

# FCC RADIO TEST REPORT

## FCC 47 CFR PART 15 SUBPART C

<b>Test Standard</b>	<b>FCC Part 15.231</b>
<b>FCC ID</b>	<b>KR5T4X</b>
<b>Trade name</b>	<b>Continental</b>
<b>Product name</b>	<b>Radio Frequency Transmitter (Car Key)</b>
<b>Model No.</b>	<b>T4x</b>
<b>Operation Freq.</b>	<b>433.66 MHz &amp; 434.18 MHz</b>
<b>Test Result</b>	<b>Pass</b>

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of SGS Compliance Certification Services Inc.(Wugu Laboratory)



Approved by:

Reviewed by:



Sam Chuang  
Manager



Jerry Chuang  
Engineer

## Revision History

Rev.	Issue Date	Revisions	Revised By
00	February 8, 2018	Initial Issue	May Lin
01	March 13, 2018	1. Modify manufacturer and added Factory. (Page 4) 2. Modify EUT channel information. (Page 5)	May Lin

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## 1. GENERAL INFORMATION

### 1.1 EUT INFORMATION

Applicant	Continental Automotive GmbH Siemensstrasse 12 SV C TS RBG EMC-Laboratory Regensburg, 93055 Germany
Manufacturer	Continental Automotive GmbH Siemensstrasse 12 SV C TS RBG EMC-Laboratory Regensburg, 93055 Germany
Factory	Continental Automotive Guadalajara México, S.A. de C.V. Camino a la Tijera No. 3 45640 Tlajomulco de Zuñiga, Jalisco Mexico
Equipment	Radio Frequency Transmitter (Car Key)
Model Name	T4x
Model Discrepancy	N/A
Received Date	January 29, 2018
Date of Test	February 2 ~ 8, 2018
Periodic operation	<input checked="" type="checkbox"/> (1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released. <input type="checkbox"/> (2) A transmitter activated automatically shall cease transmission within 5 seconds after activation <input type="checkbox"/> (3) Periodic transmissions at regular predetermined intervals are not permitted. <input type="checkbox"/> (4) Periodic transmissions (lower field strength): each transmission is not greater than 1 sec and the silent period between transmissions is at least 30 times the duration of the transmission but in no case less than 10 sec.
Power Operation	Battery 1 x CR2032 (Lithium Standard-Battery: 3V)

## 1.2 EUT CHANNEL INFORMATION

Frequency Range	433.66 MHz, 434.18 MHz
Modulation Type	FSK
Bandwidth	433.66 MHz: 53.8350 kHz
	434.18 MHz: 58.6107 kHz
Number of Channels	2 channel

**Remark:**

Refer as ANSI 63.10:2013 clause 5.6.1 Table 4 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
<input checked="" type="checkbox"/> 1 MHz or less	1	Middle
<input type="checkbox"/> 1 MHz to 10 MHz	2	1 near top and 1 near bottom
<input type="checkbox"/> More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

## 1.3 ANTENNA INFORMATION

Antenna Type	Loop Antenna (PCB Routed Antenna)
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## 1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 2.96
Emission bandwidth, 20dB bandwidth	+/- 1.4003
RF output power, conducted	+/- 1.1372
Power density, conducted	+/- 1.4003
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1GHz~8GHz	+/- 2.5975
3M Semi Anechoic Chamber / 8GHz~18GHz	+/- 2.6112
3M Semi Anechoic Chamber / 18GHz~26GHz	+/- 2.7389
3M Semi Anechoic Chamber / 26GHz~40GHz	+/- 2.9683
3M Semi Anechoic Chamber / 40GHz~60GHz	+/- 1.8509
3M Semi Anechoic Chamber / 60GHz~75GHz	+/- 1.9869
3M Semi Anechoic Chamber / 75GHz~110GHz	+/- 2.9651
3M Semi Anechoic Chamber / 110GHz~170GHz	+/- 2.7807
3M Semi Anechoic Chamber / 170GHz~220GHz	+/- 3.6437
3M Semi Anechoic Chamber / 220GHz~325GHz	+/- 4.2982

**Remark:**

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

## 1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at  
 No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	N/A	Not applicable
Radiation	Jerry Chuang	-
RF Conducted	Jerry Chuang	-

**Remark:** The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

## 1.6 INSTRUMENT CALIBRATION

RF Conducted Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
Spectrum Analyzer	R&S	FSV 40	101073	10/02/2017	10/01/2018
Directional Coupler	Agilent	87301D	MY44350252	07/25/2017	07/24/2018
SUCOFLEX Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	07/31/2017	07/30/2018
Divider	Solvang Technology	2-18GHz 4Way	STI08-0015	07/26/2017	07/25/2018

3M 966 Chamber Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
Bilog Antenna	Sunol Sciences	JB3	A030105	06/20/2017	06/19/2018
Horn Antenna	EMCO	3117	55165	02/20/2017	02/19/2018
Pre-Amplifier	EMEC	EM330	60609	06/07/2017	06/06/2018
Spectrum Analyzer	Agilent	E4446A	US42510252	11/27/2017	11/26/2018
Loop Ant	COM-POWER	AL-130	121051	03/02/2017	03/01/2018
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Wideband Radio Communication Tester	R&S	CMW 500	116875	04/25/2017	04/24/2018
Pre-Amplifier	HP	8449B	3008A00965	06/27/2017	06/26/2018
Filter	N/A	580-6000	N/A	N/A	N/A
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	07/31/2017	07/30/2018
Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	07/31/2017	07/30/2018

**Remark:** Each piece of equipment is scheduled for calibration once a year.

## 1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

There are no accessories and support equipment be used during the test.

EUT Accessories Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
	N/A				

Support Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
	N/A				

## 1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC 15.231 Rules.



## 2. TEST SUMMERY

Standard Sec.	Chapter	Test Item	Result
15.203	1.2	Antenna Requirement	Pass
15.207	4.1	AC Power-line Conducted Emission	Not applicable
15.231(c)	4.2	Emission Bandwidth	Pass
15.231(b)	4.3	Fundamental Emission	Pass
15.209(b)	4.4	Transmitter Radiated Emission	Pass
15.231(a)(1)	4.5	Operation Restriction	Pass

### 3. DESCRIPTION OF TEST MODES

#### 3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	433.66 MHz
RF Filed strength	<u>Peak: 82.65 dBuv/m</u> <u>Average : 70.53 dBuv/m</u>

Operation mode	434.18 MHz
RF Filed strength	<u>Peak: 83.28 dBuv/m</u> <u>Average : 71.16 dBuv/m</u>

Remark: Field strength performed Average level at 3m.

#### 3.2 THE WORST MODE OF MEASUREMENT

Radiated Emission Measurement Above 1G	
<b>Test Condition</b>	<b>Band edge, Emission for Unwanted and Fundamental</b>
<b>DC Voltage</b>	<b>DC 3V</b>
<b>Test Mode</b>	<b>Mode 1:EUT power by Battery.</b>
<b>Worst Mode</b>	<input checked="" type="checkbox"/> <b>Mode 1</b> <input type="checkbox"/> <b>Mode 2</b> <input type="checkbox"/> <b>Mode 3</b> <input type="checkbox"/> <b>Mode 4</b>
<b>Worst Position</b>	<input type="checkbox"/> <b>Placed in fixed position.</b> <input checked="" type="checkbox"/> <b>Placed in fixed position at X-Plane (E2-Plane)</b> <input type="checkbox"/> <b>Placed in fixed position at Y-Plane (E1-Plane)</b> <input type="checkbox"/> <b>Placed in fixed position at Z-Plane (H-Plane)</b>
<b>Worst Polarity</b>	<input checked="" type="checkbox"/> <b>Horizontal</b> <input type="checkbox"/> <b>Vertical</b>

Radiated Emission Measurement Below 1G	
<b>Test Condition</b>	<b>Radiated Emission Below 1G</b>
<b>DC Voltage</b>	<b>DC 3V</b>
<b>Test Mode</b>	<b>Mode 1:EUT power by Battery.</b>
<b>Worst Mode</b>	<input checked="" type="checkbox"/> <b>Mode 1</b> <input type="checkbox"/> <b>Mode 2</b> <input type="checkbox"/> <b>Mode 3</b> <input type="checkbox"/> <b>Mode 4</b>

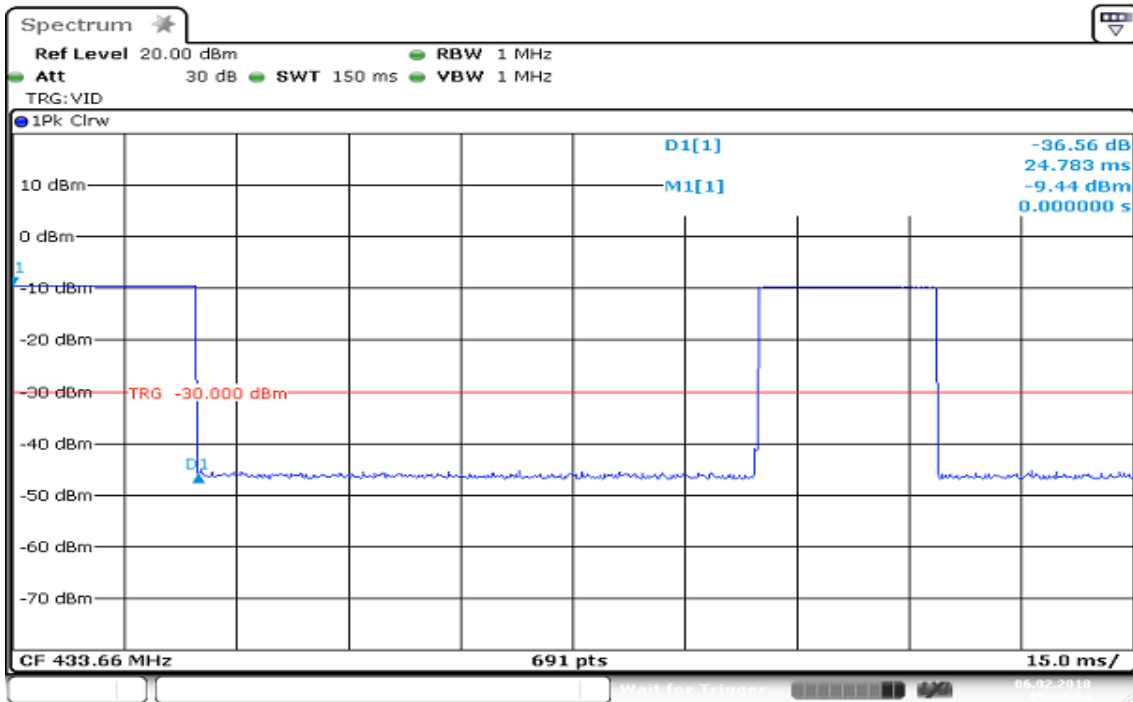
Remark:

1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis, X, Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (X-Plane and Horizontal) were recorded in this report
3. For below 1G and radiation emission were performed the EUT transmit at the highest output power channel as worse case.

### 3.3 EUT DUTY CYCLE

#### 433.66MHz

Duty Cycle	
TX ON (ms)	Duty Factor(dB)
24.783	-12.12



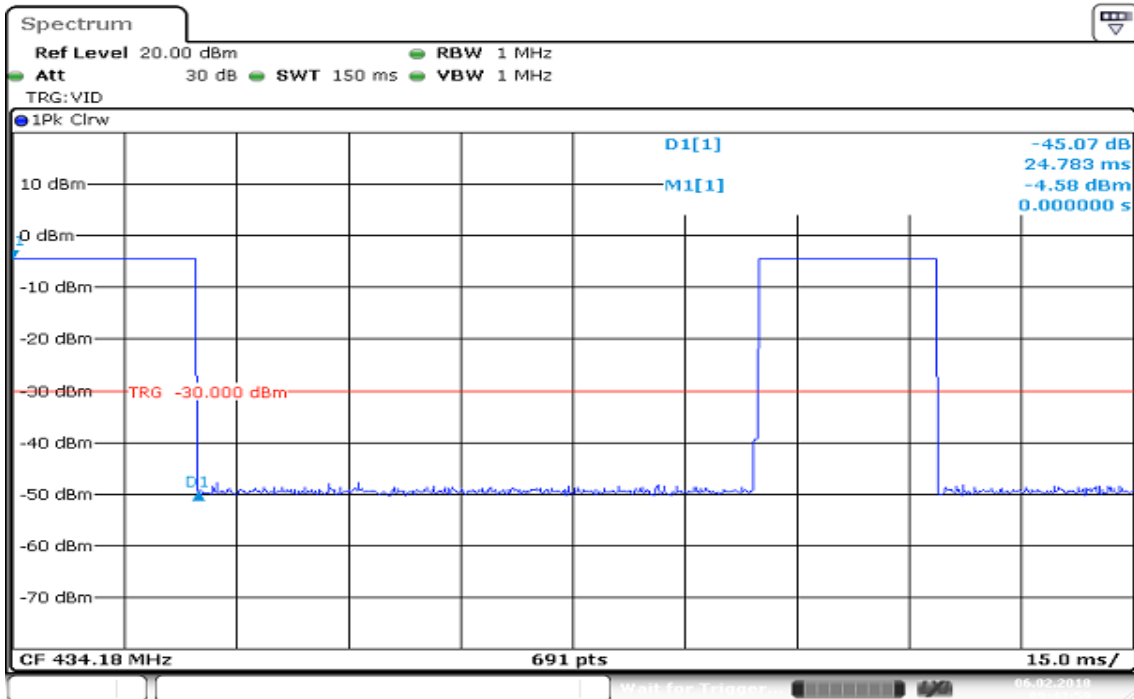
Date: 6.FEB.2018 09:39:35

Notes:

- The transmitter duty cycle was measured using a spectrum analyser in the time domain and calculated by  $20 \log (\text{Time}_{(on)} / [\text{Period or } 100 \text{ ms whichever is the lesser}] )$
- The EUT transmits for a  $\text{Time}_{(on)}$  of 24.783 milliseconds within the specified 100ms period.  
 $20 \log (\text{Time}_{(on)} / [\text{Period or } 100 \text{ ms whichever is the lesser}] )$ .  
 $20 \log (24.783/100) = -12.12\text{dB}$

**434.18 MHz**

Duty Cycle	
TX ON (ms)	Duty Factor(dB)
24.783	-12.12



Date: 6.FEB.2018 09:43:59

Notes:

1. The transmitter duty cycle was measured using a spectrum analyser in the time domain and calculated by  $20 \log(\text{Time}_{(on)} / [\text{Period or } 100 \text{ ms whichever is the lesser}])$
2. The EUT transmits for a  $\text{Time}_{(on)}$  of 24.783 milliseconds within the specified 100ms period.  
 $20 \log(\text{Time}_{(on)} / [\text{Period or } 100 \text{ ms whichever is the lesser}])$ .  
 $20 \log(24.783/100) = -12.12\text{dB}$

## 4. TEST RESULT

### 4.1 AC POWER LINE CONDUCTED EMISSION

#### 4.1.1 Test Limit

According to §15.207(a) ,

Frequency Range (MHz)	Limits(dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

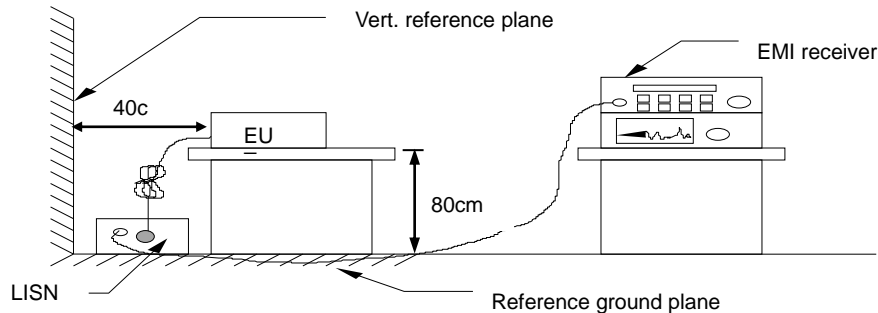
\* Decreases with the logarithm of the frequency.

#### 4.1.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete

#### 4.1.3 Test Setup



#### 4.1.4 Test Result

Not applicable

## 4.2 EMISSION BANDWIDTH

### 4.2.1 Test Limit

According to §15.231© ,

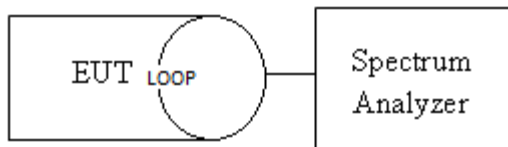
Limit	<input checked="" type="checkbox"/> 70 MHz – 900 MHz : $F_c * 0.25 \%$ <input type="checkbox"/> Above 900 MHz : $F_c * 0.5 \%$
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### 4.2.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.9.2,

The Loop antenna connected to the spectrum analyzer, was touching to the transmitter antenna. Set the RBW=10KHz, VBW ≥ 3 x RBW, Detector = Peak, Trace mode = Max hold, Sweep = Auto. Measure the maximum width of the emission that is constrained by the frequencies associated with the 20dB Bandwidth and Occupied Bandwidth(99%).

### 4.2.3 Test Setup

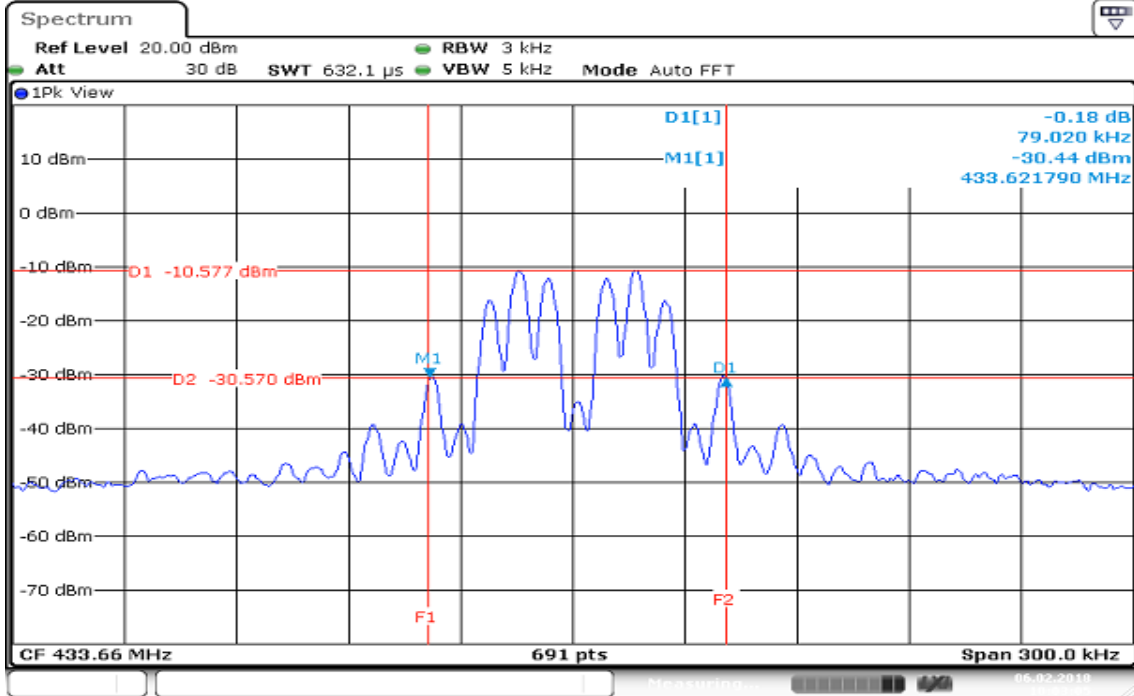


### 4.2.4 Test Result

Spectrum Bandwidth			
Frequency (MHz)	99% Occupied BW (KHz)	20dB Bandwidth (KHz)	20dB Bandwidth Limits (MHz)
433.66	53.8350	79.020	1.08415
434.18	58.6107	78.580	1.08545

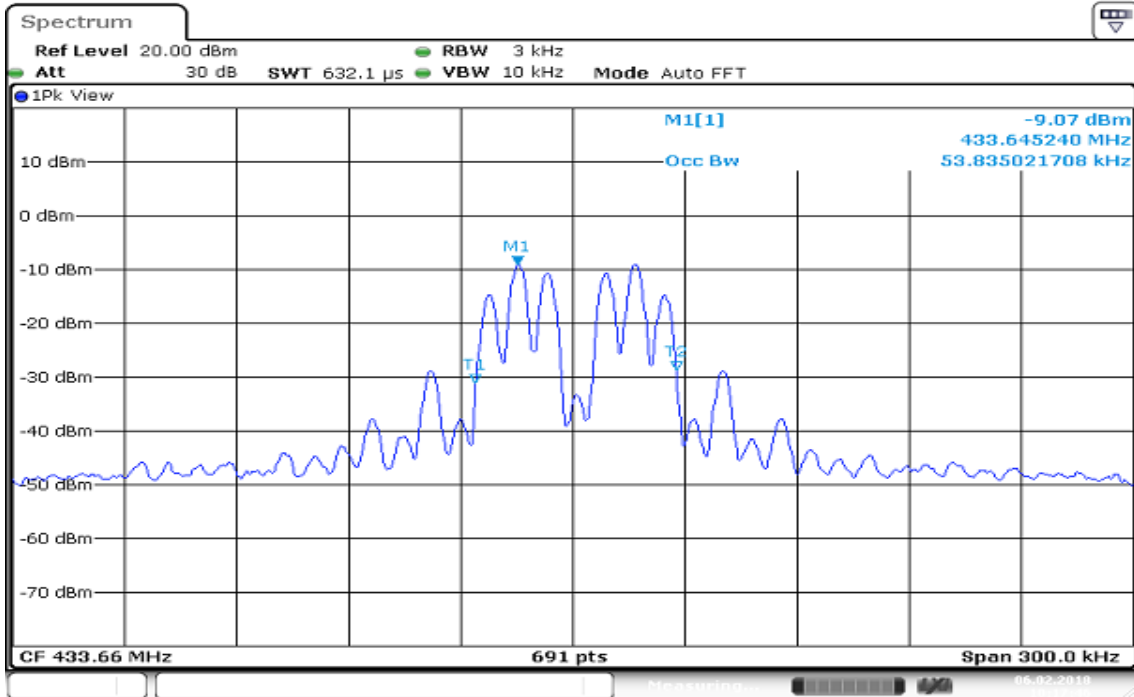
### Test Data

#### 433.66 MHz 20dB Bandwidth



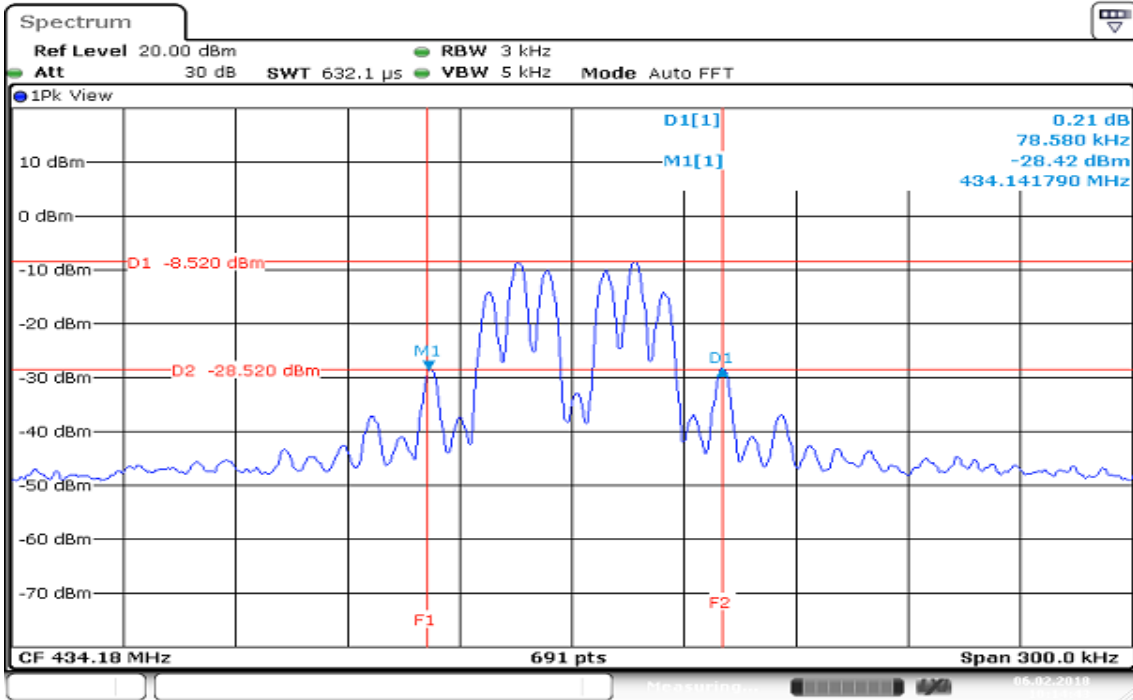
Date: 6.FEB.2018 10:03:06

#### 99% Occupied BW

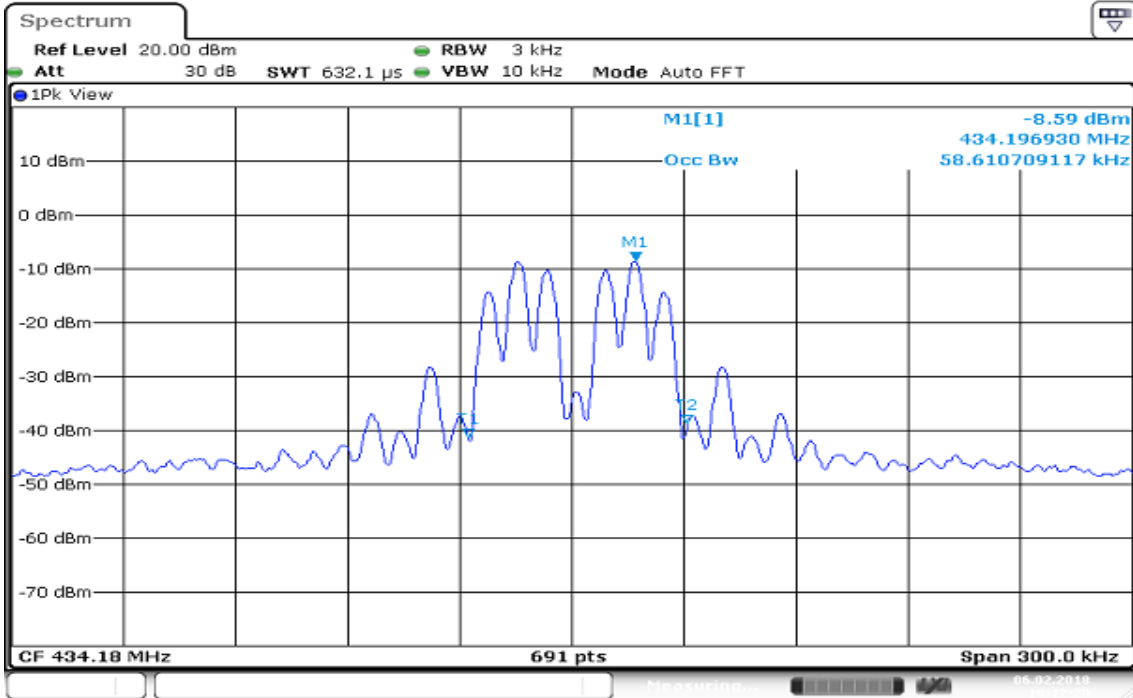


Date: 6.FEB.2018 10:17:47

### 434.18 MHz 20dB Bandwidth



### 99% Occupied BW





### 4.3 FIELD STRENGTH OF FUNDAMENTAL

#### 4.3.1 Test Limit

According to §15.231(b)

Fundamental frequency (MHz)	Field strength of fundamental (uv/m) at 3m	Field strength of fundamental (dBuv/m) at 3m
40.66-40.70	2,250	67
70-130	1,250	61.9
*130-174	*1,250 to 3,750	61.9-71.5
174-260	3,750	71.5
*260-470	*3,750 to 12,500	71.5-81.9
Above 470	12,500	81.9

**REMARK:**

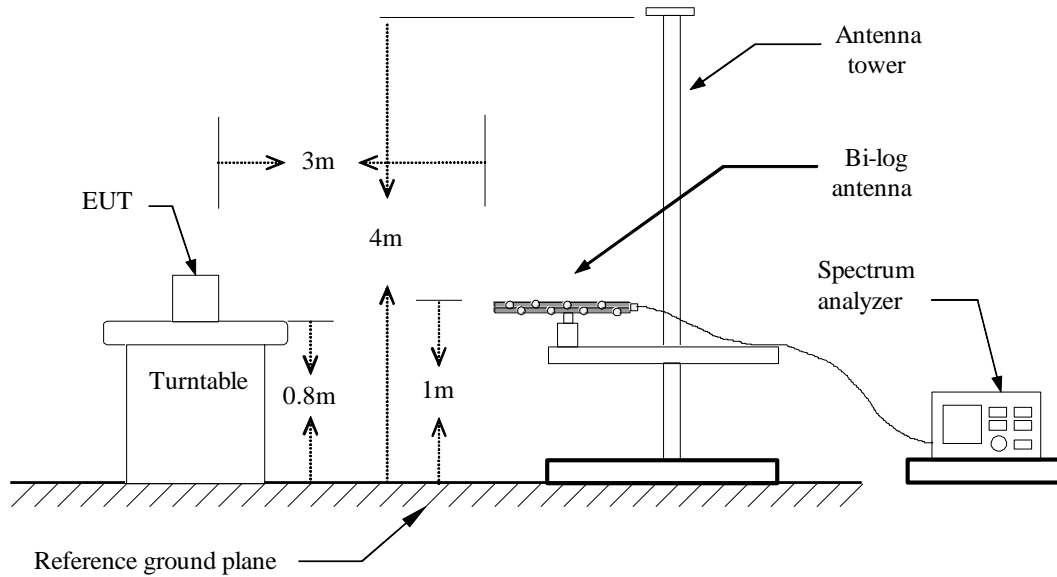
1. Linear interpolations
2. Based on the average value of the measured Field strength of fundamental.

#### 4.3.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 4.1.4 and clause 6.5

clause 4.1.4	<input checked="" type="checkbox"/> 4.1.4.2.2: Measurement Peak value. <input type="checkbox"/> 4.1.4.2.3: Duty cycle ≥ 100%. <input checked="" type="checkbox"/> 4.1.4.2.4: Measurement Average value.
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### 4.3.3 Test Setup



### 4.3.4 Test Result

#### 433.66 MHz

Field Strength					
Frequency (MHz)	Fundamental (dBuV/m) at 3m	Limit (dBuV/m) at 3m	Margin (dB)	Axis/Pol.	Remark
433.6660	70.53	80.81	-10.28	X/H	AVG

**Remark:**

1. Fundamental measured method setting on spectrum, RBW=100 kHz, VBW=100kHz and Detector=Peak.
2. Average result = Peak result + Duty factor = 82.65 dBuV/m - 12.12 = 70.53 dBuV/m
3. 260MHz ~ 470MHz limit is  $41.6667 * (\text{Frequency, MHz}) - 7083.3333$   
 $\text{Limit} = 41.6667 * (433.6660 \text{ MHz}) - 7083.3333$   
 $= 10986.0978222 \text{ (uV/m)}$   
 $\text{dBuV/m} = 20 \text{ Log (uV/m)} = 20 \text{ Log (10986.0978222 uV/m)} = 80.81 \text{ dBuV/m}$

#### 434.18 MHz

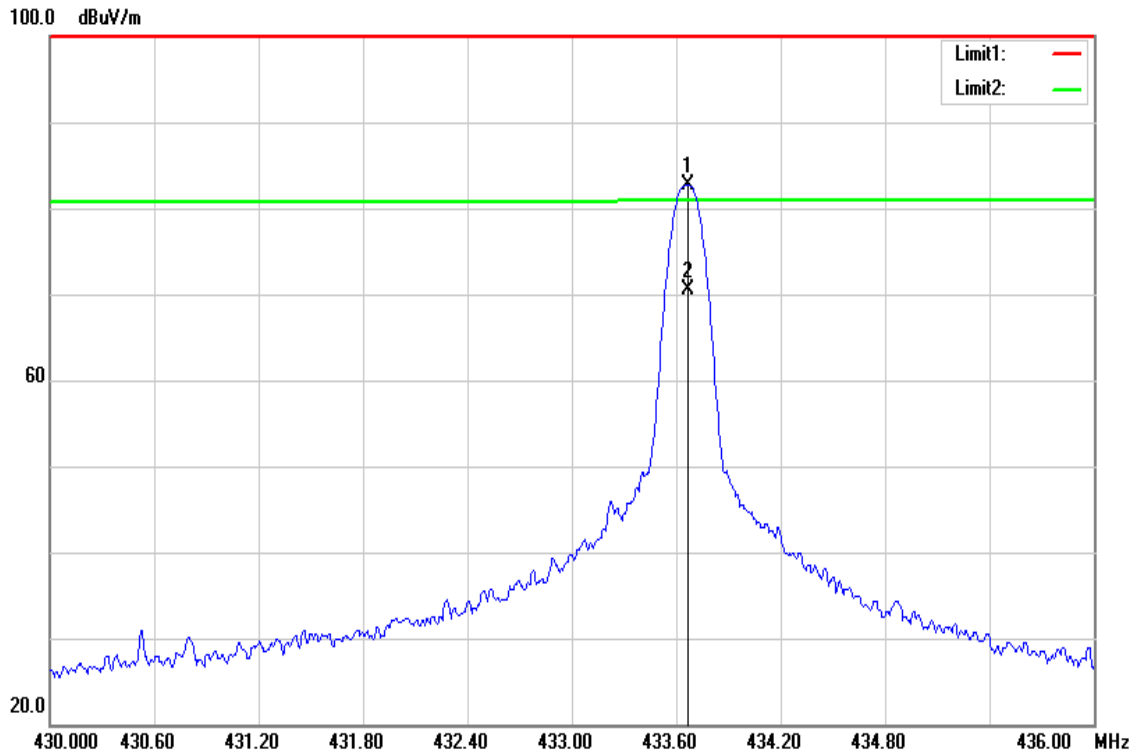
Field Strength					
Frequency (MHz)	Fundamental (dBuV/m) at 3m	Limit (dBuV/m) at 3m	Margin (dB)	Axis/Pol.	Remark
434.1820	70.81	80.84	-10.03	X/H	AVG

**Remark:**

1. Fundamental measured method setting on spectrum, RBW=100 kHz, VBW=100kHz and Detector=Peak.
2. Average result = Peak result + Duty factor = 83.28 dBuV/m - 12.12 = 71.16 dBuV/m
3. 260MHz ~ 470MHz limit is  $41.6667 * (\text{Frequency, MHz}) - 7083.3333$   
 $\text{Limit} = 41.6667 * (434.1820 \text{ MHz}) - 7083.3333$   
 $= 11007.5978394 \text{ (uV/m)}$   
 $\text{dBuV/m} = 20 \text{ Log (uV/m)} = 20 \text{ Log (11017.59785 uV/m)} = 80.83 \text{ dBuV/m}$

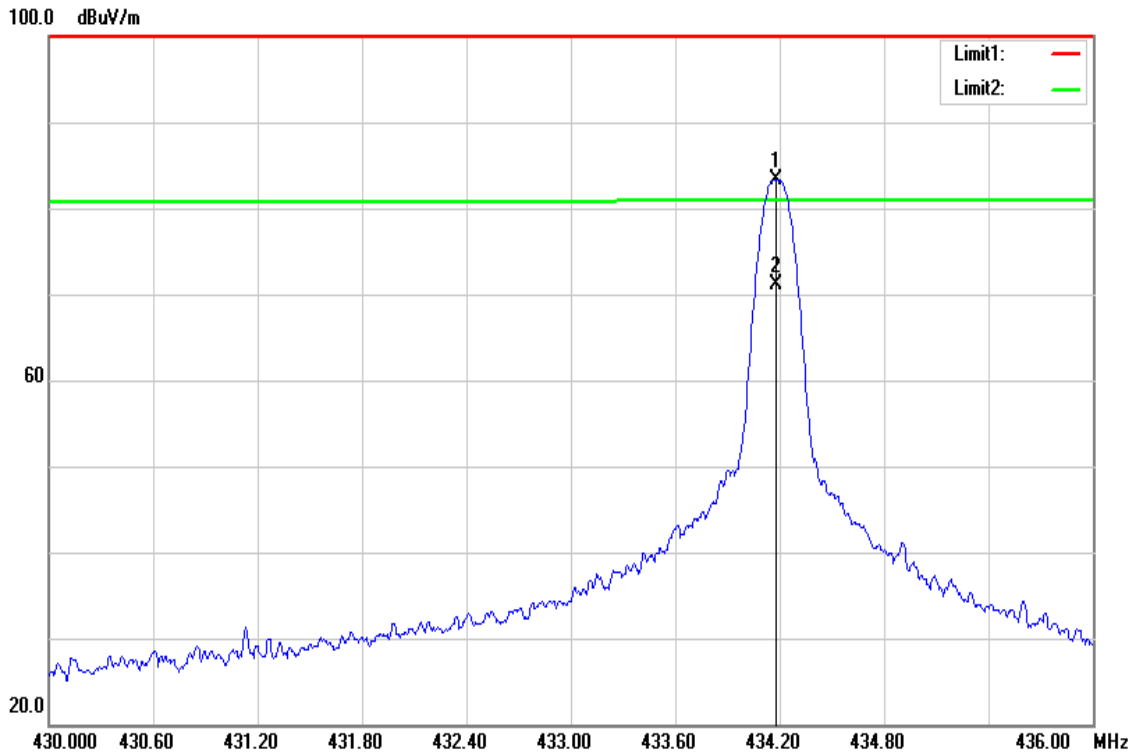
### Test Data

Test Mode:	TX-433.66MHz	Temp/Hum	24(°C)/ 33%RH
Test Item	Fundamental	Test Date	2018/02/02
Axis/Polarize	X-Plane/Hor.	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage:	3Vdc



No	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	433.6660	92.84	-10.19	82.65	100.82	-18.17	peak
2	433.6660	82.65	-12.12	70.53	80.81	-10.28	AVG

Test Mode:	TX-434.18MHz	Temp/Hum	24(°C)/ 33%RH
Test Item	Fundamental	Test Date	2018/02/02
Axis/Polarize	X-Plane/Hor.	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage:	3Vdc



No	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	434.1820	93.44	-10.16	83.28	100.83	-17.55	peak
2	434.1820	83.28	-12.12	71.16	80.83	-9.67	AVG

## 4.4 RADIATION UNWANTED EMISSION

### 4.4.1 Test Limit

According to §15.231(e) and §15.209

Unwanted emissions limit follow the table or the FCC Part 15.209, whichever limit permits higher field strength.

According to §15.231(b)

Fundamental frequency (MHz)	Field strength of Spurious emission (uv/m) at 3m	Field strength of Spurious emission (dBuv/m) at 3m
40.66-40.70	225	47
70-130	125	41.9
*130-174	*125-375	41.9-51.5
174-260	375	51.5
*260-470	*375-1250	51.5-61.9
Above 470	1250	61.9

**REMARK:**

1. Linear interpolations
2. Based on the average value of the measured Field strength of fundamental.

### Below 30MHz

Frequency (MHz)	Field Strength				
	( $\mu$ V/m)	(dB $\mu$ V/m)	Measurement Distance (meter)	(dB $\mu$ V/m)	Measurement Distance (meter)
0.009 - 0.490	2400/F(kHz)	48.52 – 13.80	300	128.52–104.84	3
0.490 - 1.705	24000/F(kHz)	33.80 – 22.97	30	73.80– 62.97	3
1.705 – 30.0	30	29.54	30	69.54	3

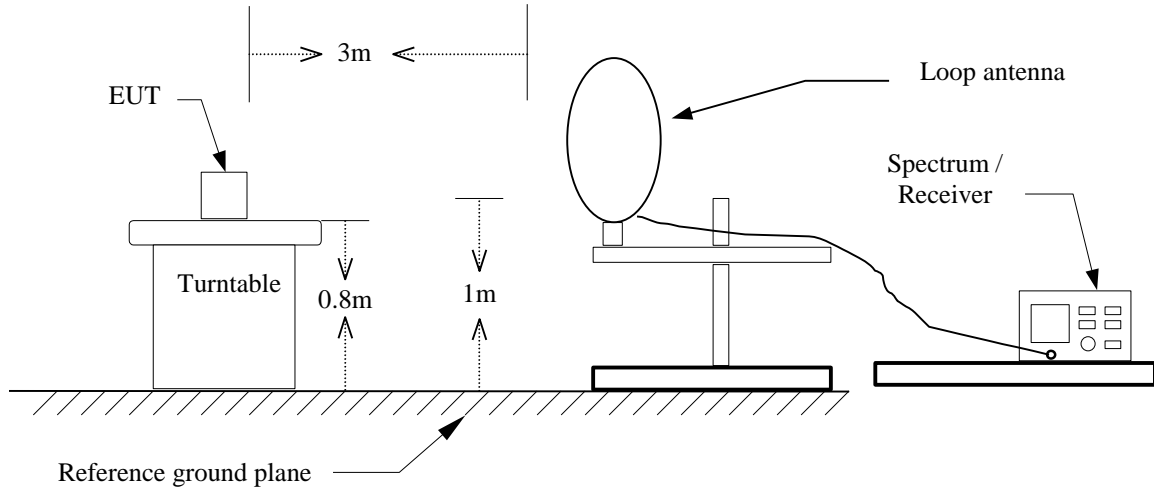
### Above 30MHz

Frequency (MHz)	Field Strength		Measurement Distance (meter)
	( $\mu$ V/m)	(dB $\mu$ V/m)	
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

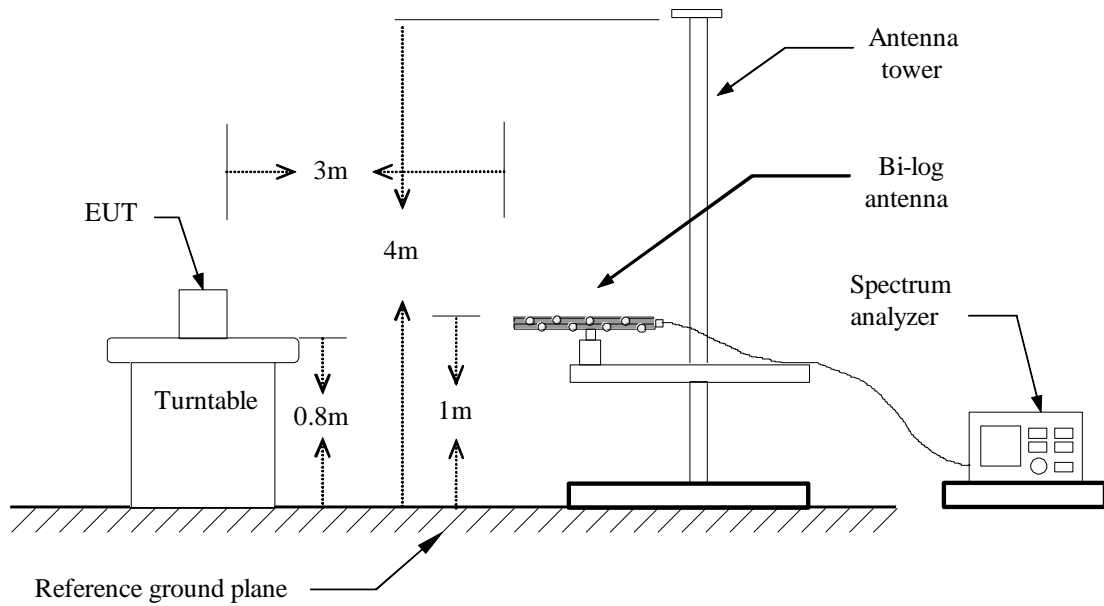


### 4.4.3 Test Setup

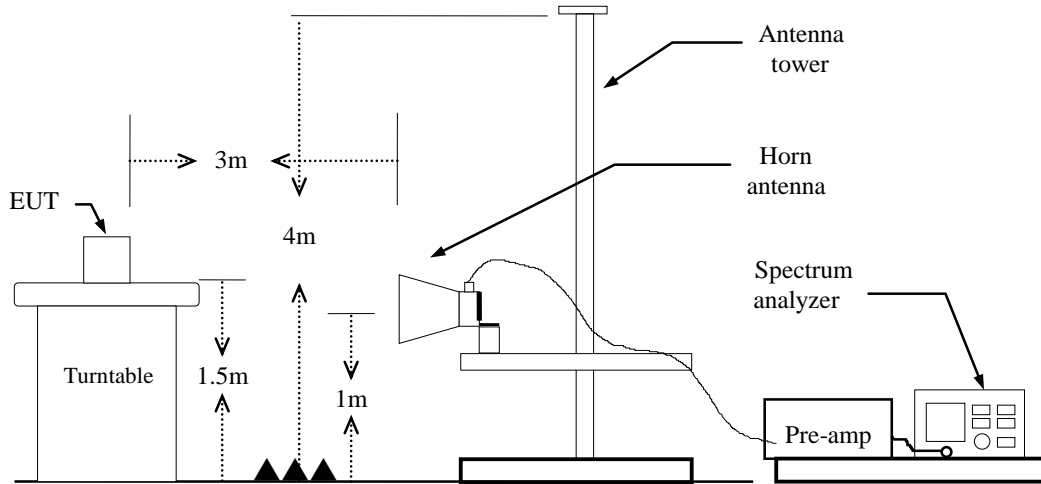
#### 9kHz ~ 30MHz



#### 30MHz ~ 1 GHz



**Above 1 GHz**



**4.4.4 Test Result**

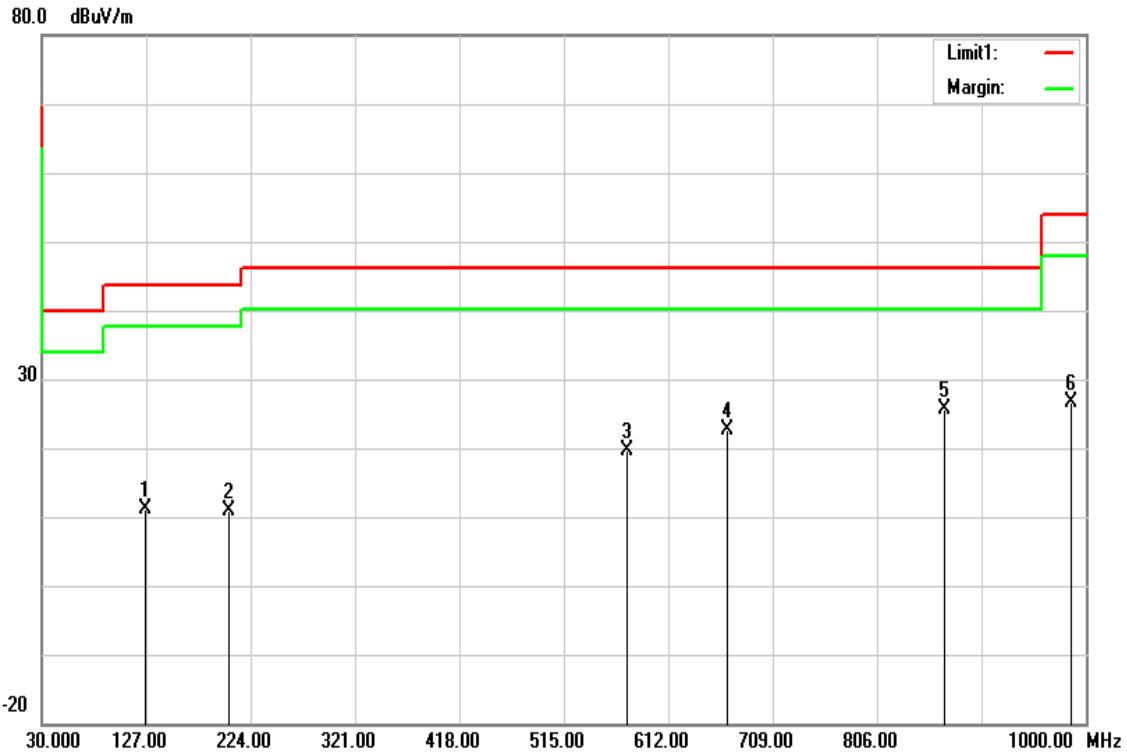
**Pass.**



**Test Data**

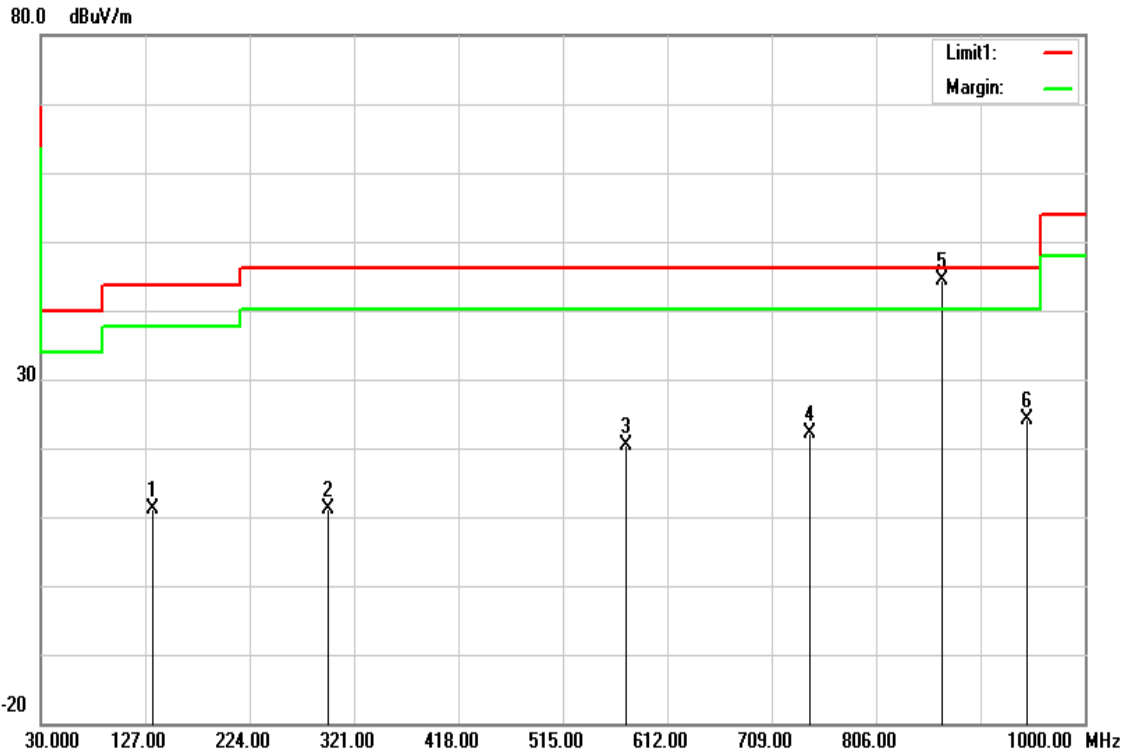
**Below 1GHz**

Test Mode:	TX-433.66MHz	Temp/Hum	24(°C)/ 33%RH
Test Item	Below 1GHz	Test Date	2018/02/05
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage:	3Vdc



Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
138.6400	26.54	-15.50	11.04	43.52	-32.48	peak
202.6600	26.66	-15.56	11.10	43.52	-32.42	peak
387.9300	27.47	-11.77	15.70	46.02	-30.32	peak
640.1300	27.47	-5.83	21.64	46.02	-24.38	peak
708.0300	29.90	-4.80	25.10	46.02	-20.92	peak
867.1100	35.12	-2.57	32.55	46.02	-13.47	peak

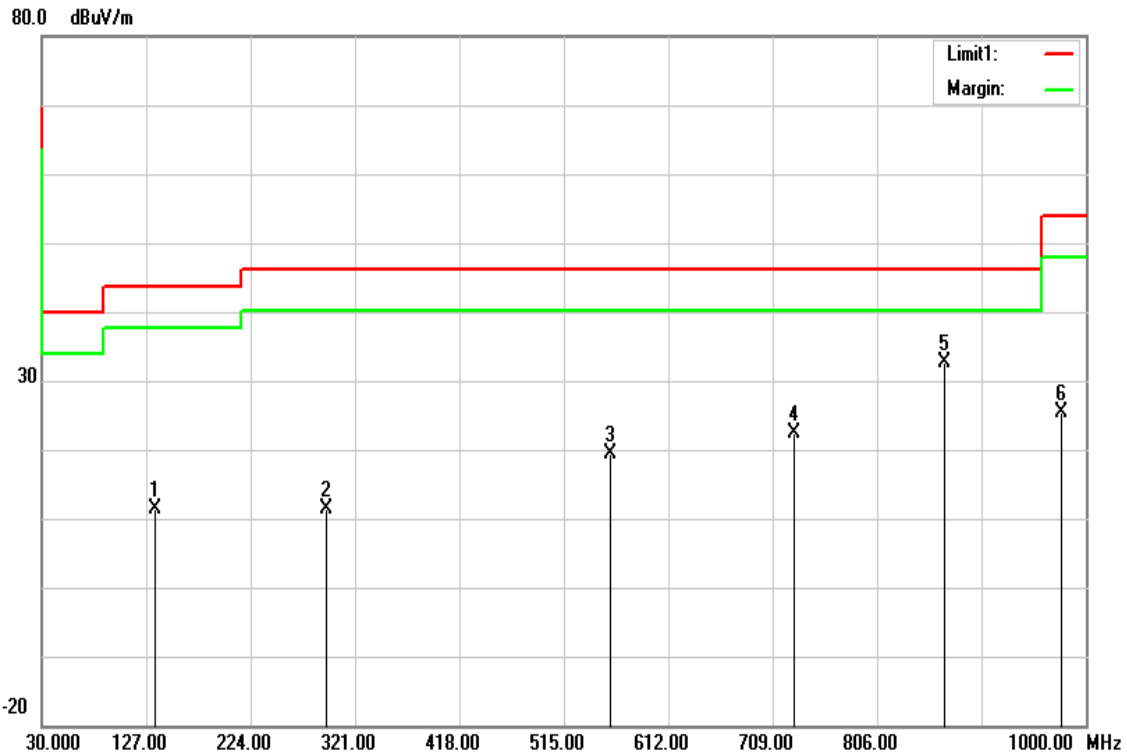
Test Mode:	TX-433.66MHz	Temp/Hum	24(°C)/ 33%RH
Test Item	Below 1GHz	Test Date	2018/02/05
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage:	3Vdc



Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
133.7900	26.58	-15.37	11.21	43.52	-32.31	peak
296.7500	25.16	-14.10	11.06	46.02	-34.96	peak
574.1700	27.53	-7.26	20.27	46.02	-25.75	peak
744.8900	26.47	-4.35	22.12	46.02	-23.90	peak
867.1100	46.07	-2.57	43.50	46.02	-2.52	QP
945.6800	25.30	-1.26	24.04	46.02	-21.98	peak

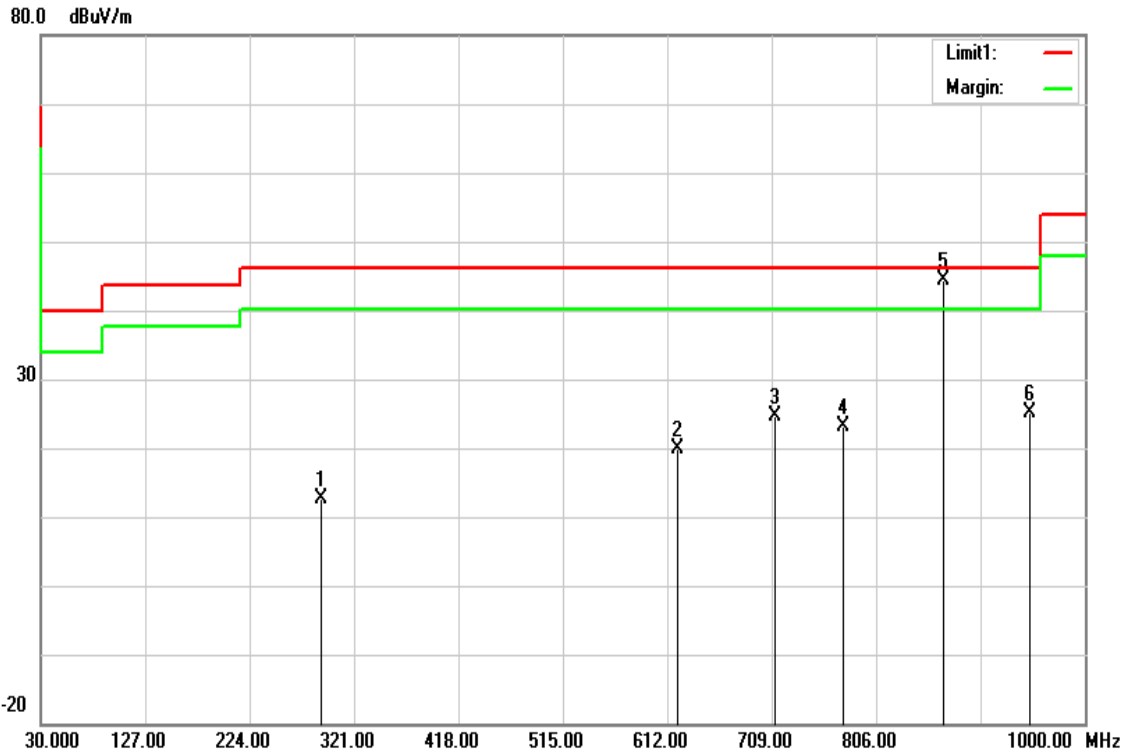
**Below 1GHz**

Test Mode:	TX-434.18MHz	Temp/Hum	24(°C)/ 33%RH
Test Item	Below 1GHz	Test Date	2018/02/05
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage:	3Vdc



Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
134.7600	26.87	-15.41	11.46	43.52	-32.06	peak
294.8100	25.58	-14.12	11.46	46.02	-34.56	peak
557.6800	26.71	-7.45	19.26	46.02	-26.76	peak
729.3700	26.87	-4.54	22.33	46.02	-23.69	peak
868.0800	35.23	-2.55	32.68	46.02	-13.34	peak
977.6900	26.16	-0.88	25.28	54.00	-28.72	peak

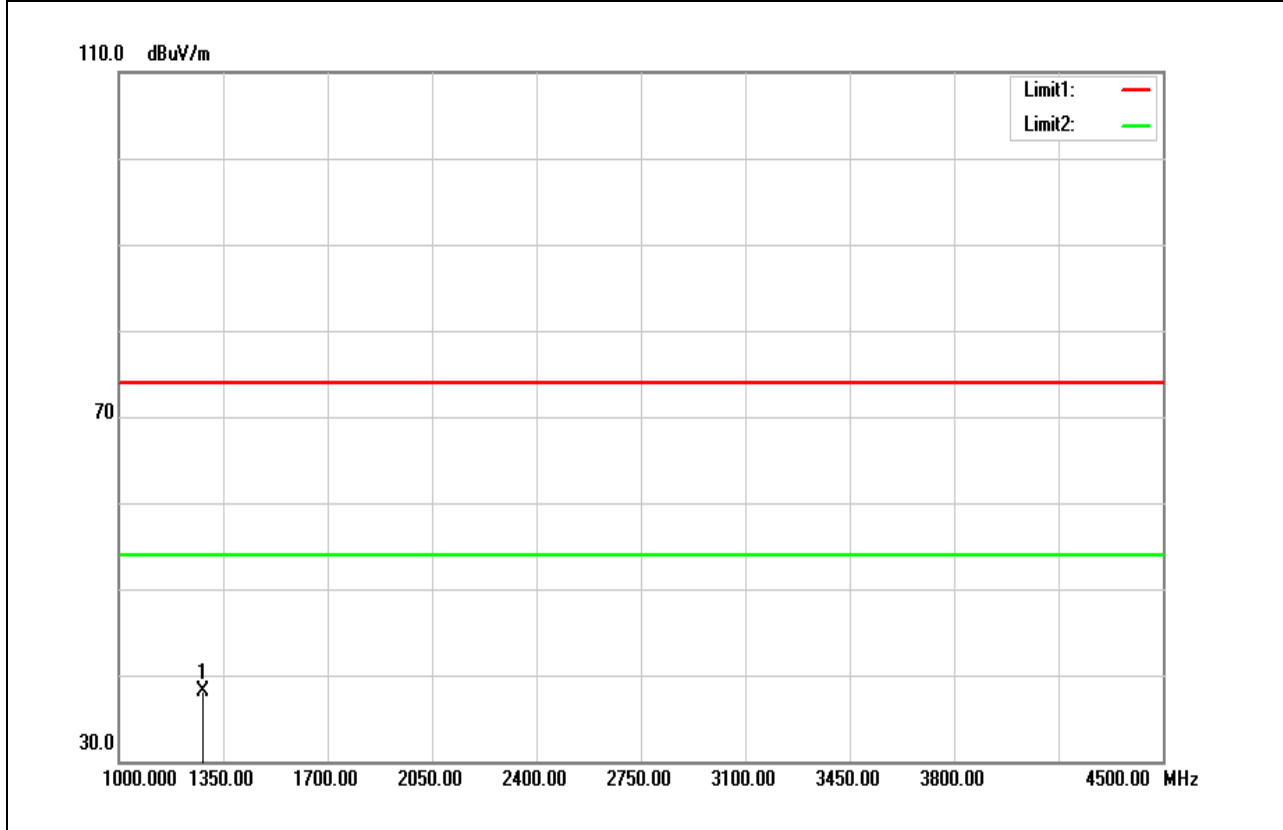
Test Mode:	TX	Temp/Hum	24(°C)/ 33%RH
Test Item	Below 1GHz	Test Date	2018/02/05
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage:	3Vdc



Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
290.9300	26.68	-14.16	12.52	46.02	-33.50	peak
621.7000	26.24	-6.33	19.91	46.02	-26.11	peak
711.9100	29.47	-4.74	24.73	46.02	-21.29	peak
775.9300	27.06	-3.82	23.24	46.02	-22.78	peak
868.0800	45.84	-2.55	43.29	46.02	-2.73	QP
948.5900	26.39	-1.21	25.18	46.02	-20.84	peak

**Above 1GHz**

Test Mode:	TX-433.66MHz	Temp/Hum	24(°C)/ 33%RH
Test Item	Above 1GHz	Test Date	2018/02/05
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage:	3Vdc

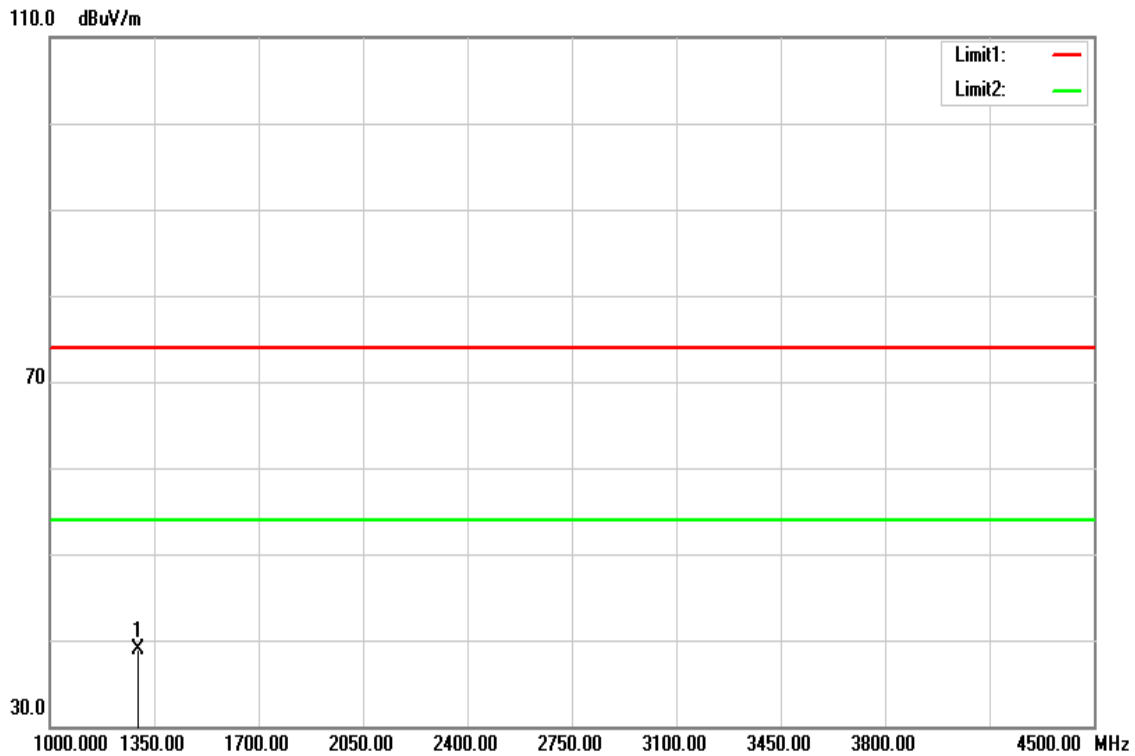


Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1283.500	46.75	-8.74	38.01	74.00	-35.99	peak
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	TX-433.66MHz	Temp/Hum	24(°C)/ 33%RH
Test Item	Above 1GHz	Test Date	2018/02/05
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage:	3Vdc



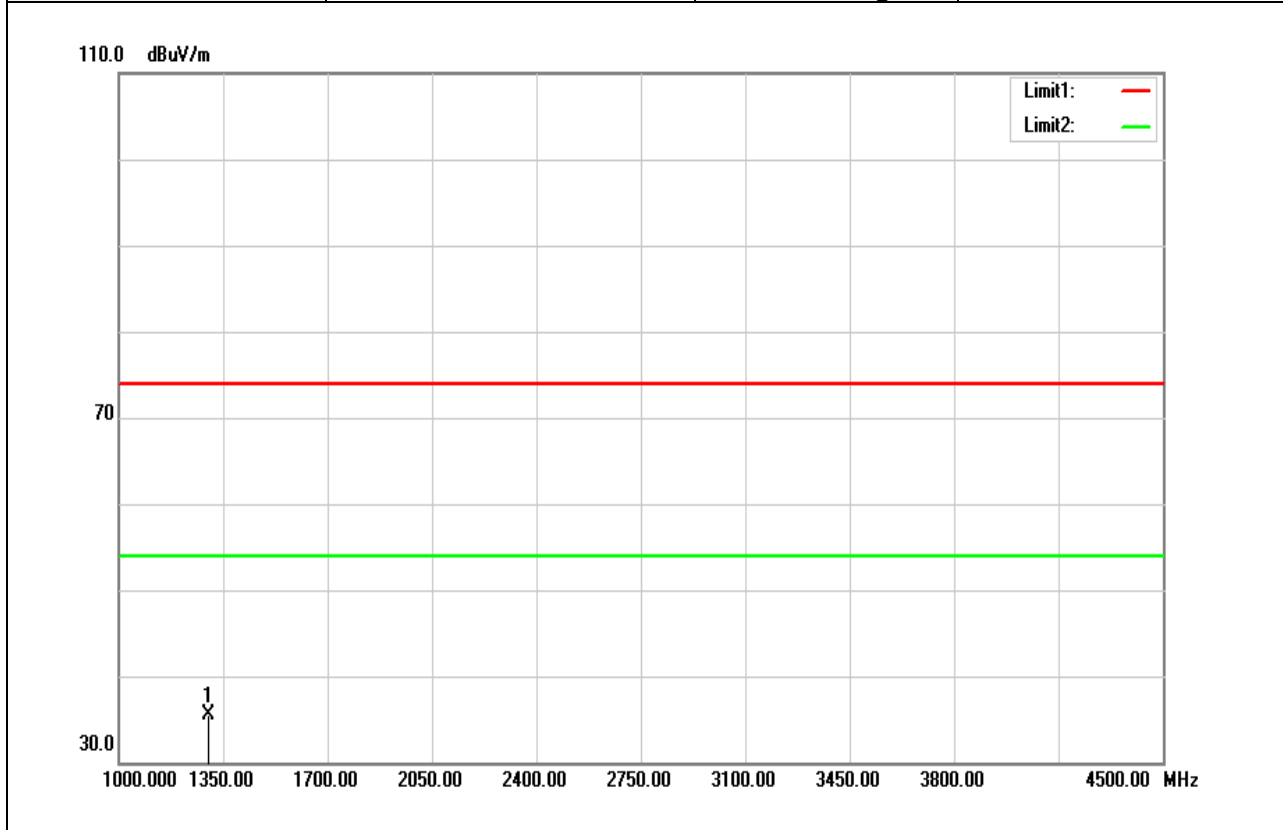
Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1294.000	47.62	-8.69	38.93	74.00	-35.07	peak
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

**Above 1GHz**

Test Mode:	TX-434.18MHz	Temp/Hum	24(°C)/ 33%RH
Test Item	Above 1GHz	Test Date	2018/02/05
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage:	3Vdc

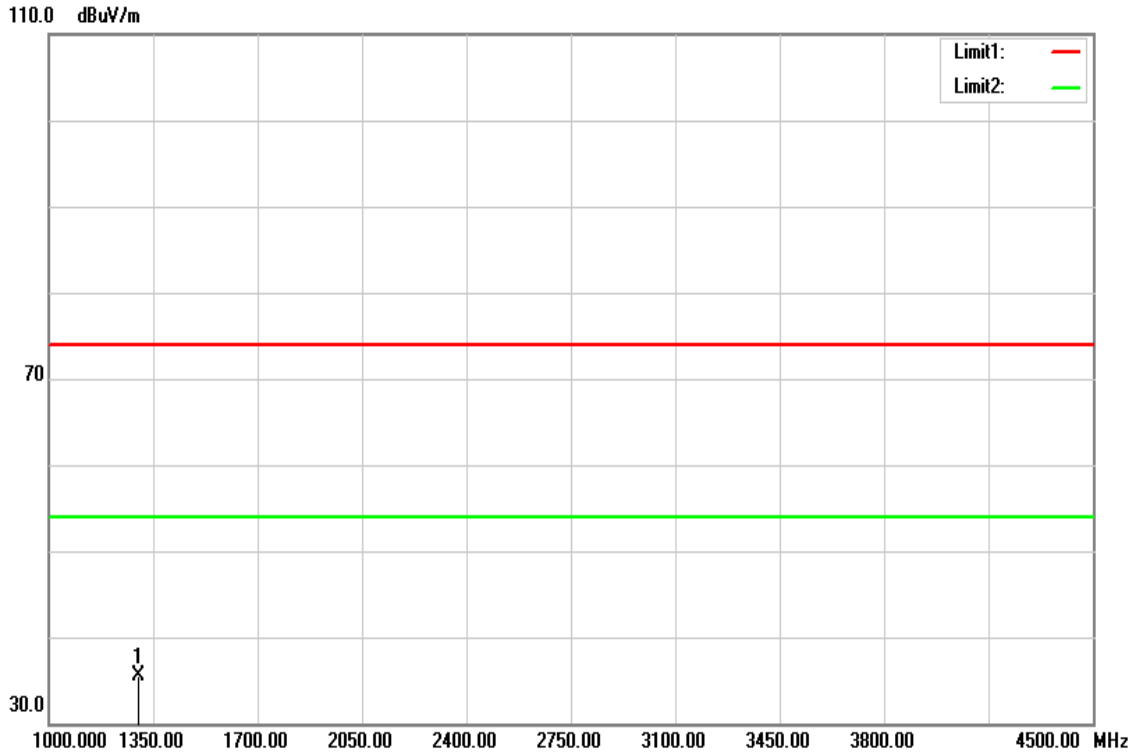


Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1302.000	44.08	-8.65	35.43	74.00	-38.57	peak
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	TX-434.18MHz	Temp/Hum	24(°C)/ 33%RH
Test Item	Above 1GHz	Test Date	2018/02/05
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage:	3Vdc



Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1302.000	44.10	-8.65	35.45	74.00	-38.55	peak
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



## 4.5 OPERATION RESTRICTION

### 4.5.1 Test Limit

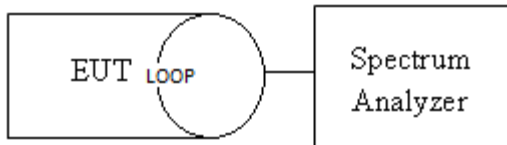
15.231(a)(1), A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

### 4.5.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 7.4

The Loop antenna connected to the spectrum analyzer, was touching to the transmitter antenna. Set the RBW=1MHz, VBW ≥ 3 x RBW, Detector = Peak, Trace mode = Max hold, Sweep = 200s.Measure

### 4.5.3 Test Setup



### 4.5.4 Test Result

Dwell Time (433.66MHz)		
Operation condition	Burst Duration	Limits
Automatically Operated	231.9 ms	5 sec

Dwell Time (434.18MHz)		
Operation condition	Burst Duration	Limits
Automatically Operated	173.9 ms	5 sec

**Test Data**

