

Report No.:

FCC ID: MG3-TX520U

T200909W01-RP2



Page: 1 / 40 Rev.: 01

# **RADIO TEST REPORT**

FCC 47 CFR PART 15 SUBPART C

Test Standard	FCC Part 15.247
Product name	Voice Remote Control
Brand Name	Sony
Model No.	RMF-TX520U, RMF-TX520B
Test Result	Pass
Statements of Conformity	Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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 Compliance Certification Services Inc.(Wugu Laboratory)

Approved by:

Komil Ismi

Kevin Tsai **Deputy Manager** 

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

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Page: 2 / 40 Rev.: 01

## **Revision History**

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	October 20, 2020	Initial Issue	ALL	Mita Wu
01	October 27, 2020	See the following note Rev.(01)	P.A-1	Mita Wu

Rev.(01)

1. Modify test setup photo above 1GHz.



Page: 3 / 40 Rev.: 01

## Table of contents

1.	GENERAL INFORMATION 4
1.1	EUT INFORMATION
1.2	EUT CHANNEL INFORMATION
1.3	ANTENNA INFORMATION
1.4	MEASUREMENT UNCERTAINTY 6
1.5	FACILITIES AND TEST LOCATION7
1.6	INSTRUMENT CALIBRATION
1.7	SUPPORT AND EUT ACCESSORIES EQUIPMENT
1.9	TABLE OF ACCREDITATIONS AND LISTINGS 8
2.	TEST SUMMERY9
3.	DESCRIPTION OF TEST MODES 10
3.1	THE WORST MODE OF OPERATING CONDITION 10
3.2	THE WORST MODE OF MEASUREMENT 11
3.3	EUT DUTY CYCLE 12
4.	TEST RESULT 13
4.1	AC POWER LINE CONDUCTED EMISSION 13
4.2	6dB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)14
4.3	OUTPUT POWER MEASUREMENT 17
4.4	POWER SPECTRAL DENSITY 19
4.5	CONDUCTED BANDEDGE AND SPURIOUS EMISSION
4.6	RADIATION BANDEDGE AND SPURIOUS EMISSION
APPE	NDIX 1 - PHOTOGRAPHS OF EUT



Page: 4 / 40 Rev.: 01

Report No.: T200909W01-RP2

## **1. GENERAL INFORMATION**

## **1.1 EUT INFORMATION**

Applicant	Universal Electronics Inc. 201 East Sandpointe Ave 7th Floor Santa Ana CA 92707 USA					
Manufacturer	Gemstar Technology Hedong Industrial E Region, P.R. China			Zhuang Autonomous		
Equipment	Voice Remote Contro	bl				
Model No.	RMF-TX520U, RMF-	TX520B				
Model Discrepancy	<ol> <li>Client consigns only one sample to test (model RMF-TX520U). Therefore, the testing Lab. just guarantees the unit, which has been tested.</li> <li>Difference of the model numbers (list on this report) is just for marketing only, difference between BLE and zigbee function (one or two key label differences depending on country) as below:         <ul> <li>Model</li> <li>RF Function</li> <li>RMF-TX520U</li> <li>Zigbee</li> <li>BLE</li> <li>Main</li> <li>RMF-TX520B</li> <li>X</li> <li>BLE</li> <li>Serial</li> </ul> </li> </ol>					
Trade Name	Sony					
Received Date	September 9, 2020					
Date of Test	September 21 ~ 25, 2	2020				
Power Supply	Power from Battery.					
S.W Version	V21.01.01.005					
H.W: Version	A01					
EUT Serial #	50:61:F6:BC:BF:11					



Page: 5 / 40 Rev.: 01

#### **Report No.:** T200909W01-RP2

## **1.2 EUT CHANNEL INFORMATION**

Frequency Range	2425 ~ 2475MHz						
Modulation Type	Zigbee: OQPSK (Offset Quadrature Phase Shift Keyed)						
Number of channels	Zigbee: 3 Channels						
Channels list	CH.	Freq.	CH.	Freq.	CH.	Freq.	
	15	2425	20	2450	25	2475	

#### **Remark:**

Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 and RSS-GEN Table 1 for test channels

Number of frequencies to be tested						
Frequency range inNumber ofLocation in frequencywhich device operatesfrequenciesrange of operation						
☐ 1 MHz or less	1	Middle				
1 MHz to 10 MHz	2	1 near top and 1 near bottom				
🖂 More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom				

## **1.3 ANTENNA INFORMATION**

Antenna Type	🗌 PIFA 🖾 PCB 🗌 Dipole 🗌 Chip					
Antenna Gain	1.74 dBi					
Antenna Connector	N/A					



Page: 6 / 40 Rev.: 01

#### Report No.: T200909W01-RP2

## **1.4 MEASUREMENT UNCERTAINTY**

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 0.0014
RF output power, conducted	+/- 1.14
Power density, conducted	+/- 1.40
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87

#### 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.



Page: 7 / 40 Rev.: 01

Report No.: T200909W01-RP2

## **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, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	-	Not applicable, because EUT doesn't connect to AC Main Source direct.
Radiation	Jerry Chang	-
RF Conducted	Jane Wang	-

**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 Serial Number Cal Date Cal Due							
Coaxial Cable	Woken	WC12	CC003	06/29/2020	06/28/2021			
Signal Analyzer	R&S	FSV 40	101073	09/25/2019	09/24/2020			
Power Meter	Anritsu	ML2487A	6K00003260	05/21/2020	05/20/2021			
Power Seneor	ower Seneor Anritsu MA2490A 032910 05/21/2020 05/20/2021							
Software	N/A							

3M 966 Chamber Test Site						
Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal Due	
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/25/2020	02/24/2021	
Bilog Antenna	Sunol Sciences	JB3	A030105	07/24/2020	07/23/2021	
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/25/2020	02/24/2021	
Coaxial Cable	EMCI	EMC105	190914+25111	09/19/2020	09/19/2021	
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/15/2020	01/14/2021	
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	10/04/2019	10/03/2020	
Loop Ant	COM-POWER	AL-130	121051	03/27/2020	03/26/2021	
Pre-Amplifier	EMEC	EM330	060609	02/25/2020	02/24/2021	
Pre-Amplifier	HP	8449B	3008A00965	02/25/2020	02/24/2021	
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	07/24/2020	07/23/2021	
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	
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R	
Software	vare e3 6.11-20180413					

**Note:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. N.C.R. = No Calibration Required.



Page: 8 / 40 Rev.: 01

## **1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT**

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

	Support Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID	
1	NB(J)	TOSHIBA	PT345T-00L002	N/A	PD97260H	

## **1.8 TEST METHODOLOGY AND APPLIED STANDARDS**

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, RSS-247 Issue 2 and RSS-GEN Issue 5



Page: 9 / 40 Rev.: 01

### Report No.: T200909W01-RP2

## 2. TEST SUMMARY

IC Standard Section	Chapter	Test Item	Result
-	1.3	Antenna Requirement	Pass
RSS-GEN 8.8	4.1	AC Conducted Emission	N/A
RSS-247(5.2)(a)	4.2	6 dB Bandwidth	Pass
RSS-GEN 6.7	4.2	Occupied Bandwidth (99%)	Pass
RSS-247(5.4)(d)	4.3	Output Power Measurement	Pass
RSS-247(5.2)(b)	4.4	Power Spectral Density	Pass
RSS-247(5.5)	4.5	Conducted Band Edge	Pass
RSS-247(5.5)	4.5	Conducted Emission	Pass
RSS-247(5.5)	4.6	Radiation Band Edge	Pass
RSS-247(5.5)	4.6	Radiation Spurious Emission	Pass



Page: 10 / 40 Rev.: 01

**Report No.:** T200909W01-RP2

## 3. DESCRIPTION OF TEST MODES

### **3.1 THE WORST MODE OF OPERATING CONDITION**

Operation mode	Zigbee
Test Channel Frequencies	<b>Zigbee:</b> 1. Lowest Channel : 2425MHz 2. Middle Channel : 2450MHz 3. Highest Channel : 2475MHz

Remark:

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.



Page: 11 / 40 Rev.: 01

**Report No.:** T200909W01-RP2

## **3.2 THE WORST MODE OF MEASUREMENT**

Radiated Emission Measurement Above 1G			
Test Condition Radiated Emission Above 1G			
Power supply Mode Mode 1: EUT power by Battery			
Worst Mode I Mode 1 Mode 2 Mode 3 Mode 4			
Worst Position	Worst Position       Image: Construction of the second secon		

Radiated Emission Measurement Below 1G				
Test Condition	Test Condition Radiated Emission Below 1G			
Power supply Mode	Power supply Mode Mode 1: EUT power by Battery			
Worst Mode   Mode 1 Mode 2 Mode 3 Mode 4				

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in axis ,X and two polarity, for radiated measurement. The worst case(X-Plane) were recorded in this report

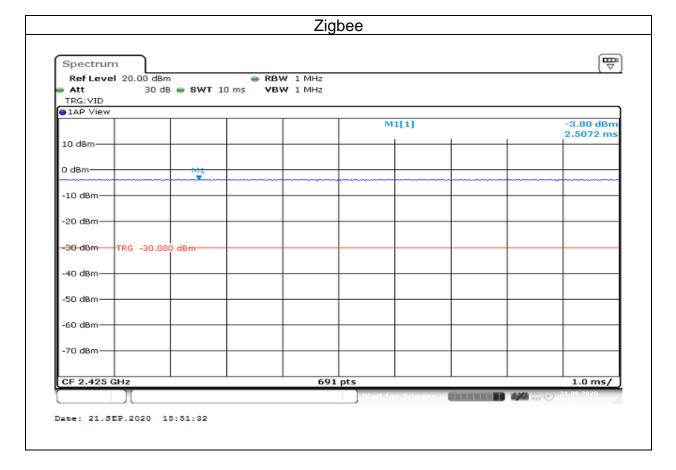


Page: 12 / 40 Rev.: 01

## **3.3 EUT DUTY CYCLE**

Temperature:	25°C	Humidity:	50% RH
Tested by:	Jane Wang		

	Duty Cycle					
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)		
Zigbee	100.00%	0.00	1.00	N/A		





Page: 13 / 40 Rev.: 01

## 4. TEST RESULT

## 4.1 AC POWER LINE CONDUCTED EMISSION

## 4.1.1 Test Limit

According to §15.207(a)(2),

Limits(dBµV)		
Quasi-peak	Average	
66 to 56*	56 to 46*	
56	46	
60	50	
	Quasi-peak 66 to 56* 56	

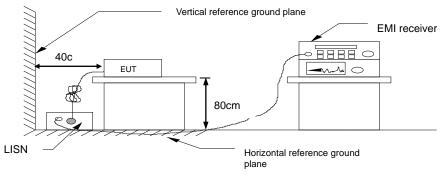
\* Decreases with the logarithm of the frequency.

### 4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

- 1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
- 2. EUT connected to the line impedance stabilization network (LISN)
- 3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. Recorded Line for Neutral and Line.

## 4.1.3 Test Setup



## 4.1.4 Test Result

Not applicable, because EUT doesn't connect to AC Main Source direct.



Page: 14 / 40 Rev.: 01

## 4.26dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

## 4.2.1 Test Limit

According to \$15.247(a)(2)

#### 6 dB Bandwidth :

Limit

Shall be at least 500kHz

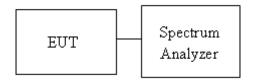
**Occupied Bandwidth(99%)** : For reporting purposes only.

### 4.2.2 Test Procedure

Test method Refer as KDB 558074 D01 and ANSI C63.10: 2013 clause 6.9.2

- 1. The EUT RF output connected to the spectrum analyzer by RF cable.
- 2. Setting maximum power transmit of EUT
- 3. SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 6 dB Bandwidth.
- 4. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
- 5. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth in the test report.

## 4.2.3 Test Setup



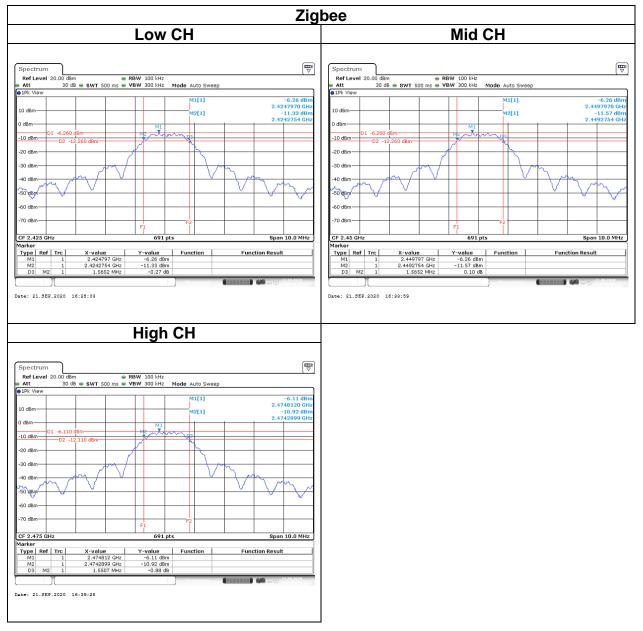
## 4.2.4 Test Result

Test mode: Zigbee / 2425-2475 MHz					
Channel	Channel Frequency OBW (99%) (MHz) (MHz)		6dB BW (MHz)	6dB limit (kHz)	
Low	2405	2.3878	1.5652		
Mid	2440	2.3733	1.5652	≥500	
High	2480	2.3733	1.5507		



Page: 15 / 40 Rev.: 01

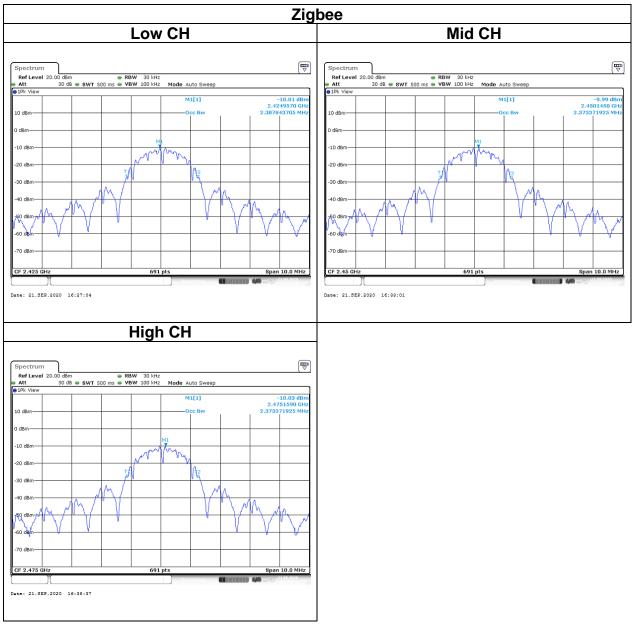
## Test Data 6dB BANDWIDTH





Page: 16 / 40 Rev.: 01

## Test Data BANDWIDTH (99%)





Page: 17 / 40 Rev.: 01

Report No.: T200909W01-RP2

## 4.3 OUTPUT POWER MEASUREMENT

### 4.3.1 Test Limit

According to §15.247(b),

#### Peak output power :

For systems using digital modulation in the 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt(30 dBm), base on the use of antennas with directional gain not exceed 6 dBi If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

	Antenna not exceed 6 dBi : 30dBm
Limit	Antenna with DG greater than 6 dBi :
	[Limit = 30 - (DG - 6)]
	Point-to-point operation :

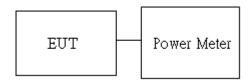
Average output power : For reporting purposes only.

### 4.3.2 Test Procedure

Test method Refer as KDB 558074 D01.

- 1. The EUT RF output connected to the power meter by RF cable.
- 2. Setting maximum power transmit of EUT.
- 3. The path loss was compensated to the results for each measurement.
- 4. Measure and record the result of Peak output power and Average output power in the test report.

### 4.3.3 Test Setup





### 4.3.4 Test Result

### Peak output power :

	Zigbee					
Config.	Freq. (MHz)	Power Setting	PK Power (dBm)	PK Power (W)	Ant. Gain (dBi)	Limit (dBm)
	2425	4	6.11	0.0041		
Zigbee	2450	4	6.15	0.0041	1.74	30
	2475	4	6.32	0.0043		

#### Average output power :

Zigbee				
Config.	Freq. (MHz)	AV Power (dBm)		
	2425	5.61		
Zigbee	2450	5.69		
	2475	5.75		

Page: 18 / 40 Rev.: 01



Page: 19 / 40 Rev.: 01

**Report No.:** T200909W01-RP2

## 4.4 POWER SPECTRAL DENSITY

## 4.4.1 Test Limit

According to RSS-247 section 5.2(b),

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

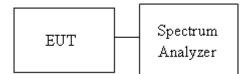
Limit $\bigtriangleup$  Antenna not exceed 6 dBi : 8dBmLimitAntenna with DG greater than 6 dBi[ Limit = 8 - (DG - 6)] $\square$  Point-to-point operation :

### 4.4.2 Test Procedure

Test method Refer as KDB 558074 D01.

- 1. The EUT RF output connected to the spectrum analyzer by RF cable.
- 2. Setting maximum power transmit of EUT
- 3. SA set RBW = 3kHz, VBW = 30kHz, Span = 1.5 times DTS Bandwidth (6 dB BW), Detector = Peak, Sweep Time = Auto and Trace = Max hold.
- 4. The path loss and Duty Factor were compensated to the results for each measurement by SA.
- 5. Mark the maximum level.
- 6. Measure and record the result of power spectral density. in the test report.

### 4.4.3 Test Setup

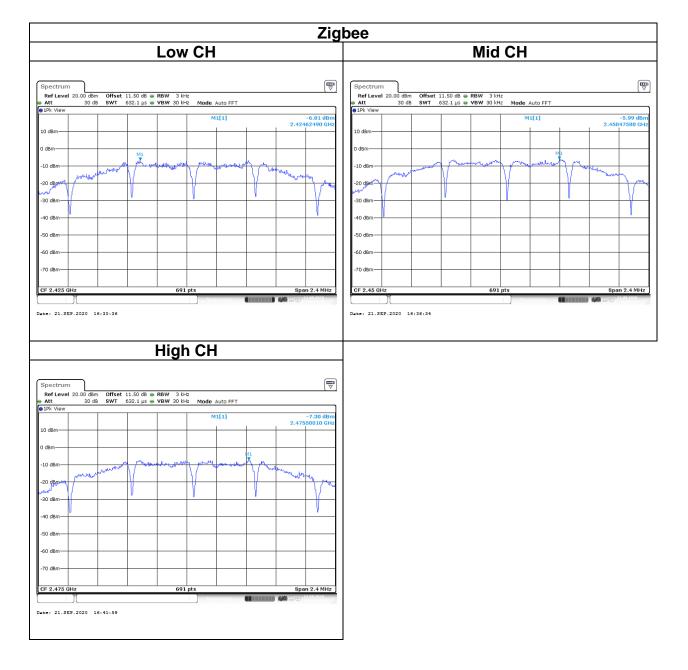


#### 4.4.4 Test Result

Test mode: Zigbee / 2425 - 2475 MHz									
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)						
Low	2425	-6.81							
Mid	2450	-5.99	8						
High	2475	-7.30							



## Test Data



Page: 20 / 40 Rev.: 01



Page: 21 / 40 Rev.: 01

## 4.5 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

### 4.5.1 Test Limit

According to §15.247(d),

In any 100 kHz bandwidth outside the authorized frequency band,

Non-restricted bands shall be attenuated at least 20 dB/30 dB relative to the maximum PSD level in 100 kHz by RF conducted or a radiated measurement which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

## 4.5.2 Test Procedure

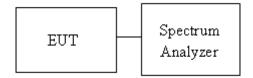
Test method Refer as KDB 558074 D01,

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.

2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.

3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when conducted power procedure is used. f the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

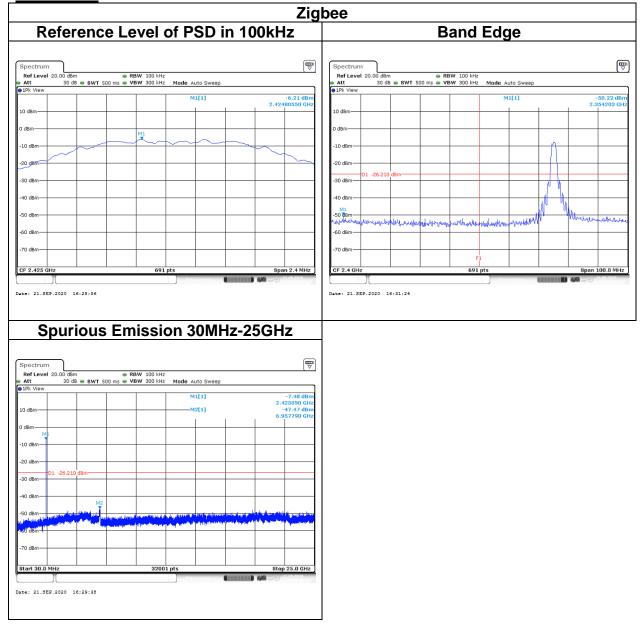
## 4.5.3 Test Setup





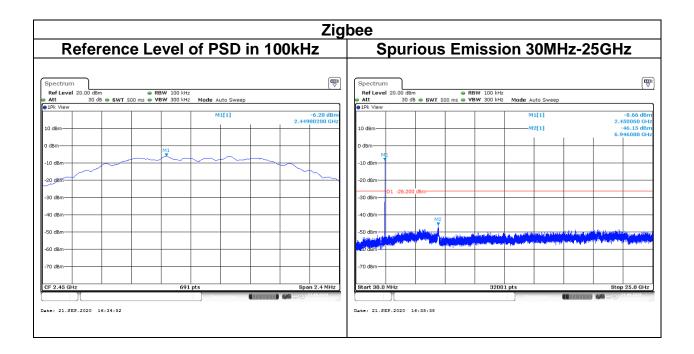
### 4.5.4 Test Result

#### Test Data



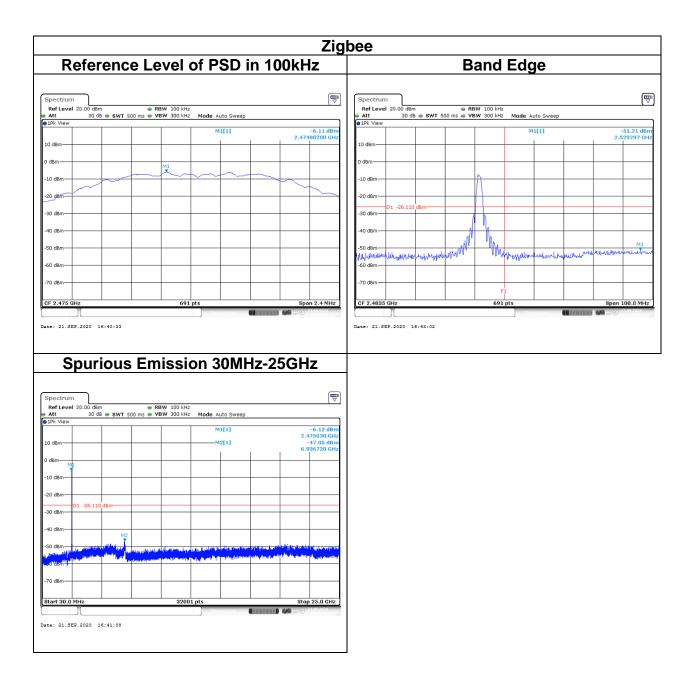


Page: 23 / 40 Rev.: 01





Page: 24 / 40 Rev.: 01





Page: 25 / 40 Rev.: 01

## 4.6 RADIATION BANDEDGE AND SPURIOUS EMISSION

### 4.6.1 Test Limit

FCC according to §15.247(d), §15.209 and §15.205,

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

#### Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

#### Above 30 MHz

Frequency	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)				
(MHz)	Transmitters	Receivers			
30-88	100 (3 nW)	100 (3 nW)			
88-216	150 (6.8 nW)	150 (6.8 nW)			
216-960	200 (12 nW)	200 (12 nW)			
Above 960	500 (75 nW)	500 (75 nW)			

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.



Page: 26 / 40 Rev.: 01

#### Report No.: T200909W01-RP2

### 4.6.2 Test Procedure

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10: 2013, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 30MHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Remark:

1. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

2. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

- 4. The SA setting following :
  - (1) Below 1G : RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
  - (2) Above 1G:
    - (2.1) For Peak measurement : RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
    - (2.2) For Average measurement : RBW = 1MHz, VBW

If Duty Cycle  $\geq$  98%, VBW=10Hz.

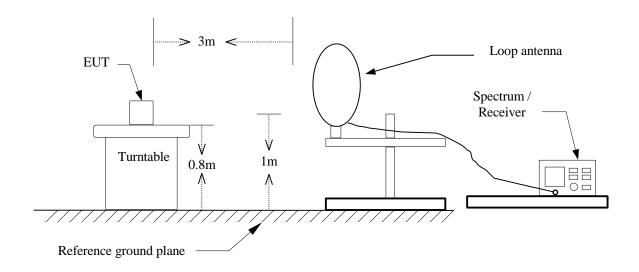
If Duty Cycle < 98%, VBW≥1/T.



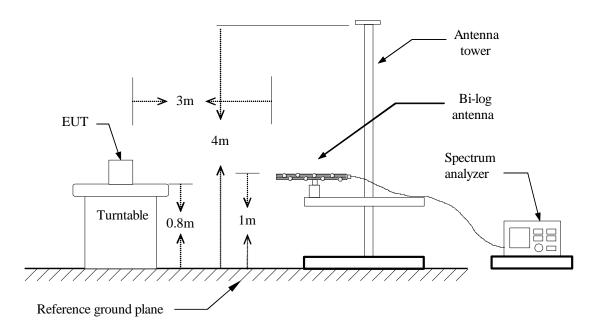
Page: 27 / 40 Rev.: 01

## **Report No.:** T200909W01-RP2 **4.6.3 Test Setup**

#### <u>9kHz ~ 30MHz</u>



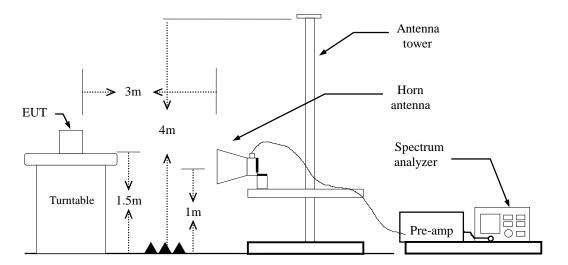
#### <u>30MHz ~ 1GHz</u>





Page: 28 / 40 Rev.: 01

#### Above 1 GHz





Page: 29 / 40 Rev.: 01

### 4.6.4 Test Result

### Band Edge Test Data

Test Mode	e Z	igbee Low CH	-	Temp/Hum	25.0(°C	)/ 41%RF	
Test Item	1	Band Edge Test Date Sept		September 24, 20		est Date September 24, 2	
Polarize		Horizontal	Te	est Engineer	Jerry	Chang	
Detector	F	Peak / Average					
130	n)						
120							
120							
100							
80							
60							
40					2		
20							
0 <mark>2310</mark>	2330.	2350. Free	juency (MHz)	2370.	2390.	2410	
		1					
Frequency	Detector	Spectrum	Factor	Actual	Limit	Margin	
<b>(88</b> )	Mode	Reading Level		FS	@3m		
(MHz)	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
2390.00	Peak	50.09	1.25	51.34	74.00	-22.66	
2390.00	Average	38.30	1.25	39.55	54.00	-14.45	



Test Mode 2		Zigbee Low CH		mperature:	25.0(°C)/ 41%R	
Test Item	1	Band Edge	1	est Date	September 24, 2	
Polarize		Horizontal	Tes	st Engineer		Chang
Detector	· F	Peak / Average				
130 Level (dBuV/r	n)					
120						
100						
80						
60						
40					2	
20						
0 <mark></mark>	2330.	2350. Free	23 quency (MHz)	370.	2390.	2410
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level	Factor dB	Actual FS	Limit @3m dBu\//m	Margin dB
2390.00	Peak	<b>dBμV</b> 53.11	<u>ив</u> 1.25	<b>dBµV/m</b> 54.36	<b>dBμV/m</b> 74.00	ав -19.64
2390.00	Average	40.64	1.25	41.89	54.00	-12.11
	1	1 1		l .		l.



Test Mod	e Z	igbee High CH	Te	emp/Hum	25.0(°C	)/ 41%R <mark>⊢</mark>
Test Item	1 I	Band Edge	Т	est Date	Septemb	er 24, 202
Polarize		Horizontal	Tes	st Engineer		Chang
Detector	· F	Peak / Average				
120	m)					
110				         		
110						
90						
50						
70			1			
10						
50		1				
50		2	1			
30			     			
50						
10				· · · · · · · · · · · · · · · · · · ·		
0 <sup>2475</sup>	2480.	2485. Fre	24 quency (MHz)	190.	2495.	2500
			400.0 <b>9</b> (2)			
Frequency	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
(MHz)	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Peak	50.94	1.62	52.56	74.00	-21.44
2483.50	Average	39.08	1.62	40.70	54.00	-13.30
		I				



Test Mod	e Z	igbee High CH	Tei	mperature:	25.0(°C	)/ 41%RF
Test Iten	า	Band Edge Test Date Septen		Septemb	er 24, 202	
Polarize	•	Horizontal	Tes	st Engineer		Chang
Detector	r F	Peak / Average				
120 Level (dBuV/	m)					
110			1			
110						
90						
90						
70	-		-			
10		1				
50		2				
50						
30	, , , , , , , , , , , , , , , , , , ,				     	
50						
10						
0 <sup>2475</sup>	2480.	2485. Free	24 quency (MHz)	190.	2495.	2500
Frequency	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
(MHz)	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Peak	57.35	1.62	58.97	74.00	-15.03
2483.50	Average	46.33	1.62	47.95	54.00	-6.05
	•			•		•



#### Below 1GHz

Test Mod	le	Mode 1	Т	emp/Hum	25.0(°C	)/ 41%RF
Test Iter		30MHz-1GHz		Test Date	est Date September	
Polarize		Vertical	Tes	st Engineer	Jerry	Chang
Detecto	r	Peak				
120 Level (dBuV	/m)					
110						
90			       	*		   
70				· · · · · · · · · · · · · · · · · · ·		
50			1			
50	·					
30	2 3 4	5				6
10	· · · · · · · · · · · · · · · · · · ·					 
0 <mark></mark> 30	<b>224.</b>	418.		12.	806.	1000
		Fre	quency (MHz)			
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
MHz						1
<b>MHz</b> 122.15	Peak	39.45	-8.97	30.48	43.50	-13.02
			-8.97 -10.26	30.48 30.44	43.50 43.50	-13.02 -13.06
122.15	Peak	39.45				
122.15 147.37	Peak Peak	39.45 40.70	-10.26	30.44	43.50	-13.06
122.15 147.37 214.30	Peak Peak Peak	39.45 40.70 42.50	-10.26 -11.92	30.44 30.58	43.50 43.50	-13.06 -12.92

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)



Page: 34 / 40 Rev.: 01

Test Mode		Mode 1	Temp/Hum		25.0(°C	C)/ 41%RF
Test Iter		30MHz-1GHz		Test Date	September 25, 202	
Polarize		Horizontal	Te	est Engineer	Jerry	/ Chang
Detecto	r	Peak				
120 Level (dBuV	/m)					
110						
90					     	
70						
10						
50						
	2 3	4 5	6			
30					     	
10						
10						
0 <mark></mark> 30	224.	418. Fre	6 quency (MHz)	512.	806.	1000
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBu\//m	@3m	dB
165.80	Peak	овµv 50.82	-10.71	<b>dBμV/m</b> 40.11	<b>dBμV/m</b> 43.50	-3.39
212.36	Peak	49.10	-11.92	37.18	43.50	-6.32
277.35	Peak	42.47	-8.74	33.73	46.00	-12.27
335.55	Peak	38.22	-7.79	30.43	46.00	-15.57
	Peak	37.15	-4.52	32.63	46.00	-13.37
444.19						

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)



Page: 35 / 40 Rev.: 01

### Above 1 GHz

Test Mo	de			emp/Hum	25.0(°C	)/ 41%RH	
Test Ite				Harmonic Test Date September 2		Test Date	
Polariz		Vertical	Tes	st Engineer	Jerry	Chang	
Detecto	or	Peak					
120 Level (dBuV	//m)						
110							
90							
70							
50							
30							
10							
0 <sup>L</sup> 1000	6100.	11200. Free	16 quency (MHz)	300.	21400.	26500	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
4850.00	Peak	38.58	6.43	45.01	74.00	-28.99	
N/A							
				+			
emark: 1. Meas freque		cies from 1 GHz	to the 10t	h harmonic c	of highest fu	ndamental	



Freq	Detector	Spectrum	Factor	Actual	Limit	Margin
			······			
<sup>0</sup> 1000	6100.	11200. Fre	163 quency (MHz)	00.	21400.	26500
0						
10						1
30					· 4	
50	1					
70				       	       	   
90						
110						
120 Level (dBuV/	m)					
120 Level (dBuV/	m)		i	i	1	1
Detecto		Реак				
Polarize		Horizontal Peak	Tes	t Engineer	Jerry	y Chang
Test Iten		Harmonic		est Date		per 24, 20
Test Mod		igbee Low CH	Te	emp/Hum	25.0(°C)/ 41%R	

Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4850.00	Peak	42.16	6.43	48.59	74.00	-25.41
N/A						

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



	0 <sup>L</sup> 1000	6100.	11200. Frequer	16300. cy (MHz)	21400.	26500
	10					
	30		· · · · · · · · · · · · · · · · · · ·			
	50	1				
	50					
	/0					
	70					1
	90		4		· · · · · · · · · · · · · · · · · · ·	
	110					
	120					
	20 Level (dBuV/r 110 90 70	n)				
	Delector		i can			
	Polarize Detector		Vertical Peak	Test Engine	Jerry	Chang
Jerry Chang	Test Item		Harmonic	Test Date		
September 24, 20 Jerry Chang	Test Mod		bee Mid CH	Temp/Hun		2)/ 41%RF

Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4900.00	Peak	37.56	6.39	43.95	74.00	-30.05
N/A						

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test Mod		bee Mid CH	Temp/Hun		:)/ 41%RF
Test Item		Harmonic	Test Date		er 24, 202
Polarize		Horizontal	Test Engine	er Jerry	<sup>,</sup> Chang
Detector	•	Peak			
120 Level (dBuV/r	n)				
110					1 1 1
90					
70					
50	1				
30					
10					
0 <mark>1000</mark>	6100.	11200. Frequer	16300. icy (MHz)	21400.	26500

Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4900.00	Peak	37.41	6.39	43.80	74.00	-30.20
N/A						

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Page: 39 / 40 Rev.: 01

30 10 0 1000 6100.	11200.	16300.	21400.	26500
30				
30				
1				
50	     			
70				
70				
90			= +	
110				
120 Level (dBuV/m)				

Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4950.00	Peak	36.63	6.80	43.43	74.00	-30.57
N/A						

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



11200. Frequency	16300.	21400.	26500
	· +		1

Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4950.00	Peak	37.82	6.80	44.62	74.00	-29.38
N/A						

Remark:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

--End of Report --