RF Test Report

Applicant	:	Grand Mate Co., Ltd
Product Type	:	Remote controller
Trade Name	:	GRAND MATE
Model Number	:	TX341, TX340
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART C ANSI C63.10:2013
Received Date	:	Nov. 29, 2021
Test Period	:	Dec. 08 ~ Dec. 09, 2021
Issued Date	:	Dec. 22, 2021

Issued by

A Test Lab Techno Corp.
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Taoyuan City 334025, Taiwan (R.O.C.)
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Taiwan Accreditation Foundation accreditation number: 1330
Frequency Range : 9 kHz to 40 GHz
Test Firm MRA designation number: TW0010

Note:
1.The test results are valid only for samples provided by customers and under the test conditions described in this report.
2.This report shall not be reproduced except in full, without the written approval of A Test Lab Technology Corporation.
3.The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.

Revision History

Rev.	Issued Date	Revisions	Revised By
00	Dec. 22, 2021	Initial Issue	Emma Chao

Verification of Compliance

Applicant	:	Grand Mate Co., Ltd
Product Type	:	Remote controller
Trade Name	:	GRAND MATE
Model Number	:	TX341, TX340
FCC ID	:	UMPTX341
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART C ANSI C63.10:2013
Test Result	:	Complied
Performing Lab.	:	A Test Lab Techno Corp. No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan (R.O.C.) Tel：+886-3-2710188 / Fax：+886-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330 http://www.atl-lab.com.tw/e-index.htm

A Test Lab Techno Corp. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By : Kai Yu Yang

(Kai Yu Yang)

TABLE OF CONTENTS

1 General Information

1.1. Summary of Test Result

Standard	Item	Results	Remark
15.207	AC Power Conducted Emission	N/A	This device use DC power source.
15.231(a)	Transmitter Deactivation Time	PASS	----
15.231(b)	Transmitter Radiated Emissions	PASS	----
15.231(c)	20 dB Bandwidth	PASS	----
15.203	Antenna Requirement	PASS	----

Standard	Description
CFR47, Part 15, Subpart C	Intentional Radiators
ANSI C63. 10: 2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

Decision Rule

■ Uncertainty is not included.

□ Uncertainty is included.

1.2. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conducted Emission	150 kHz ~ 30 MHz	2.7 dB
Radiated Emission	30 MHz ~ 1000 MHz	2.2 dB
	1000 MHz ~ 18000 MHz	5.1 dB
	18000 MHz ~ 26500 MHz	5.2 dB
	26500 MHz ~ 40000 MHz	4.6 dB
RF Bandwidth	4.7 %	

2 EUT Description

Applicant	Grand Mate Co., Ltd No.30 Lugong S. 2nd Road, Lukang Township, Changhua County, 505 Taiwan
Product Type	Remote controller
Trade Name	GRAND MATE
Model Number	TX341, TX340
Difference description of model number	Due to market demand, several series models are added. The Product differences such as accessories (Appendix B. Difference description table), but rest of the spare parts such as circuit design and printed circuit boards remain the same.
FCC ID	UMPTX341
Frequency Range	434 MHz
Modulation Type	ASK
Number of Channels	1 Channel
Antenna Type	PCB Antenna
Antenna Max. Gain	0.5 dBi
Operate Temp. Range	0 ~ 50 ℃
EUT Power Rating	DC 4.5 V, 100 mA (AAA Battery X 3 PCS)

3 Test Methodology

3.1. Mode of Operation

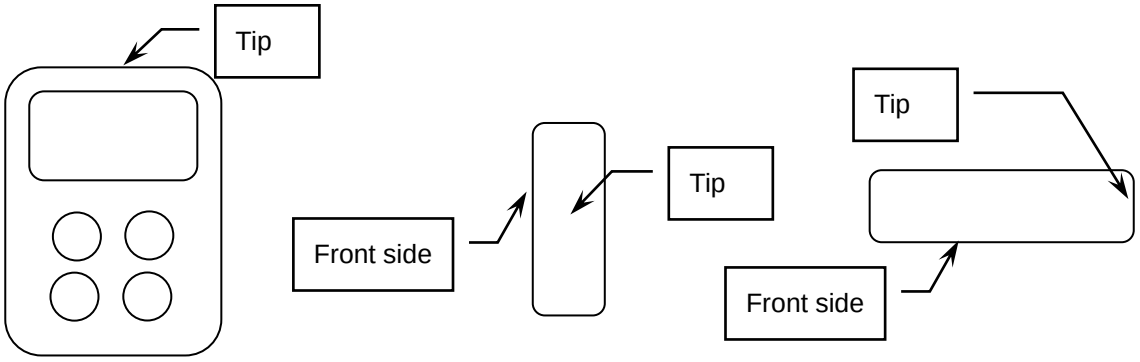
In the test report use EUT model: TX341 to operate testing.

Test Mode
Mode 1: Transmitter Mode
Mode 2: Continuous TX Mode

Then, the above highest fundamental level mode of the configuration of the EUT and antenna was chosen for all final test items.

By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “X axis” position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

Note: Model Number: TX341 is the worst case.

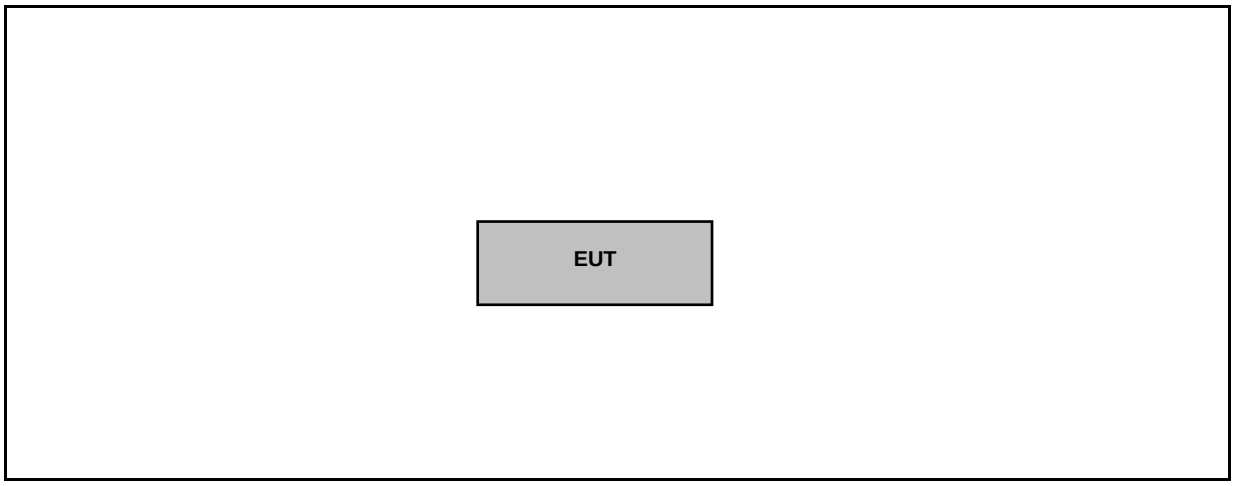


X axis mode Y axis mode Z axis mode

3.2. EUT Test Step

1.	Setup the EUT shown on “Configuration of Test System Details”.
2.	Turn on the power of all equipment.
3.	The EUT will start to operate function.

3.3. Configuration of Test System Details



Devices Description					
Product		Manufacturer	Model Number	Serial Number	Power Cord
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3.4. Test Instruments

For Radiated Emissions
Test Period: Dec. 08, 2021
Testing Engineer: Pink Li

Radiation test sites		Semi Anechoic Room				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☐	Spectrum Analyzer (10 Hz~44 GHz)	Keysight	N9010A	MY52221312	Jan. 18, 2021	1 year
☐	Spectrum Analyzer (3 Hz~50 GHz)	Agilent	N9030A	MY53120541	Jan. 08, 2021	1 year
☒	Spectrum Analyzer (2 Hz~50 GHz)	Keysight	N9030B	MY57143537	Apr. 19, 2021	1 year
☒	Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A11119	Jan. 15, 2021	1 year
☐	Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A10961	Jul. 06, 2021	1 year
☐	Broadband Amplifier (100 kHz~1 GHz)	Titan	T0910E00014330 A1F	001	Jul. 23, 2021	1 year
☐	Amplifier (1 GHz~26.5 GHz)	Agilent	8449B	3008A02237	Oct. 21, 2021	1 year
☒	Broadband Amplifier (1 GHz~26.5 GHz)	Titan	T0912E01263025 A1F	002	Jul. 26, 2021	1 year
☐	Preamplifier (26.5 GHz~40 GHz)	EMCI	EMC2654045	980028	Aug. 19, 2021	1 year
☐	Loop Antenna (9 kHz~30 MHz)	COM-POWER CORPORATION	AL-130	121014	Apr. 07, 2021	1 year
☒	Trilog Broadband Antenna (30 kHz~1 GHz)	Schwarzbeck Mess-Elektronik	VULB9168	01146	Jul. 19, 2021	1 year
☐	Trilog Broadband Antenna (30 kHz~1 GHz)	Schwarzbeck Mess-Elektronik	VULB9168	416	Nov. 17, 2021	1 year
☒	Broadband Horn Antenna (1 GHz~18 GHz)	Schwarzbeck Mess-Elektronik	9120D	02207	Jul. 09, 2021	1 year
☐	Broadband Horn Antenna (1 GHz~18 GHz)	Schwarzbeck Mess-Elektronik	9120D	9120D-550	Aug. 24, 2021	1 year
☐	Broadband Horn Antenna (18 GHz~40 GHz)	Schwarzbeck Mess-Elektronik	9170	9170-320	Aug. 24, 2021	1 year
☐	Horn Antenna (18 GHz~40 GHz)	ETS	3116	00086467	Dec. 03, 2021	1 year
☐	RF Cable	EMCI	EMC104-N-N-6000	TE01-1	Feb. 19, 2021	1 year
☐	Microwave Cable	EMCI	EMC104-SM-SM-13000	170814	Feb. 19, 2021	1 year
☐	Microwave Cable	EMCI	EMC102-KM-KM-14000	151001	Feb. 19, 2021	1 year
☒	Coaxial Cable	Titan	T0710AT327A10 A100	J11005	Aug. 06, 2021	1 year
☒	Coaxial Cable	Titan	T0710AT327A10 A900	J11004	Aug. 06, 2021	1 year
☒	Coaxial Cable	Titan	CFD400NL-LW	001	Aug. 06, 2021	1 year
☐	Bluetooth Tester	R&S	CBT	100350	Mar. 17, 2021	2 years
☐	Wireless Connectivity Tester	R&S	CMW270	102208	Jun. 02, 2021	1 year
☐	Power Supply	KEITHLEY	2303	4045290	Feb. 01, 2021	1 year
☒	Software	EZ EMC	1.1.4.4	N/A	N.C.R.	---

Note: N.C.R. = No Calibration Request.

For Conducted
Test Period: Dec. 09, 2021
Testing Engineer: Peter.Shui

Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☐	Power Sensor	Anritsu	MA2411B	1126022	Sep. 03, 2021	1 year
☐	Power Meter	Anritsu	ML2495A	1135009	Sep. 03, 2021	1 year
☐	Power Sensor	Agilent	N1921A	MY45241957	Dec. 06, 2021	1 year
☐	Power Meter	Agilent	N1911A	MY45101619	Dec. 06, 2021	1 year
☐	Spectrum Analyzer (10 Hz~26.5 GHz)	Keysight	N9010B	MY59071418	Mar. 17, 2021	1 year
☐	Spectrum Analyzer (9 kHz~26.5 GHz)	Agilent	N9010A	MY48030518	Jul. 23, 2021	1 year
☒	Spectrum Analyzer (20 Hz~26.5 GHz)	Agilent	N9020A	US47520902	Sep. 09, 2021	1 year
☐	Spectrum Analyzer (3 Hz~50 GHz)	Agilent	N9030A	MY53120541	Jan. 08, 2021	1 year
☐	Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	Mar. 30, 2021	1 year
☐	Signal Generator	Keysight	N5182B	MY53052569	Apr. 20, 2021	1 year
☐	Signal Generator	Keysight	N5182BX07	MY59360221	Apr. 20, 2021	1 year
☐	Bluetooth Tester	R&S	CBT	100350	Mar. 17, 2021	2 years
☐	Wireless Connectivity Tester	R&S	CMW270	102208	Jun. 02, 2021	1 year
☐	Power Supply	KEITHLEY	2303	4045290	Feb. 01, 2021	1 year
☐	RF Communication Test Set	HP	8920A	3344A03297	Aug. 10, 2021	1 year

Note: N.C.R. = No Calibration Request.

3.5. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	20-30
Humidity (%RH)	25-75	45-75

4 Measurement Procedure

4.1. Radiated Emissions Measurement

■ Limit

According to FCC Part 15.231(b) requirement:

In addition to the provisions of §15.205, the field strength of emissions from intentional radiator operated under this section shall not exceed the following:

Fundamental and harmonics emission limits

Frequency range	Average Field Strength of Fundamental	Peak Field Strength of Fundamental
(MHz)	(dBμV/m@3 m)	(dBμV/m@3 m)
434	80.83	100.83

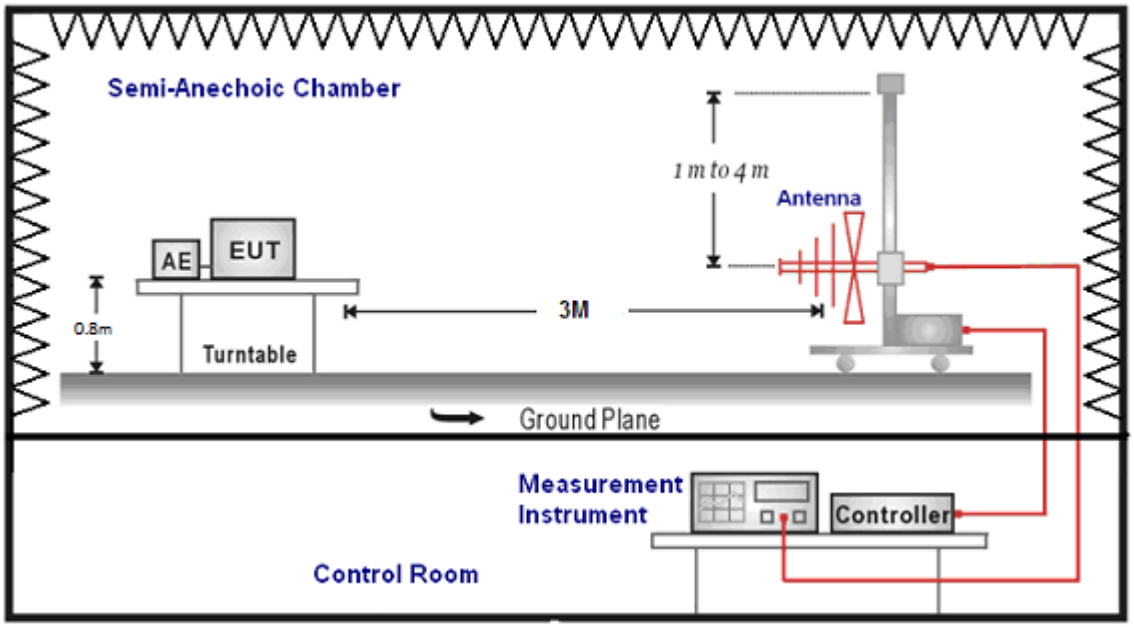
General Radiated emission Limit

Frequency range	Field Strength of Fundamental	Field Strength of Harmonics
(MHz)	(uV/m at 3 m)	(uV/m at 3 m)
40.66 to 40.70	2250 (67.04 dBuV)	225 (47.04 dBuV)
70 to 130	1250 (61.94 dBuV)	125 (41.94 dBuV)
130 to 174	1250 (61.94 dBuV) to 3750 (71.48 dBuV)	125 (41.94 dBuV) to 375 (51.48 dBuV)
174 to 260	3750 (71.48 dBuV)	375 (51.48 dBuV)
260 to 470	3750 (71.48 dBuV) to 12500 (81.94 dBuV)	375 (51.48 dBuV) to 1250 (61.94 dBuV)
470 and above	12500 (81.94 dBuV)	1250 (61.94 dBuV)

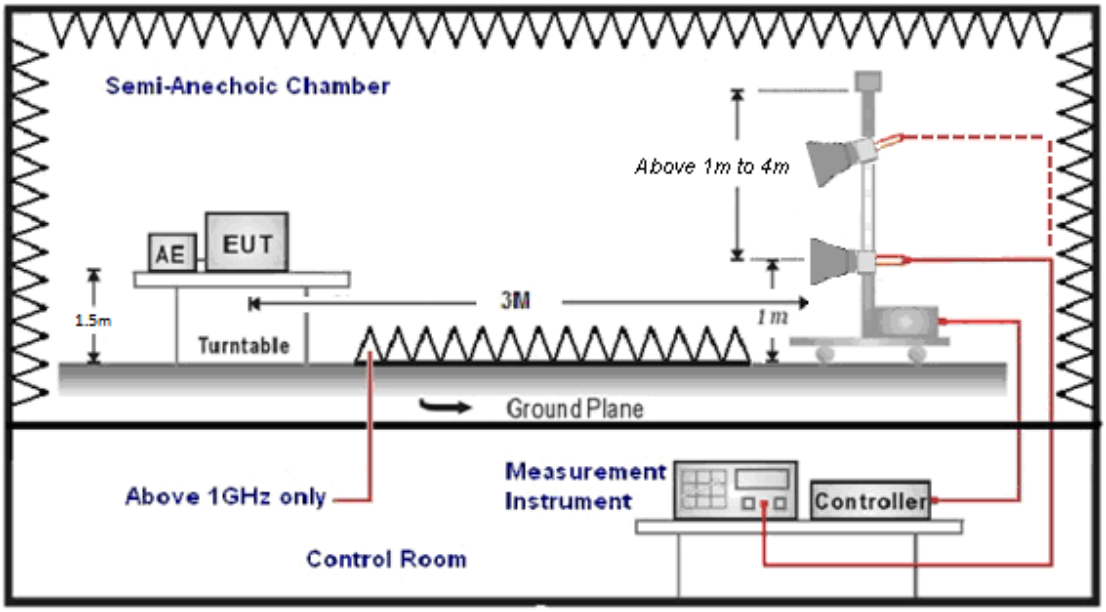
Remark: 1. The table above tighter limit applies at the band edges.
2. The measurement distance in meters, which that between form closest point of EUT to instrument antenna.

■ **Setup**

Below 1 GHz



Above 1 GHz



■ Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 or 1.5 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 30 MHz to 26.5 GHz is investigated.
For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 3 MHz for peak measurements and 10 Hz for average measurements.
A nonconductive material surrounded the EUT to supporting the EUT for standing on tree orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.
SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20 dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.
The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts pre meter (uV/m).
The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro colts per meter (dBuV/m).

The actual field is intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

(1) Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

(2) Actual Amplitude (dBuV/m) = Amplitude (dBuV)-Dis(dB)

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(a) For fundamental frequency : Transmitter Output < +30 dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.

■ Calculation of Average Factor

The output field strengths of specification in accordance with the FCC rules specify measurements with an average detector. During the test, 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.
Please see the diagrams below.

(*) When the field strength (or envelope power) is not constant or when it is in pulses, and an averaging detector is specified to be used, the value of field strength or power over one complete pulse train, excluding blanking intervals, shall be averaged as long as the pulse train does not exceed 0.1 seconds. In cases where the pulse train exceeds 0.1 seconds, the average value (of field strength or output power) shall be determined during a 0.1 second interval during which the field strength or power is at its maximum value.

4.2. 20 dB Bandwidth Measurement

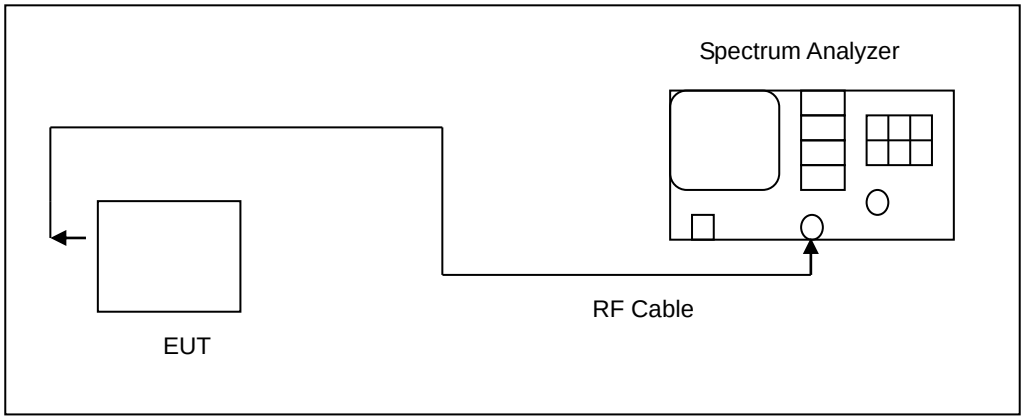
■ Limit

According to FCC Part 15.231(c) requirement:

The 20 dB bandwidth shall be no wider than 0.25 % of the centre frequency for devices operating between 70-900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5 % of the centre frequency.

B.W Limit = 0.25 % * f (MHz) = 0.25 % * 434 MHz = 1085 kHz

■ Test Setup



■ Test Procedure

20 dB Bandwidth

The RF output port of the Equipment-Under-Test is directly coupled to the input of the analyzer through a specialized RF connector and a 10 dB passive attenuator. A fully charged battery was used for the supply voltage. The RF function of the EUT was enabled. The spectrum analyzer used the following settings:

1. Span = 1 MHz
2. RBW ≥ 1 % of the 20 dB span
3. VBW ≥ RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

The trace was allowed to stabilize. The EUT was transmitting at its maximum data rate. The marker-to-peak function was used to set the marker to the peak of the emission. The marker-delta function was used to measure 20 dB down one side of the emission. The marker-delta function and marker was moved to the other side of the emission until it was even with the reference marker. The marker-delta reading at this point was the 20 dB bandwidth of the emission.

4.3. Antenna Requirement

- **Limit**

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.

- **Antenna Connector Construction**

See section 2 – antenna information.

5 Test Results

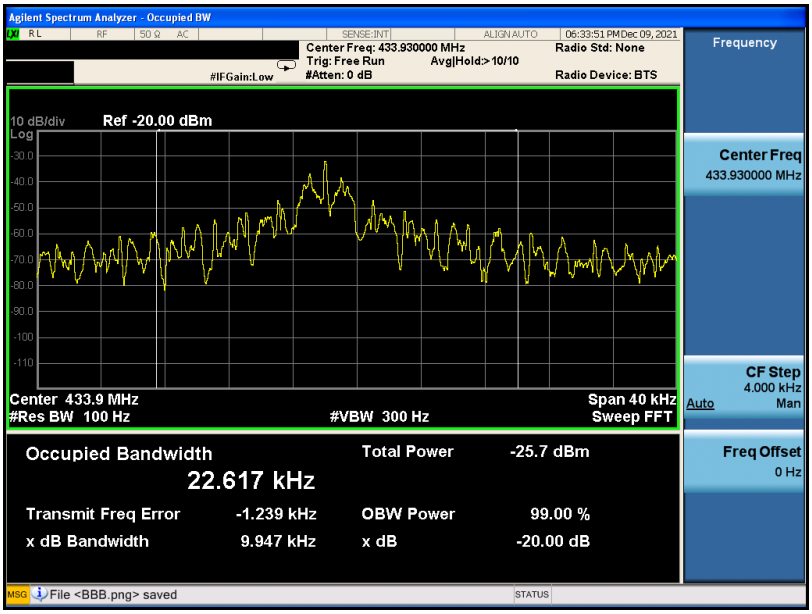
5.1. Conducted Test Results

20 dB Bandwidth Measurement

Test Mode	Mode 2	
Frequency (MHz)	Measurement Results (kHz)	Limited (kHz)
433.93	9.947	1084.825

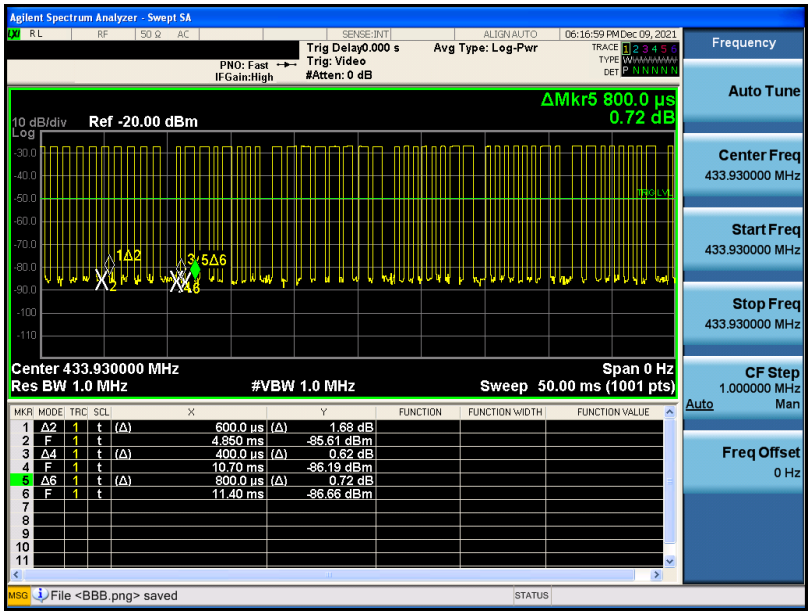
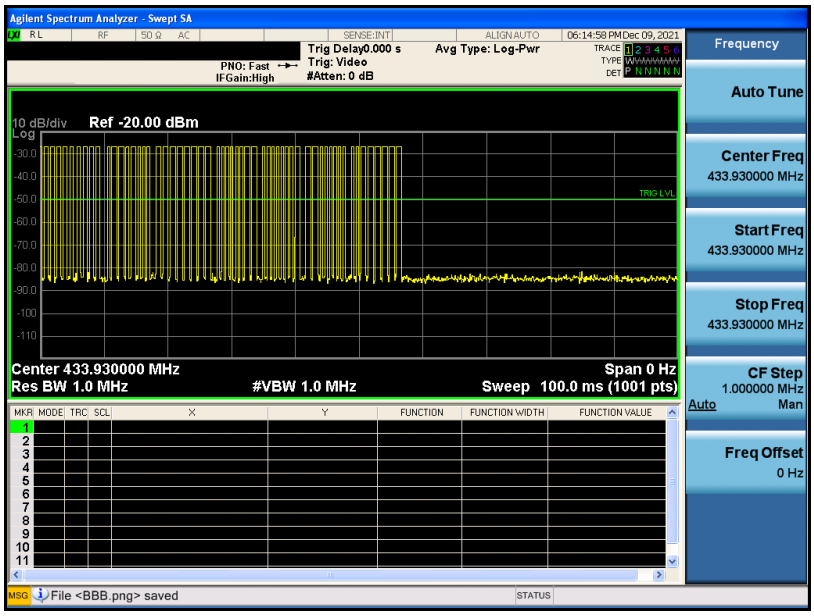
■ **Test Graphs**

Mode 2

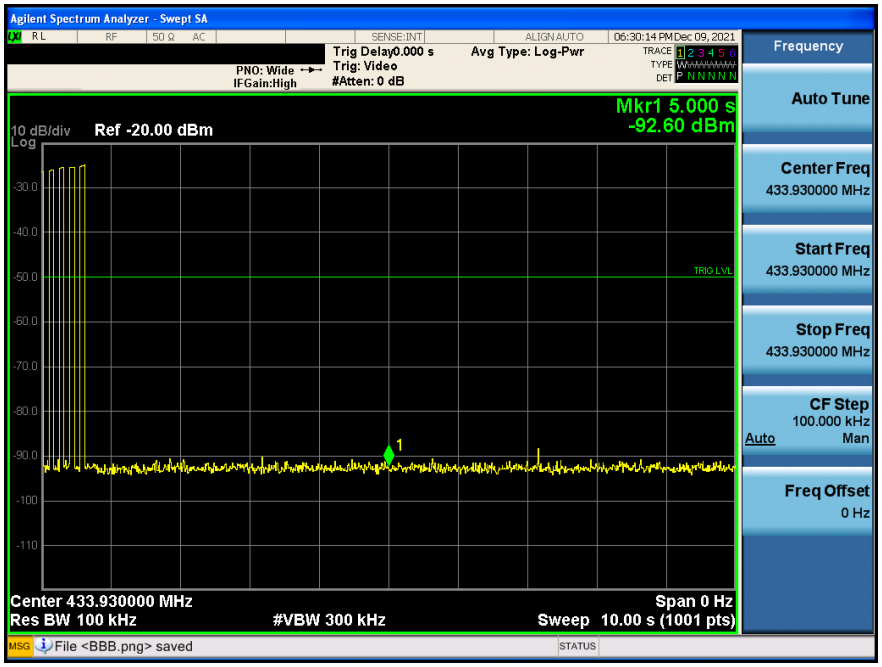


5.2. Radiated Emissions Measurement

Duty Cycle Test Diagrams

Mode 2	
On	
On+Off	

The EUT was complied with the requirement of FCC 15.231 (a) (1), which employed a switch that will automatically deactivate the transmitter within less than 5 seconds of being released.

Mode 2


Duty Cycle Results

Test Mode	Mode 2	
Item	Results	Note
Ton	34.200 ms	-----
Ton+off	100.000 ms	-----
Duty Cycle	0.342	-----
Averaging Factor (20 log * Duty Cycle)	9.319	-----

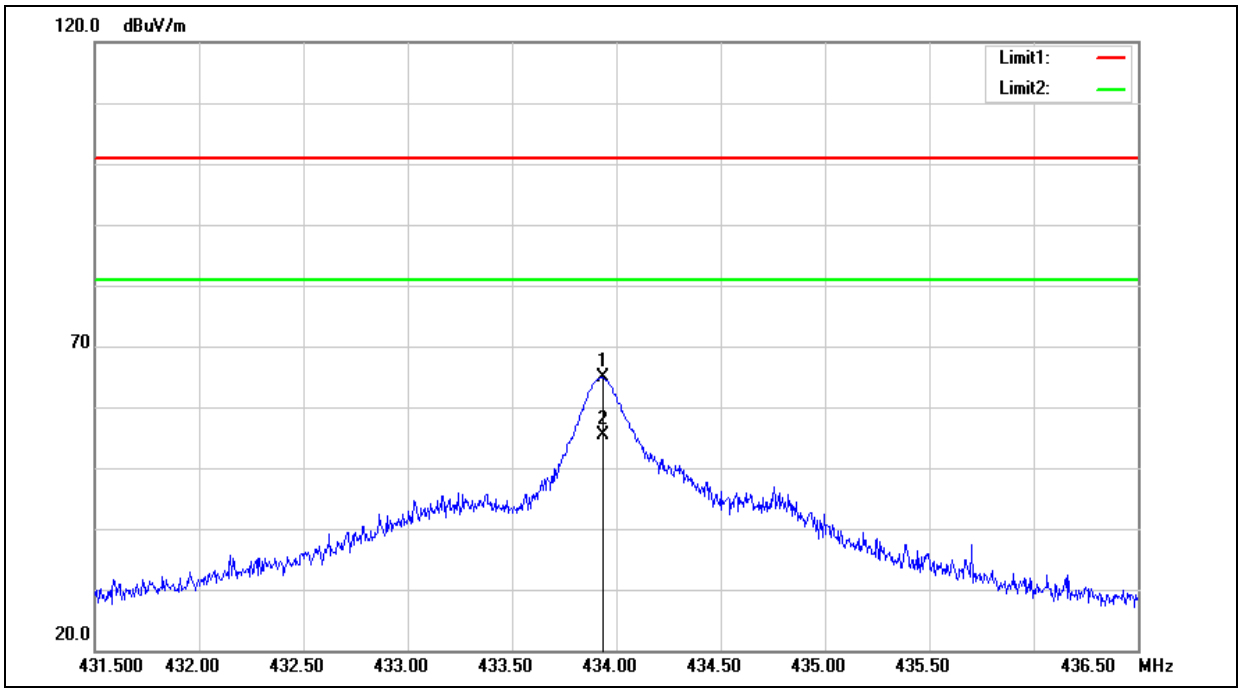
Please see the diagrams below.

Note:

1. RB=100 KHz, VB=300 KHz, SPAN=0
2. Duty Cycle= $\frac{Ton}{Ton+off}$

Fundamental Frequency Test Results

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Fundamental		
Mode:	Mode 2		
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	433.9350	67.59	-2.78	64.81	100.83	-36.02	peak
2	433.9350	58.27	-2.78	55.49	80.83	-25.34	AVG

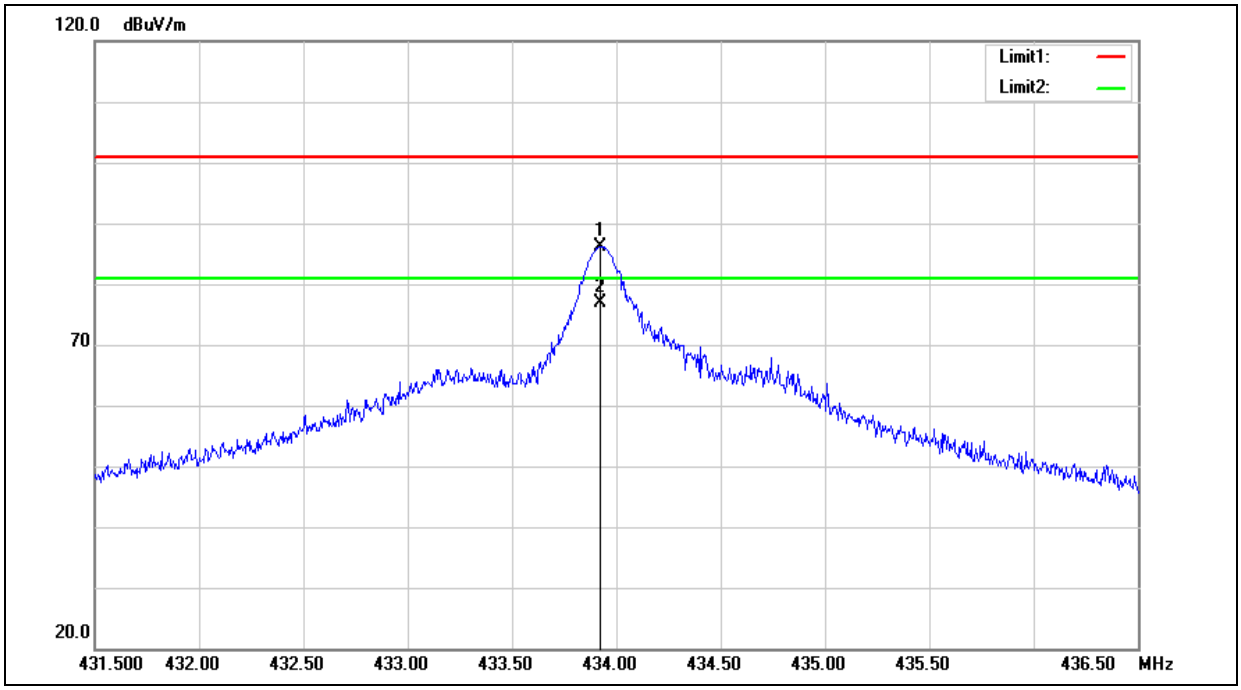
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: 64.81 = -2.78 + 67.59

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Fundamental		
Mode:	Mode 2		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	433.9250	88.90	-2.78	86.12	100.83	-14.71	peak
2	433.9250	79.58	-2.78	76.80	80.83	-4.03	AVG

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

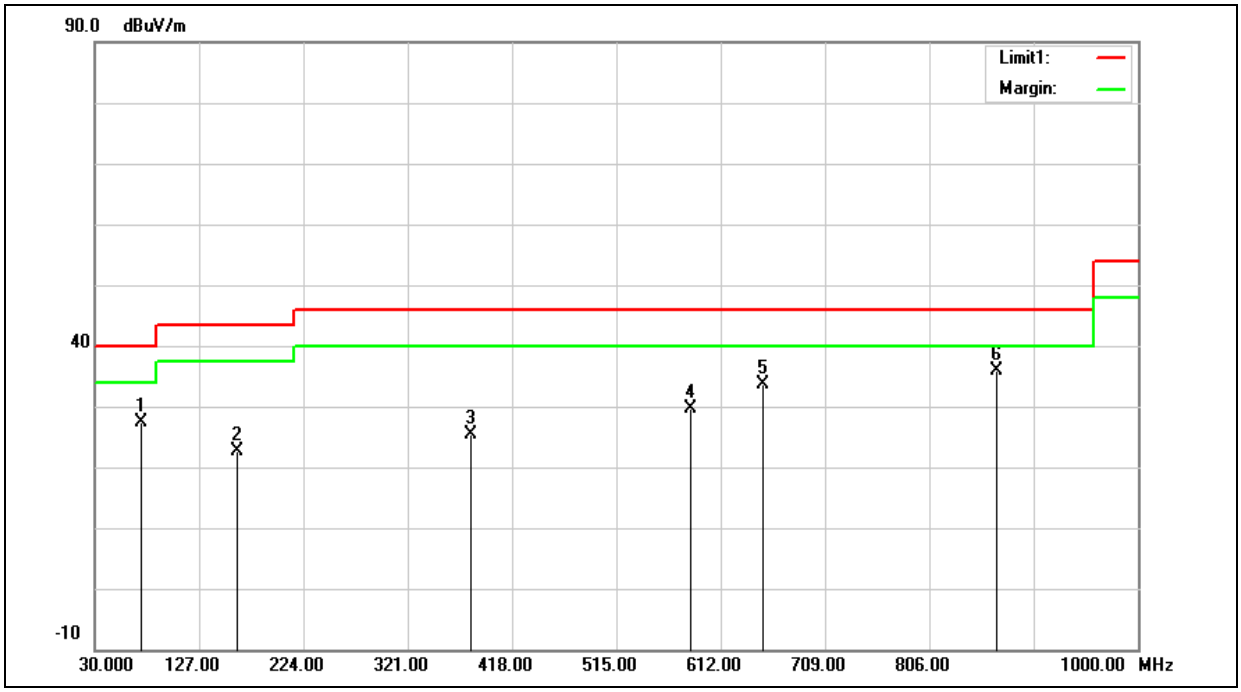
Example: 86.12 = -2.78 + 88.90

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Below 1 GHz

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Radiated Emission		
Mode:	Mode 1		
Ant.Polar.:	Horizontal		
Model Number:	TX341		



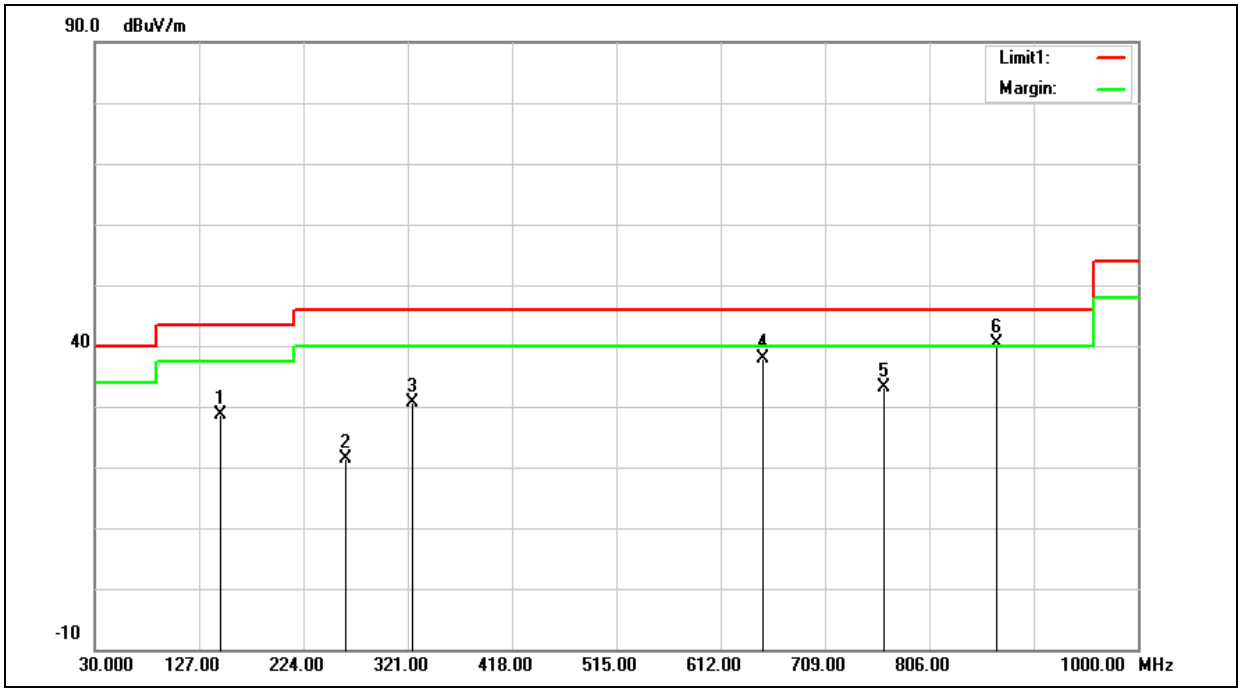
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	73.6500	37.67	-10.35	27.32	40.00	-12.68	QP
2	162.8900	29.09	-6.52	22.57	43.50	-20.93	QP
3	380.1700	29.16	-3.84	25.32	46.00	-20.68	QP
4	583.8700	29.46	0.08	29.54	46.00	-16.46	QP
5	650.8000	32.53	1.14	33.67	46.00	-12.33	QP
6	868.0800	30.92	4.89	35.81	46.00	-10.19	QP

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Radiated Emission		
Mode:	Mode 1		
Ant.Polar.:	Vertical		
Model Number:	TX341		



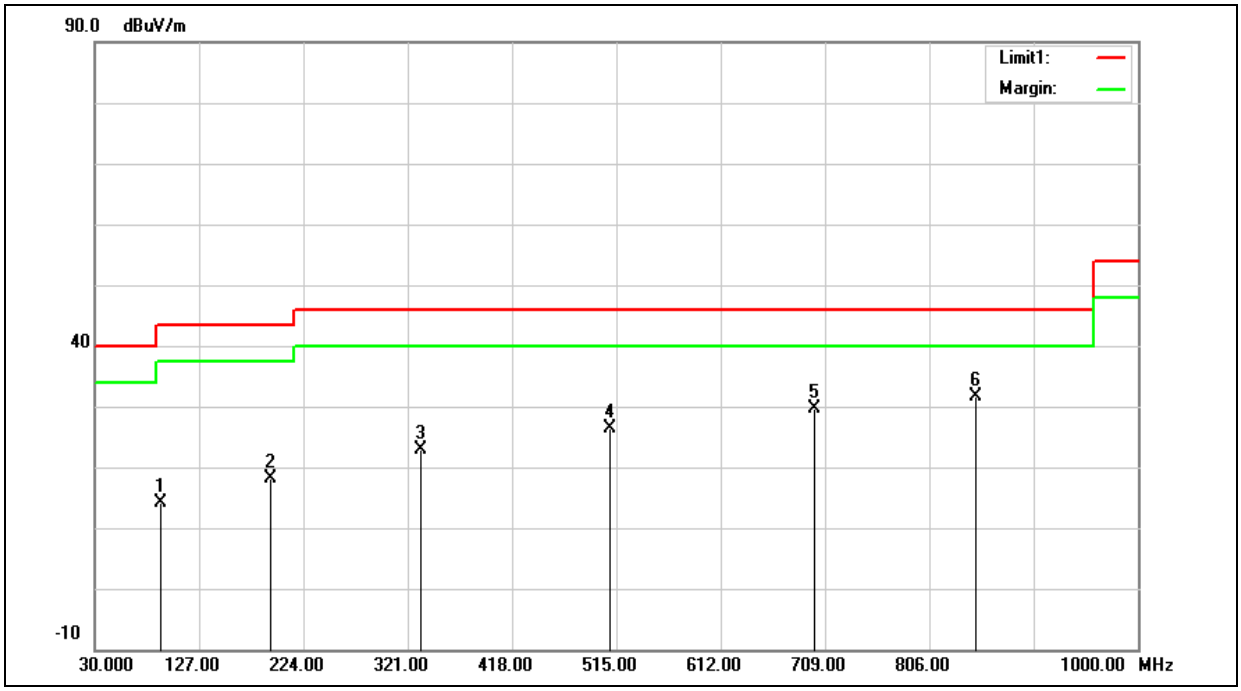
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	147.3700	35.39	-6.83	28.56	43.50	-14.94	QP
2	262.8000	27.95	-6.60	21.35	46.00	-24.65	QP
3	325.8500	35.57	-5.04	30.53	46.00	-15.47	QP
4	650.8000	36.79	1.14	37.93	46.00	-8.07	QP
5	763.3200	29.92	3.16	33.08	46.00	-12.92	QP
6	868.0800	35.52	4.89	40.41	46.00	-5.59	QP

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Radiated Emission		
Mode:	Mode 1		
Ant.Polar.:	Horizontal		
Model Number:	TX340		



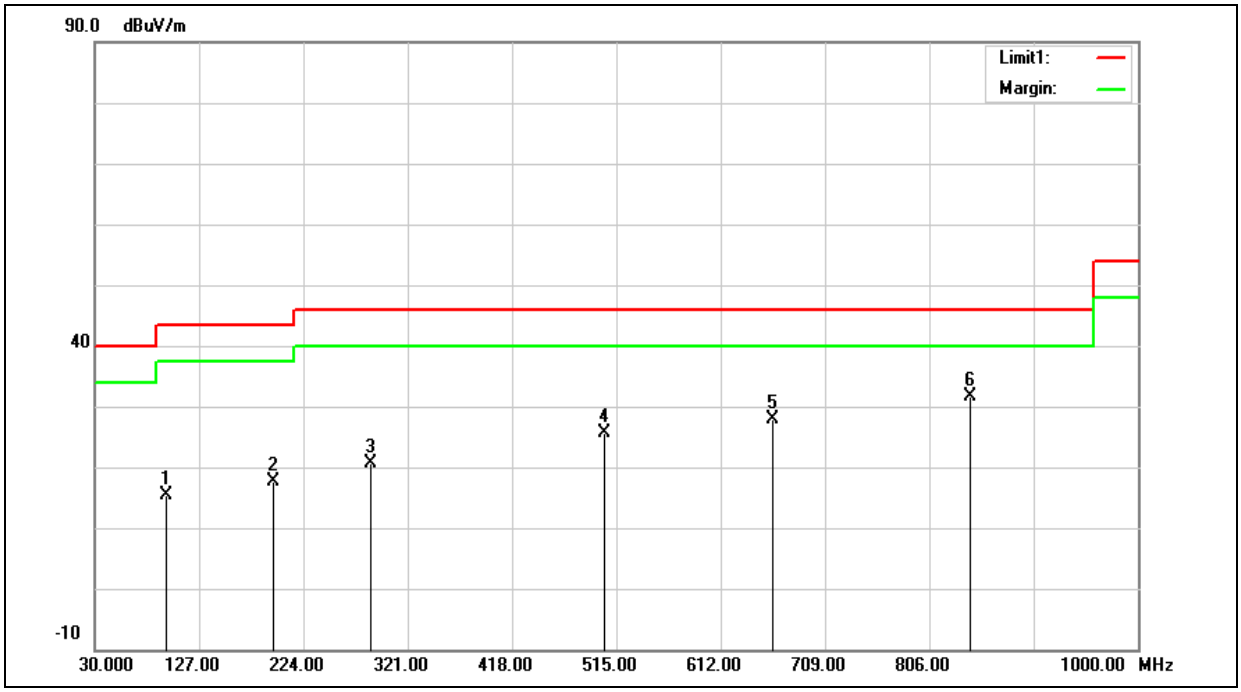
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	91.1100	27.17	-12.99	14.18	43.50	-29.32	QP
2	193.9300	26.77	-8.72	18.05	43.50	-25.45	QP
3	333.6100	27.69	-4.92	22.77	46.00	-23.23	QP
4	509.1800	27.97	-1.71	26.26	46.00	-19.74	QP
5	699.3000	27.48	2.23	29.71	46.00	-16.29	QP
6	849.6500	27.17	4.57	31.74	46.00	-14.26	QP

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Radiated Emission		
Mode:	Mode 1		
Ant.Polar.:	Vertical		
Model Number:	TX340		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	96.9300	27.64	-12.21	15.43	43.50	-28.07	QP
2	195.8700	26.48	-8.83	17.65	43.50	-25.85	QP
3	287.0500	26.19	-5.68	20.51	46.00	-25.49	QP
4	504.3300	27.53	-1.79	25.74	46.00	-20.26	QP
5	660.5000	26.63	1.35	27.98	46.00	-18.02	QP
6	843.8300	27.14	4.50	31.64	46.00	-14.36	QP

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

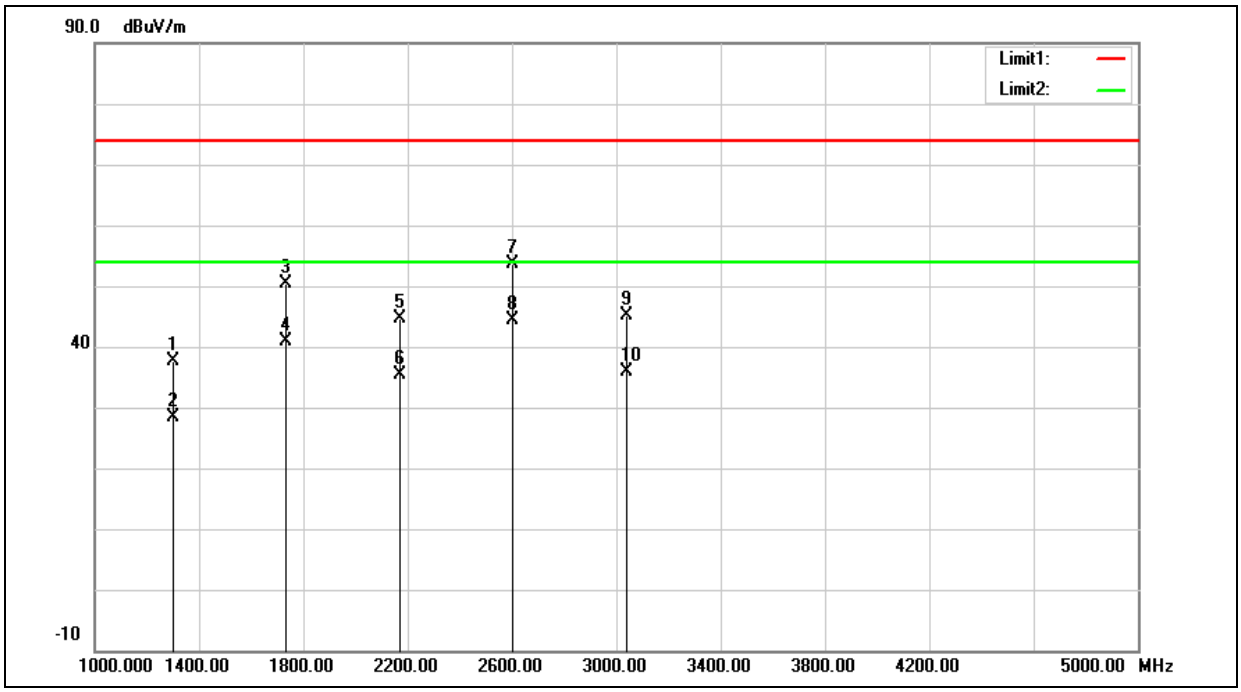
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Harmonic

Above 1 GHz

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	434MHz		
Mode:	Mode 2		
Ant.Polar.:	Horizontal		



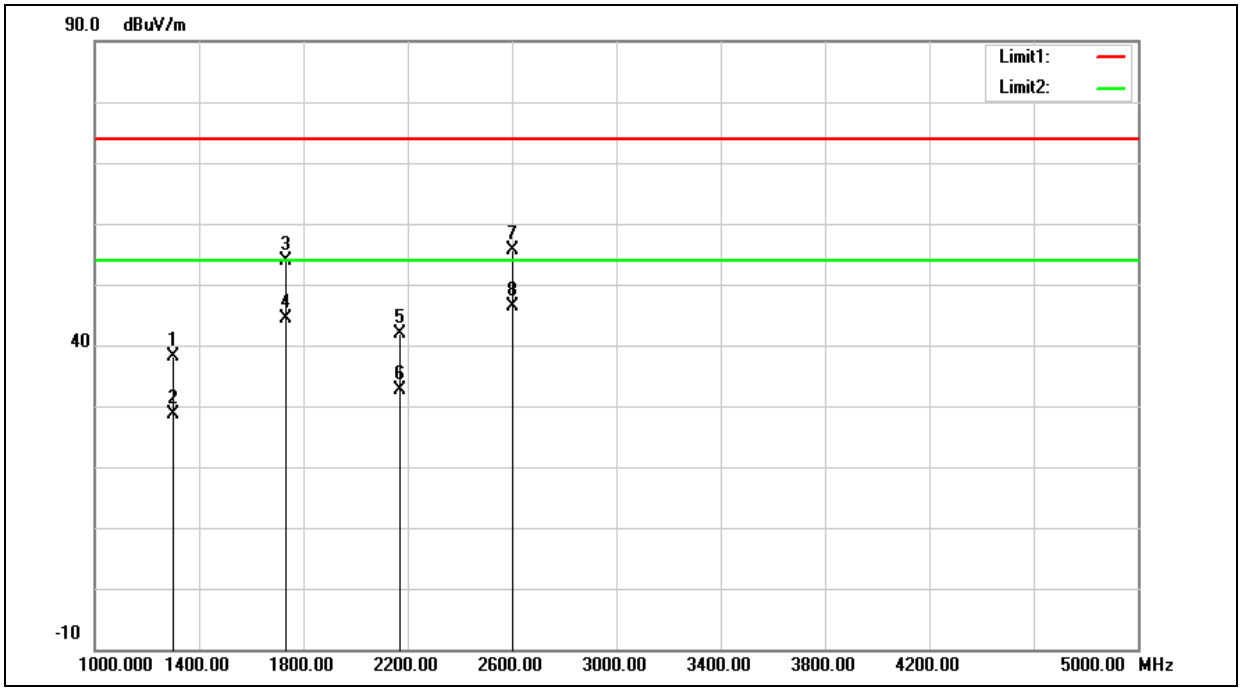
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1301.790	48.40	-10.67	37.73	74.00	-36.27	peak
2	1301.790	39.08	-10.67	28.41	54.00	-25.59	AVG
3	1735.720	59.75	-9.43	50.32	74.00	-23.68	peak
4	1735.720	50.43	-9.43	41.00	54.00	-13.00	AVG
5	2169.650	52.85	-8.18	44.67	74.00	-29.33	peak
6	2169.650	43.53	-8.18	35.35	54.00	-18.65	AVG
7	2603.580	60.24	-6.55	53.69	74.00	-20.31	peak
8	2603.580	50.92	-6.55	44.37	54.00	-9.63	AVG
9	3037.510	50.45	-5.29	45.16	74.00	-28.84	peak
10	3037.510	41.13	-5.29	35.84	54.00	-18.16	AVG

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	434MHz		
Mode:	Mode 2		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1301.790	48.74	-10.67	38.07	74.00	-35.93	peak
2	1301.790	39.42	-10.67	28.75	54.00	-25.25	AVG
3	1735.720	63.19	-9.43	53.76	74.00	-20.24	peak
4	1735.720	53.87	-9.43	44.44	54.00	-9.56	AVG
5	2169.650	50.13	-8.18	41.95	74.00	-32.05	peak
6	2169.650	40.81	-8.18	32.63	54.00	-21.37	AVG
7	2603.580	62.14	-6.55	55.59	74.00	-18.41	peak
8	2603.580	52.82	-6.55	46.27	54.00	-7.73	AVG

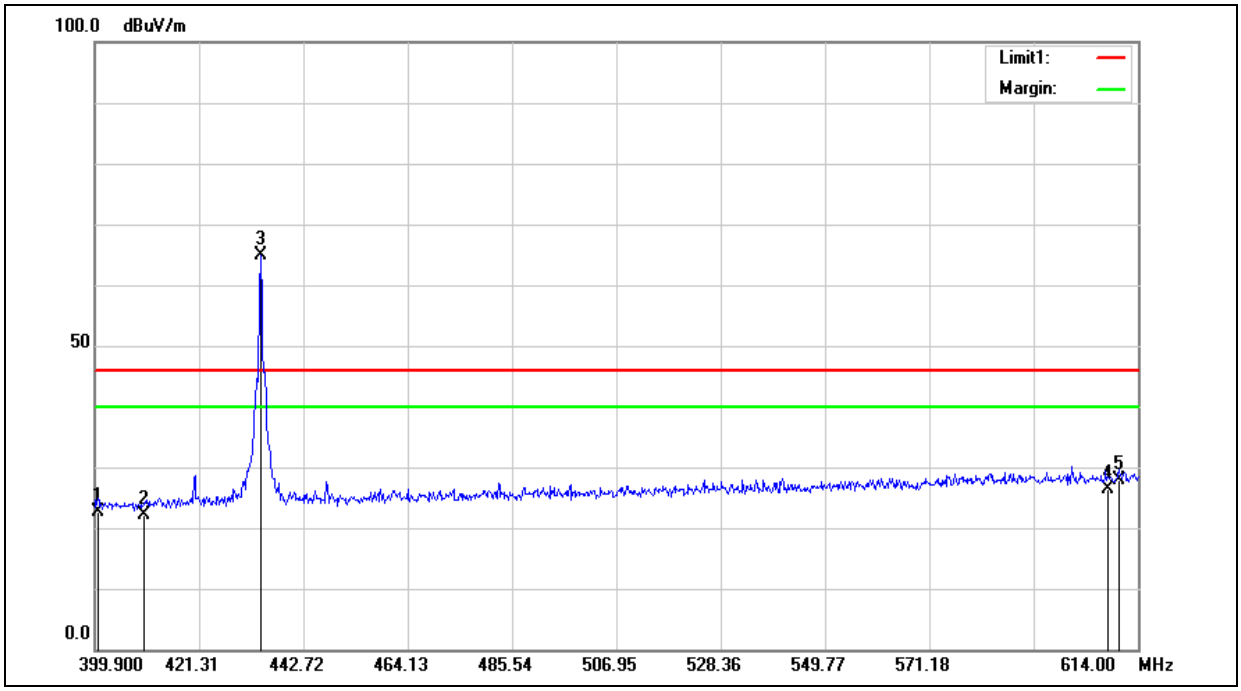
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Band edge

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Band edge		
Frequency:	434MHz		
Mode:	Mode 2		
Ant.Polar.:	Horizontal		



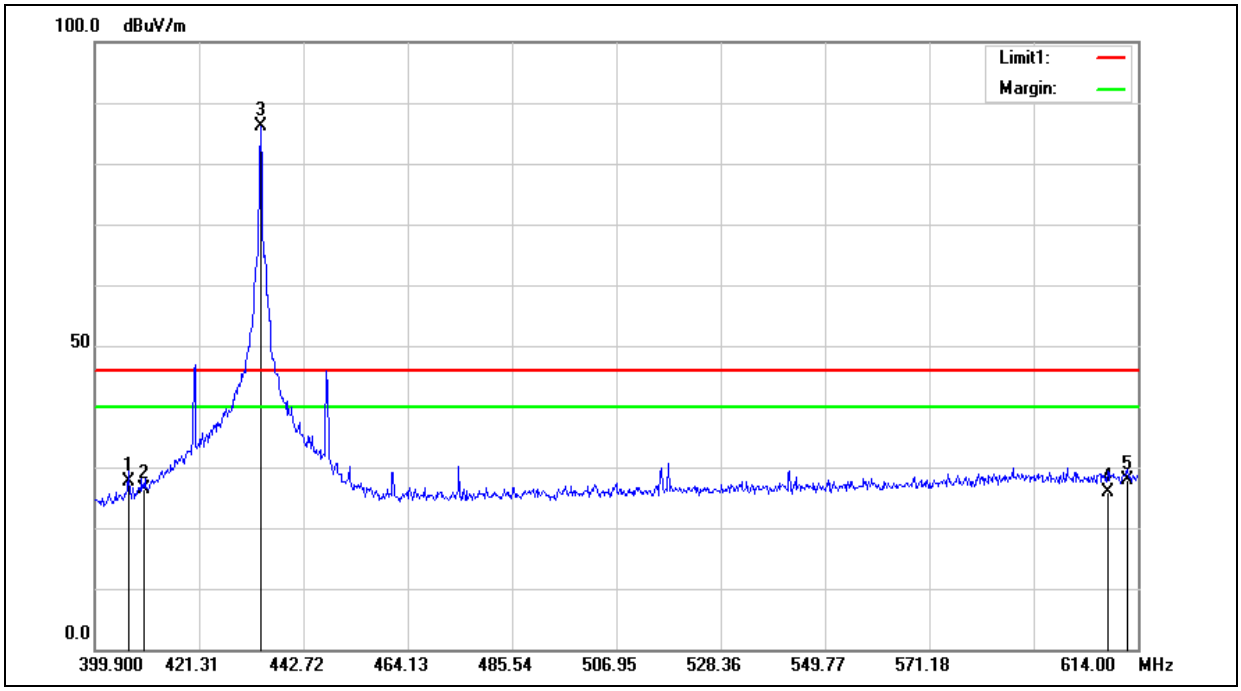
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	400.5423	25.84	-3.28	22.56	46.00	-23.44	QP
2	410.0000	25.31	-3.14	22.17	46.00	-23.83	QP
3	433.9420	67.56	-2.78	64.78	46.00	18.78	peak
4	608.0000	25.72	0.63	26.35	46.00	-19.65	QP
5	610.1462	27.17	0.67	27.84	46.00	-18.16	QP

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Band edge		
Frequency:	434MHz		
Mode:	Mode 2		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	406.7512	30.87	-3.19	27.68	46.00	-18.32	QP
2	410.0000	29.56	-3.14	26.42	46.00	-19.58	QP
3	433.9420	88.95	-2.78	86.17	46.00	40.17	peak
4	608.0000	25.36	0.63	25.99	46.00	-20.01	QP
5	611.8590	27.15	0.68	27.83	46.00	-18.17	QP

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

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