LTA
Laboratory for Test & Approval Co.,Ltd.

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ENUSTECH

Dates of Tests: : Jan 21~27, 2010
Test Report S/N: LR500191001D
Test Site : LTA CO., LTD.

CERTIFICATION OF COMPLIANCE

FCC ID **TT2KLAT7-RC**

APPLICANT **ENUSTECH.,INC.**

TEST REPORT

FCC Classification	**:**	**Part 15 Security/Remote Control Transmitter**
Manufacturing Description	**:**	**Wireless Remote Controller**
Manufacturer	**:**	**ENUSTECH.,INC.**
Model name	**:**	**KlaT7-RC**
Test Device Serial No.:	**:**	**Identification**
FCC Rule Part(s)	**:**	**FCC Part 15 Subpart C ; ANSI C-63.4-2003**
Frequency Range	**:**	**433.055~434.680 MHz**
Data of issue	**:**	**January 27, 2010**

This test report is issued under the authority of:

Dong –Min JUNG, Technical Manager

The test was supervised by:

Kyung-Taek LEE, Test Engineer

This test result only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the test laboratory. This report must not be used by the applicant to claim product endorsement by any agency.

NVLAP LAB Code.: 200723-0

TABLE OF CONTENTS

1. General information's

1-1 Test Performed

Company name : LTA Co., Ltd.

Address : 243, Jubug-ri,Yangji-Myeon,Youngin-Si, Kyunggi-Do, Korea. 449-822

Web site : http://www.ltalab.com

E-mail : chahn@ltalab.com

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Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the "General requirements for the competents of calibration and testing laboratory".

1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

Agency	Country	Accreditation No.	Validity	Reference
NVLAP	U.S.A	200723-0	2010-09-30	ECT accredited Lab.
RRL	KOREA	KR0049	2011-06-20	EMC accredited Lab.
FCC	U.S.A	610755	2011-04-22	FCC filing
VCCI	JAPAN	R2133, C2307	2011-06-21	VCCI registration
IC	CANADA	IC5799	2010-05-03	IC filing

2. Information's about test item

2-1 Client & Manufacturer

Company name	:	ENUSTECH.,INC.
Address	:	Dui Bldg, 5FL, 1196-2 Gaepo-4dong, Gangnam-gu,
	:	Seoul 135-240,Korea
Telephone / Facsimile		+82-2-565-0785 / +82-2-565-0785

2-2 Equipment Under Test (EUT)

Trade name	:	Wireless Remote Controller
Model name	:	KlaT7-RC
Serial number	:	Identification
Date of receipt	:	January 20, 2010
EUT condition	:	Pre-production, not damaged
Antenna type	:	Pattern Antenna
Frequency Range	:	433.055~434.680 MHz
RF Output Power	:	Below 10 mW
Type of Modulation	:	FSK
Power Source	:	DC 3.0V By Lithium Battery Power

2-3 Tested frequency

Frequency	
Low	433.055MHz
Mid	433.580MHz
High	434.680MHz

2-4 Ancillary Equipment

Equipment	Model No.	Serial No.	Manufacturer
DC Power Supply	E3615A	KR72705061	HP
-	-	-	-

3. Test Report

3.1 Summary of tests

FCC Part Section(s)	Parameter	Test Condition	Status (note 1)
FCC Part 15.205/209	Restricted Bands of Operation	Radiated	C
FCC Part 15.231 a)	Operation mode		C [2)]
FCC Part 15.231 b)	Radiated emissions		C
FCC Part 15.231 c)	20dB Bandwidth		C
15.207 /15.107	AC Conducted Emissions	Line Conducted	NA[3)]

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2 The emitting time of fundamental frequency is less than 5seconds.
Refer to the APPENDIX 2.

Note 3: This device is only operated by battery.

Note 4: The data in this test report are traceable to the national or international standards.

A sample calculation:

COR. F (correction factor)= Antenna factor + Cable loss- Amp.gain- Distance correction

Emission Level= meter reading + COR.F

3.2 Transmitter requirements

3.2.1 Conducted Emission

Procedure:

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its hopping function disabled at the middle channels in line with Section 15.31(m). Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

Measurement Data:

- The EUT operates by the Battery
- According to the rule of section 15.207(c), The EUT exempt to the power line conducted test.

LIMIT:

Frequency Range	Near-peak	Average
0.15 ~ 0.5 MHz	66 ~ 56 dBuV	56 ~ 46 dBuV
0.5 ~ 5 MHz	56 dBuV	46 dBuV
5 ~ 30 MHz	60 dBuV	50 dBuV

Note: The limits will decrease with the frequency logarithmically within 0.15MHz to 0.5MHz

3.2.2 Radiated Emission

Definition:

The field strength of emissions from intentional radiators was measured.

Test method	:	FCC Part 15.205 / 209
Transmit Frequency	:	433.055~434.680MHz
Frequency Range	:	30 MHz ~ 10th harmonic.
Bandwidth	:	120 kHz (F < 1GHz) 1 MHz (F > 1GHz)
Distance of antenna	:	3 meters
Test mode	:	Tx mode
Result	:	**Complies**

Measurement Data:

- No other emissions were detected at a level greater than 20dB below limit.
- Refer to the next page.

Field Strength Limit of fundamental and Harmonics: Part 15.231(b)

Frequency (MHz)	Limit @ 3m
433.055~434.680	41.6667(433.055) – 7083.3333 = 10961 uV/m = 80.8 dBuV/m (Average) 100.8dBuV/m (Peak) 41.6667(433.580) – 7083.3333 = 10983 uV/m = 80.8 dBuV/m (Average) 100.8dBuV/m (Peak) 41.6667(434.680) – 7083.3333 = 11028 uV/m = 80.9 dBuV/m (Average) 100.9dBuV/m (Peak)
Harmonics	60.8 dBuV/m (The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.)

Part 15.209 LIMIT:

Frequency (MHz)	Limit (uV/m) @ 3m
30 ~ 88	100**
88 ~ 216	150**
216 ~ 960	200**
Above 960	500

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

Measurement Data:

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
433.055	85.02	87.10	H	-8.79	80.8	100.8	76.23	78.31	4.57	22.49
866.800	39.32	41.37	H	+0.19	60.8	80.8	39.13	41.18	21.67	39.62

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
433.580	85.13	87.22	H	-8.79	80.8	100.8	76.35	78.43	4.45	22.36
867.750	39.29	41.31	H	+0.19	60.8	80.8	39.10	41.12	21.7	39.68

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
434.680	84.44	82.62	H	-8.79	80.8	100.8	75.66	77.88	5.14	22.92
869.520	39.62	41.68	H	+0.19	60.8	80.8	39.43	41.49	21.37	39.31

***restricted band of operation §15.205**

*** Result level = Reading value + Antenna factor – Amp Gain + Cable Loss**

Note 1: No other emission were detected at a level greater than 20 dB below limit.

Note 2: All readings above 1GHz were taken using a peak detector function at a distance of 3 meters.

Radiated Emissions

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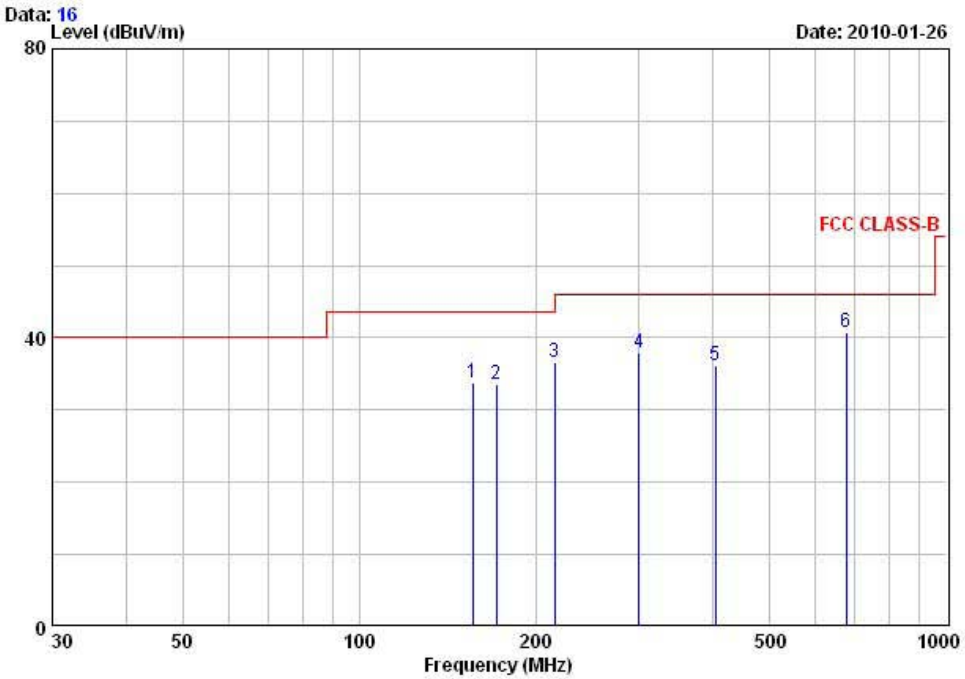
EUT/Model No.: KlaT7-RC TEST MODE: Wireless mode

Temp Humi : 1 / 19 Tested by: KIM.K.I

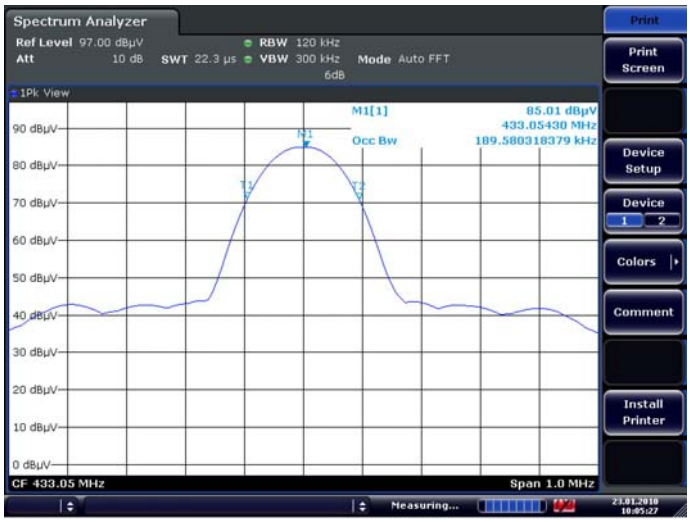


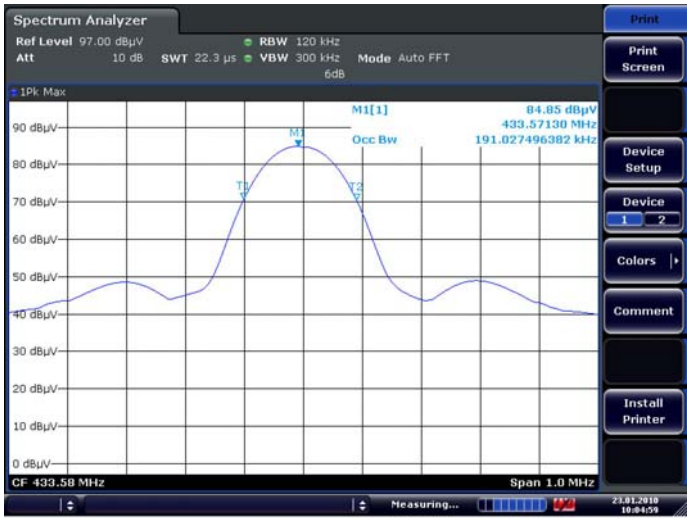
	Freq	Reading	C.F	Result	Limit QP	Margin	Height	Angle	Polarity
	MHz	dBuV/m	dB/m	dBuV/m	dBuV/m	dB	cm	deg	
1	156.01	45.30	-11.59	33.71	43.50	9.79	142	211	HORIZONTAL
2	171.20	45.20	-11.69	33.51	43.50	9.99	100	142	VERTICAL
3	215.24	48.30	-11.76	36.54	43.50	6.96	183	201	HORIZONTAL
4	300.12	46.50	-8.51	37.99	46.00	8.01	162	135	HORIZONTAL
5	405.11	42.90	-6.65	36.25	46.00	9.75	100	213	VERTICAL
6	676.05	42.10	-1.39	40.71	46.00	5.29	210	302	HORIZONTAL

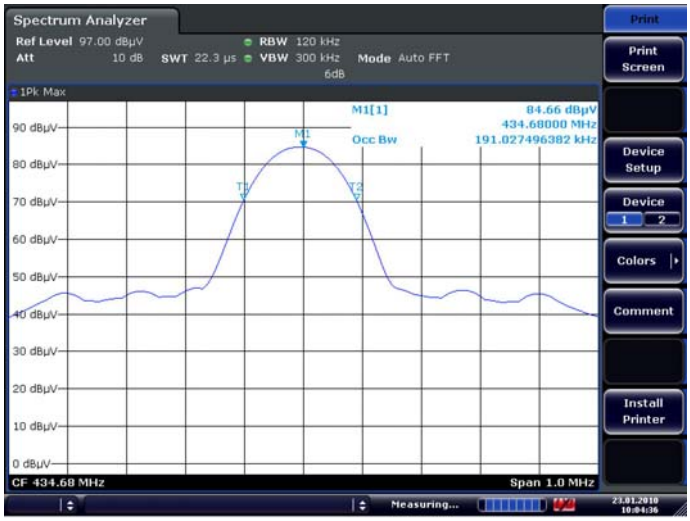
Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

APPENDIX 1

BANDWIDTH OF EMISSION



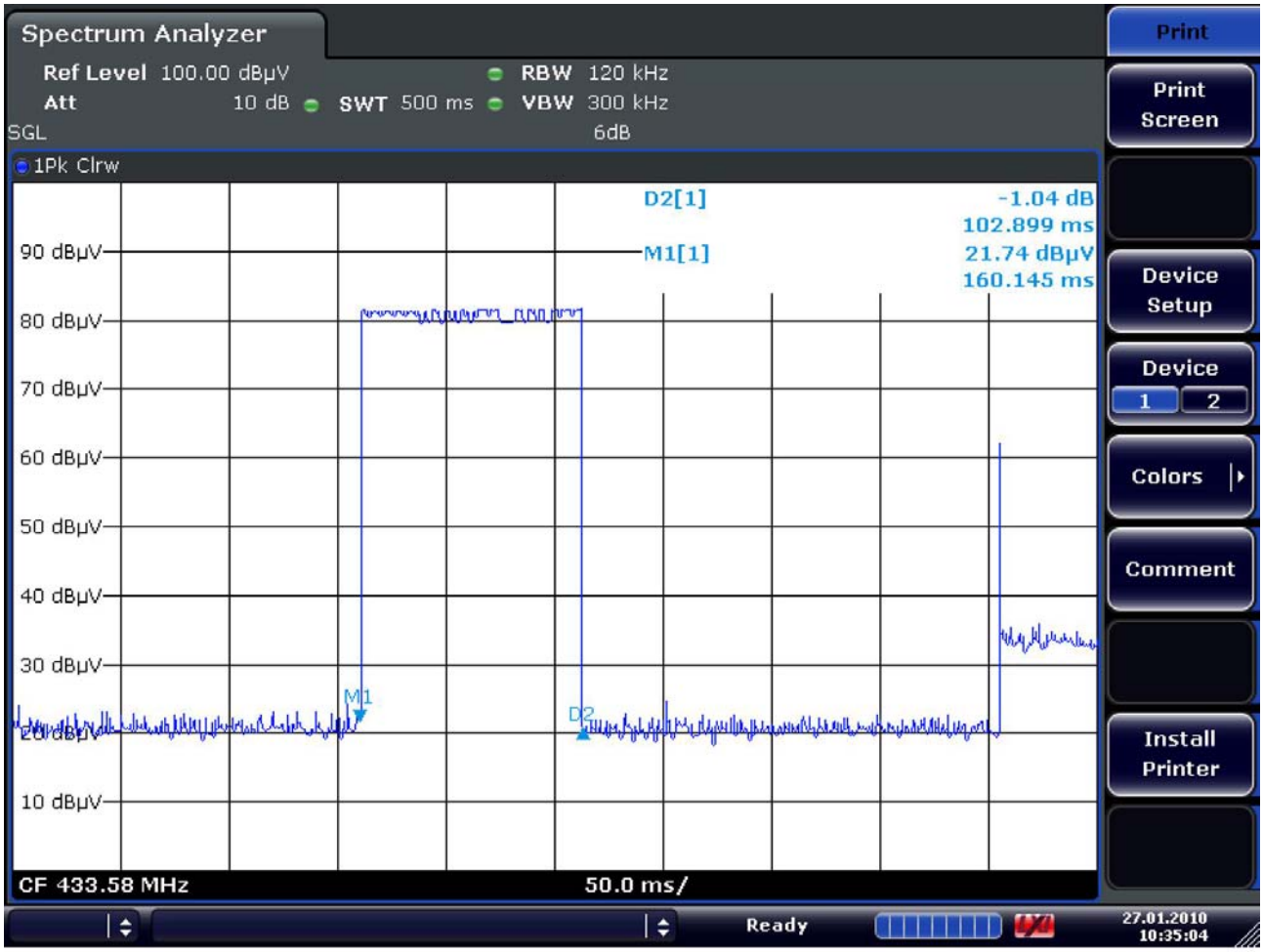




APPENDIX 2

THE EMITTING TIME OF FUNDAMENTAL FREQUENCY

The Emitting time of Fundamental Frequency



Note . The above plots is the worst case plots generated with the full data rate.

APPENDIX 3

TEST EQUIPMENT USED FOR TESTS

	Description	Model No.	Serial No.	Manufacturer	Next Cal. Date
1	Spectrum Analyzer	FSV-30	100757	R&S	Feb-10
2	Spectrum Analyzer	8563E	3425A02505	HP	Apr-10
3	Spectrum Analyzer	8594E	3710A04074	HP	Oct-10
4	Signal Generator	8648C	3623A02597	HP	Apr-10
5	Signal Generator	83711B	US34490456	HP	Apr-10
6	Attenuator (3dB)	8491A	37822	HP	Oct-10
7	Attenuator (10dB)	8491A	63196	HP	Oct-10
8	Attenuator (30dB)	8498A	1801A06689	HP	Oct-10
9	EMI Test Receiver	ESVD	843748/001	R&S	Apr-10
10	Horn Antenna(18 ~ 40GHz)	SAS-574	154	Schwarzbeck	Nov-10
11	Horn Antenna(18 ~ 40GHz)	SAS-574	155	Schwarzbeck	Nov-10
12	RF Amplifier	8447D	2949A02670	HP	Oct-10
13	RF Amplifier	8449B	3008A02126	HP	Apr-10
14	Test Receiver	ESHS10	828404/009	R&S	Apr-10
15	TRILOG Antenna	VULB 9160	9160-3212	SCHWARZBECK	Apr-11
16	Log.-Per. Antenna	VULP 9118	9118 A 401	SCHWARZBECK	Apr-11
17	Biconical Antenna	BBA 9106	VHA 9103-2315	SCHWARZBECK	Apr-11
18	Horn Antenna	3115	00055005	ETS LINDGREN	Mar-11
19	Horn Antenna	BBHA 9120D	9120D122	SCHWARZBECK	Dec-11
20	Dipole Antenna	VHA9103	2116	SCHWARZBECK	Nov-10
21	Dipole Antenna	VHA9103	2117	SCHWARZBECK	Nov-10
22	Dipole Antenna	VHA9105	2261	SCHWARZBECK	Nov-10
23	Dipole Antenna	VHA9105	2262	SCHWARZBECK	Nov-10
24	Hygro-Thermograph	THB-36	0041557-01	ISUZU	Apr-10
25	Splitter (SMA)	ZFSC-2-2500	SF617800326	Mini-Circuits	-
26	RF Switch	MP59B	6200414971	ANRITSU	-
27	Power Divider	11636A	6243	HP	Oct-10
28	DC Power Supply	6622A	3448A03079	HP	Oct-10
29	Frequency Counter	5342A	2826A12411	HP	Apr-10
30	Power Meter	EPM-441A	GB32481702	HP	Apr-10
31	Power Sensor	8481A	2702A64048	HP	Apr-10
32	Audio Analyzer	8903B	3729A18901	HP	Oct-10
33	Modulation Analyzer	8901B	3749A05878	HP	Oct-10
34	TEMP & HUMIDITY Chamber	YJ-500	LTAS06041	JinYoung Tech	Oct-10
35	LOOP-ANTENNA	FMZB 1516	151602/94	SCHWARZBECK	Mar-11
36	Stop Watch	HS-3	601Q09R	CASIO	Apr-10