

Global United Technology Services Co., Ltd.

Report No.: GTS201903000166F01

FCC REPORT

Applicant:	Dinsafer Innovation Co., Ltd.
Address of Applicant:	Room 402/403, Floor 4, Area B, Unit B, West Silicon Valley, No. 5010, Baoan Avenue, Hangcheng Street, Baoan District, Shenzhen, 518128, China
Manufacturer:	Dinsafer Innovation Co., Ltd.
Address of Manufacturer:	Room 402/403, Floor 4, Area B, Unit B, West Silicon Valley, No. 5010, Baoan Avenue, Hangcheng Street, Baoan District, Shenzhen, 518128, China
Equipment Under Test (I	EUT)
Product Name:	Wireless Smart Alarm System
Model No.:	A4(*4,*=A-Z)(A*,*=1-9)
FCC ID:	2ASON-A4
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.231
Date of sample receipt:	March 22, 2019
Date of Test:	March 22~ April 1, 2019
Date of report issued:	April 2, 2019
Test Result :	PASS *

In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature: 8019

Robinson Lo Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.



2 Version

Version No.	Date	Description
01	April 2, 2019	Original

Prepared By:

Check By:

Date:

Date:

April 2, 2019

Project Engineer

obinson

Reviewer

April 2, 2019



3 Contents

		.9-
1	COVER PAGE	1
2	VERSION	2
3	CONTENTS	3
4	TEST SUMMARY	4
	4.1 MEASUREMENT UNCERTAINTY	4
5	GENERAL INFORMATION	
	 5.1 GENERAL DESCRIPTION OF EUT 5.2 TEST MODE 	
	5.3 DESCRIPTION OF SUPPORT UNITS	
	5.4 TEST FACILITY	
	5.5 TEST LOCATION	
	5.6 OTHER INFORMATION REQUESTED BY THE CUSTOMER	-
6	TEST INSTRUMENTS LIST	7
7		
	7.1 ANTENNA REQUIREMENT	9
	7.2 CONDUCTED EMISSIONS	. 10
	7.3 RADIATED EMISSION METHOD	. 13
	7.3.1 Field Strength of The Fundamental Signal	
	7.3.2 Spurious Emissions	
	7.4 20DB Occupy Bandwidth	
	7.5 DWELL TIME	
8	TEST SETUP PHOTO	. 21
9	EUT CONSTRUCTIONAL DETAILS	. 21

4 Test Summary

Test Item	Section in CFR 47	Result
Antenna Requirement	15.203	Pass
Conduction Emission	15.207	Pass
Field strength of the Fundamental Signal	15.231 (b)	Pass
Spurious Emissions	15.231 (b)/15.209	Pass
20dB Bandwidth	15.231 (c)	Pass
Dwell Time	15.231 (a)(1)	Pass

Pass: The EUT complies with the essential requirements in the standard.

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes	
Radiated Emission	9kHz ~ 30MHz	\pm 4.54dB	(1)	
Radiated Emission	30MHz ~ 1000MHz	\pm 5.34dB	(1)	
Radiated Emission	1GHz ~ 26.5GHz	\pm 5.34dB	(1)	
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.44dB	(1)	
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.				



5 General Information

5.1 General Description of EUT

Product Name:	Wireless Smart Alarm System
Model No.:	A4(*4,*=A-Z)(A*,*=1-9)
Test model:	A4
Remark: All above models are	identical in the same PCB layout, interior structure and electrical circuits.
The only difference is model n	ame for commercial purpose.
Serial No.:	2019-NOVA Pro A4
Hardware Version:	Y005-F4
Software Version:	Y005F4_V0.9.1.2019.04.01
Test sample(s) ID:	GTS201903000166-1
Sample(s) Status:	Engineer sample
Operation Frequency:	433.92MHz
Modulation technology:	2FSK
Antenna Type:	Integral Antenna
Antenna gain:	0dBi(declare by applicant)
Power supply:	DC3.7V 2300mAh 8.51Wh battery
	Or DC 5V/2A adapter

5.2 Test mode

```
Transmitting mode
```

Keep the EUT in transmitting mode.

Per-test mode.

We have verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which only the worst case was shown in this test report and defined as follows:

	Axis	Х	Y	Z
433.92MHz	Field Strength(dBuV/m)	79.76	80.7	76.14

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
DELTA	ADAPTER	ADP-60ADT	N/A

5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• FCC — Registration No.: 381383

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383.

• Industry Canada (IC) — Registration No.: 9079A-2

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2.

• NVLAP (LAB CODE:600179-0)

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd. No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China Tel: 0755-27798480 Fax: 0755-27798960

5.6 Other Information Requested by the Customer

None.



6 Test Instruments list

Radia	Radiated Emission:					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 27 2018	June. 26 2019
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 27 2018	June. 26 2019
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 27 2018	June. 26 2019
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 27 2018	June. 26 2019
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 27 2018	June. 26 2019
9	Coaxial Cable	GTS	N/A	GTS211	June. 27 2018	June. 26 2019
10	Coaxial cable	GTS	N/A	GTS210	June. 27 2018	June. 26 2019
11	Coaxial Cable	GTS	N/A	GTS212	June. 27 2018	June. 26 2019
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 27 2018	June. 26 2019
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 27 2018	June. 26 2019
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 27 2018	June. 26 2019
15	Band filter	Amindeon	82346	GTS219	June. 27 2018	June. 26 2019
16	Power Meter	Anritsu	ML2495A	GTS540	June. 27 2018	June. 26 2019
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 27 2018	June. 26 2019
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 27 2018	June. 26 2019
19	Splitter	Agilent	11636B	GTS237	June. 27 2018	June. 26 2019
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 27 2018	June. 26 2019
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 20 2018	Oct. 19 2019
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 20 2018	Oct. 19 2019
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 20 2018	Oct. 19 2019
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 27 2018	June. 26 2019



Conc	lucted Emission					
ltem	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.16 2014	May.15 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2018	June. 26 2019
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 27 2018	June. 26 2019
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 27 2018	June. 26 2019
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	КТЈ	TA328	GTS233	June. 27 2018	June. 26 2019
8	Absorbing clamp	Elektronik- Feinmechanik	MDS21	GTS229	June. 27 2018	June. 26 2019

Gene	General used equipment:					
ltem	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	ChangChun	DYM3	GTS257	June 27 2018	June 26 2019



7 Test results and Measurement Data

7.1 Antenna Requirement

	FCC Part15 C Section 15.203			
15.203 requirement:				
responsible party shall be antenna that uses a uniq	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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.			
EUT Antenna:				
The antenna is integral an	tenna; the best case gain of the antenna is 0dBi, reference to the appendix II for details.			

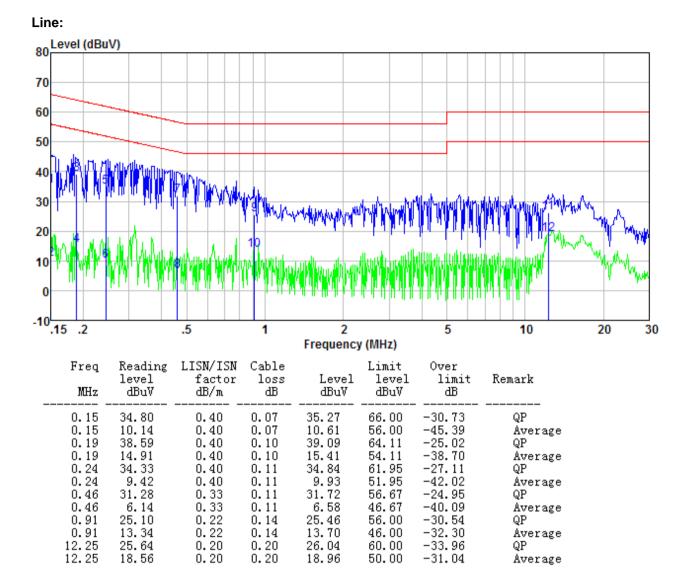


7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207						
Test Method:	ANSI C63.10:2013						
 Test Frequency Range:	150KHz to 30MHz						
Class / Severity:	Class B						
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto						
 Limit:		Limit (c	lBuV)				
	Frequency range (MHz)	Quasi-peak	Average				
	0.15-0.5	66 to 56*	56 to 46*				
	0.5-5	56	46				
	5-30	60	50				
 	* Decreases with the logarithn	n of the frequency.					
Test setup:	Reference Plane						
	AUX Filter AC power Equipment E.U.T Filter AC power Test table/Insulation plane EMI Receiver Remark: E.U.T: Equipment Under Test ENI: Line impedence Stabilization Network Test table height=0.8m Retwork						
Test procedure:	 The E.U.T and simulators a line impedance stabilization 50ohm/50uH coupling impediate The peripheral devices are LISN that provides a 50ohm 	n network (L.I.S.N.). Th edance for the measuri also connected to the	nis provides a ng equipment. main power through a				
	termination. (Please refer to photographs).	o the block diagram of	the test setup and				
	 Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement. 						
Test Instruments:	Refer to section 6.0 for details						
Test mode:	Refer to section 5.2 for details						
Test results:	Pass						

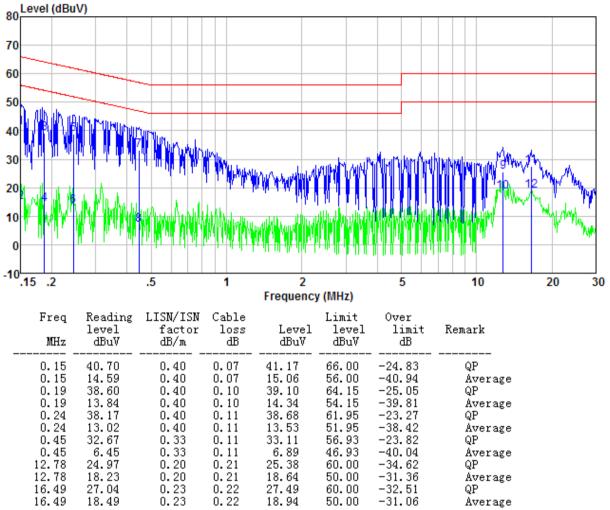
Measurement data:











Notes:

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss
- 4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.



7.3 Radiated Emission Method

1.5										
	Test Requirement:	FCC Part15 C Section	on 15.23	31 (b)& S	Section 15.2	209	<u>.</u>			
	Test Method:	ANSI C63.10:2013								
	Test Frequency Range:	9kHz to 5000MHz								
	Test site:	Measurement Distar	nce: 3m							
	Receiver setup:	Frequency	Dete	ector	RBW	VB	W	Value		
		9KHz-150KHz	Quas	i-peak	200Hz	600	Hz	Quasi-peak		
		150KHz-30MHz	Quas	i-peak	9KHz	30KHz		Quasi-peak		
		30MHz-1GHz	Quas	i-peak	100KHz	300k	Ήz	Quasi-peak		
			Pe	eak	1MHz	3MI	Ηz	Peak		
		Above 1GHz	Peak		1MHz	10	Ηz	Average		
	Limit:	Frequency		Limit	(dBuV/m @	3m)		Remark		
	(Field strength of the	433.92MHz			100.83			Peak Value		
	fundamental signal)				80.83		A	verage Value		
	Limit:			Fie	ld Strength	of	Fie	eld Strength of		
	(Spurious Emissions)		Fundamental Frequency					Unwanted		
		(MHz)			fundamental (microvolts/meter)			Emissions (microvolts/meter)		
		40.66-40.70		1,000			100			
		70-130		500		50				
		130-174		50	0 to 1,500*	*	ļ	50 to 1,50**		
		174-260			1,500			1,50		
		260-470		1,5	1,500 to 5,000**			,50 to 5,00**		
		Above 470			5,000 5,00					
		Frequency			Class B	dBuV	/m @	23m)		
		(MHz)			Peak Ave			Average		
		Above 1000			74			54		
		Or The maximum pe								
		maximum permitted f strength.	fundame	ental lev	el whicheve	er limit	perm	hits higher field		
	Test setup:									
		Below 30MHz								
							-			
		E	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			=			
		411A	< 3	m >+			111			
		ÅÅÅÅ.					111			
		Turn Table \downarrow EUT- < $80 \text{ cm} \rightarrow \downarrow$ < $1 \text{ m} \rightarrow \downarrow$								
		Test /	Antenna	Receiver#	Preamplifier	~				
		Below 1GHz								



	Report No.: GTS201903000166F01						
	Above 1GHz						
	<pre></pre>						
Test Procedure:	 The EUT was placed on the top of a rotating table (0.8 meters for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving 						
	antenna, which was mounted on the top of a variable-height antenna						
	tower.3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.						
	4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.						
	5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.						
	 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. 						
Test Instruments:	Refer to section 6.0 for details						
Test mode:	Refer to section 5.2 for details						
Test environment:	Temp.:25 °CHumid.:50%Press.:1 010mbar						
Test results:	Pass						

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Measurement data:

7.3.1 Field Strength of The Fundamental Signal

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
433.92	96.18	16.03	3.02	37.52	77.71	100.83	-23.12	Horizontal
433.92	101.17	16.03	3.02	37.52	82.70	100.83	-18.13	Vertical

Average value:

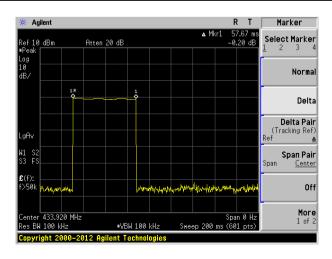
Frequency (MHz)	Peak Value (dBuV/m)	Duty cycle factor	Average value (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
433.92	77.71	-4.78	72.93	80.83	-7.90	Horizontal
433.92	82.70	-4.78	77.92	80.83	-2.91	Vertical

Remarks:

1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

2. Average value=Peak value + Duty cycle factor

Average value:	Average value:					
	Average value=Peak value + Duty Cycle Factor					
Calculate Formula:	Duty cycle factor=20 log(Duty cycle)					
	Duty cycle=on time/100 milliseconds or period, whichever is less					
	T on time =57.67(ms)					
Toot data	T period 100ms					
Test data:	Duty cycle=0.5767					
	duty cycle factor=-4.78					



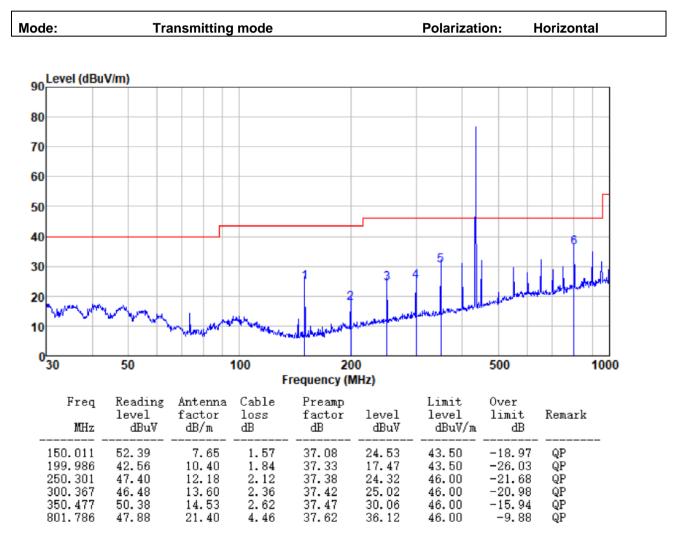
7.3.2 Spurious Emissions

Measurement data:

9 kHz ~ 30 MHz

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Below 1GHz:





Mode	e:		Т	rans	smitti	ing	mode				P	olari	izatio	n:	Ver	tical	
90	Level (dl	BuV/n	n)														
80																	
70																	
60																	
50																	
40						_								5			
30												3			6	1	
20	dun p	-yuri	a suba					1			Í			a and	***		Ave, a construction
10	-		~ `	M	-	Walk V	Mar March	an de	by barnet	(p) and the second	4.440						
0	30		50				100	Freq	2(uency (l)0 MHz)				50)0		10
	Free MH:	- 1	leadin evel dBuV	-	Anter fact dB/r	or	Cable loss dB	f	reamp actor dB	lev dB	rel uV	le	mit vel BuV/n	11	/er imit dB	Rema	rk
	150.011 250.301 300.361 350.471 451.138 550.948	1 4 7 4 7 4 5 5	6.38 3.86 3.68 8.85 4.92 5.22		7.1 12. 13.1 14.1 16.4 18.4	18 60 53 40	1.57 2.12 2.36 2.62 3.09 3.53	3 3 3 3	7.08 7.38 7.42 7.47 7.51 7.53	18. 20. 22. 28. 36. 29.	78 22 53 90	46 46 46 46	.50 .00 .00 .00 .00	-2 -2 -1	24.98 25.22 23.78 17.47 -9.10 16.33	QP QP QP QP QP QP QP	



Above 1G:

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1220	49.8	24.83	4.54	35.93	43.24	74.00	-30.76	Vertical
1695	47.07	25.85	5.26	36.31	41.87	74.00	-32.13	Vertical
2210	47.36	26.95	6.04	36.69	43.66	74.00	-30.34	Vertical
1375	49.07	25.2	4.77	36.07	42.97	74.00	-31.03	Horizontal
1980	47.87	26.36	5.68	36.49	43.42	74.00	-30.58	Horizontal
2375	42.71	27.38	6.29	36.84	39.54	74.00	-34.46	Horizontal
Average val	ue:							
_				Average				

Frequency (MHz)	Level (dBuV/m)	Duty cycle factor	Average value (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1220	43.24	-4.78	38.46	54.00	-15.54	Vertical
1695	41.87	-4.78	37.09	54.00	-16.91	Vertical
2210	43.66	-4.78	38.88	54.00	-15.12	Vertical
1375	42.97	-4.78	38.19	54.00	-15.81	Horizontal
1980	43.42	-4.78	38.64	54.00	-15.36	Horizontal
2375	39.54	-4.78	34.76	54.00	-19.24	Horizontal

Remarks:

1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

2. Average value=Peak value + Duty cycle factor



Test Requirement: FCC Part15 C Section 15.231 (c) **Test Method:** ANSI C63.10:2013 Limit: The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900MHz. 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. Test setup: Spectrum Analyzer E.U.T r. Non-Conducted Table **Ground Reference Plane Test Instruments:** Refer to section 6.0 for details Test mode: Refer to section 5.2 for details

7.4 20dB Occupy Bandwidth

Measurement Data

Test results:

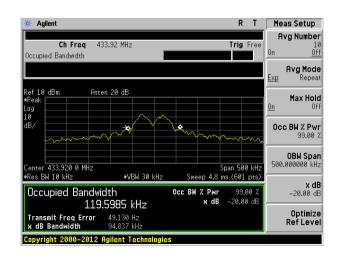
Test Frequency (MHz)	20dB bandwidth (MHz)	Limit (MHz)	Result
433.92	0.095	1.085	Pass

Pass

Note: Limit= Fundamental frequency×0.25%

433.92×0.25%=1.085MHz

Test plot as follows:



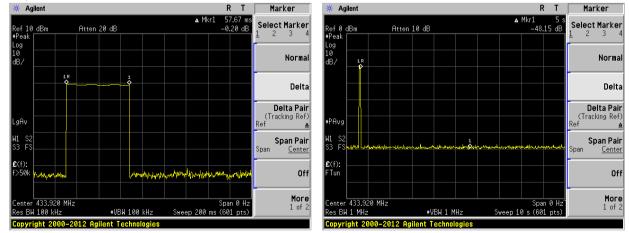
7.5 Dwell Time

Test Requirement:	FCC Part15 C Section 15.231 (a)(1)			
Test Method:	ANSI C63.10:2013			
Receiver setup:	RBW=100KHz, VBW=300KHz, span=0Hz, detector: Peak			
Limit:	Not more than 5 seconds			
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane			
Test Instruments:	Refer to section 6.0 for details			
Test mode:	Refer to section 5.2 for details			
Test results:	Pass			

Measurement data:

Frequency (MHz)	Duration of each TX (second)	Limit (second)	Result
433.92	0.05767	<5.0	Pass

Test plot as follows:





8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

----- End ------