

Shenzhen CTL Electromagnetic Technology Co., Ltd. Tel: +86-755-89486194 Fax: +86-755-89486194-805

FCC PART 15 SUBPART C TEST REPORT					
FCC Part 15.249					
Report Reference No	CTL130315363-WF				
Compiled by					
(position+printed name+signature):	File administrators Jacky Chen Jacky Chen				
Name of the organization performing the tests	File administrators Jacky ChenJacky ChenTest Engineer Tracy QiJuny ChiManager Tracy QiJuny Chi				
(position+printed name+signature):					
Approved by					
(position+printed name+signature):	Manager Tracy Qi				
Date of issue:	Mar. 28, 2013				
Representative Laboratory Name. :	Shenzhen CTL Electromagnetic Technology Co., Ltd.				
Address	Zone B, 4/F, Block 20, Guangqian Industrial Park, Longzhu Road, Nanshan, Shenzhen 518055 China.				
Test Firm	Bontek Compliance Testing Laboratory Ltd				
Address	1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China				
Applicant's name	SHENZHEN WEIKING TECHNOLOGY CO., LTD				
Address	W-king Technology Park, NO.431, Huating Road, Dalang Street, Longhua Town, Baoan District, Shenzhen City, China				
Test specification:					
Standard	FCC Part 15.249: Operation within the bands 920-928 MHz, 2400-2483.5 MHz, 5725-5850 MHz and 24.0 - 24.25 GHz.				
TRF Originator	Shenzhen CTL Electromagnetic Technology Co., Ltd.				
Master TRF	Dated 2011-01				
Shenzhen CTL Electromagnetic Tech	hnology Co., Ltd. All rights reserved.				
Shenzhen CTL Electromagnetic Techn the material. Shenzhen CTL Electroma	whole or in part for non-commercial purposes as long as the ology Co., Ltd. is acknowledged as copyright owner and source of gnetic Technology Co., Ltd. takes no responsibility for and will not from the reader's interpretation of the reproduced material due to its				
Test item description:	Solo Bluetooth Speaker				
Trade Mark:	w-king				
Models/Type reference:	BT15S				
Modulation:	FHSS				
Work Frequency	2402 MHz~2480 MHz				
Antenna Type	internal				
FCC ID	Q8W-BT15S				
Result:	Positive				

TEST REPORT

Test Report No. :	CTL130315363-WF	Mar. 28, 2013	
		Date of issue	
Equipment under Test	: Solo Bluetooth Speaker		
Model /Type	: BT15S		
Applicant	: SHENZHEN WEIKING	TECHNOLOGY CO.,LTD	
Address		k, NO.431, Huating Road, Dalang Baoan District, Shenzhen City,	
Manufacturer	SHENZHEN WEIKING	TECHNOLOGY CO.,LTD	
Address		k, NO.431, Huating Road, Dalang Baoan District, Shenzhen City,	
Test Result according to the standards on page 4:		Positive	

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1.	TEST STANDARDS	. 4
2.	SUMMARY	.5
	General Remarks	
2.2.	Equipment Under Test	5
2.3.	Short description of the Equipment under Test (EUT) EUT operation mode	с а
	EUT configuration	
	Related Submittal(s) / Grant (s)	
	Modifications	
3.	TEST ENVIRONMENT	.7
2 1	Address of the test laboratory	7
3.1.	Test Facility	<i>1</i> 7
	Environmental conditions	
3.4.	Configuration of Tested System	7
3.5.	Statement of the measurement uncertainty	8
3.6.	Equipments Used during the Test.	8
	TEST CONDITIONS AND RESULTS	
4.	TEST CONDITIONS AND RESULTS	.9
	Conducted Emissions Test	
41	Conducted Emissions Test	٩
4.2.	Radiated Emission Test	12
4.3.	Band Edge Measurement	17
5	ANTENNA REQUIREMENT	1
•.		•
6.	TEST SETUP PHOTOS OF THE EUT	2
	ANTENNA REQUIREMENT	
7	EXTERNAL AND INTERNAL PHOTOS OF THE EUT	3
•••		5

1. <u>TEST STANDARDS</u>

The tests were performed according to following standards:

FCC Rules Part 15.249: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

ANSI C63.4-2003



: Mar. 18, 2013

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample

Testing commenced on	:	Mar. 20, 2013

Testing concluded on	Mar. 21, 2013
resting concluded on	IVIAL 21, 2013

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage

o 120V / 60 Hz o 115V/60Hz o 24 V DC

o 12 V DC • Other (specified in blank below)

DC 3.7V from battery

2.3. Short description of the Equipment under Test (EUT

:

The EUT is a 2.4GHz Solo Bluetooth Speaker work at 2402~2480 MHz. Channel List: S & THIS

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38 10	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

Power Range: -5dBm~0dBm

For more details, refer to the user's manual of the EUT. Serial number: Prototype

2.4. EUT operation mode

Test Mode(TM)	Description	Remark
TM1	Bottom Channel Transmitting	/
TM2	Middle Channel Transmitting	/
TM3	Top Channel Transmitting	/
TM4	Charging	USB power by PC

The field strength of radiation emission was measured in the following position: EUT stand-up position (Y axis), lie-down position (X, Z axis).

The following data show only with the worst case setup.

The worst case of Y axis was reported.

Based on client request, all normal using modes of the normal function were tested but only the worst test data of the worst mode is reported by this report.

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- o supplied by the manufacturer
- supplied by the lab
- Notebook PC

Manufacturer : HP

Model No.: 4-1007TX

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **Q8W-BT15S** filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

The ctromagnetic Techn

2.7. Modifications

No modifications were implemented to meet testing criteria.

nenci

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Bontek Compliance Testing Laboratory Ltd 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

3.2. Test Facility

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

IC Registration No.: 7631A

The 3m alternate test site of Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on March, 2011.

FCC-Registration No.: 338263

Bontek Compliance Testing Laboratory Ltd 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 our files. Registration 338263, March 24, 2008.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges

Temperature:

15-35 ° C

Humidity:

Atmospheric pressure:

30-60 %

950-1050mbar

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System

PC	USB Cable	EUT	

Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	0.8	Unshielded	Without Core

3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods - Part 4: Uncertainty in EMC Measurements" and is documented in the Bontek Compliance Testing Laboratory Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Bontek laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	1~26.5GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.20dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

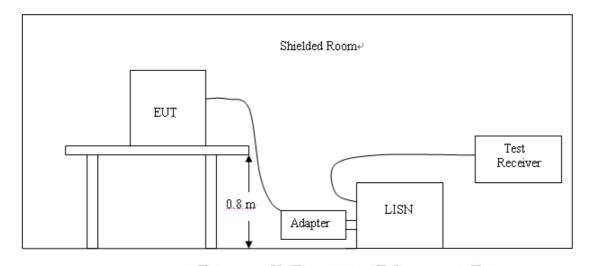
3.6. Equipments Used during the Test

Item	Test Equipment	Manufacturer	Model No.	Last Cal.	Due. Date
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	2012/04/14	2013/04/13
2	Radio Communication Tester	ROHDE & SCHWARZ	CMU200	2012/04/14	2013/04/13
3	Dual Directional Coupler	Agilent	778D	2012/04/14	2013/04/13
4	10dB attenuator	SCHWARZBECK	MTAIMP-136	2012/04/14	2013/04/13
5	Tunable Bandreject filter	K&L	3TNF-800	2012/04/14	2013/04/13
6	Tunable Bandreject filter	K&L	5TNF-1700	2012/04/14	2013/04/13
7	High-Pass Filter	K&L	9SH10- 2700/X12750- O/O	2012/04/14	2013/04/13
8	High-Pass Filter	K&Potromocro	41H10- 1375/U12750- O/O	2012/04/14	2013/04/13
9	Coaxial Cable	Huber+Suhner	AC4-RF-H	2012/04/14	2013/04/13
10	AC Power Supply	IDRC	CF-500TP	2012/04/14	2013/04/13
11	DC Power Supply	IDRC	CD-035-020PR	2012/04/14	2013/04/13
12	RF Current Probe	FCC	F-33-4	2012/04/14	2013/04/13
13	Temperature /Humidity Meter	zhicheng	ZC1-2	2012/04/14	2013/04/13
14	MICROWAVE AMPLIFIER	HP	8349B	2012/04/14	2013/04/13
15	Amplifier	HP	8447D	2012/04/14	2013/04/13
16	SIGNAL GENERATOR	HP	8647A	2012/04/14	2013/04/13
17	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	2012/04/14	2013/04/13
18	Horn Antenna	Schwarzbeck	BBHA9120A	2012/04/14	2013/04/13
19	Spectrum Analyzer	Agilent	E4446A	2012/04/14	2013/04/13
20	Loop Antenna	ZHINAN	ZN30900A	2012/04/14	2013/04/13
21	Horn Antenna	Schwarzbeck	BBHA9120D	2012/04/14	2013/04/13
22	Horn Antenna	Schwarzbeck	BBHA9170	2012/04/14	2013/04/13

4. TEST CONDITIONS AND RESULTS

4.1. Conducted Emissions Test

TEST CONFIGURATION



TEST PROCEDURE

1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4.

2 Support equipment, if needed, was placed as per ANSI C63.4.

3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

4 If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.

5 All support equipments received AC power from a second LISN, if any.

6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.

7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

8 During the above scans, the emissions were maximized by cable manipulation.

The RBW/VBW for 150KHz to 30MHz: 9KHz

CONDUCTED POWER LINE EMISSION LIMIT

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following :

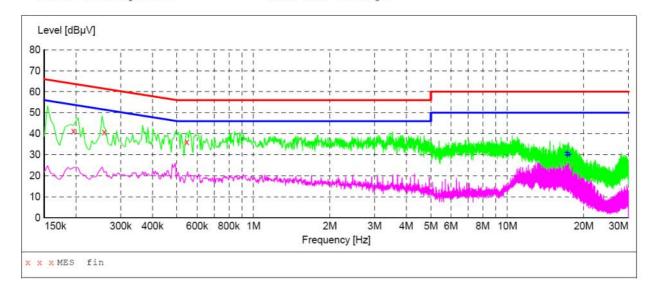
En anno 10	Maximum RF Line Voltage (dBμV)			
Frequency (MHz)	CLAS	SS A	C	CLASS B
(11112)	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

TEST RESULTS





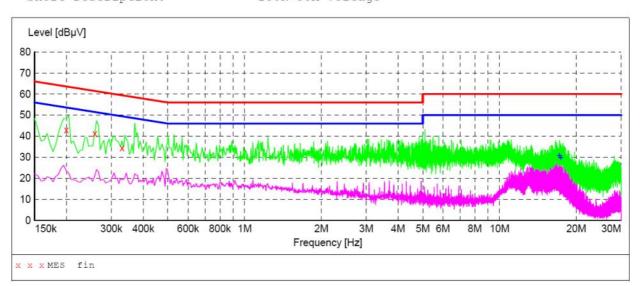
MEASUREMENT RESULT:

Frequency MHz	Level dBµV		Limit dBµV	Margin dB	Detector	Line	PE
0.195000	41.30	10.2	64	22.5	QP	L1	GND
0.258000	40.80	10.2	62	20.7	QP	L1	GND
0.546000	36.10	10.2	56	19.9	QP	L1	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
17.178000	31.10	10.8	50	18.9	AV	L1	GND
17.200500	29.70	10.8	50	20.3	AV	L1	GND
17.551500	29.90	10.8	50	20.1	AV	L1	GND





MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.199500	43.00	10.2	64	20.6	QP	Ν	GND
0.258000	41.20	10.2	62	20.3	QP	Ν	GND
0.330000	34.40	10.2	60	25.1	QP	Ν	GND

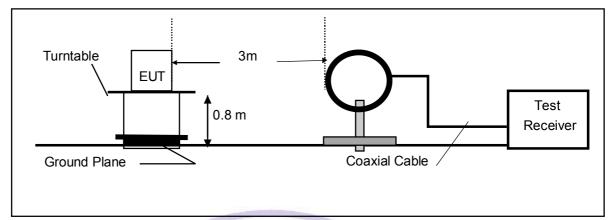
MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
17.178000 17.376000	30.80 29.70	10.8 10.8	50 50	19.2 20.3	AV AV	N N	GND GND
		lec	trom	agne	ticTec		

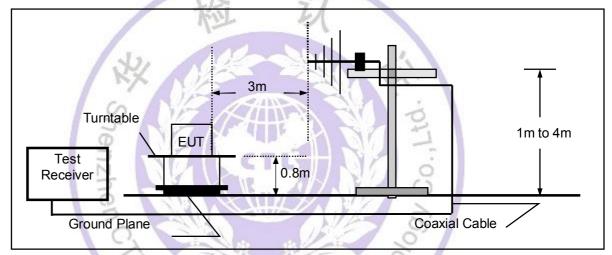
4.2. Radiated Emission Test

TEST CONFIGURATION

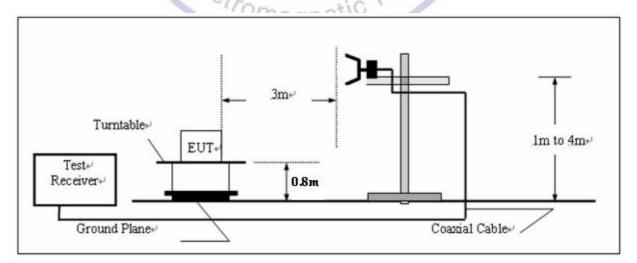
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

RADIATION LIMIT

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

TEST PROCEDURE

- 1. The EUT is placed on a turntable, which is 0.8m above ground plane.
- 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Repeat above procedures until the measurements for all frequencies are complete.
- 7. Based on the Frequency Generator in the device include 26MHz. The test frequency range from 9KHz to 25GHz per FCC PART 15.33(a).

Note:

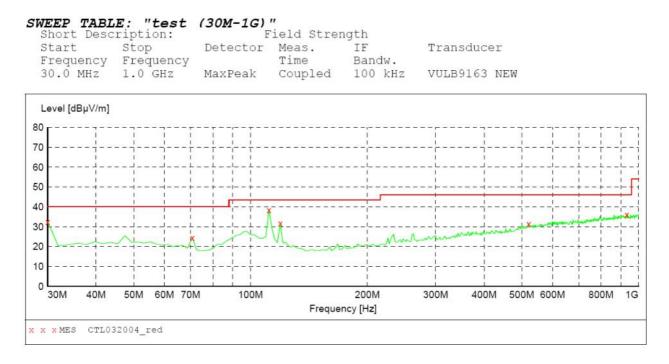
Three axes are chosen for pretest, the Y axis is the worst mode for final test.

For battery operated equipment, the equipment tests shall be performed using a new battery.

TEST RESULTS

All the test modes (TM1, TM2, TM3 and TM4) completed for test. The worst case of Radiated Emission is TM4; the test data of this mode was reported.

Below 1GHz Test Results:



MEASUREMENT RESULT: "CTL032004 red"

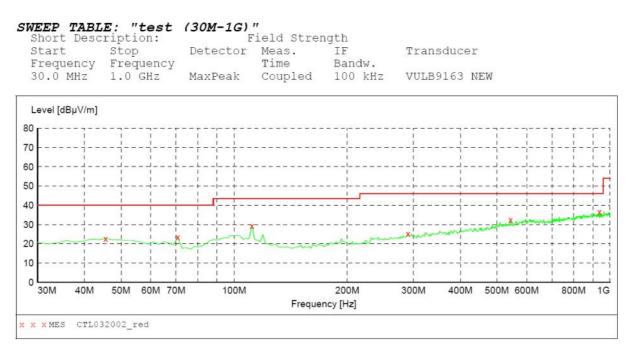
3/20/2013 10:	:13AM							
Frequency	Level	Transd	Limit	Margin	Det.	Height	Azimuth	Polarization
MHz	dBuV/m	dB	dBµV/m	dB		Cm	deg	
	5-5-5-5-5- 8 -5-5-5-5-5-5-5-5-5-						2	
30.000000	32.40	14.3	40.0	7.6		100.0	0.00	Horizontal
70.740000	24.40	12.4	40.0	15.6		300.0	0.00	Horizontal
111.480000	38.40	16.2	43.5	5.1		300.0	0.00	Horizontal
119.240000	31.80	14.8	43.5	11.7		300.0	0.00	Horizontal
520.820000	31.40	24.3	46.0	14.6		300.0	0.00	Horizontal
932.100000	36.10	29.4	46.0	9.9		100.0	0.00	Horizontal
Remark.		-	Cha		1.1	10		

Remark:

Measuring frequencies from 9 KHz to the 1 GHz, Radiated emission test from 9KHz to 30MHz (1)was verified, and no any emission was found except system noise floor.

(2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

The IF bandwidth of EMI Test Receiver between 25MHz to 1GHz was 120KHz, 1 MHz (3) for measuring above 1 GHz, below 30MHz was 10KHz.



MEASUREMENT RESULT: "CTL032002 red"

	10AM	m	+ 1 - 1 +		5			
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
45.520000	22.70	15.9	40.0	17.3		100.0	0.00	Vertical
70.740000	23.40	12.4	40.0	16.6		100.0	0.00	Vertical
111.480000	29.50	16.2	43.5	14.0		100.0	0.00	Vertical
289.960000	25.30	18.4	46.0	20.7		100.0	0.00	Vertical
544.100000	32.40	24.9	46.0	13.6		100.0	0.00	Vertical
937.920000	36.60	29.5	46.0	9.4		100.0	0.00	Vertical
	2		17 11	IK	ATA	1125	0	
Remark:	Q I		M		DHA.	212	~	

Remark:

- Measuring frequencies from 9 KHz to the 1 GHz, Radiated emission test from 9KHz to 30MHz (1) was verified, and no any emission was found except system noise floor.
- * denotes emission frequency which appearing within the Restricted Bands specified in (2) provision of 15.205, then the general radiated emission limits in 15.209 apply.
- The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz (3)for measuring above 1 GHz, below 30MHz was 10KHz.

omagnetic

e 1 Gl	Iz Test R	esults:						
Freq. (MHz)	Ant.Pol. H/V	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)	Note
2480	V	Peak	76.45	-3.30	73.15	113.98	-40.83	F
2480	н	Peak	68.88	-3.30	65.58	113.98	-48.40	F
4960	V	Peak	48.23	3.90	52.13	74.00	-21.87	н
4960	н	Peak	42.40	3.90	46.30	74.00	-27.70	н
7440	V							Н
7440	Н							н
Others								
Freq.				Ant./CL/	Actual FS	Limit3m	Safe Margin	Note
2441	-	Peak		-3.40	71.33	113.98		F
								F
								Н
		Peak	42.35	3.70	46.05	74.00	-27.95	Н
								Н
								Н
Others								
Freq.		DetectorMode		Ant./CL/	Actual FS	Limit3m	Safe Margin	Note
		(PK/AV)						
								F
								F
								н
		Peak	42.82	3.50	46.32	74.00	-27.68	н
								н
								Н
Others		N.4		20x 0. 0x 100 0.0				
nark:		7				ő		
	Measuring fr	requencies from	1 GHz to	the 25 GHz。	1.21/20			
					ous frequenc	v. "E" denote	es band edae	
		O.		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		0	j.	
	* denotes en						cified in	
	Data of mea	surement within	this freque	ency range show	wn " " in the	e table above		
	strength is to	oo small to be m	easured.	itoanoti				
						Hz was 120	KHz, 1 MHz	
	tor measuriı	ng above 1 GH	lz, below 3	30MHz was 10	KHz.			
	Freq. (MHz) 2480 2480 4960 7440 7440 Others Freq. (MHz) 2441 2441 4882 7323 7323 Others Freq. (MHz) 2402 2402 2402 4804 4804 7206 7206 Others mark:	Freq. Ant.Pol. (MHz) HN 2480 V 2480 H 4960 V 4960 H 7440 H Others HN 2480 H 7440 H Others HN 2441 H 4882 H 7323 V 7323 V 7323 H Others V Freq. Ant.Pol. (MHz) HN 2402 V 2402 H 4804 V 4804 V 4804 V 4804 V 7206 H Others Treelees en pro	(MHz)HV(PK/AV)2480VPeak2480HPeak2480HPeak4960VPeak4960HPeak7440VPeak7440HOthersFreq. Ant Pol. Detector/Mode(MHz)H/V(PK/AV)2441VPeak4882VPeak4882VPeak4882HPeak7323HOthersFreq. Ant Pol. Detector/Mode(MHz)H/V(PK/AV)2402VPeak4804VPeak4804VPeak4804HPeak7206HOthersothersnark:Measuring frequencies from"F" denotes fundamental free frequency.* denotes emission frequence provision of 15.205, then the Data of measurement withir reading of emissions are atta strength is too small to be m The IF bandwidth of EMI T	Freq.Ant.Pol.DetectorModeReading (MHz) (HV) (PK/AV) $(dBuV)$ 2480 HPeak 76.45 2480 HPeak 68.88 4960 VPeak 48.23 4960 HPeak 42.40 7440 H 7440 HOthers 7440 HOthers 7441 VPeak 74.73 2441 VPeak 47.33 482 VPeak 47.33 482 VPeak 42.35 7323 V 7323 HOthers 7323 HOthers 7323 H $Others$ 7206 HPeak 7206 H 7	Freq.Ant Pol.DetectorModeReadingAnt /CL/ Amp. CF(dB)2480VPeak76.45-3.302480HPeak68.88-3.304960VPeak48.233.904960HPeak42.403.907440V7440H7440HOthers7441HPeak74.732441VPeak74.732441VPeak69.602441VPeak42.352441HPeak69.602441VPeak42.353.707323V7323V7323V7323HOthers7206HPeak7206H7206H7206H7206H7206H7206H7206H7206H740H740H740H740H740HPeak740H740H740H740H740HPeak740 </td <td>Freq. Ant.Pol. DetectorMode Reading Ant./CL/ Actual FS (MHz) H/V (PK/AV) (dBuV) Amp. CF(dB) (dBuV/m) 2480 H Peak 76.45 -3.30 73.15 2480 H Peak 68.88 -3.30 65.58 4960 V Peak 48.23 3.90 52.13 4960 H Peak 42.40 3.90 46.30 7440 H 7440 H 7440 H 7440 H 7441 H Peak 74.73 -3.40 71.33 240 2441 V Peak 74.73 -3.40 71.33 3.70 51.03 4882 V Peak 47.33 3.70 51.03 46.05 7323 V </td> <td>Freq. Ant.Pol. Detector/Mode Reading Ant/CL/ Actual FS Limit3m 2480 V Peak 76.45 -3.30 73.15 113.98 2480 H Peak 68.88 -3.30 65.58 113.98 2480 H Peak 48.23 3.90 52.13 74.00 4960 V Peak 42.40 3.90 46.30 74.00 7440 V 7440 H 7440 H 7440 H 7440 H Peak 74.73 2441 V Peak 74.73 </td> <td>Freq. Ant Pol. DetectorMode Reading Ant/CL/ Actual FS Limit3m Safe Margin (dB) 2480 V Peak 76.45 -3.30 73.15 113.96 40.83 2480 H Peak 68.88 -3.30 65.58 113.98 -40.83 2480 H Peak 48.840 -3.30 65.58 113.98 -40.83 2480 H Peak 42.40 3.90 45.30 74.00 -21.87 4960 H Peak 42.40 3.90 45.30 74.00 -27.70 7440 H 7440 H </td>	Freq. Ant.Pol. DetectorMode Reading Ant./CL/ Actual FS (MHz) H/V (PK/AV) (dBuV) Amp. CF(dB) (dBuV/m) 2480 H Peak 76.45 -3.30 73.15 2480 H Peak 68.88 -3.30 65.58 4960 V Peak 48.23 3.90 52.13 4960 H Peak 42.40 3.90 46.30 7440 H 7440 H 7440 H 7440 H 7441 H Peak 74.73 -3.40 71.33 240 2441 V Peak 74.73 -3.40 71.33 3.70 51.03 4882 V Peak 47.33 3.70 51.03 46.05 7323 V	Freq. Ant.Pol. Detector/Mode Reading Ant/CL/ Actual FS Limit3m 2480 V Peak 76.45 -3.30 73.15 113.98 2480 H Peak 68.88 -3.30 65.58 113.98 2480 H Peak 48.23 3.90 52.13 74.00 4960 V Peak 42.40 3.90 46.30 74.00 7440 V 7440 H 7440 H 7440 H 7440 H Peak 74.73 2441 V Peak 74.73	Freq. Ant Pol. DetectorMode Reading Ant/CL/ Actual FS Limit3m Safe Margin (dB) 2480 V Peak 76.45 -3.30 73.15 113.96 40.83 2480 H Peak 68.88 -3.30 65.58 113.98 -40.83 2480 H Peak 48.840 -3.30 65.58 113.98 -40.83 2480 H Peak 42.40 3.90 45.30 74.00 -21.87 4960 H Peak 42.40 3.90 45.30 74.00 -27.70 7440 H 7440 H

Above 1 GHz Test Results:

(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.15dBuV/m(PK Value) <93.98(AV Limit), at harmonic 52.33 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

4.3. Band Edge Measurement

TEST CONFIGURATION

Same as Section 4.2

TEST PROCEDURE

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.4 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW to 100KHz and VBM to 300KHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength.

The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW to 100 KHz and VBM to 300 KHz, to measure the conducted peak band edge.

LIMIT

FCC PART 15.249(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

TEST RESULTS

Radiated Test:

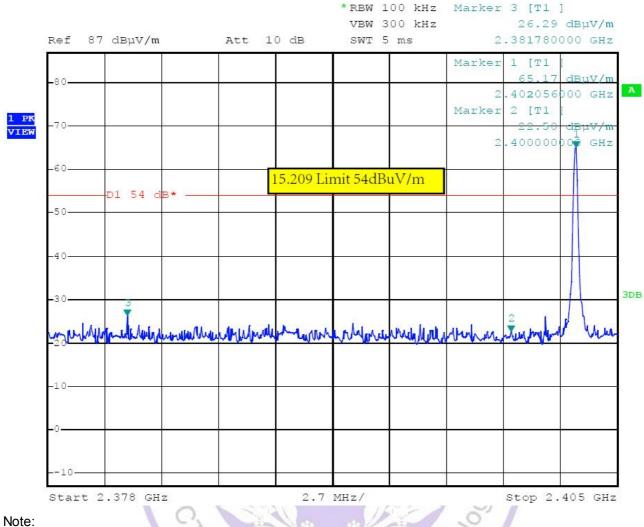
Operation Mode: TX on Bot Channel

Polarity: Hor.

								100 kHz 300 kHz			3	
Ref	87	dBµV/m		Att	10	dB		5 ms		25.12 .384480		
-80				5.					Marker	1 [T1 73.03	l dB	uV/m
_70									Det Berry	.402056 2 [T1		
									2	.400000	000	GHZ
-60		D1 54 d	D.+		1	5.209 Lii	nit 54dl	BuV/m]			
-50		DI 54 Q	B *		-							
-40							-					
-30	tullar	haran	3 M. J. N. I. I	alla, ha a	. 1.41	. Aston Ad	Naum nu l	Wine man	hunt	Antonia	ľ	July,
- <u>F</u> r M -			(M) (III)-	- Yuu	(LUV	<u>w vyluw v</u>		- And Anton	the newtoor of	1.0.0		
-10					_						2	
-0		-1			_							
10-						2.						9
Star	t 2	.378 GH	z			2.7	MHz/			Stop 2.	405	5 GHz

Operation Mode: TX on Bot Channel

Polarity: Ver.

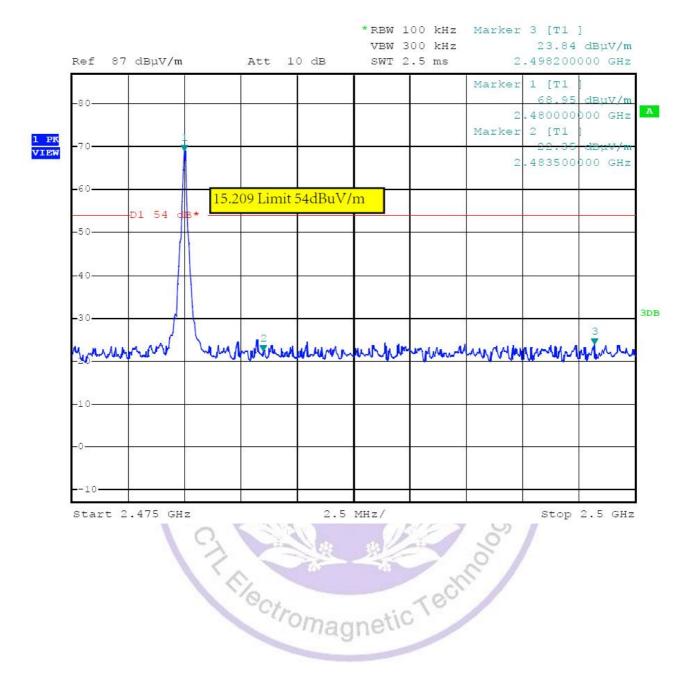


Note:

- 1. The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209.
- 2. The average measurement was not performed when the peak measured data under the limit of average detection.

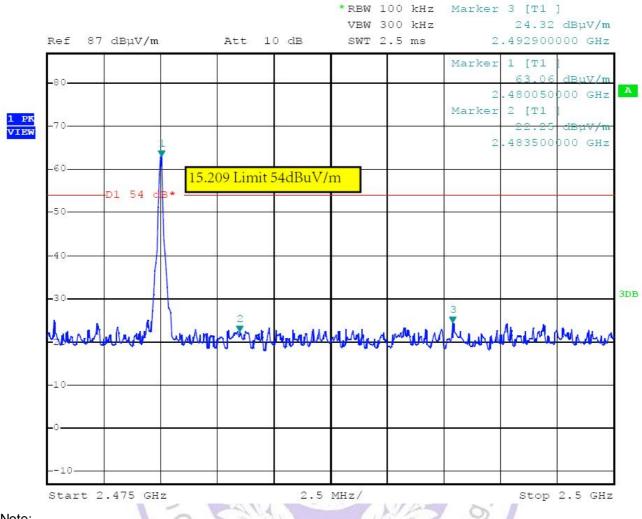
Operation Mode: TX on Top Channel

Polarity: Hor.



Operation Mode: TX on Top Channel

Polarity: Ver.



Note:

- 1. The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209.
- 2. The average measurement was not performed when the peak measured data under the limit of average detection.

5. <u>Antenna Requirement</u>

Standard Applicable

For intentional device, according to FCC 47 CFR Section 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.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is a PCB Antenna, The directional gains of antenna used for transmitting is 2.0 dBi.



6. Test Setup Photos of the EUT







7. External and Internal Photos of the EUT



