

TEST REPORT

For

Shenzhen Yitao Intelligent Control Co., Ltd.

Remote Control, 433MHz

Model No.: DF2690-R

FCC ID: GSO300082

Prepared for : Shenzhen Yitao Intelligent Control Co., Ltd.
Address : A1 Building, Longma Industry Estate, Shiyan Town, Baoan
District, Shenzhen, China

Prepared by : SHENZHEN EMTEK CO., LTD.
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Report Number : ES120419075F
Date of Test : March 20, 2012 to March 23, 2012
Date of Report : March 27, 2012

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TEST REPORT DESCRIPTION

Applicant : Shenzhen Yitao Intelligent Control Co., Ltd.
Manufacturer : Shenzhen Yitao Intelligent Control Co., Ltd.
Trade Mark : Dimplex
EUT : Remote Control, 433MHz
Model No. : DF2690-R
Type of device : Superregenerative Receiver
Power Supply : AC 120V, 60HZ

Measurement Procedure Used:

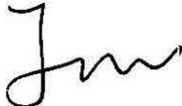
FCC Rules and Regulations Part 15 Subpart B Class B & FCC / ANSI C63.4-2009

The device described above is tested by SHENZHEN EMTEK CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and SHENZHEN EMTEK CO., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN EMTEK CO., LTD.

Date of Test : March 20, 2012 to March 23, 2012

Prepared by : 
(Engineer)

Reviewer : 
(Quality Manager)

Approved & Authorized Signer : 
(Manager)



1. SUMMARY OF TEST RESULT

EMISSION		
Description of Test Item	Standard & Limits	Results
Conducted Disturbance at Mains Terminals	FCC Part 15, Subpart B, Class B ANSI C63.4: 2009	Pass
Radiated Disturbance	FCC Part 15, Subpart B, Class B ANSI C63.4: 2009	Pass
Note: N/A is an abbreviation for Not Applicable.		

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : Remote Control, 433MHz

Model Number : DF2690-R

Test Voltage : AC 120V, 60Hz

Applicant : Shenzhen Yitao Intelligent Control Co., Ltd.

Address : A1 Building, Longma Industry Estate, Shiyan Town, Baoan District, Shenzhen, China

Manufacturer : Shenzhen Yitao Intelligent Control Co., Ltd.

Address : A1 Building, Longma Industry Estate, Shiyan Town, Baoan District, Shenzhen, China

Date of Received : March 20, 2012

Date of Test : March 20, 2012 to March 23, 2012

2.2. Description of Test Facility

Site Description
EMC Lab. : Accredited by CNAS, 2010.10.29
The certificate is valid until 2013.10.28
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2005)
The Certificate Registration Number is L2291.

Accredited by TUV Rheinland Shenzhen 2010.5.25
The Laboratory has been assessed according to the requirements ISO/IEC 17025.

Accredited by FCC, October 28, 2010
The Certificate Registration Number is 406365.

Accredited by Industry Canada, March 5, 2010
The Certificate Registration Number is 46405-4480.

Name of Firm : SHENZHEN EMTEK CO., LTD.
Site Location : Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

2.3.Measurement Uncertainty

Conducted Emission Uncertainty : 2.8dB

Radiated Emission Uncertainty : 3.3dB (3m Chamber)

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Power Line Conducted Emission Measurement

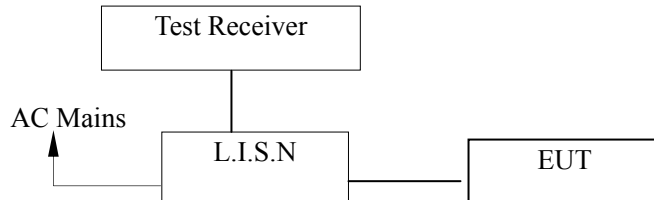
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCS30	828985/018	May 29, 2011	1 Year
2.	L.I.S.N.	Schwarzbeck	NNLK8129	8129203	May 29, 2011	1 Year
3.	50Ω Coaxial Switch	Anritsu	MP59B	M20531	N/A	N/A
4.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	May 29, 2011	1 Year
5.	Voltage Probe	Rohde & Schwarz	TK9416	N/A	May 29, 2011	1 Year
6.	I.S.N	Rohde & Schwarz	ENY22	1109.9508.02	May 29, 2011	1 Year

3.2. For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	May 29, 2011	1 Year
2.	Pre-Amplifier	HP	8447D	2944A07999	May 29, 2011	1 Year
3.	Bilog Antenna	Schwarzbeck	VULB9163	142	May 29, 2011	1 Year
4.	Loop Antenna	ARA	PLA-1030/B	1029	May 29, 2011	1 Year
5.	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA91703 99	May 29, 2011	1 Year
6.	Horn Antenna	Schwarzbeck	BBHA 9120	D143	May 29, 2011	1 Year
7.	Cable	Schwarzbeck	AK9513	ACRX1	May 29, 2011	1 Year
8.	Cable	Rosenberger	N/A	FP2RX2	May 29, 2011	1 Year
9.	Cable	Schwarzbeck	AK9513	CRPX1	May 29, 2011	1 Year
10.	Cable	Schwarzbeck	AK9513	CRRX2	May 29, 2011	1 Year

4. POWER LINE CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup



(EUT: Remote Control, 433MHz)

4.2. Measuring Standard

FCC Part 15, Subpart B, Class B ANSI C63.4: 2009

4.3. Power Line Conducted Emission Limits (Class B)

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0
NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

4.4. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet FCC requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

EUT : Remote Control, 433MHz
Model Number : DF2690-R

4.5. Operating Condition of EUT

4.5.1. Setup the EUT as shown on Section 4.1.

4.5.2. Turn on the power of all equipments.

4.5.3. Let the EUT work in measuring mode (ON) and measure it.

4.6. Test Procedure

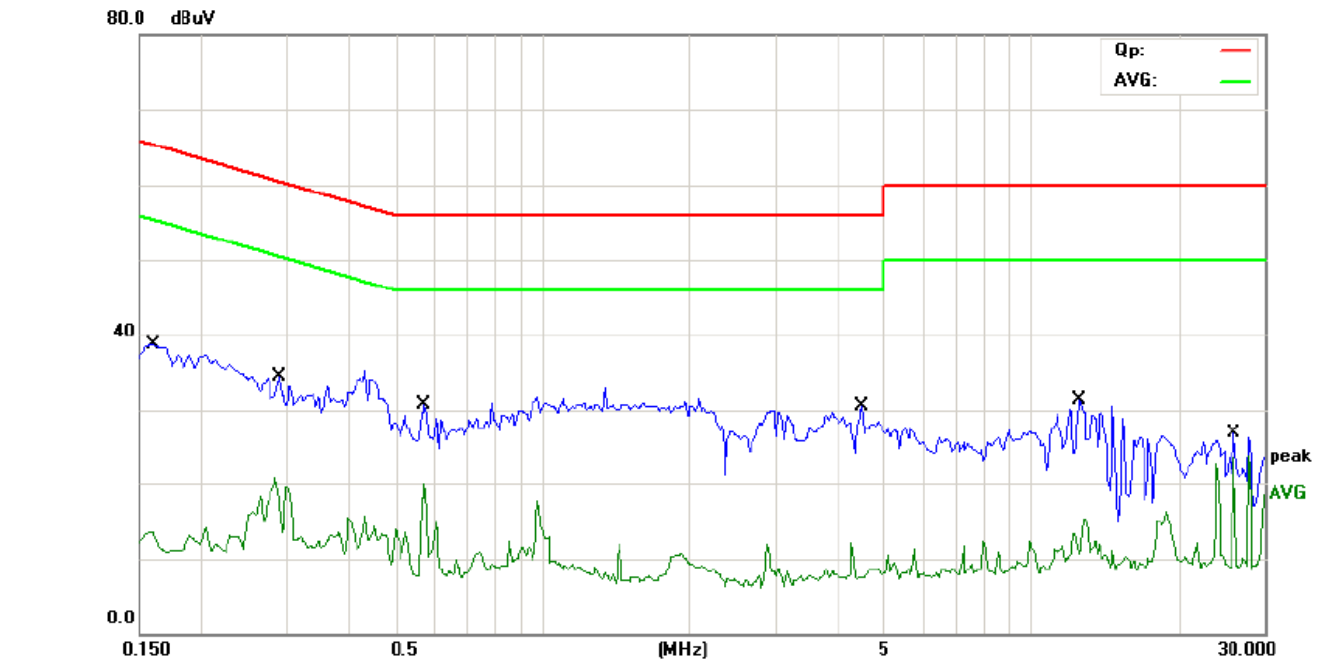
The EUT is put on the plane 0.1m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the FCC regulations during conducted emission measurement.

The bandwidth of the field strength meter (R&S Test Receiver ESCS30) is set at 9kHz in 150kHz~30MHz and 200Hz in 9kHz~150kHz.

The frequency range from 150kHz to 30MHz is investigated.

4.7. Measuring Results

PASS.



Site Conduction #1

Limit: (CE)FCC PART 15 class B_QP

M/N: DF2690-R

Mode: ON

Note:

Phase: **L1**

Power: AC 120V/60Hz

Temperature: 26

Humidity: 60 %

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit		Detector	Comment
		MHz	Level	Factor	ment	dBuV	dB		
1		0.1600	38.71	0.00	38.71	65.46	-26.75	QP	
2		0.1600	13.58	0.00	13.58	55.46	-41.88	AVG	
3		0.2900	34.58	0.00	34.58	60.52	-25.94	QP	
4		0.2900	20.62	0.00	20.62	50.52	-29.90	AVG	
5	*	0.5750	30.72	0.00	30.72	56.00	-25.28	QP	
6		0.5750	19.99	0.00	19.99	46.00	-26.01	AVG	
7		4.5100	30.52	0.00	30.52	56.00	-25.48	QP	
8		4.5100	10.53	0.00	10.53	46.00	-35.47	AVG	
9		12.5500	31.30	0.00	31.30	60.00	-28.70	QP	
10		12.5500	15.38	0.00	15.38	50.00	-34.62	AVG	
11		25.9750	26.83	0.00	26.83	60.00	-33.17	QP	
12		25.9750	23.67	0.00	23.67	50.00	-26.33	AVG	

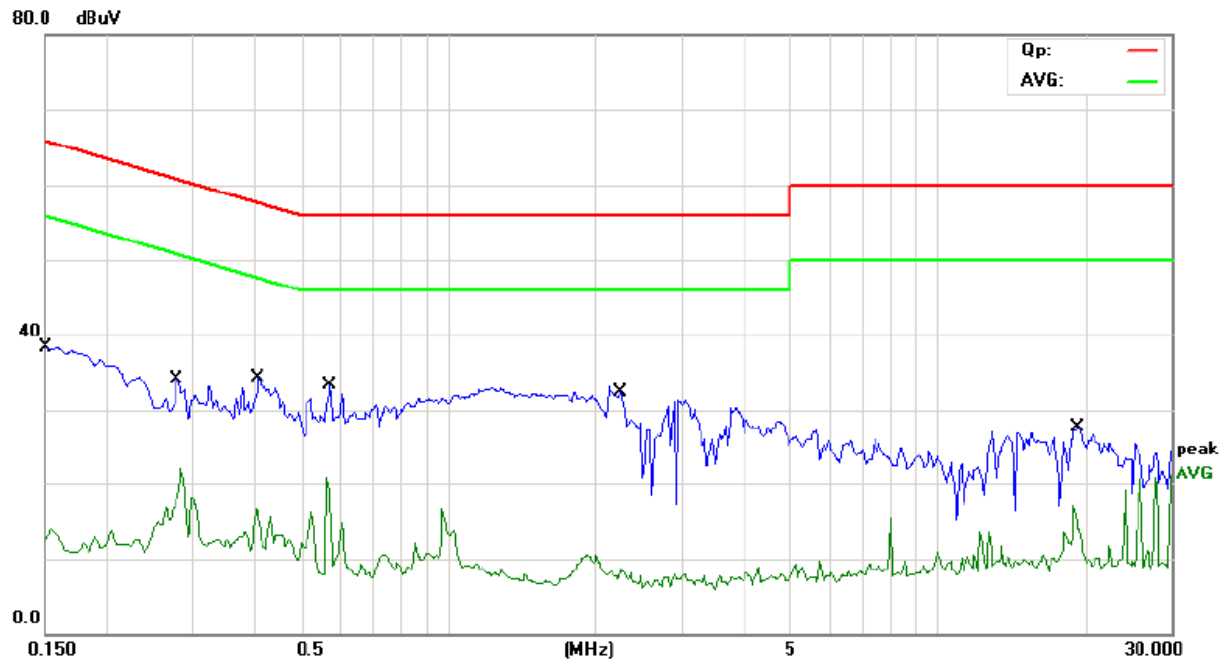
*:Maximum data

x:Over limit

!:over margin

Comment: Factor build in receiver.

Operator: Ricky



Site Conduction #1

Phase: **N**

Temperature: 26

Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

Humidity: 60 %

M/N: DF2690-R

Mode: ON

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	38.27	0.00	38.27	66.00	-27.73	QP	
2		0.1500	13.93	0.00	13.93	56.00	-42.07	AVG	
3		0.2800	34.13	0.00	34.13	60.82	-26.69	QP	
4		0.2800	22.15	0.00	22.15	50.82	-28.67	AVG	
5		0.4100	34.34	0.00	34.34	57.65	-23.31	QP	
6		0.4100	16.67	0.00	16.67	47.65	-30.98	AVG	
7	*	0.5750	33.32	0.00	33.32	56.00	-22.68	QP	
8		0.5750	20.70	0.00	20.70	46.00	-25.30	AVG	
9		2.2600	32.21	0.00	32.21	56.00	-23.79	QP	
10		2.2600	8.42	0.00	8.42	46.00	-37.58	AVG	
11		19.4250	27.62	0.00	27.62	60.00	-32.38	QP	
12		19.4250	17.10	0.00	17.10	50.00	-32.90	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: Ricky

5. RADIATED EMISSION MEASUREMENT

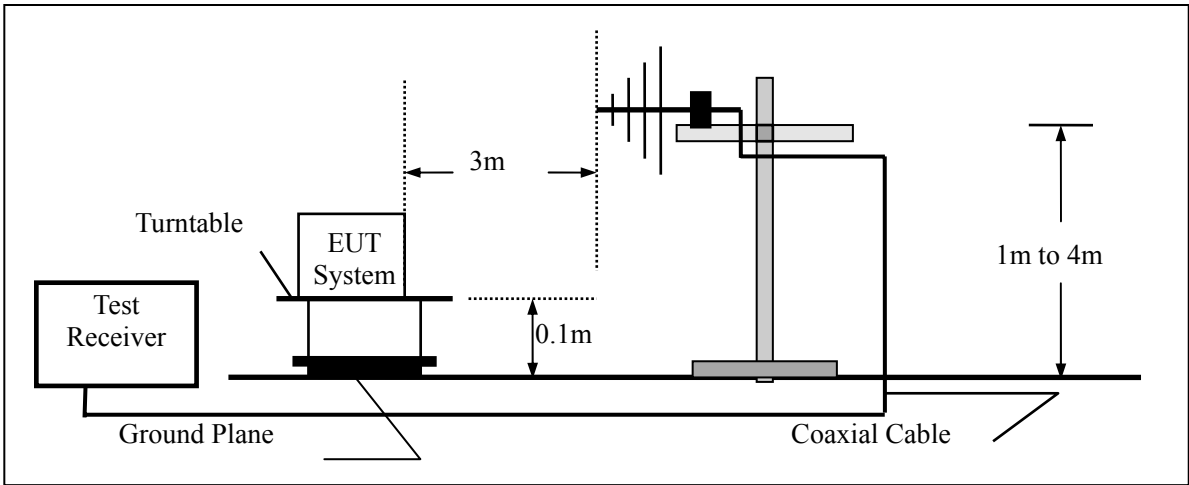
5.1. Block Diagram of Test Setup

5.1.1. Block diagram of EUT System



(EUT: Remote Control, 433MHz)

5.1.2. Block diagram of test setup (In chamber)



(EUT: Remote Control, 433MHz)

5.2. Measuring Standard

FCC Part 15, Subpart B, Class B ANSI C63.4: 2009

5.3.Radiated Emission Limits (Class B)

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

Frequency (GHz)	Distance (Meters)	Field Strengths Limit	
		Average ($\text{dB}\mu\text{V/m}$)	Peak ($\text{dB}\mu\text{V/m}$)
1~6	3	54	74

- Remark:
- (1) Emission level ($\text{dB}\mu\text{V}$) = $20 \log$ Emission level $\mu\text{V/m}$
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

5.4.EUT Configuration on Measurement

The FCC Class B regulations test method must be used to find the maximum emission during radiated emission measurement.

EUT : Remote Control, 433MHz
 Model Number : DF2690-R

5.5.Operating Condition of EUT

5.5.1.Setup the EUT as shown on Section 5.1.

5.5.2.Turn on the power of all equipments.

5.5.3.Let the EUT work in measuring mode (ON) and measure it.

5.6.Test Procedure

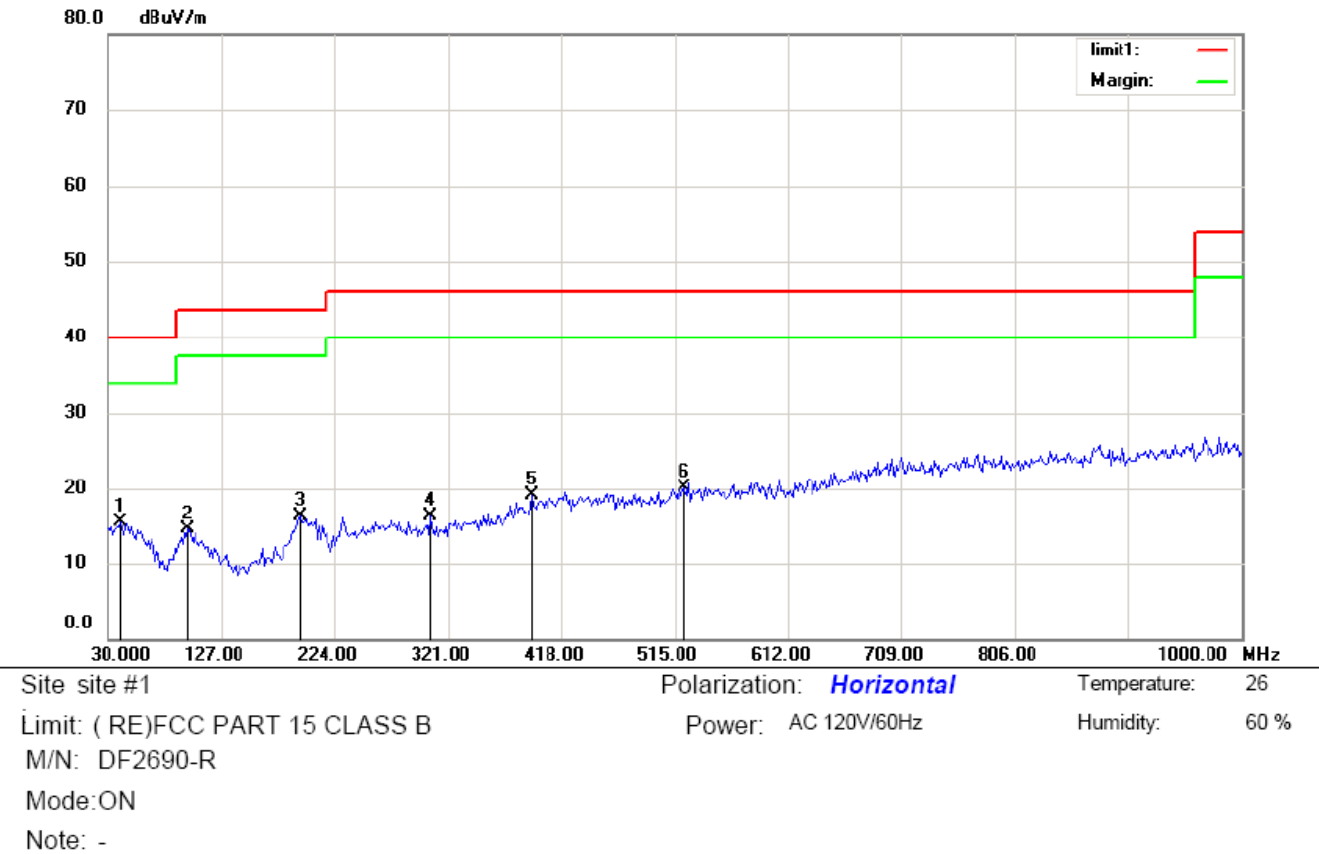
The EUT is placed on a turn table which is 0.1 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) or horn antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the Receiver (ESU26) is set at 120kHz.

5.7.Measuring Results

PASS.

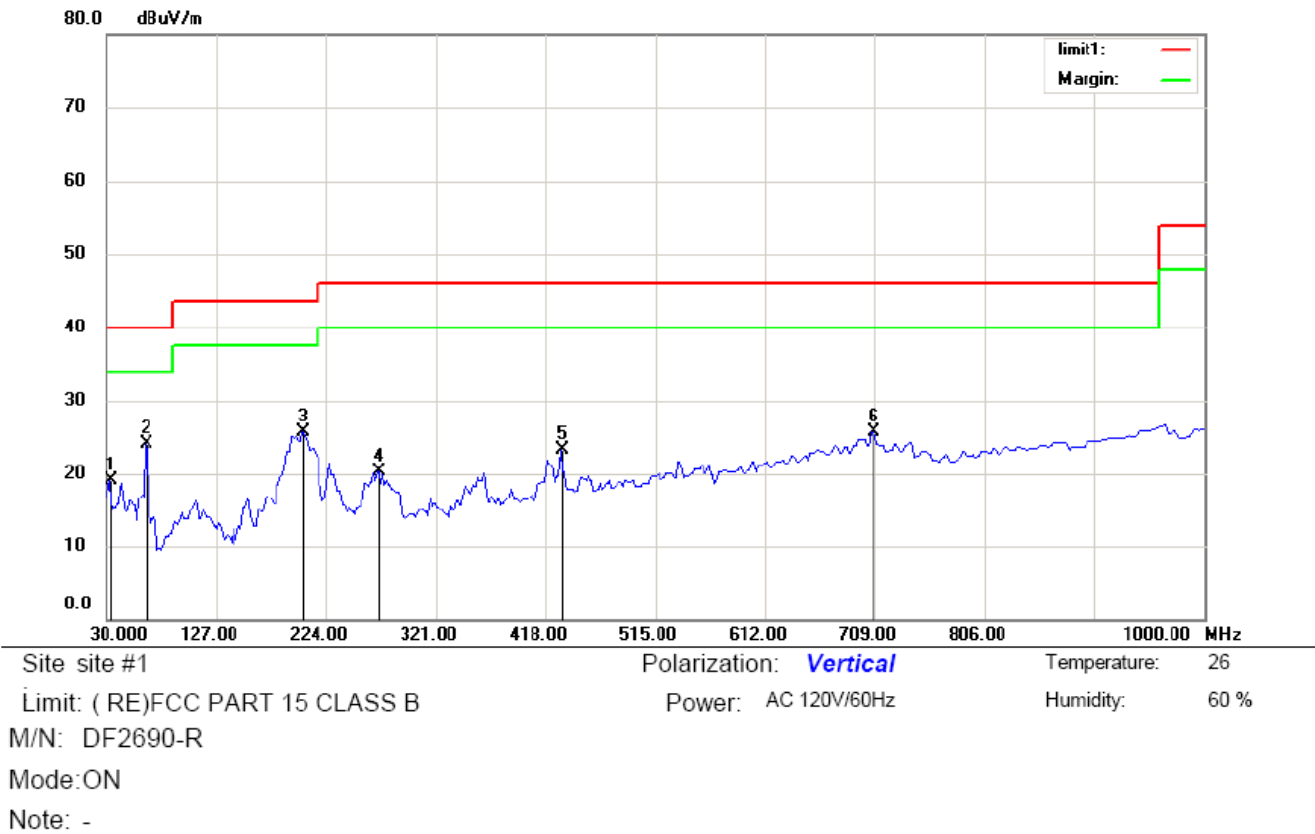
The frequency range from 30MHz to 6GHz is investigated.



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	40.8814	1.15	14.26	15.41	40.00	-24.59	QP		
2		98.3974	0.99	13.54	14.53	43.50	-28.97	QP		
3		194.7756	5.22	11.16	16.38	43.50	-27.12	QP		
4		306.6986	2.23	14.03	16.26	46.00	-29.74	QP		
5		392.1955	1.45	17.74	19.19	46.00	-26.81	QP		
6		522.7723	0.69	19.39	20.08	46.00	-25.92	QP		

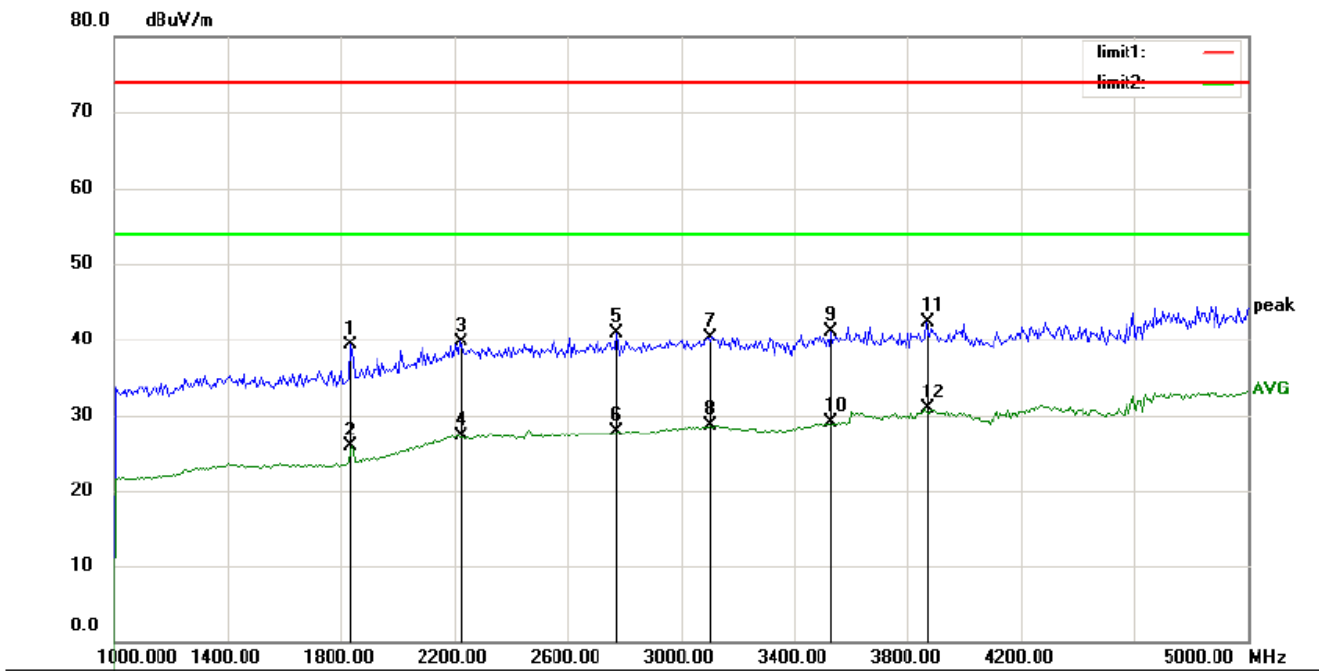
*:Maximum data x:Over limit !:over margin

Operator: Ricky



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
										Comment
1		33.1090	4.91	14.13	19.04	40.00	-20.96	QP		
2	*	65.7532	13.19	10.88	24.07	40.00	-15.93	QP		
3		204.1024	12.65	13.05	25.70	43.50	-17.80	QP		
4		270.9454	7.15	13.13	20.28	46.00	-25.72	QP		
5		431.0577	5.80	17.56	23.36	46.00	-22.64	QP		
6		707.7562	1.83	23.82	25.65	46.00	-20.35	QP		

*:Maximum data x:Over limit !:over margin Operator: Ricky



Site site #1

Polarization: **Horizontal**

Temperature: 26

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 60 %

M/N: DF2690-R

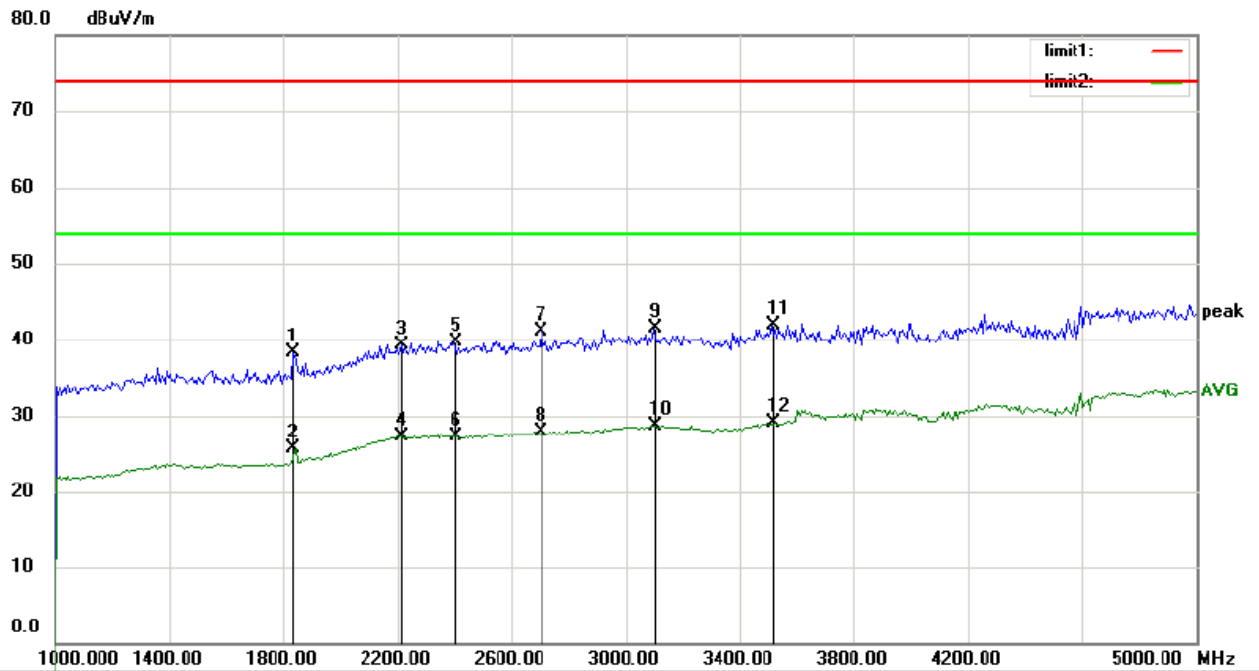
Mode:ON

Note: -

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		1833.333	51.19	-11.95	39.24	74.00	-34.76			peak
2		1833.333	37.78	-11.95	25.83	54.00	-28.17			AVG
3		2217.949	48.32	-8.62	39.70	74.00	-34.30			peak
4		2217.949	35.87	-8.62	27.25	54.00	-26.75			AVG
5		2775.641	48.90	-8.08	40.82	74.00	-33.18			peak
6		2775.641	35.99	-8.08	27.91	54.00	-26.09			AVG
7		3096.154	47.68	-7.42	40.26	74.00	-33.74			peak
8		3096.154	36.15	-7.42	28.73	54.00	-25.27			AVG
9		3532.051	48.16	-7.13	41.03	74.00	-32.97			peak
10		3532.051	36.22	-7.13	29.09	54.00	-24.91			AVG
11		3865.385	48.80	-6.43	42.37	74.00	-31.63			peak
12	*	3865.385	37.34	-6.43	30.91	54.00	-23.09			AVG

*:Maximum data x:Over limit !:over margin

Operator: Ricky



Site site #1

Polarization: **Vertical**

Temperature: 26

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 60 %

M/N: DF2690-R

Mode: ON

Note: -

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1		1833.333	50.33	-11.95	38.38	74.00	-35.62	peak			
2		1833.333	37.65	-11.95	25.70	54.00	-28.30	AVG			
3		2211.538	47.90	-8.61	39.29	74.00	-34.71	peak			
4		2211.538	35.97	-8.61	27.36	54.00	-26.64	AVG			
5		2397.436	48.38	-8.67	39.71	74.00	-34.29	peak			
6		2397.436	36.00	-8.67	27.33	54.00	-26.67	AVG			
7		2705.128	49.34	-8.14	41.20	74.00	-32.80	peak			
8		2705.128	36.03	-8.14	27.89	54.00	-26.11	AVG			
9		3096.154	48.91	-7.42	41.49	74.00	-32.51	peak			
10		3096.154	36.15	-7.42	28.73	54.00	-25.27	AVG			
11		3512.821	49.10	-7.19	41.91	74.00	-32.09	peak			
12	*	3512.821	36.28	-7.19	29.09	54.00	-24.91	AVG			

*:Maximum data x:Over limit !:over margin

Operator: Ricky

6. PHOTOGRAPHS

6.1.Photos of Conducted Emission Measurement



6.2.Photos of Radiation Emission Measurement

