

TEST REPORT FOR CERTIFICATION

On Behalf of

Qisda Corporation

Remote Control

Model No.: RFRC_NV01

REF. No. : KH-0490

FCC ID: VRSRFRC-NV01

Prepared for: Qisda Corporation
157, Shan-Ying Road, Gueishan, Taoyuan 333,
Taiwan, R.O.C.

Prepared By : AUDIX Technology Corporation
EMC Department
No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang,
Taipei Hsian, Taiwan

Tel : (02) 2609-9301, 2609-2133

Fax : (02) 2609-9303

File Number : EM980867B
Report Number : EM-F980740
Date of Test : Oct. 06, 2009
Date of Report : Oct. 13, 2009

TABLE OF CONTENTS

Description	Page
TEST REPORT CERTIFICATION	3
1. GENERAL INFORMATION	4
1.1. Description of Device (EUT)	4
1.2. Description of Test Facility	5
1.3. Measurement Uncertainty	5
2. CONDUCTED EMISSION MEASUREMENT	6
3. RADIATED EMISSION MEASUREMENT	7
3.1. Test Equipment	7
3.2. Test Setup	7
3.3. Radiation Emission Limits	8
3.4. Operating Condition of EUT	9
3.5. Test Procedure	9
3.6. Radiated Emission Noise Measurement Results	10
4. DEVIATION TO TEST SPECIFICATIONS	16
5. PHOTOGRAPHS	17
5.1. Photos of Radiated Measurement at Semi-Anechoic Chamber (30~1000MHz)	17
5.2. Photos of Radiated Measurement at Semi-Anechoic Chamber (Above 1GHz)	18

TEST REPORT CERTIFICATION

Applicant : Qisda Corporation
EUT Description : Remote Control
(A) Model No. : RFRC_NV01
(B) Serial No. : N/A
(C) Ref. No. : KH-0490
(D) Power Supply : DC 3V

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C, July 2008
AND ANSI C63.4/2003

(FCC CFR 47 Part 15C, §15.207, §15.209 and §15.249)

The device described above was tested by AUDIX Technology Corporation to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart C limits both radiated and conducted emissions.


The measurement results are contained in this test report and AUDIX Technology Corporation is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX Technology Corporation.

Date of Test : Oct. 06, 2009 Date of Report : Oct. 13, 2009

Producer : 
(Nita Lee/Administrator)

Review : 
(Ben Cheng/ Manager)

Signatory: 
(Leon Liu/Deputy General Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Remote Control
Model Number	:	RFRC_NV01
FCC ID	:	VRSRFRC-NV01
Applicant	:	Qisda Corporation 157, Shan-Ying Road, Gueishan, Taoyuan 333, Taiwan, R.O.C.
Frequency Band	:	2405MHz
Power Supply	:	DC 3V
Date of Receipt of Sample	:	Aug. 24, 2009
Date of Test	:	Oct. 06, 2009

* Remote Control – Receiver (Crystal LED Lamp)
Model No.: NV01, FCC by DoC

Remark:

Antenna requirement: This EUT's transmitter antenna is designed to be soldered on a printed circuit board, comply with §15.203 and inform to user that any change and modify is prohibited.

1.2. Description of Test Facility

Name of Firm	:	AUDIX Technology Corporation EMC Department No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang, Taipei Hsien, Taiwan.
Test Facility & Location	:	Semi-Anechoic Chamber No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang, Taipei Hsien, Taiwan. May 16, 2006 Renewal on Federal Communication Commission Registration Number: 90993
NVLAP Lab. Code	:	200077-0
TAF Accreditation No	:	1724

1.3. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Radiation Test (Distance: 3m)	30MHz~300MHz	± 2.91dB
	300MHz~1000MHz	± 2.94dB

Remark : Uncertainty = $ku_c(y)$

2. CONDUCTED EMISSION MEASUREMENT

【The EUT only employs battery power for operation, no conductive emission limits are required according to FCC Part 15 Section §15.207】

3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

The following test equipment was used during the radiated emission test:

3.1.1. For Frequency Range 30MHz~1000MHz (Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	HP	8564EC	3946A00249	Oct. 24, 08'	Oct. 23, 09'
2.	Test Receiver	R & S	ESCS30	100265	Aug. 28, 09'	Aug. 27, 10'
3.	Pre-Amplifier	HP	8447D	2944A06305	Feb. 04, 09'	Feb. 03, 10'
4.	Biconical Antenna	CHASE	VBA6106A	1264	Mar. 20, 09'	Mar. 19, 10'
5.	Log Periodic Antenna	Schwarzbeck	UHALP91 08-A	0810	Mar. 20, 09'	Mar. 19, 10'
6.	Coaxial Switch	Anritsu	MP59B	6100226512	Feb. 20, 09'	Feb. 19, 10'

3.1.2. For Frequency Range Above 1GHz (Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	HP	8564EC	3946A00249	Oct. 24, 08'	Oct. 23, 09'
2.	Amplifier	HP	8449B	3008A00529	Dec. 31, 08'	Dec. 30, 09'
3.	Horn Antenna	EMCO	3115	9112-3775	May 15, 09'	May 14, 10'

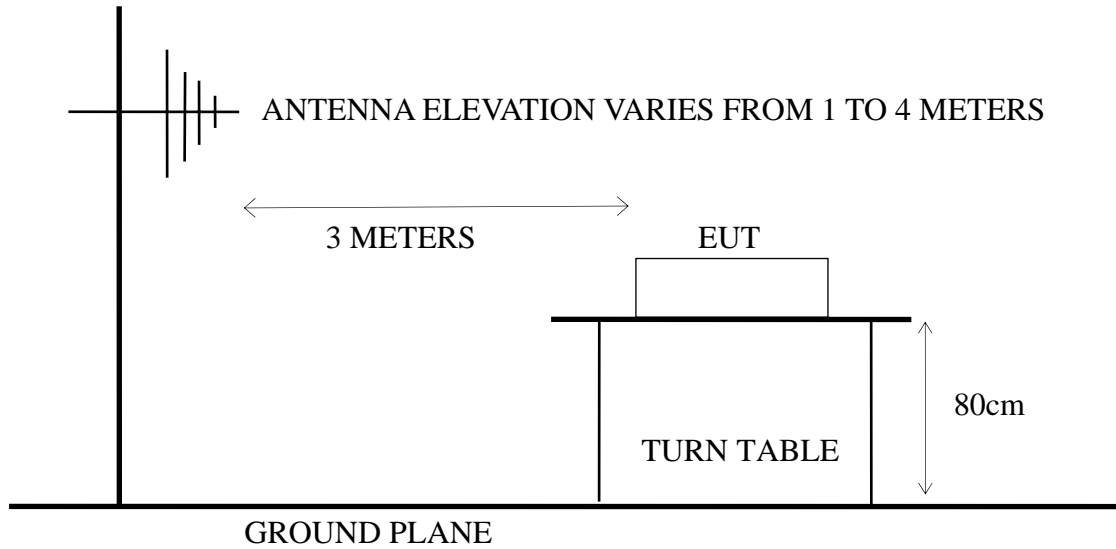
3.2. Test Setup

3.2.1. Block Diagram of connection between EUT and simulators

REMOTE CONTROL (EUT)

3.2.2. Semi-Anechoic Chamber (3m) Setup Diagram

ANTENNA TOWER



3.3. Radiation Emission Limits

3.3.1. Radiated Emission Limits (§15.109, Class B & §15.209)

Frequency MHz	Distance Meters	Field Strengths Limits	
		$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
Above 1000	3	74.0 $\text{dB}\mu\text{V/m}$ (Peak) 54.0 $\text{dB}\mu\text{V/m}$ (Average)	

- Remark :
- (1) Emission level ($\text{dB}\mu\text{V/m}$) = $20 \log$ Emission level ($\mu\text{V/m}$)
 - (2) The tighter limit applies at the edge between two frequency bands.
 - (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 - (4) The limits in this table are based on CFR 47 Part 15.205(a)(b) and Part 15.209 (a).
 - (5) All final readings in frequency band 30MHz to 1000MHz were measured with Qusai-Peak detector. Frequency above 1GHz shall be measured with Peak and Average detectors.
 - (6) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35 (b) and Part 15.205(b) & Part 15.209(e) and Part 15.207(c).

3.3.2. Fundamental Frequency Emission Limit (§15.249)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		mV/m	dB μ V/m
Fundamental Frequency	3	50	94 (Average)

- Remarks :
- (1) Emission level (dB μ V/m) = 20 log Emission level (μ V/m)
 - (2) The tighter limit applies at the edge between two frequency bands.
 - (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 - (4) The limits in this table are based on CFR 47 Part 15.249.
 - (5) The peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation

3.4. Operating Condition of EUT

- 3.4.1. Set up the EUT and simulator as shown on 3.2.
- 3.4.2. To Turn on the power of all equipment.
- 3.4.3. The EUT (Remote Control) emitted the fundamental frequency with data code at the stand, side and lying conditions.
(We had verified the radio emissions with 3 plans:x/y/z)
- 3.4.4. The EUT was operated on maximum transmitting status during all testing (lying condition).

3.5. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. For 30MHz to 1000MHz frequency ranges, EUT was set 3 meters and for above 1GHz frequency ranges, EUT was set at 3 meters away from the receiving antenna which was mounted on an antenna tower. The antenna moved up and down between 1 to 4 meters to find out the maximum emission level. Broadband antennas (bilog antenna or broadband and log periodical or horn antenna) were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to FCC ANSI C63.4 regulation.

The bandwidth of the R&S Test Receiver ESCS30 was set at 120kHz. (For 30MHz to 1000MHz)

The resolution bandwidth and video bandwidth of test spectrum analyzer is 1MHz for peak detection (PK) at frequency above 1GHz.

The resolution bandwidth of test spectrum analyzer is 1MHz and the video bandwidth is 10Hz for average detection (AV) at frequency above 1GHz.

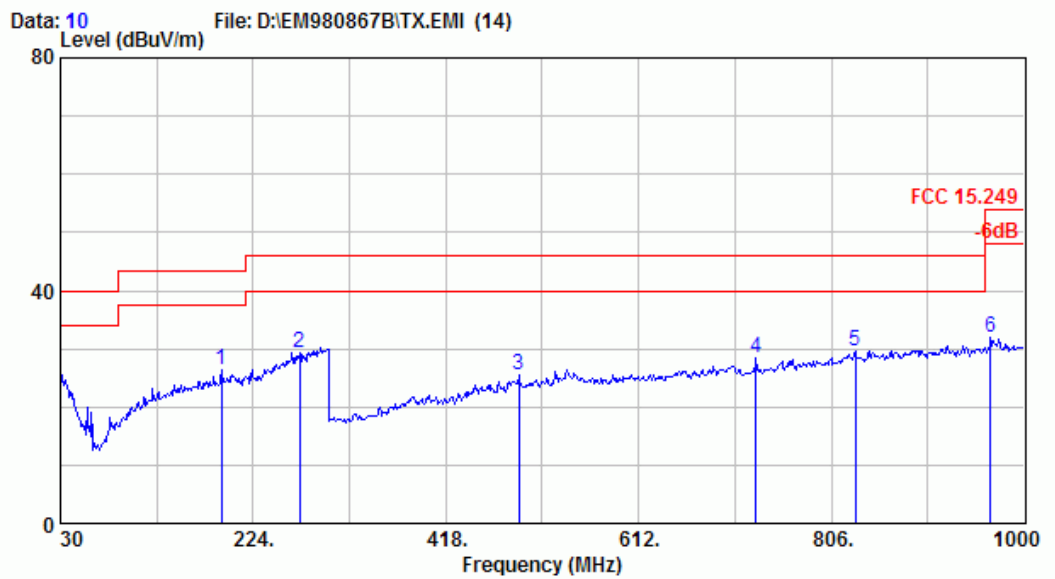
The frequency range from 30MHz to 25GHz (Up to 10th harmonics from fundamental frequency) was checked. 30MHz to 1000MHz was measured with Qusai-Peak detector. Above 1GHz was measured with peak and average detector. For average reading in frequency from 5.5G to 25GHz, we checked it in 1 meter distance and with a shorter cable 2 meter instead of original's. There is no signal exist.

3.6. Radiated Emission Noise Measurement Results

3.6.1. Frequency Range 30MHz to 1GHz Measurement Results: **PASSED.**

All the emissions not reported below are too low against the FCC part 15 Subpart C limit.

Date of Test : Oct. 06. 2009 Temperature : 26
 EUT : Remote Control Humidity : 50%
 Test Mode : Operating (Lying) Ant. Position : Horizontal

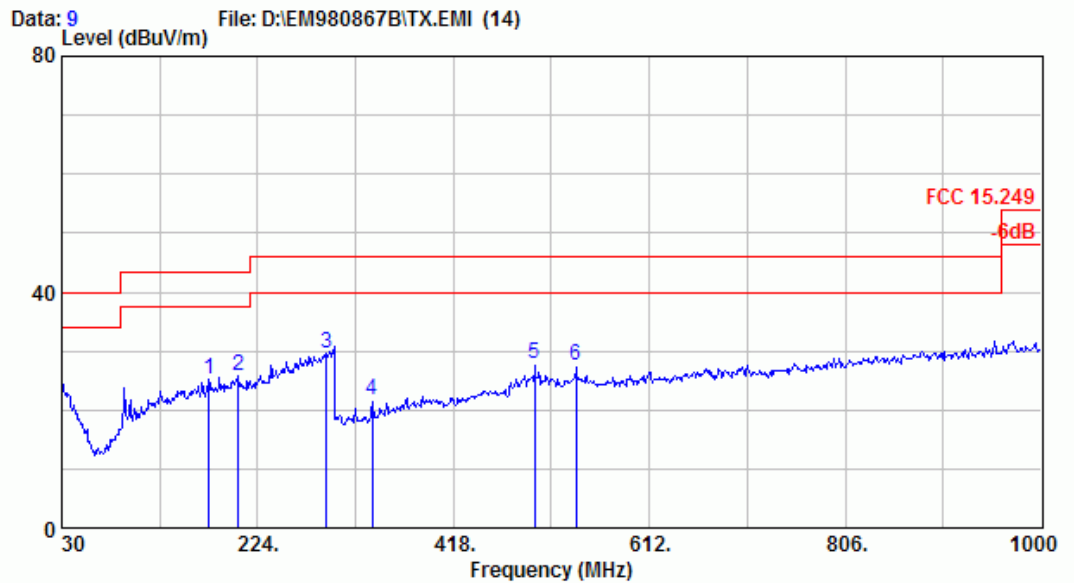


Site no. : site Data no. : 10
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC 15.249
 Env. / Ins. : 8564EC 26*C/50% Engineer : Jarwei Wang
 EUT : Remote Control M/N:RFRN_NV01
 Power Rating : DC 3V
 Test Mode : TX

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	191.990	21.60	3.00	1.68	26.28	43.50	17.22	
2	270.560	25.00	3.70	0.71	29.41	46.00	16.59	
3	491.720	18.61	6.33	0.45	25.39	46.00	20.61	
4	730.340	22.00	6.60	-0.25	28.35	46.00	17.65	
5	830.250	24.75	7.10	-2.14	29.71	46.00	16.29	
6	966.050	26.89	7.70	-2.74	31.85	54.00	22.15	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Oct. 06. 2009 Temperature : 26
 EUT : Remote Control Humidity : 50%
 Test Mode : Operating (Lying) Ant. Position : Vertical



Site no. : site Data no. : 9
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC 15.249
 Env. / Ins. : 8564EC 26*C/50% Engineer : Jarwei Wang
 EUT : Remote Control M/N:RFRFC_NV01
 Power Rating : DC 3V
 Test Mode : TX

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	175.500	21.19	2.85	1.19	25.23	43.50	18.27	
2	204.600	21.97	3.10	0.61	25.67	43.50	17.83	
3	291.900	26.17	3.90	-0.57	29.50	46.00	16.50	
4	337.490	15.09	4.20	2.36	21.65	46.00	24.35	
5	498.510	18.79	6.50	2.51	27.79	46.00	18.21	
6	539.250	19.34	7.10	1.04	27.48	46.00	18.52	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

3.6.2. Frequency Range 1000MHz to 2680MHz Measurement Results: **PASSED.**

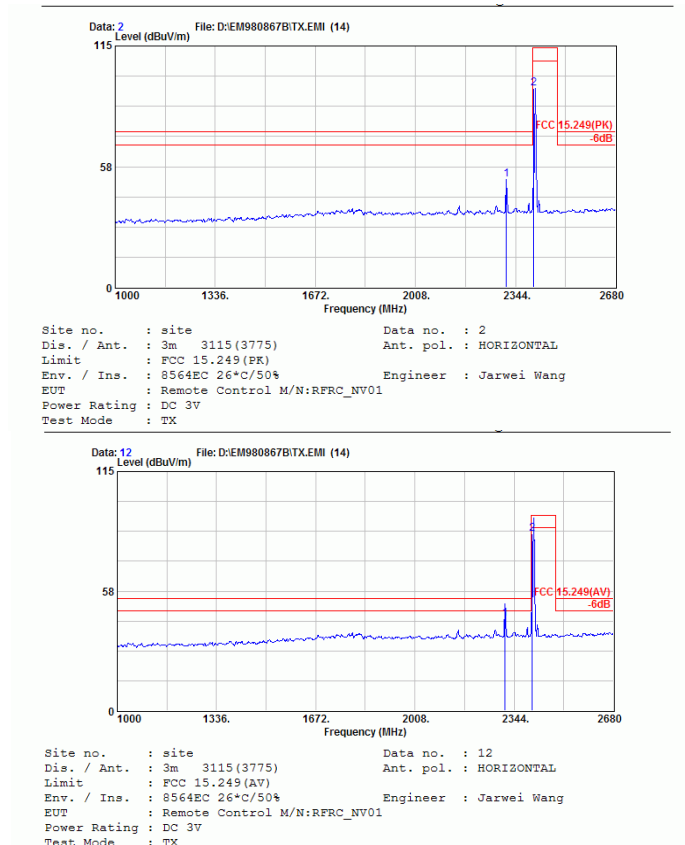
Date of Test : Oct. 06. 2009 Temperature : 26
 EUT : Remote Control Humidity : 50%
 Test Mode : Operating (Lying)

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB

Fundamental Freq. (Peak Value)						
2405.000	28.11	6.36	60.19	94.67	114.00	19.33
Spurious / Harmonic Freq. (Peak Value)						
2313.760	28.01	6.24	17.13	51.39	74.00	22.61

Fundamental Freq. (Average Value)						
2405.000	28.11	6.36	50.79	85.27	94.00	8.73
Spurious / Harmonic Freq. (Average Value)						
2313.760	28.01	6.24	10.03	44.28	54.00	9.72

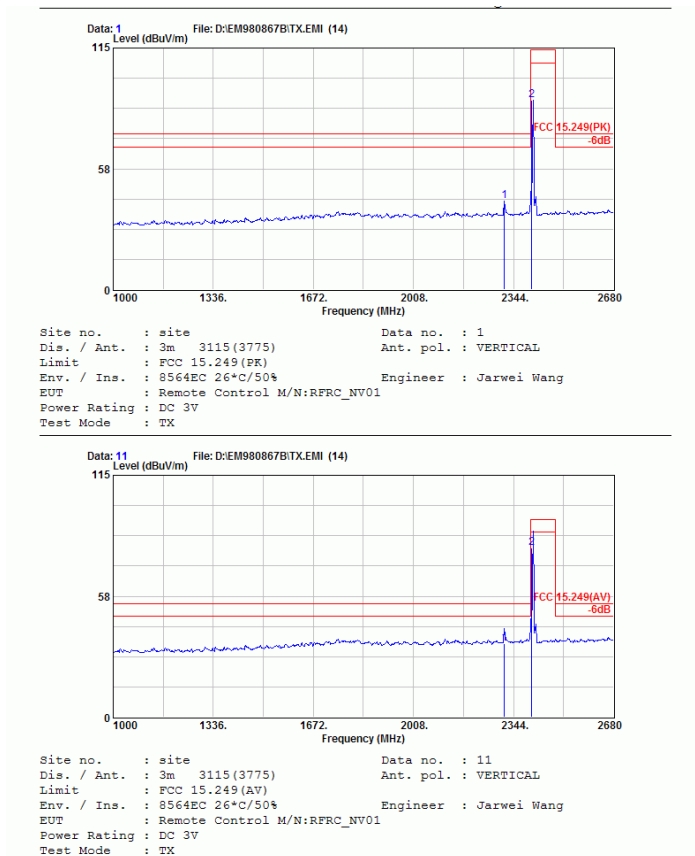
- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.



Date of Test : Oct. 06. 2009 Temperature : 26
 EUT : Remote Control Humidity : 50%
 Test Mode : Operating (Lying)

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Fundamental Freq. (Peak Value)						
2405.000	28.11	6.36	55.82	90.30	114.00	23.70
Spurious / Harmonic Freq. (Peak Value)						
2313.760	28.01	6.24	7.88	42.14	74.00	31.86
Fundamental Freq. (Average Value)						
2405.000	28.11	6.36	45.85	80.32	94.00	13.68
Spurious / Harmonic Freq. (Average Value)						
2313.760	28.01	6.24	0.67	34.92	54.00	19.08

Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

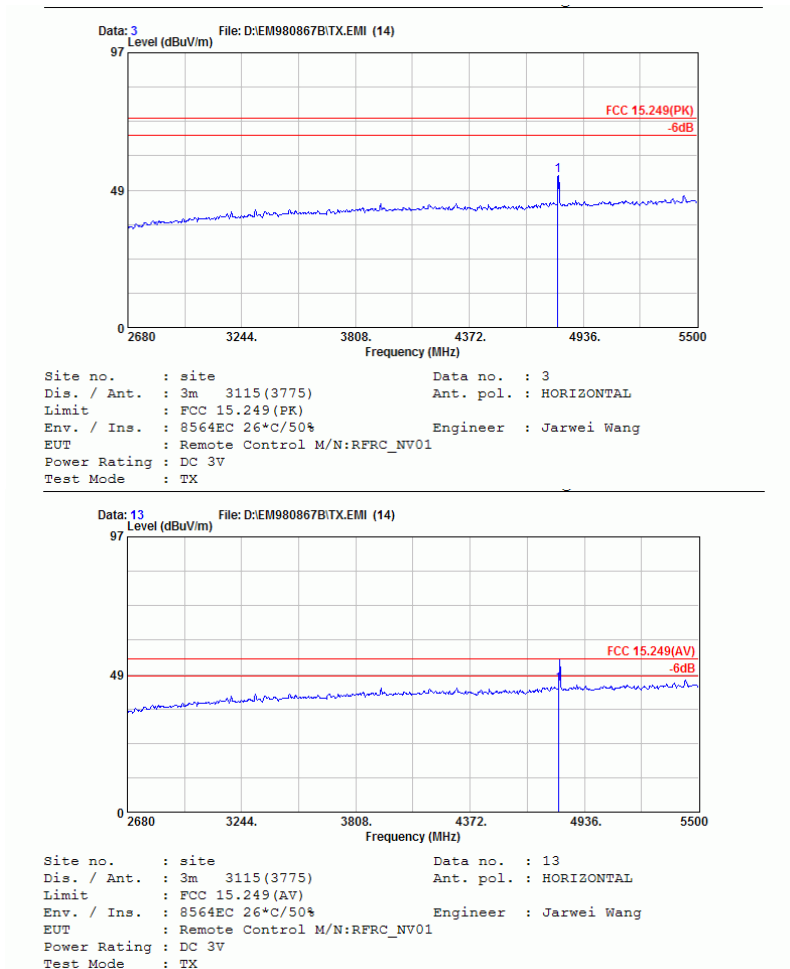


3.6.3. Frequency Range 2680MHz to 5500MHz Measurement Results: **PASSED.**

Date of Test : Oct. 06. 2009 Temperature : 26
 EUT : Remote Control Humidity : 50%
 Test Mode : Operating (Lying)

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Peak Value						
4810.000	32.92	9.14	11.75	53.81	74.00	20.19
Average Value						
4810.000	32.92	9.14	3.21	45.28	54.00	8.72

Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.



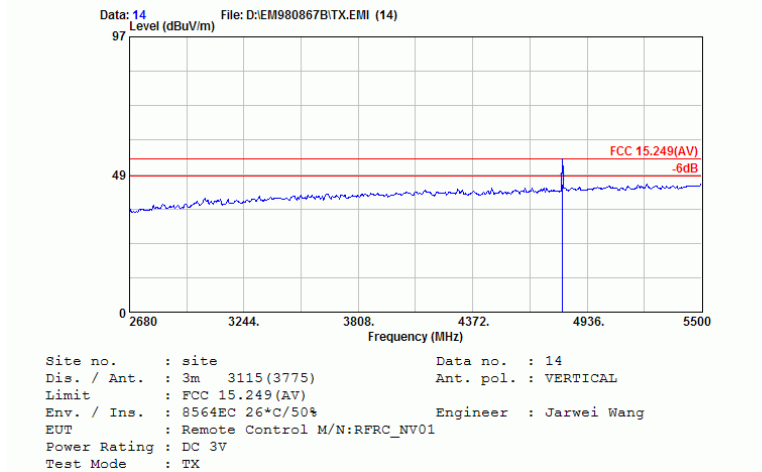
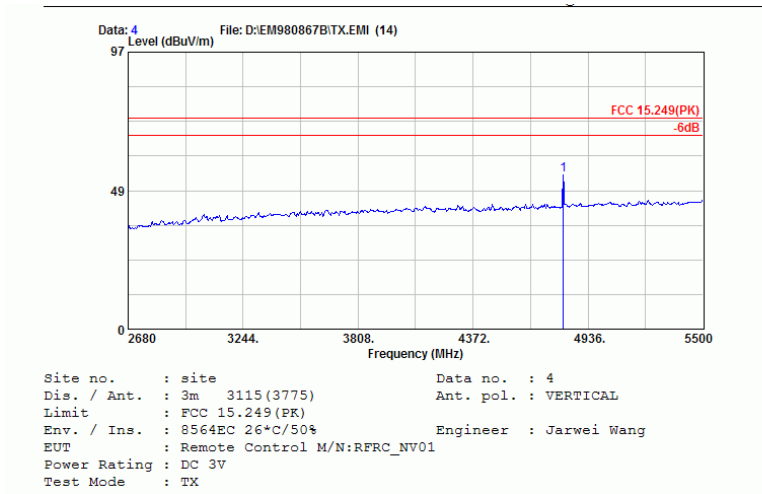
Date of Test : Oct. 06. 2009 Temperature : 26

EUT : Remote Control Humidity : 50%

Test Mode : Operating (Lying)

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Peak Value						
4814.740	32.92	9.14	11.85	53.91	74.00	20.09
Average Value						
4814.740	32.92	9.14	3.12	45.18	54.00	8.82

Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.



4. DEVIATION TO TEST SPECIFICATIONS

【NONE】