



CONFORMANCE TEST REPORT FOR FCC 47 CFR, Part 15 Subpart C

Report No.: **ET93S-09-024-02**

Client: **TYNTEK CORPORATION**
Product: **2-WAY LCD Remote Controller**
Model: **RC1**
FCC ID: **SPP9500RC1**
Manufacturer/supplier: **TYNTEK CORPORATION**

Date test item received: 2004/08/16
Date test campaign completed: 2004/09/04
Date of issue: 2004/12/03

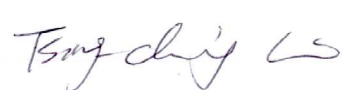
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Total number of pages of this test report: 41 pages

Total number of pages of photos: External photos 2 pages

Internal photos 3 pages

Setup photos 3 pages

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TEST REPORT CERTIFICATION

Client : TYNTEK CORPORATION
Address : 1387 Ren-Ay Rd. Chunan-Jenn , Miaulih 350 , Taiwan , R.O.C
Manufacturer : TYNTEK CORPORATION
Address : 1387 Ren-Ay Rd. Chunan-Jenn , Miaulih 350 , Taiwan , R.O.C
EUT : 2-WAY LCD Remote Controller
Trade name : TYNTEK
Model No. : RC1
Power Source : 1.5 VDC
Regulations applied : FCC 47 CFR, Part 15 Subpart C (2003)

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

The compliance test is only certified for the test equipment and the results of the testing report relate only to the item tested. The compliance test of this report was conducted in accordance with the appropriate standards. It's not intention to assure the quality and performance of the product. This report shall not be reproduced except in full, without the approval of ETC. This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

Laboratory Introduction: Electronics Testing Center, Taiwan is recognized, filed and mutual recognition arrangement as following:

- ① ISO9001: TüV Product Service
- ② ISO/IEC 17025: BSMI, CNLA, DGT, NVLAP, CCIBLAC, UL, Compliance
- ③ Filing: FCC, Industry Canada, VCCI
- ④ MRA: Australia, Hong Kong, New Zealand, Singapore, USA, Japan, Korea, China, APLAC through CNLA



NVLAP Lab Code 200133-0

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1. GENERAL INFORMATION

1.1 Product Description

a) Type of EUT	: 2-WAY LCD Remote Controller
b) Model No.	: RC1
c) Serial No.	: ----
d) FCC ID	: SPP9500RC1
e) Working Frequency	: 433.92 MHz
f) Power Supply	: 1.5VDC

1.2 Characteristics of Device:

RC1 is a handy device, which can remote the vehicle to take action, such as door lock, unlock, engine start and check vehicle's status. If vehicle's doors are intruded or impacted, the LCD display of remote controller will display the vehicle's status immediately to warning the car owner.

1.3 Test Methodology

Both Conducted and radiated testing were performed according to the procedures in chapter 13 of ANSI C63.4.

The equipment under test was operated continuously in its normal operating mode for the purpose of the measurements. In order to secure the continuous operation of the device under test, the circuit rewired by the manufacturer to affect its intended operation. The receiving antenna was varied from 1 to 4 meters and the wooden turntable was rotated through 360 degrees to obtain the highest reading on the field strength meter or on the display of the spectrum analyzer. And also, each emission was to be maximized by changing the orientation of the equipment under test.

1.4 Test Facility

The semi-anechoic chamber and conducted measurement facility used to collect the radiated and conducted data are located inside the Building at No.8, Lane 29, Wen-ming Road, Lo-shan Tsun, Kweishan Hsiang, Taoyuan, Taiwan, R.O.C.

This site has been accreditation as a FCC filing site.

2. DEFINITION AND LIMITS

2.1 Definition

Intentional radiator:

A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42-16.423	399.9-410	4.5-5.25
0.495 - 0.505 **	16.69475 - 16.69525	608-614	5.35-5.46
2.1735 - 2.1905	16.80425 - 16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475 - 156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

Remark "***" : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2.3 Limitation

(1) Conducted Emission Limits :

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the conducted limit is the following:

Frequency MHz	Quasi Peak dB μ V	Average dB μ V
0.15 - 0.5	66-56	56-46
0.5 - 5.0	56	46
5.0 - 30.0	60	50

(2) Radiated Emission Limits :

According to 15.231 ,Periodic operation in the band 40.66-40.70 MHz and above 70 MHz, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Frequency Band (MHz)	Field strength of Fundamental (uV/m)	Field strength of Spurious (uV/m)
40.66-40.70	2250	225
70-130	1250	125
130-174	*1,250 to 3,750	*125 to 375
174-260	3750	375
260-470	*3,750 to 12,500	*375 to 1250
Above 470	12500	1250

* Linear interpolations.

Field strength limits are at the distance of 3 meters, emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209,as following table:

Other Frequencies (MHz)	Field Strength of Fundamental	
	μ V/meter	dB μ V/meter
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, 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) Limit of transmission time

- a) A manually operated transmitter shall employ a switch that will automatically deactivate the equipment Transmitter within not more than 5 seconds of being released.
- b) A transmitter activated automatically shall cease transmission within 5 seconds after activation.

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

3. RADIATED EMISSION MEASUREMENT

3.1 Applicable Standard

For periodic operation intentional radiator, the radiated emission shall comply with § 15.231(b).

3.2 Measurement Procedure

A. Preliminary Measurement For Portable Devices.

For portable devices, the following procedure was performed to determine the maximum emission axis of EUT:

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antenna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.

B. Final Measurement

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively. Turn on EUT and make sure that it is in continuous operating function.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a semi-anechoic chamber to determine the accurate frequencies of higher emissions and then each selected frequency is precisely measured. As the same purpose, for emission measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
3. For emission measured below and above 1 GHz, set the spectrum analyzer on a 120 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

Figure 1 : Frequencies measured below 1 GHz configuration

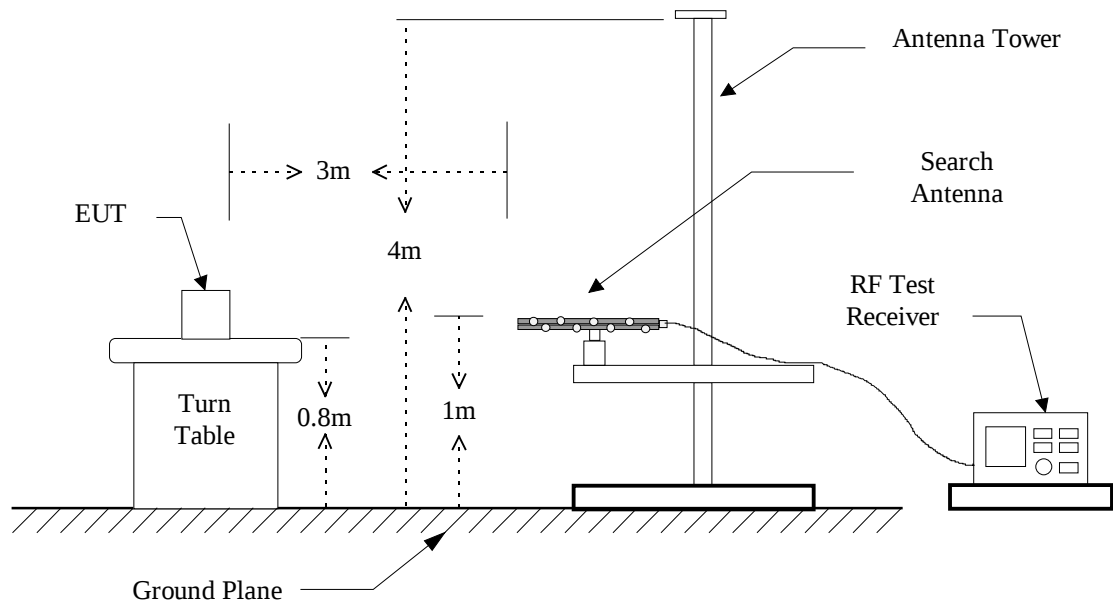
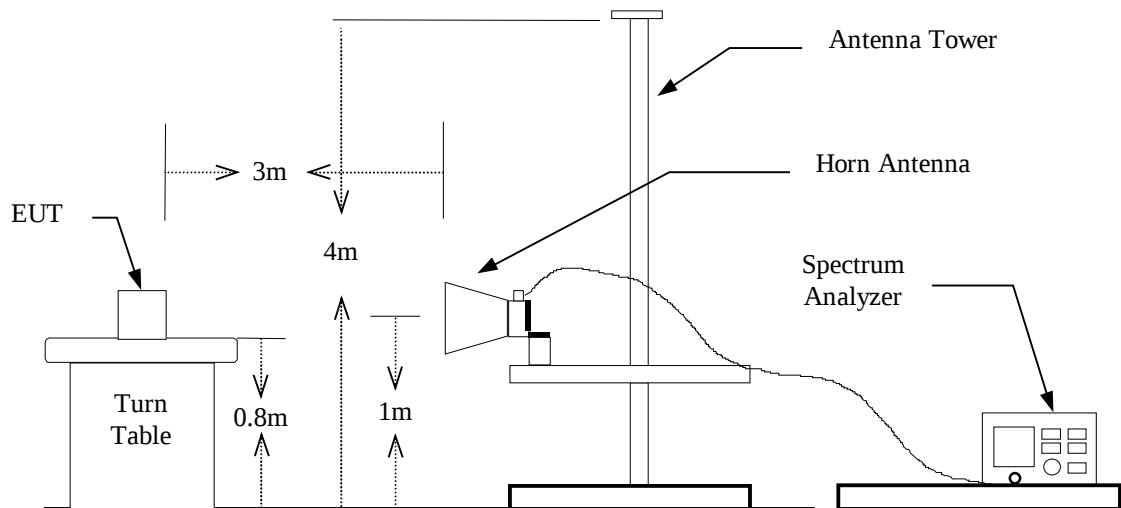


Figure 2 : Frequencies measured above 1 GHz configuration



3.3 Test Data

3.3.1

Operated mode : Transmitting (X-axis)Test Date : Aug. 31, 2004 Temperature : 25 °C Humidity : 60 %

Frequency (MHz)	Ant Pol H / V	Reading (dBuV) Peak QP		Correct Factor (dB)	Duty Factor (dB)	Result @3m (dBuV/m) Peak QP AVG			Limit @3m (dBuV/m) Peak QP AVG			Table Degree (Deg.)	Ant. High (m)	
Fundamental														
433.968	H	55.6	----	20.1	-17.3	75.7	----	58.4	100.8	----	80.8	40	1.0	
433.968	V	55.7	----	20.1	-17.3	75.8	----	58.5	100.8	----	80.8	40	1.0	
Harmonic														
*867.936	H	14.3	10.5	28.4	-17.3	42.7	38.9	25.4	80.8	46.0	60.8	40	1.0	
*867.936	V	13.8	10.3	28.4	-17.3	42.2	38.7	24.9	80.8	46.0	60.8	40	1.0	
*1301.904	H	----	----	-14.9	-17.3	----	----	----	74.0	----	54.0	----	----	
*1301.904	V	50.7	----	-14.9	-17.3	35.8	----	18.5	74.0	----	54.0	45	1.0	
*1735.872	H/V	----	----	----	-17.3	----	----	----	74.0	----	54.0	----	----	
2169.840	H/V	----	----	----	-17.3	----	----	----	80.8	----	60.8	----	----	
2603.808	H	49.0	----	-9.5	-17.3	39.5	----	22.2	80.8	----	60.8	0	1.0	
2603.808	V	----	----	----	-17.3	----	----	----	80.8	----	60.8	----	----	
3037.776	H/V	----	----	----	-17.3	----	----	----	80.8	----	60.8	----	----	
3471.744	H/V	----	----	----	-17.3	----	----	----	80.8	----	60.8	----	----	
*3905.712	H/V	----	----	----	-17.3	----	----	----	74.0	----	54.0	----	----	
*4339.680	H/V	----	----	----	-17.3	----	----	----	74.0	----	54.0	----	----	
Other Spurious														
31.940	H	19.9	----	13.1	-17.3	33.0	----	15.7	80.8	----	60.8	200	1.0	
31.940	V	20.7	----	13.1	-17.3	33.8	----	16.5	80.8	----	60.8	70	1.1	

Note:

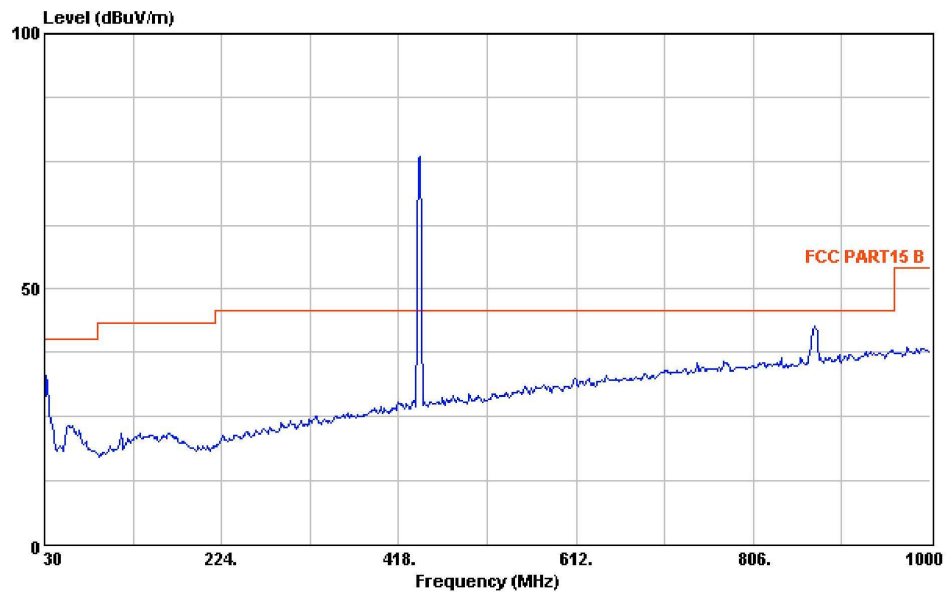
1. Peak Result = Peak Reading + Correct Factor
2. AVG Result = Peak Result + Duty Factor
3. If the result of peak value is under the limit of average, the average value doesn't need to be measured.
4. "*" means the frequency is in the Restricted Bands.
5. Please refer to page 11 to page 14 for chart

Horizontal



ETC TEST LABORTARY

Data#: 1101 File#: C:\Program Files\et3\TestHsu.emi



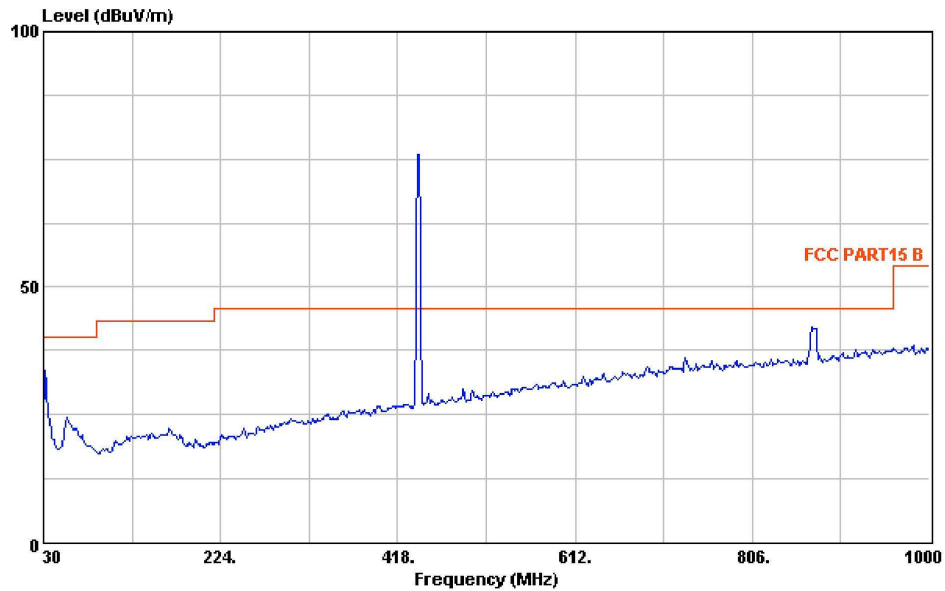
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EUT : REMOTE CONTROLLER
Model :
Memo : Tx
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Vertical



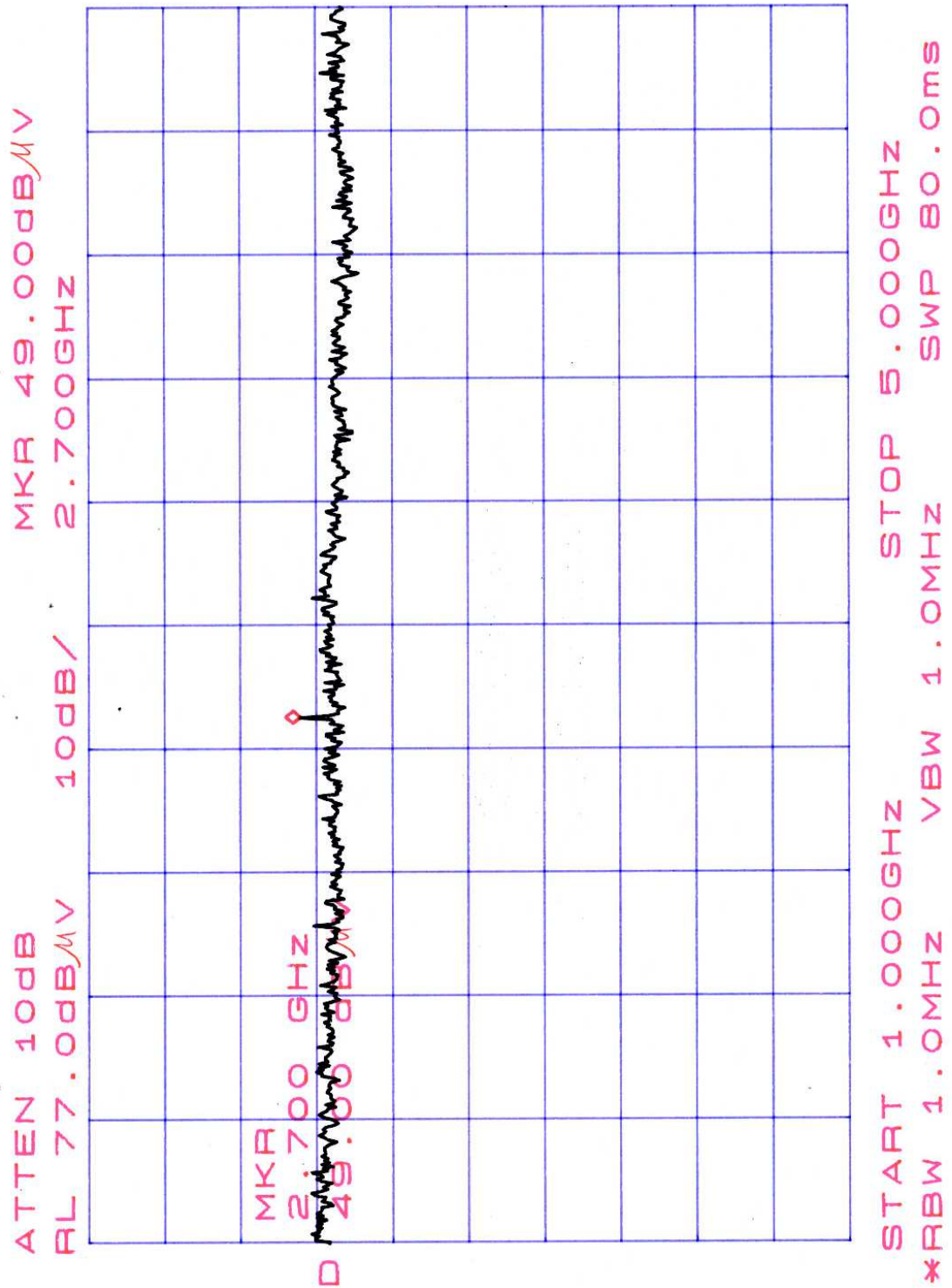
ETC TEST LABORTARY

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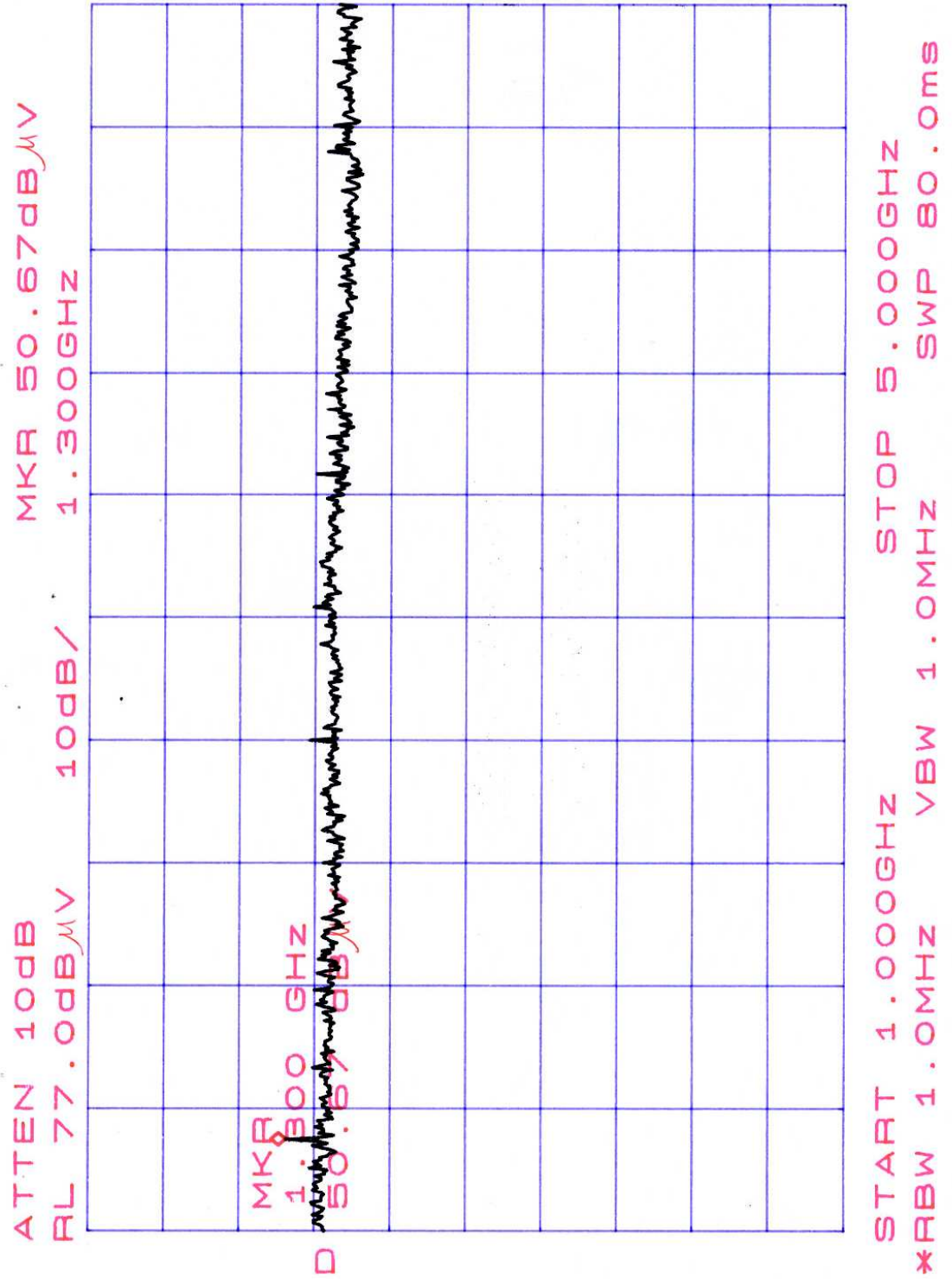


Site : MOO SITE
Condition : FCC PART15 B 3m VERTICAL
EUT : REMOTE CONTROLLER
Model :
Memo : Tx
: 1

Horizontal



Vertical



3.3.2

Operated mode : Transmitting (Y-axis)Test Date : Aug. 31, 2004 Temperature : 25 °C Humidity : 60 %

Frequency (MHz)	Ant Pol H / V	Reading (dBuV) Peak QP		Correct Factor (dB)	Duty Factor (dB)	Result @3m (dBuV/m) Peak QP AVG			Limit @3m (dBuV/m) Peak QP AVG			Table Degree (Deg.)	Ant. High (m)	
Fundamental														
433.968	H	63.0	----	20.1	-17.3	83.1	----	65.8	100.8	----	80.8	60	1.0	
433.968	V	60.8	----	20.1	-17.3	80.9	----	63.6	100.8	----	80.8	60	1.0	
Harmonic														
*867.936	H	16.3	15.2	28.4	-17.3	44.7	43.6	27.4	80.8	46.0	60.8	60	1.0	
*867.936	V	15.4	12.9	28.4	-17.3	43.8	41.3	26.5	80.8	46.0	60.8	60	1.0	
*1301.904	H	----	----	-14.9	-17.3	----	----	----	74.0	----	54.0	----	----	
*1301.904	V	48.2	----	-14.9	-17.3	33.3	----	16.0	74.0	----	54.0	60	1.0	
*1735.872	H/V	----	----	----	-17.3	----	----	----	74.0	----	54.0	----	----	
2169.840	H/V	----	----	----	-17.3	----	----	----	80.8	----	60.8	----	----	
2603.808	H/V	----	----	----	-17.3	----	----	----	80.8	----	60.8	----	----	
3037.776	H/V	----	----	----	-17.3	----	----	----	80.8	----	60.8	----	----	
3471.744	H/V	----	----	----	-17.3	----	----	----	80.8	----	60.8	----	----	
*3905.712	H/V	----	----	----	-17.3	----	----	----	74.0	----	54.0	----	----	
*4339.680	H/V	----	----	----	-17.3	----	----	----	74.0	----	54.0	----	----	
Other Spurious														
31.940	H	19.2	----	13.1	-17.3	32.3	----	15.0	80.8	----	60.8	0	1.0	
31.940	V	18.4	----	13.1	-17.3	31.5	----	14.2	80.8	----	60.8	100	1.0	

Note:

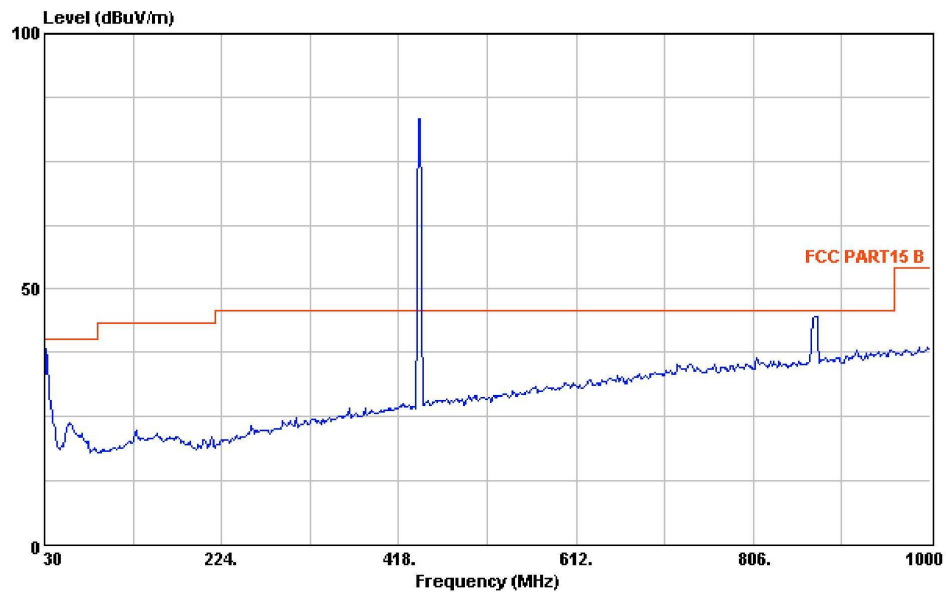
1. Peak Result = Peak Reading + Correct Factor
2. AVG Result = Peak Result + Duty Factor
3. If the result of peak value is under the limit of average, the average value doesn't need to be measured.
4. "*" means the frequency is in the Restricted Bands.
5. Please refer to page 16 to page 19 for chart

Horizontal



ETC TEST LABORTARY

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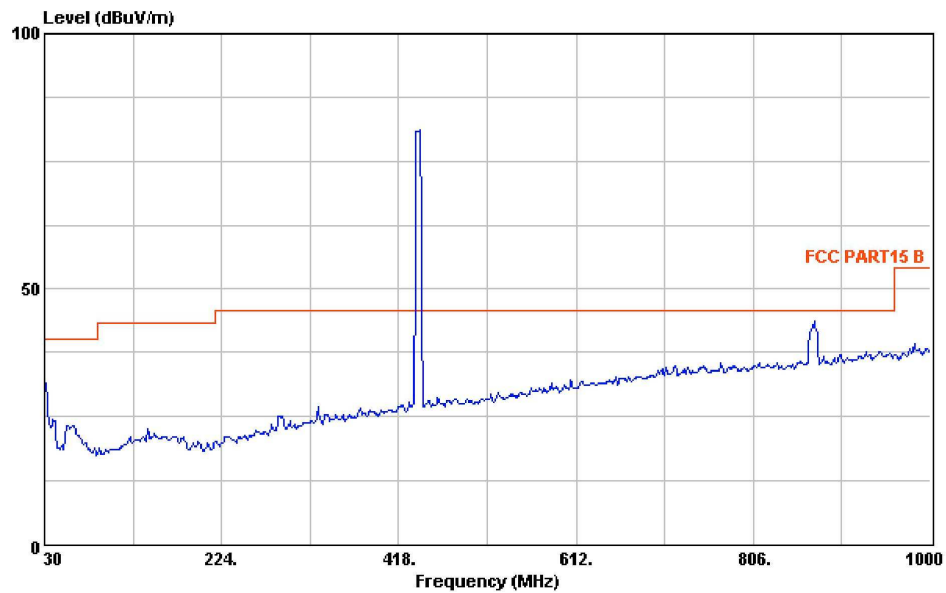
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EUT : REMOTE CONTROLLER
Model :
Memo : Tx
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Vertical



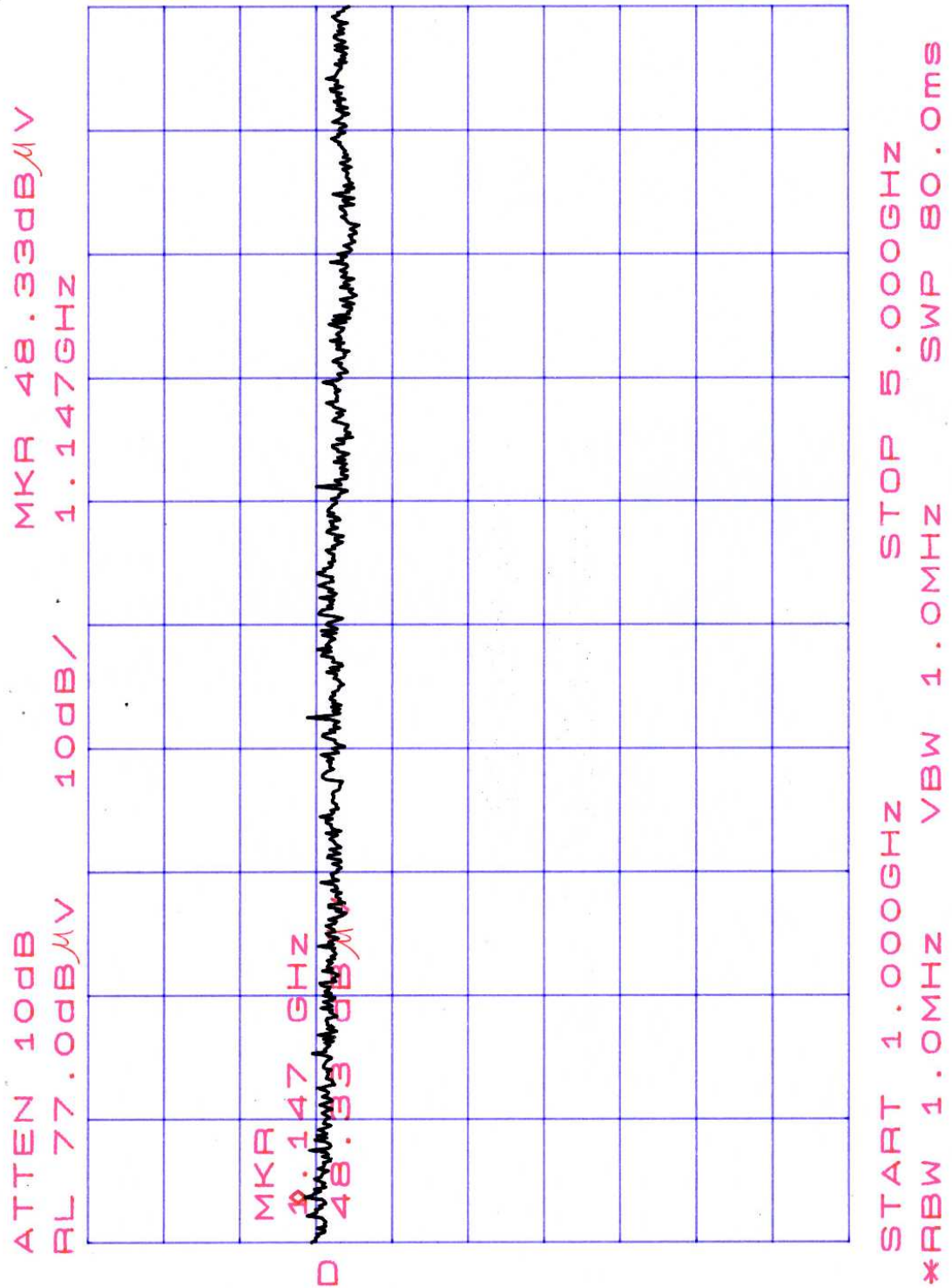
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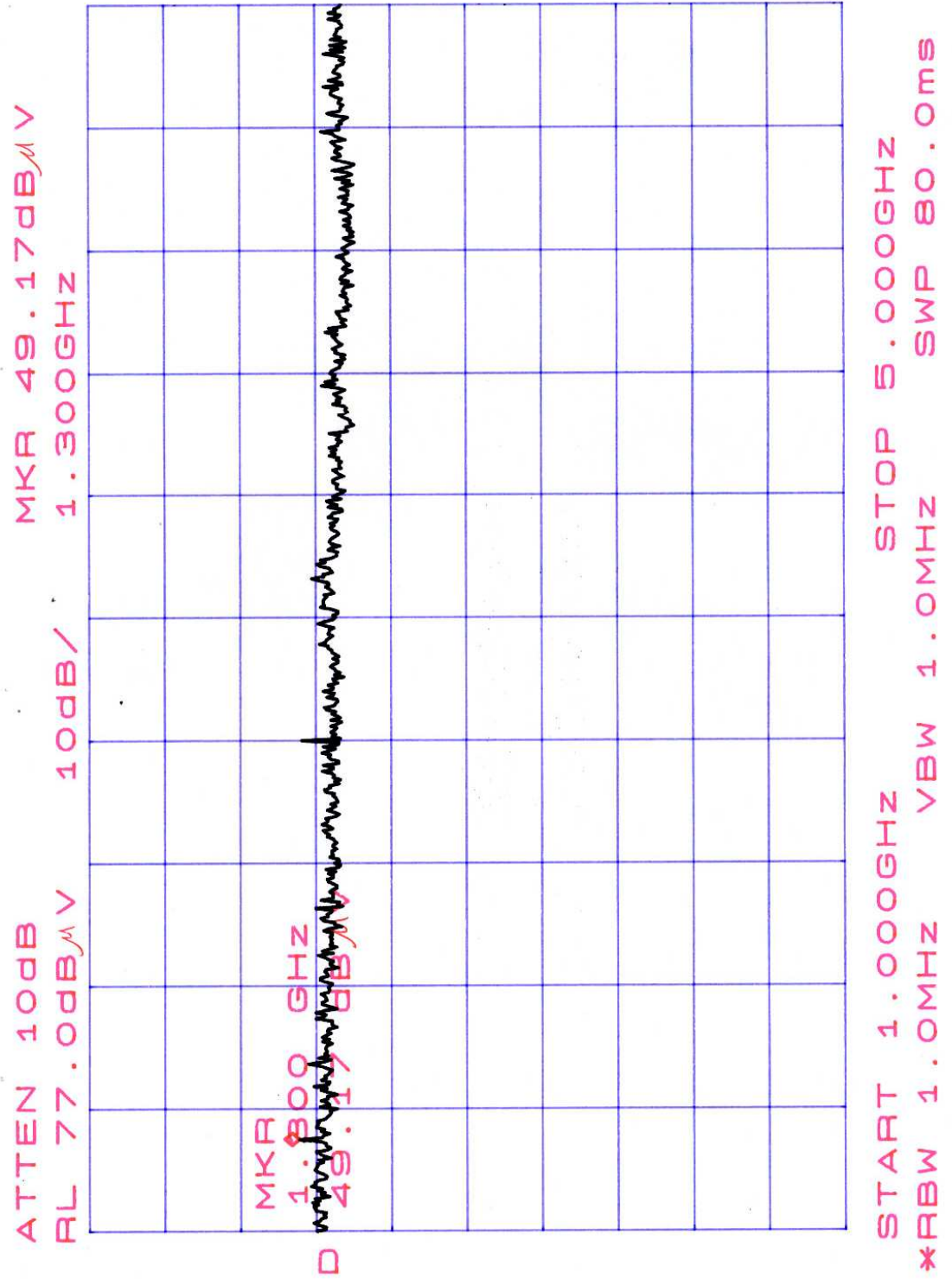


Site : MOO SITE
Condition : FCC PART15 B 3m VERTICAL
EUT : REMOTE CONTROLLER
Model :
Memo : Tx
: 2

Horizontal



Vertical



3.3.3

Operated mode : Transmitting (Z-axis)Test Date : Aug. 31, 2004 Temperature : 25 °C Humidity : 60 %

Frequency (MHz)	Ant Pol H / V	Reading (dBUV) Peak QP		Correct Factor (dB)	Duty Factor (dB)	Result @3m (dBUV/m) Peak QP AVG			Limit @3m (dBUV/m) Peak QP AVG			Table Degree (Deg.)	Ant. High (m)
Fundamental													
433.968	H	62.5	----	20.1	-17.3	82.6	----	65.3	100.8	----	80.8	150	1.0
433.968	V	55.5	----	20.1	-17.3	75.6	----	58.3	100.8	----	80.8	150	1.0
Harmonic													
*867.936	H	14.9	12.5	28.4	-17.3	43.3	40.9	26.0	80.8	46.0	60.8	150	1.0
*867.936	V	17.0	13.3	28.4	-17.3	45.4	41.7	28.1	80.8	46.0	60.8	150	1.0
*1301.904	H	----	----	-14.9	-17.3	----	----	----	74.0	----	54.0	----	----
*1301.904	V	52.2	----	-14.9	-17.3	37.3	----	20.0	74.0	----	54.0	150	1.0
*1735.872	H/V	----	----	----	-17.3	----	----	----	74.0	----	54.0	----	----
2169.840	H/V	----	----	----	-17.3	----	----	----	80.8	----	60.8	----	----
2603.808	H/V	----	----	----	-17.3	----	----	----	80.8	----	60.8	----	----
3037.776	H/V	----	----	----	-17.3	----	----	----	80.8	----	60.8	----	----
3471.744	H/V	----	----	----	-17.3	----	----	----	80.8	----	60.8	----	----
*3905.712	H/V	----	----	----	-17.3	----	----	----	74.0	----	54.0	----	----
*4339.680	H/V	----	----	----	-17.3	----	----	----	74.0	----	54.0	----	----
Other Spurious													
31.940	H	23.7	----	13.1	-17.3	36.8	----	19.5	80.8	----	60.8	0	1.0
31.940	V	24.0	----	13.1	-17.3	37.1	----	19.8	80.8	----	60.8	150	1.0

Note:

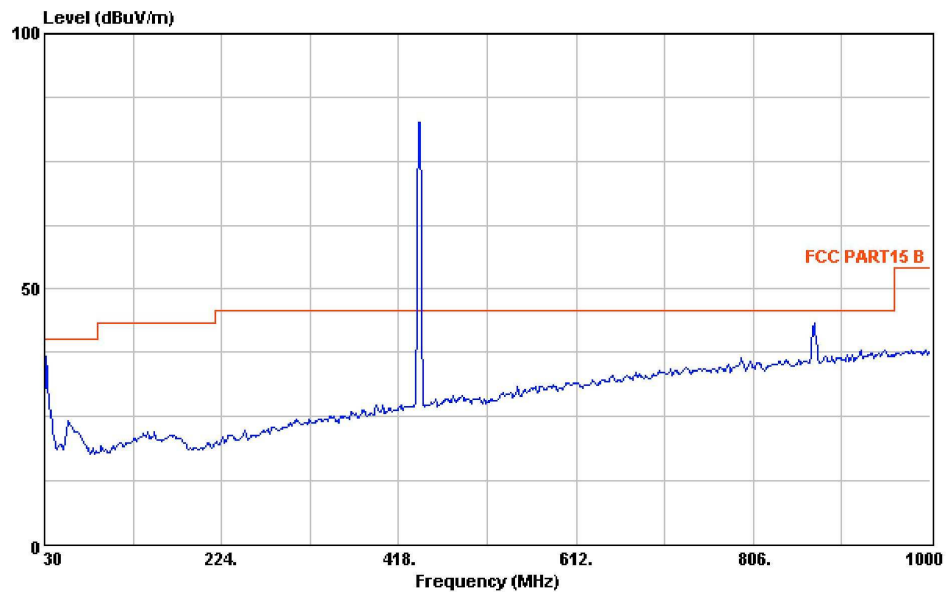
1. Peak Result = Peak Reading + Correct Factor
2. AVG Result = Peak Result + Duty Factor
3. If the result of peak value is under the limit of average, the average value doesn't need to be measured.
4. "*" means the frequency is in the Restricted Bands.
5. Please refer to page 21 to page 24 for chart

Horizontal



ETC TEST LABORTARY

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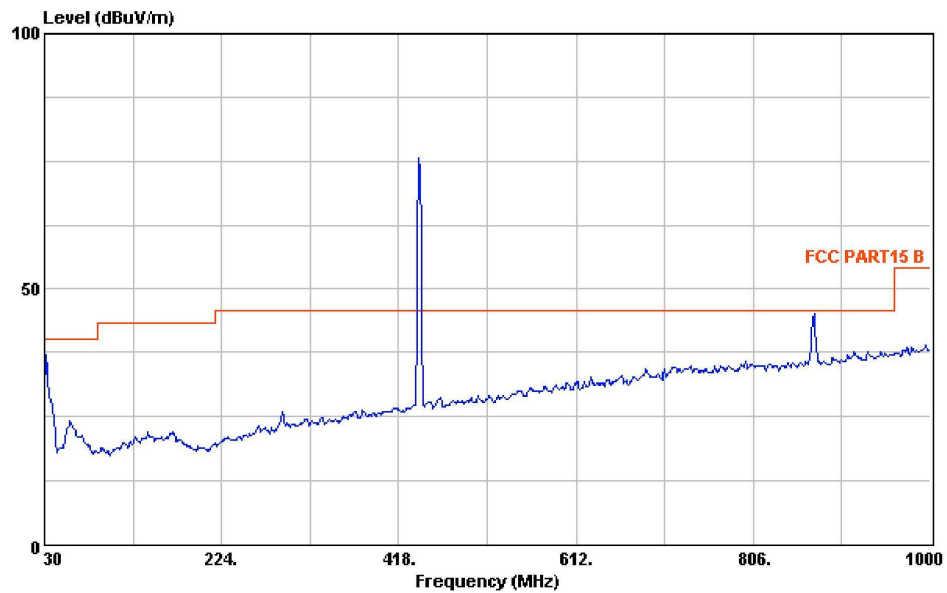
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Condition : FCC PART15 B 3m HORIZONTAL
EUT : REMOTE CONTROLLER
Model :
Memo : Tx
: 3

Vertical



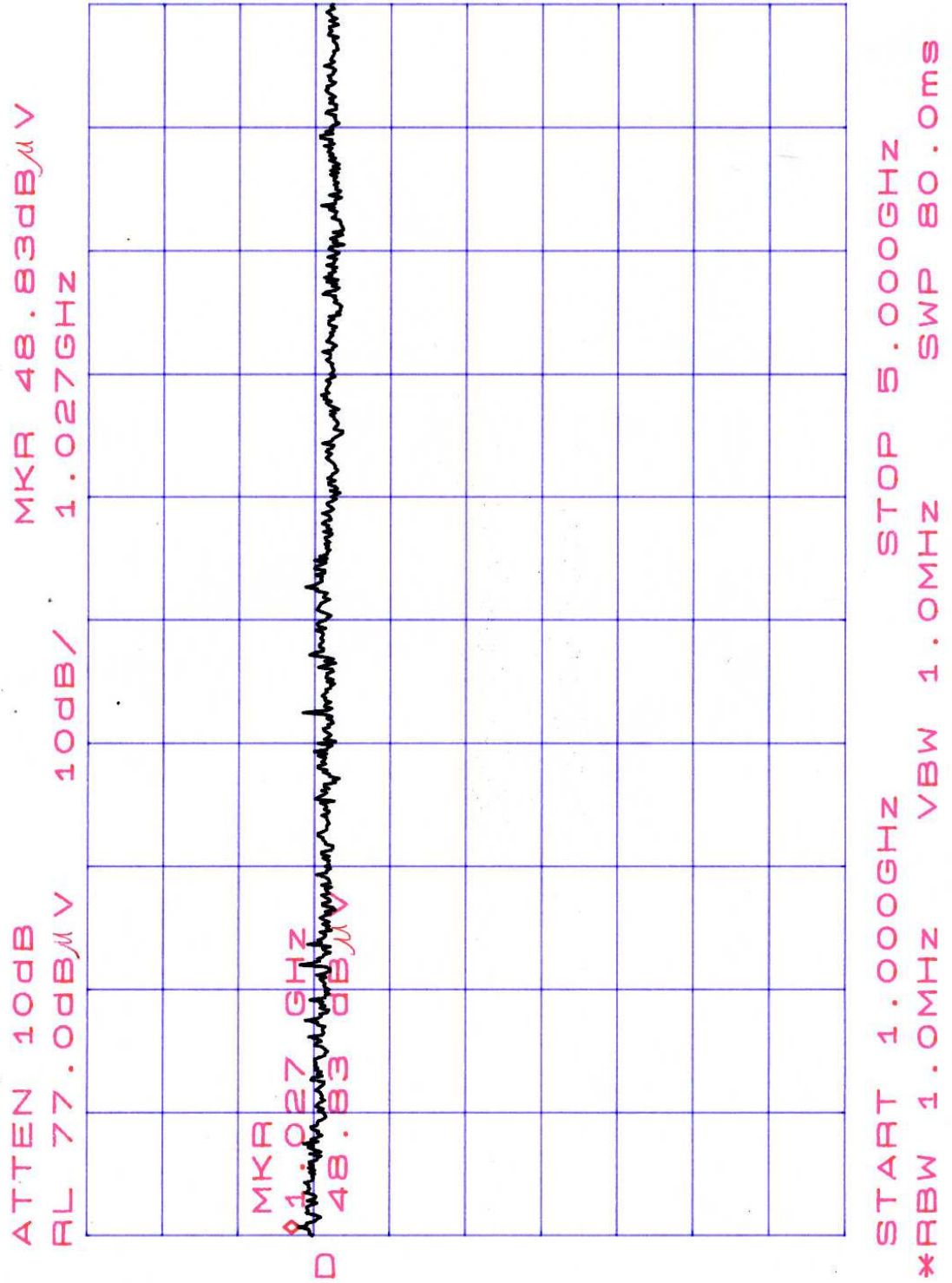
ETC TEST LABORTARY

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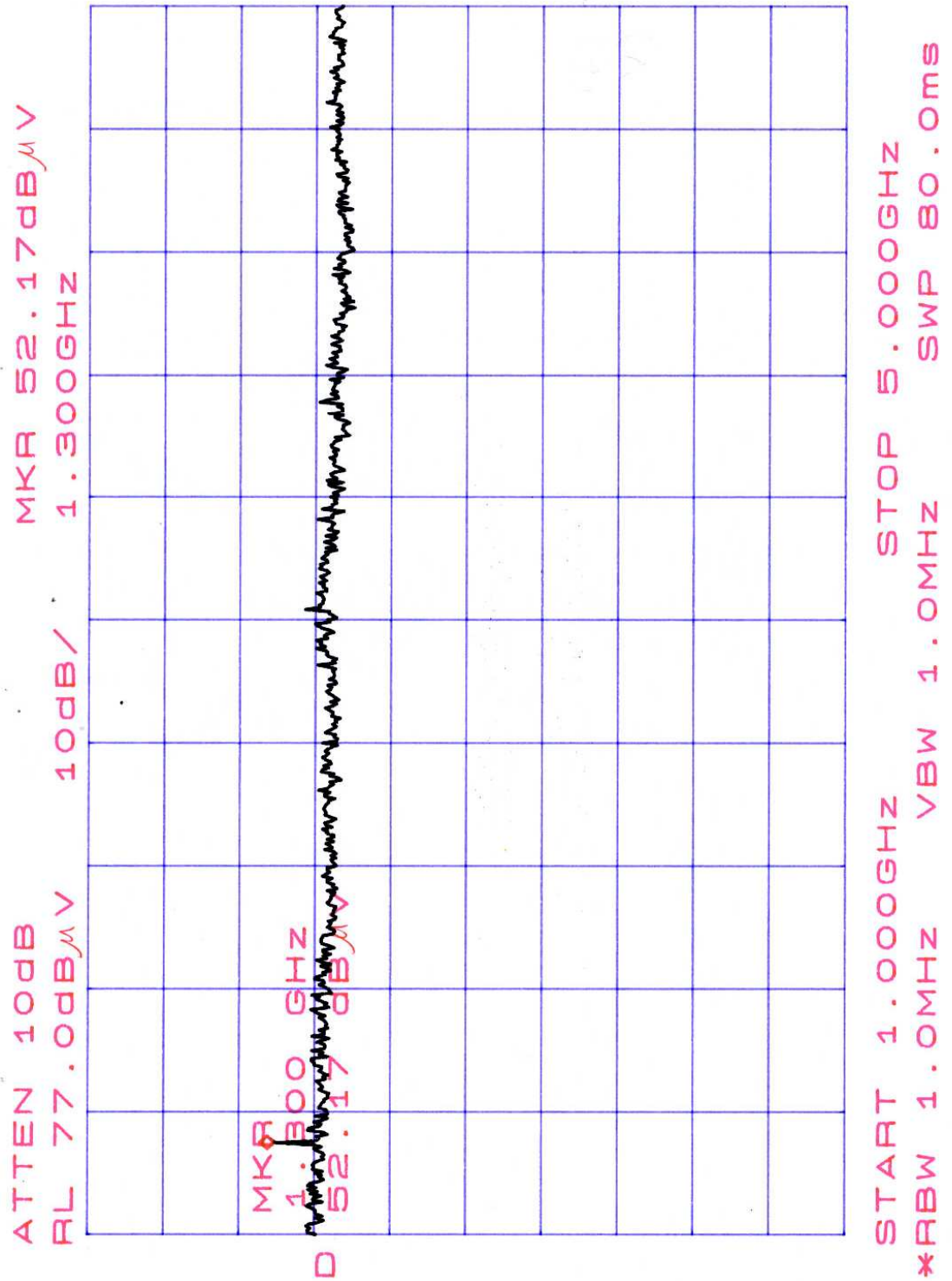


Site : MOO SITE
Condition : FCC PART15 B 3m VERTICAL
EUT : REMOTE CONTROLLER
Model :
Memo : Tx
: 3

Horizontal



Vertical



3.3.4

Operation Mode: Receiving ModeTest Date : Sep. 04 2004Temperature : 23 °CHumidity : 59 %

Emission Frequency (MHz)	Meter Reading (dBuV)		CORR'd Factor (dB)	Results (dBuV/m)		Limit (3m) (dBuV/m)	Margins (dB)	Table Degree (deg)		Ant. High (m)	
	HOR.	VERT.		HOR.	VERT.			HOR.	VERT.	HOR.	VERT.
33.880	9.8	***	13.1	22.9	***	40.0	-17.1	0	***	1.0	***
363.680	***	6.6	18.8	***	25.4	46.0	-20.6	***	0	***	1.0
611.030	***	8.2	23.8	***	32.0	46.0	-14.0	***	0	***	1.0
686.690	7.3	***	25.7	33.0	***	46.0	-13.0	0	***	1.0	***

Note :

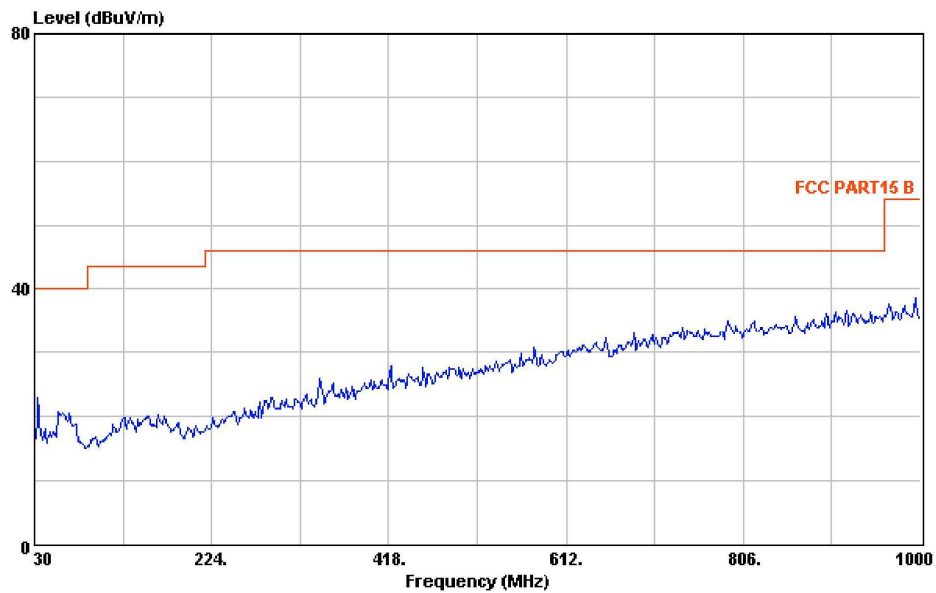
1. Remark “***” means that the emissions level is too low to be measured.
2. Item “Margin” referred to Q.P. limit while there is only peak result.
3. The estimated measurement uncertainty of the result measurement is:
 $\pm 4.6\text{dB}(30\text{MHz} \leq f \leq 300\text{MHz})$
 $\pm 4.4\text{dB}(300\text{MHz} \leq f \leq 1\text{GHz})$
4. Please refer to page 26 to page 29 for chart

Horizontal



ETC TEST LABORTARY

Data#: 1130 File#: C:\Program Files\es\TestHsu.emi



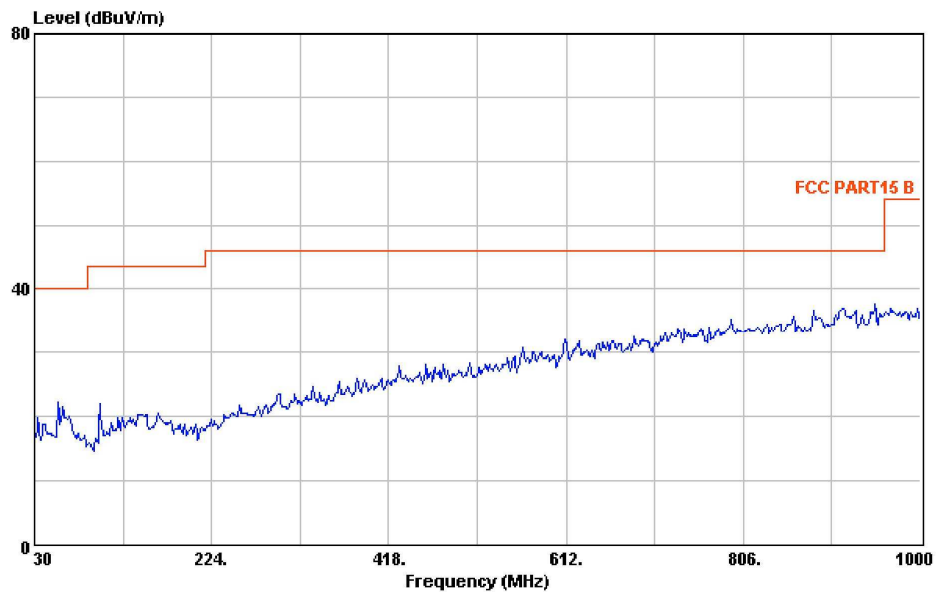
Site : MOO SITE
Condition : FCC PART15 B 3m HORIZONTAL
EUT : REMOTE CONTROLLER
Model :
Memo : Rx MODE

Vertical



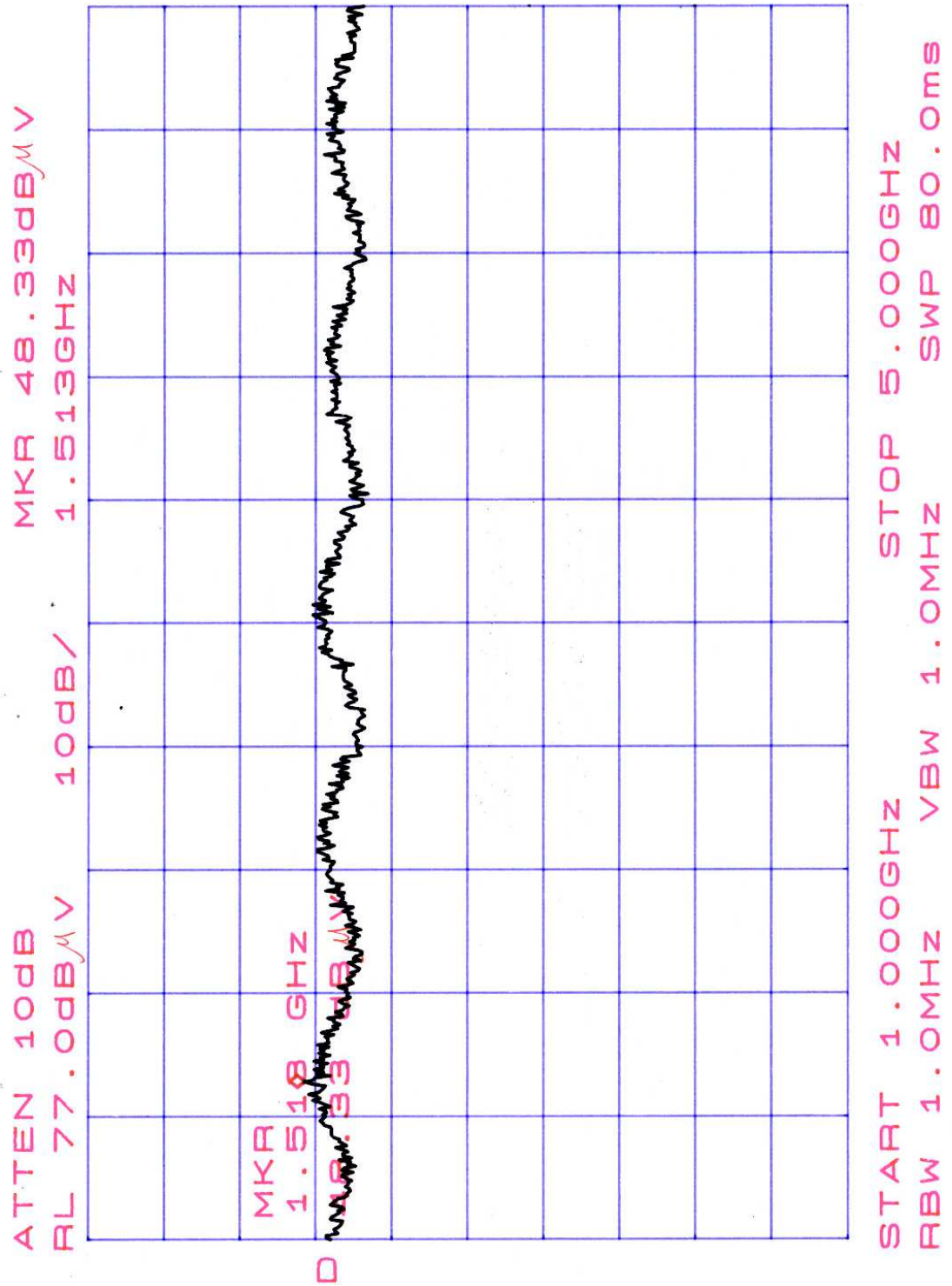
ETC TEST LABORTARY

Data#: 1129 File#: C:\Program Files\es\TestHsu.emi



Site : MOO SITE
Condition : FCC PART15 B 3m VERTICAL
EUT : REMOTE CONTROLLER
Model :
Memo : Rx MODE

Horizontal



Vertical

