RESULTS

EUT：	Wireless Dog Fence System	Model Name ：	Best-2Acre
Temperature：	26 ℃	Relative Humidity：	53%
Pressure：	1020 hPa	Test Power ：	DC 12V
Test Mode ：	TX		

Frequency(MHz)	Transmission time(s)
433.92	1.367s
Limit	5s
Result	Pass

Transmission time



According to FCC 15.231(a) requirement:
(1)A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released
OK,see Above test result.

(2)A transmitter activated automatically shall cease transmission within 5 seconds after activation.
OK, see Above test result.

(3)Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

OK, not exceed more than two seconds per hour for each transmitter