JAPAN QUALITY ASSURANCE ORGANIZATION
21-25, KINUTA 1-CHOME, SETAGAYA-KU, TOKYO 157 JAPAN
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REPORT OF MEASUREMENTS

Date : March 31, 1998
Issue in : Tokyo, Japan

JQA APPLICATION NO.: 80-71210

1. Applicant : NIKKO CO,. LTD.
   1-7-14, Mizumoto, Katsushika-ku, Tokyo
   125-0032, Japan

2. Manufacturer : NIKKO ELECTRONICS BHD.
   PLOT 497, PRAI TRADE ZONE,
   PRAI INDUSTRIAL ESTATE,13600 PRAI,
   PENANG, MALAYSIA

3. Description of Equipment : Radio Controlled Toy
   (Super regenerative Type)

   a) FCC ID : CVT604214R
   b) Trade Name : NIKKO
   c) Model No. : 604214R
   d) Tuning Frequency Range : 49.830 MHz - 49.890 MHz
   e) Power Supply : Battery 9.6 VDC

4. Applicable Rule : FCC Rules & Regulations Part 15
   Subpart B (June 23, 1989)

5. Place of Measurement : JQA EMC Engineering Dept.

6. Date of Measurement : March 31, 1998

7. Total Pages of This Report : 7 (including this page)

8. I certify that I am authorized to sign for the report and that all the statement in this report and in the exhibits hereto are true and correct to the best my knowledge and belief.

Y. Fukumoto

Yuichi Fukumoto, Deputy Manager
Testing Div.
EMC Engineer Dept.

1. Radiated Spurious Emission: [§15.109 (a)]

Measurement Method Employed: The field strength measurements of the equipment under test were made at the distance of 3 meters away from the device which was placed on the wooden turntable 0.8 meter in height.
The receiving antenna polarized horizontally was varied from 1 to 4 meters and the wooden turntable was rotated 360 degrees to obtain the highest reading on the field strength meter.
These measurements were repeated with the receiving antenna polarized vertically.
The internal pre-amplifier was used from 30 MHz up to 1000 MHz.
During these measurements, the signal generator was used in order to stabilize the receiver circuit of the EUT and a fresh battery was used for the maximum radiation from the EUT.

Measurement Results:

Turning Frequency : 49.860 MHz
Distance of Measurement : 3.0 meters

	Antenna	Meter Reading		Field Strength at 3 m	
Frequency	Factor	Horiz.	Vert.	Horiz.	Vert.
(MHz)	(Db)	(dB/uV)	(dB/uV)	(uV/m)	(uV/m)
45.433	3.3	0.6	8.6	1.6	3.9
48.333	3.8	6.6	15.3	3.3	9.0
51.822	4.5	9.7	14.4	5.1	8.8
54.347	4.9	6.8	9.8	3.8	5.4
93.409	10.8	1.6	8.6	4.2	4.6
103.400	11.3	0.8	5.5	4.0	6.9
140.200	14.3	-2.7	2.6	3.8	7.0
147.310	14.9	< -5.0	0.2	< 3.1	5.7
231.692	19.7	10.0	15.0	30.5	54.3
239.857	19.9	7.4	10.4	23.2	32.7
276.200	21.5	-0.1	3.2	11.7	17.2
300.000	22.4	< -5.0	< -5.0	7.4 or Less	
400.000	25.6	< -5.0	< -5.0	10.7 or Less	
500.000	28.1	< -5.0	< -5.0	14.3 or Less	
650.000	31.6	< -5.0	< -5.0	21.4 or Less	
800.000	34.4	< -5.0	< -5.0	29.5 or Less	
1000.000	37.4	< -5.0	< -5.0	41.7 or Less	

Note: 1. The spectrum was checked from 30 MHz to 1000 MHz.
All emissions not listed were found to be more than 20 dB below the limits.

2. The symbol of "<" means "or less".

3. The cable loss was included in the antenna factor.

4. Sample calculation :

at 45.433 MHz

$$10^{(AF+Mr)/20} = 10^{(3.3+8.6)/20} = 3.9 \text{ uV/m}$$

Where,

Af = Antenna Factor including the cable loss.
Mr = Meter Reading

5. Measuring Instrument Setting:

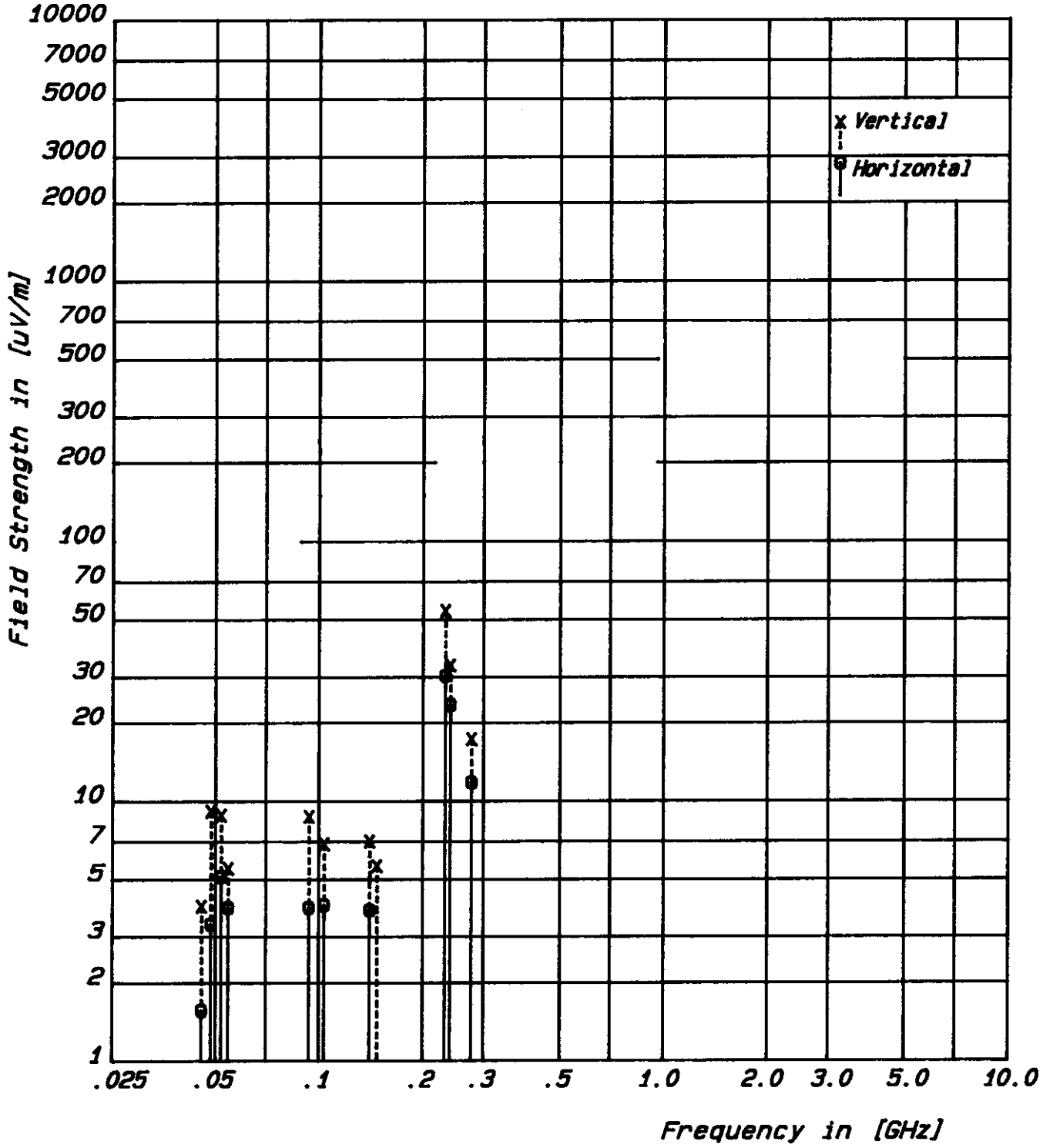
Detector function : CISPR quasi-peak
IF Bandwidth : 120 KHz

JQA

JQA APPLICATION NO. : 80-71210

Radiated Spurious Emission

FCC ID : CVT604214R
Tuning Frequency : 49.860 MHz



N O . R N 6 2 1 0 L I S T

Receiver PCB. for FCC ID:CVT604214R

N O .	DESCRIPTION	CODE	PARTS NAME	NOTE
1	I.C.	IC 1	NR9600	
2	TRANSISTOR	TR 1	2SC380-O or equivalent	
3		TR 2	2SC945Q or equivalent	
4		TR 3	2SC945Q or equivalent	
5		TR 4	2SA733Q or equivalent	
6		TR 5	2SA733Q or equivalent	
7		TR 6	2SC945Q or equivalent	
8		TR 7	2SC2001 or equivalent	
9		TR10	2SC945Q or equivalent	
10		TR11	2SB1151 or equivalent	
11		TR12	2SB1151 or equivalent	
12		TR13	2SD1691 or equivalent	
13		TR14	2SD1691 or equivalent	
14		TR15	2SC945Q or equivalent	
15		TR16	2SC945Q or equivalent	
16		TR17	2SA1680 or equivalent	
17		TR18	2SA1680 or equivalent	
18		TR19	2SC4408 or equivalent	
19		TR20	2SC4408 or equivalent	
20		TR21	2SC945Q or equivalent	
21	DIODE	D 1	1SS133 or equivalent	
22		D 2	1SS133 or equivalent	
23		D 3	1SS133 or equivalent	
24		D 4	1SS133 or equivalent	
25		D 5	1SS133 or equivalent	
26		D 7	1SS133 or equivalent	
27		D 8	1SS133 or equivalent	
28		D 9	1SS133 or equivalent	
29		D10	1SS133 or equivalent	
30		D11	1SS133 or equivalent	
31		D12	1SS133 or equivalent	
32		D13	1SS133 or equivalent	
33		D14	1SS133 or equivalent	
34		D15	1SS133 or equivalent	
35		D20	4.3V(ZENER)	
36		D21	4.3V(ZENER)	
37		D24	1SS133 or equivalent	
38		D25	1SS133 or equivalent	
39		D26	1SS133 or equivalent	
40		D27	1SS133 or equivalent	
41	RESISTOR	R 1	4.7K	
42		R 2	8.2K	
43		R 3	470	
44		R 4	5.6K	
45		R 5	2.2K	
46		R 6	10K	
47		R 7	6.8K	
48		R 8	22K	
49		R 9	22K	
50		R10	0 ohm	

RESISTOR・・・No mark:1/6W,+-5%　　INDUCTOR・・・100mA,+-10%

CAPACITOR:(C)=CERAMIC・・・50WV,+80-20%

:(M)=MYLAR・・・50WV,No mark(K-rank):+-10%,J-rank:+-5%

:(E)=ELECTROLYTIC・・・16WV,+-20%

:(T)=TANTALUM・・・35WV,+-10%

NO. RN6210 LIST

Receiver PCB. for FCC ID:CVT604214R

NO.	DESCRIPTION	CODE	PARTS NAME	NOTE
51		R11	10K	
52		R12	10K	
53		R14	2.2K	
54		R15	1K	
55		R16	10K	
56		R17	10K	
57		R18	2.2K	
58		R19	2.2K	
59		R20	1K	
60		R23	22K	
61		R24	100(1W)	
62		R25	100(1W)	
63		R26	10K	
64		R27	10K	
65		R29	6.8(1W)	
66		R30	1K	
67		R32	1K	
68		R33	10K	
69		R35	56K	
70		R36	470K	
71		R37	100K	
72	CAPACITOR	C 1	10pF(C)	
73		C 2	5pF(C)	
74		C 3	33pF(C)	
75		C 4	4.7uF(E)	
76		C 5	0.0022uF(M)	222(M)
77		C 6	0.022uF(M)	223(M)
78		C 7	0.01uF(M)	103(M)
79		C 8	1uF(E)	1(E)
80		C 9	0.001uF(M.J-rank)	102J(M)
81		C10	1uF(E)	
82		C11	150pF(C)	
83		C12	100uF(E)	
84		C13	0.01uF(C)	103(C)
85		C14	47uF(E)	
86		C15	47uF(E)	
87		C16	22uF(E)	
88		C17	100uF(E)	
89		C18	0.1uF(C)	104(C)
90		C19	47uF(E)	
91		C20	0.01uF(C)	103(C)
92		C22	0.01uF(C)	103(C)
93		C23	2.2uF(E)	
94		C24	10uF(E)	
95		C25	47uF(E)	
96		C26	10uF(NP)	
97		C27	0.047uF(C)	473(C)
98		C28	10uF(E)	
99		C29	2.2uF(E)	
100	INDUCTOR	L 2	SP 3.3uH	

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CAPACITOR:(C)=CERAMIC・・・50WV,+80-20%

:(M)=MYLAR・・・50WV,No mark(K-rank):+-10%,J-rank:+-5%

:(E)=ELECTROLYTIC・・・16WV,+-20%

:(T)=TANTALUM・・・35WV,+-10%

N O . R N 6 2 1 0 L I S T

Receiver PCB. for FCC ID:CVT604214R

98／03／09　　

N O .	DESCRIPTION	CODE	PARTS NAME	NOTE
101		L 3	S6.5T	
102		L 4	L11-28ohm(0.17x1265T)	Out of PCB.
103	JUMPER	J 1	0 ohm	
104		J 2	WIRE:60mm	
105		J 3	WIRE:60mm	
106		J 4	0 ohm	
107		J 5	0 ohm	
108		J 6	0 ohm	
109		J 7	WIRE:40mm	
110		J 8	0 ohm	
111		J 9	WIRE:60mm	
112		J10	WIRE:80mm	
113	EXTRA PARTS	EP 1	RAD:H-7 x 2	
114		EP 2	TAPPING:3*8B x 4	
115		EP 3	H500S03-2-C	
116		EP 5	PCB:NO.RN6210	

RESISTOR・・・No mark:1/6W,+-5%　　INDUCTOR・・・100mA,+-10%

CAPACITOR:(C)=CERAMIC・・・50WV,+80-20%

:(M)=MYLAR・・・50WV,No mark(K-rank):+-10%,J-rank:+-5%

:(E)=ELECTROLYTIC・・・16WV,+-20%

:(T)=TANTALUM・・・35WV,+-10%

RN6210 CIRCUIT EXPLANATION

1) The RF.(Radio Frequency) inputted through The ANT.,is passed to the Super-regenerative receiver, formed by TR1, where the Action Signal is detected.

2) The Action Signal is decoded in the control IC., and are sent to each output terminal.

3) TR16,17,18,19,20 and 21 form the steering control circuit.

(3-1) Right turned.
IC.15P.(pin) is turned on, and TR16,18,19 are tuned on to make a Right turn.

(3-2) Left turned.
Ic.16P. is turned on, and TR17,20,21 are turned on to make a Left turn.

4) TR10,11,12,13,14 and 15 form the motor drive control circuit.

(4-1) Forward motion.
IC.14P. is turned Hi, and TR10,11,14 are turned on.
And consequently sending Forward motion electric power to the motor.

(4-2) Backward motion.
IC.13P. is turned Hi, and TR15,12,and 13 are turned on.
And consequently sending Backward motion electric power to the motor.

5) Jump Motion control circuit.

TR7 is turned on, consequently RL1 is Active. And RL1 sending electric power to the sub-motor for Jumping. But TR7 has conditions what are as follows.
1) The front wheel rotation has enough swiftness.
2) R/C car has forward motion for front.(R/C car has not steering action.)

(5-1) Safety circuit
5-1-1 Detector of front wheel rotation
TR2 is turned on when front wheel rotation has enough swiftness. Consequently TR3 is turned on, and enable Jump Mode.

5-1-2 Detector of forward motion, no steering and tension of spring for jumping.
TR5 is turned on, when R/C car is having forward motion and it have not steering motion.
SW3 is closed, when spring has enough tension. TR4 is turned on, when TR5 is turned on and SW3 closed.
TR4 is turned on, consequently TR7 turned on and sending normal electric power to the sub-motor for jumping. Consequently, the arm connected sub-motor is active, and R/C car is jumping.

LIST OF MEASUREMENT EQUIPMENT

Equipment (Model No.)	Manufacturer	Date of Cal.
1. Field Strength Meter		
ESVP	Rohde & Schwarz	October 1997
2. Tuned Dipole Antenna		
KBA-511	Kyoritsu Electrical Works	November 1997
KBA-611	Kyoritsu Electrical Works	November 1997
3. Signal Generator		
TR4511	ADVANTEST	May 1997
4. Biconical Antenna		
94455-1	EMCO	-