DATA OF CONDUCTION TEST

A-PEX INTERNATIONAL CO., LTD.
No.2 SEMI ANECHOIC CHAMBER
Report No. : 221E0025-H0

Applicant	:	SONY Corporation
Kind of Equipment	:	Digital Video Camera Recorder
Model No.	:	DCR-IP220
Serial No.	:	95
Power	:	AC120V/60Hz
Mode	:	Tx(2402MHz)
Remarks	:	
Date	:	6/10/2002
Phase	:	Single Phase
Temperature	:	26 ℃
Humidity	:	48 %
Regulation	:	FCC 15.207 (0.15-30MHz)

Engineer : Hiroka Umeyama

No.	FREQ.	READING(N) QP	READING(N) AV	READING(L1) QP	READING(L1) AV	LISN FACTOR	CABLE LOSS	ATTEN.	RESULT QP	RESULT AV	LIMITS QP	LIMITS AV	MARGIN QP	MARGIN AV
	[MHz]	[dBuV]		[dBuV]		[dB]	[dB]	[dB]	[dBuV]		[dBuV]		[dB]	
1.	0.1500	39.5	-	39.3	-	0.0	0.1	0.0	39.6	-	66.0	56.0	26.4	-
2.	0.2597	40.6	-	40.4	-	0.0	0.1	0.0	40.7	-	61.4	51.4	20.7	-
3.	0.3896	36.7	-	36.7	-	0.0	0.1	0.0	36.8	-	58.1	48.1	21.3	-
4.	0.6499	30.6	-	30.6	-	0.1	0.1	0.0	30.8	-	56.0	46.0	25.2	-
5.	1.8182	31.2	-	30.4	-	0.1	0.3	0.0	31.6	-	56.0	46.0	24.4	-
6.	1.9479	30.8	-	29.8	-	0.1	0.3	0.0	31.2	-	56.0	46.0	24.8	-
7.	4.8052	33.5	-	32.3	-	0.2	0.5	0.0	34.2	-	56.0	46.0	21.8	-
8.	7.0120	36.6	-	36.6	-	0.3	0.6	0.0	37.5	-	60.0	50.0	22.5	-
9.	11.2986	39.8	-	40.7	-	0.4	0.9	0.0	42.0	-	60.0	50.0	18.0	-

CALCULATION: READING + LISN FACTOR + CABLE LOSS + ATTEN.

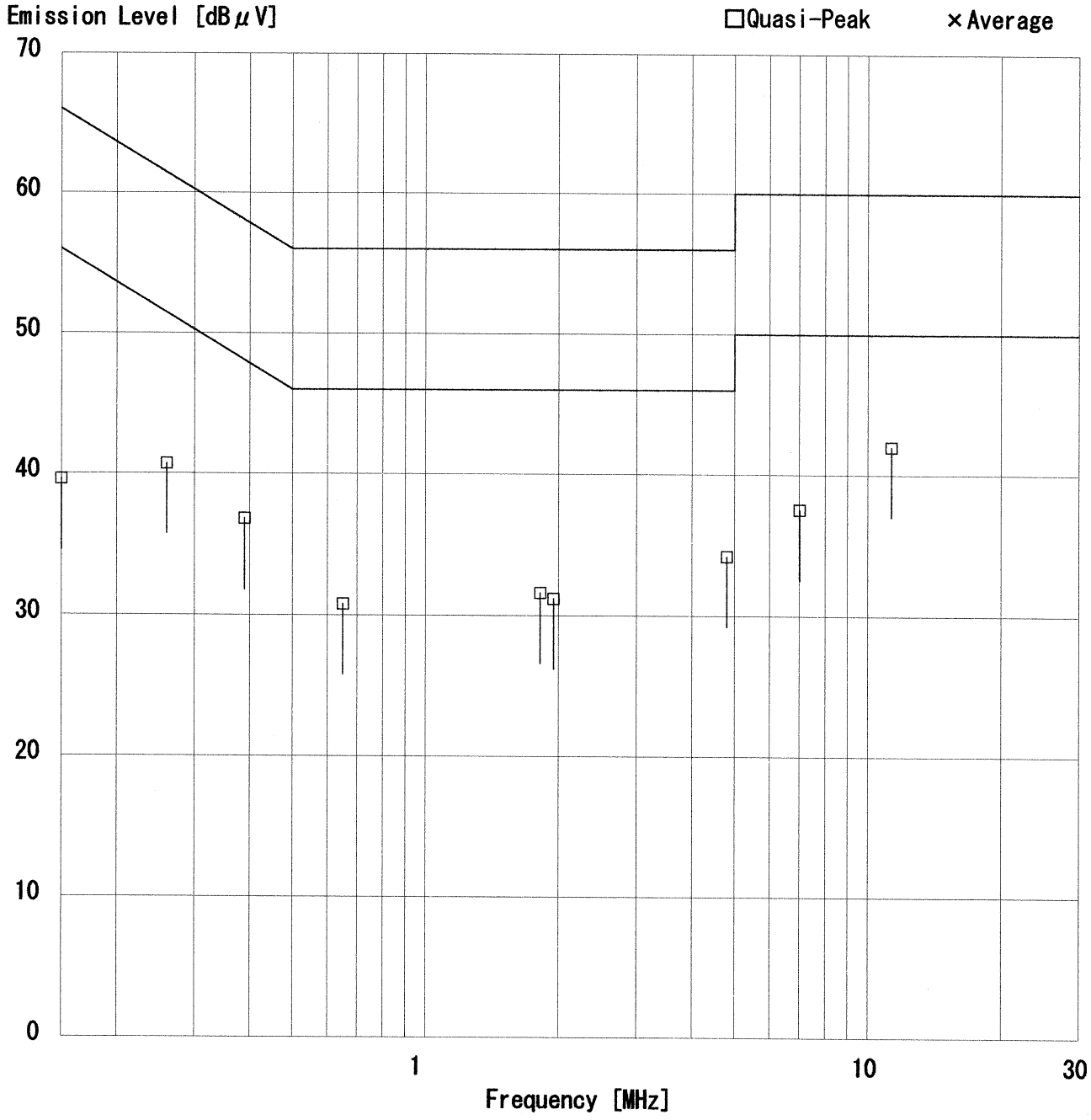
Except for the above table : adequate margin data below the limits.

DATA OF CONDUCTION TEST

A-PEX INTERNATIONAL CO., LTD.
No.2 SEMI ANECHOIC CHAMBER
Report No.: 22IE0025-H0

Applicant	:	SONY Corporation
Kind of Equipment	:	Digital Video Camera Recorder
Model No.	:	DCR-IP220
Serial No.	:	95
Power	:	AC120V/60Hz
Mode	:	Tx(2402MHz)
Remarks	:	
Date	:	6/10/2002
Phase	:	Single Phase
Temperature	:	26 ℃
Humidity	:	48 %
Regulation	:	FCC 15.207 (0.15-30MHz)

Engineer : Hiroka Umeyama

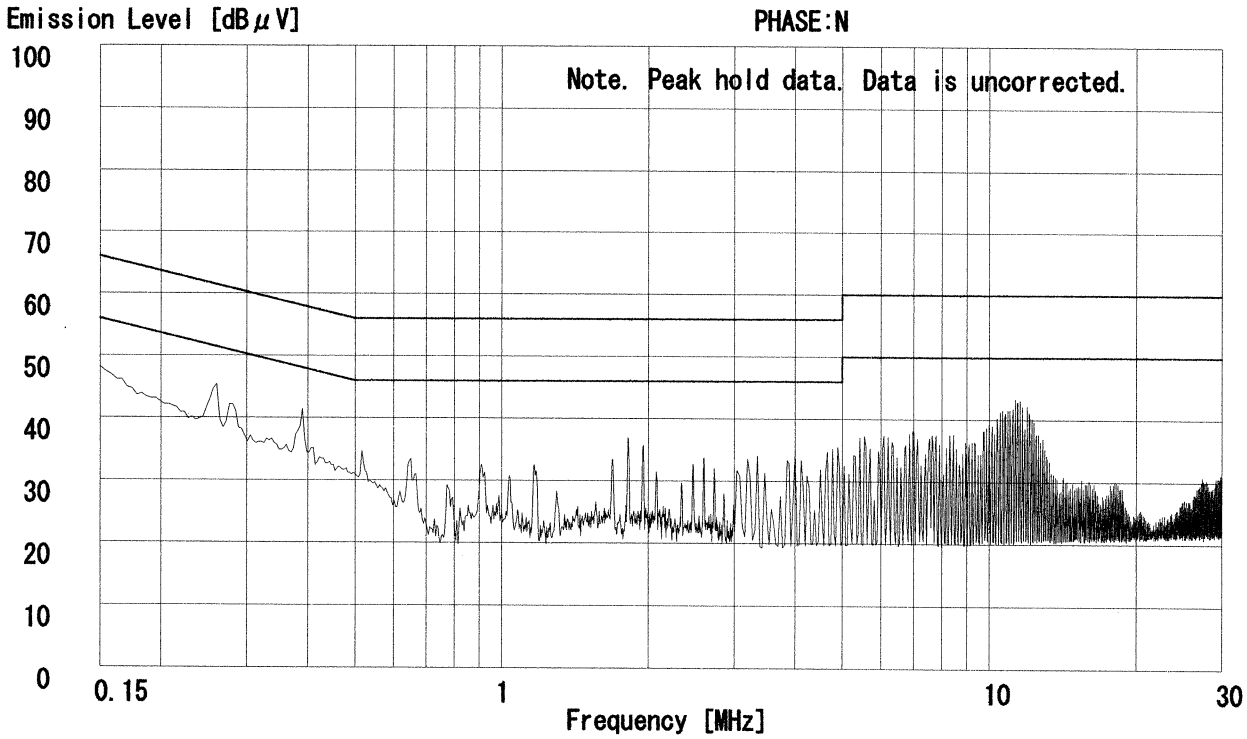


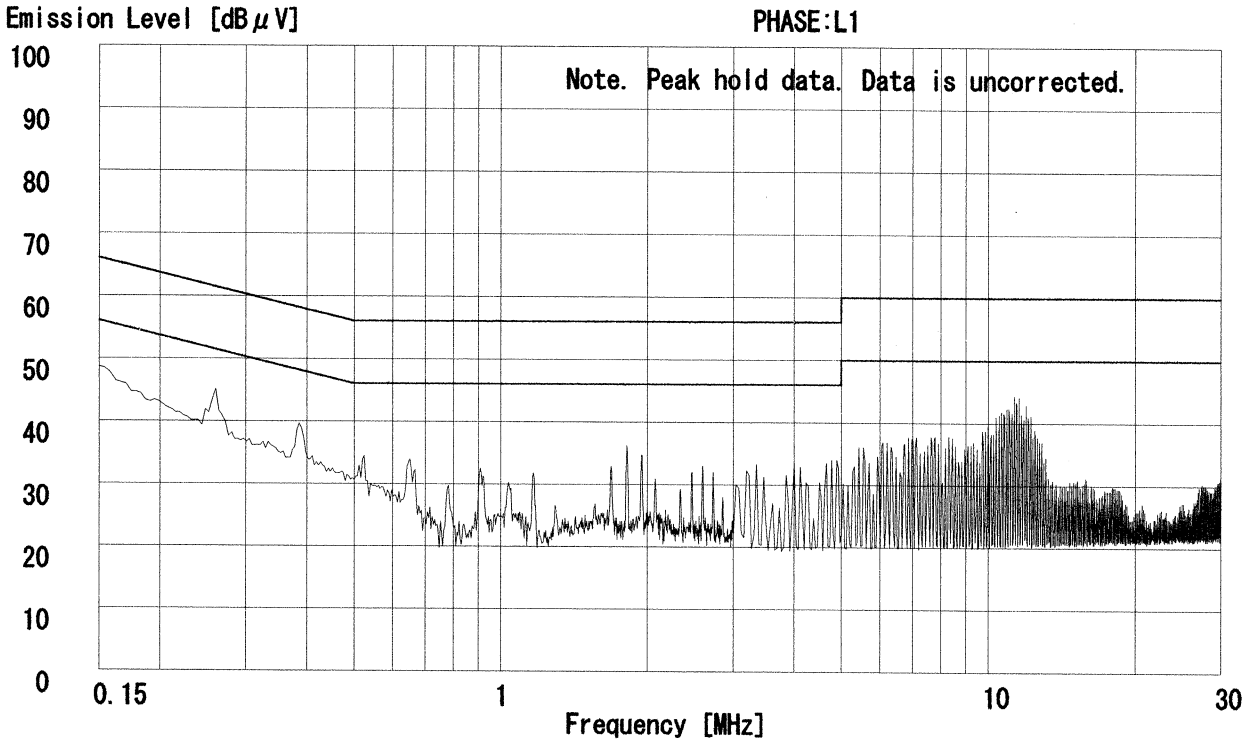
DATA OF CONDUCTION TEST CHART

A-PEX INTERNATIONAL CO., LTD.
No.2 SEMI ANECHOIC CHAMBER
Report No.: 22IE0025-H0

Applicant	:	SONY Corporation
Kind of Equipment	:	Digital Video Camera Recorder
Model No.	:	DCR-IP220
Serial No.	:	95
Power	:	AC120V/60Hz
Mode	:	Tx(2402MHz)
Remarks	:	
Date	:	6/10/2002
Phase	:	Single Phase
Temperature	:	26 ℃
Humidity	:	48 %
Regulation 1	:	FCC 15.207 (0.15-30MHz)
Regulation 2	:	None

Engineer : Hiroka Umeyama



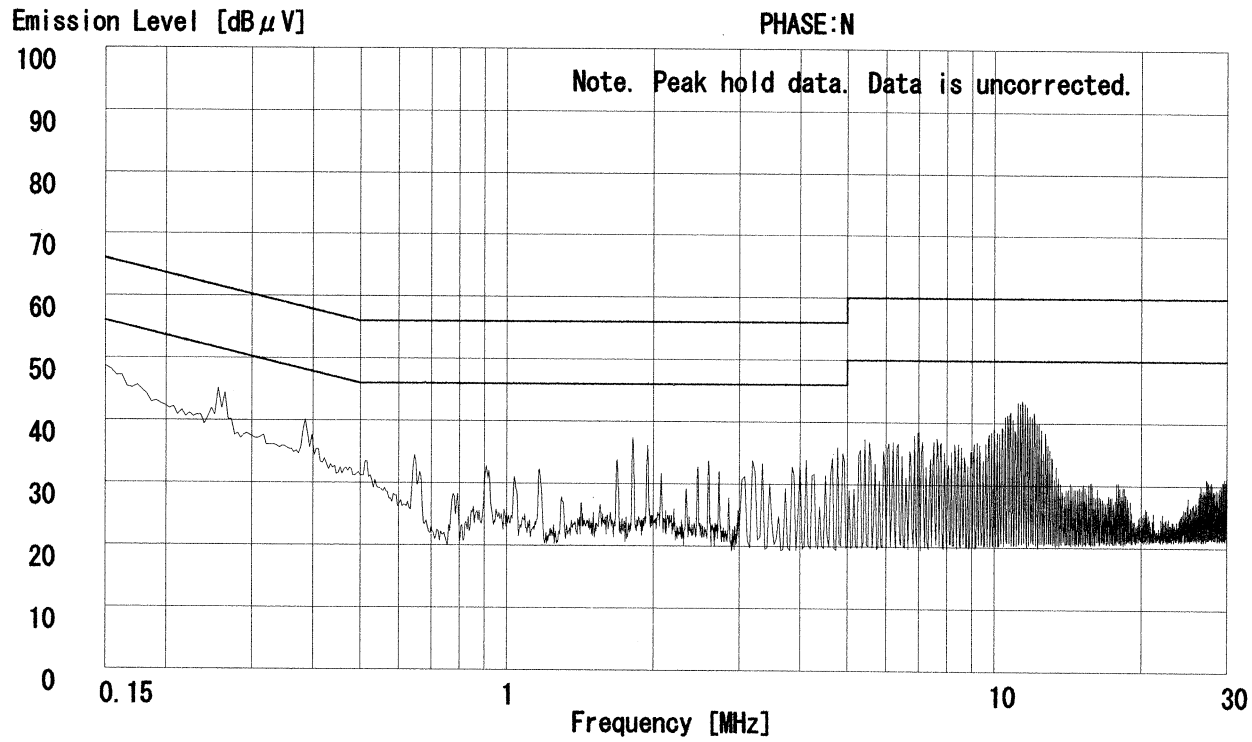


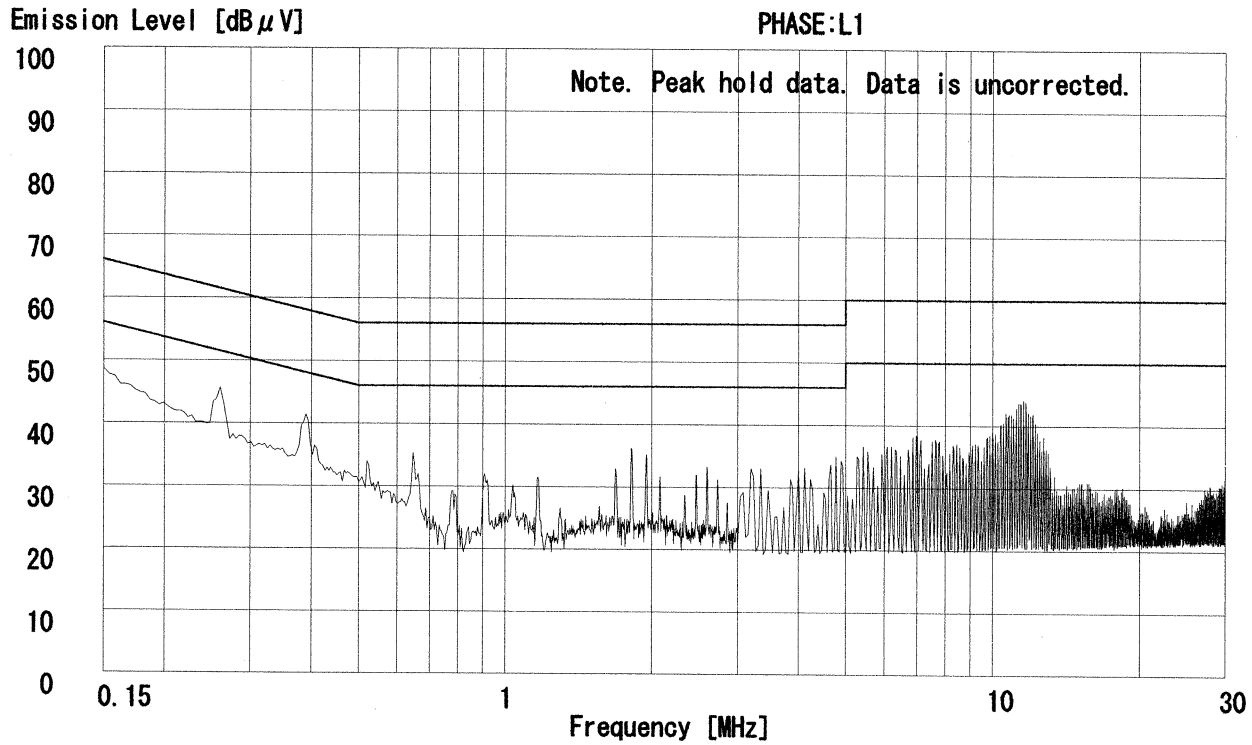
DATA OF CONDUCTION TEST CHART

A-PEX INTERNATIONAL CO., LTD.
No.2 SEMI ANECHOIC CHAMBER
Report No. : 22IE0025-H0

Applicant	:	SONY Corporation
Kind of Equipment	:	Digital Video Camera Recorder
Model No.	:	DCR-IP220
Serial No.	:	95
Power	:	AC120V/60Hz
Mode	:	Tx(2441MHz)
Remarks	:	
Date	:	6/10/2002
Phase	:	Single Phase
Temperature	:	26 ℃
Humidity	:	48 %
Regulation 1	:	FCC 15.207 (0.15-30MHz)
Regulation 2	:	None

Engineer : Hiroka Umeyama



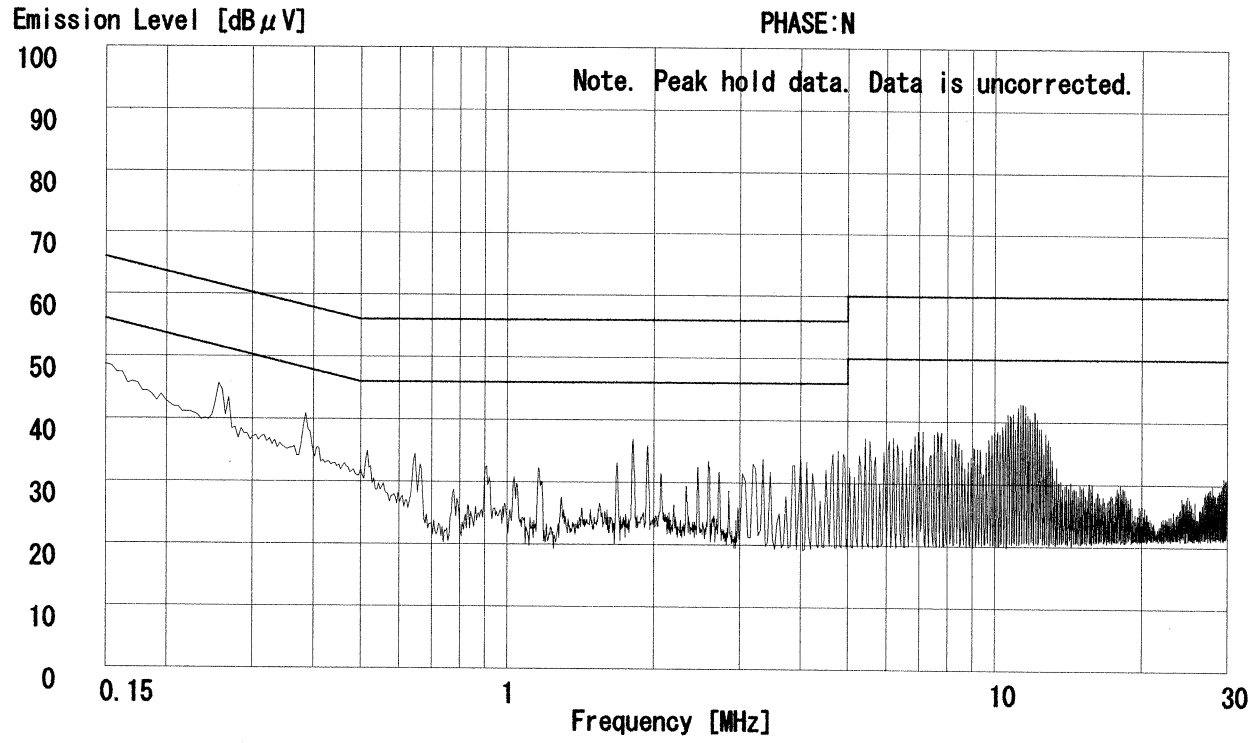


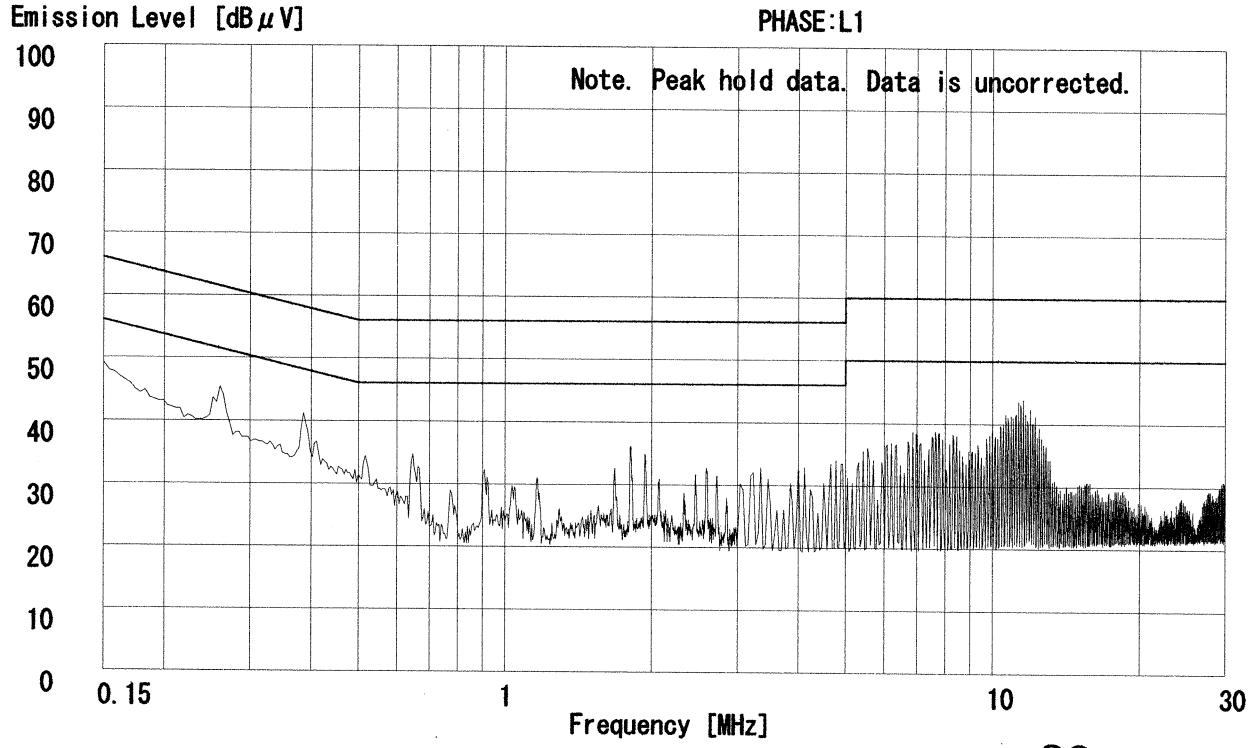
DATA OF CONDUCTION TEST CHART

A-PEX INTERNATIONAL CO., LTD.
No.2 SEMI ANECHOIC CHAMBER
Report No. : 221E0025-H0

Applicant	:	SONY Corporation
Kind of Equipment	:	Digital Video Camera Recorder
Model No.	:	DCR-IP220
Serial No.	:	95
Power	:	AC120V/60Hz
Mode	:	Tx(2480MHz)
Remarks	:	
Date	:	6/10/2002
Phase	:	Single Phase
Temperature	:	26 ℃
Humidity	:	48 %
Regulation 1	:	FCC 15.207 (0.15-30MHz)
Regulation 2	:	None

Engineer : Hiroka Umeyama





DATA OF CARRIER FREQUENCY SEPARATION

A-PEX INTERNATIONAL CO., LTD.
EMC HEAD OFFICE DIVISON No.3 MEASUREMENT ROOM

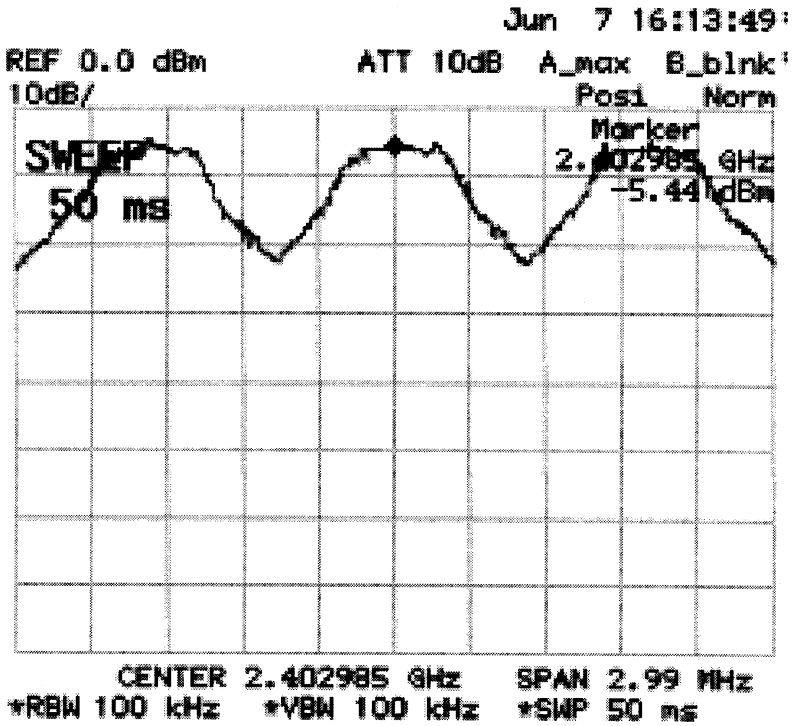
COMPANY	: SONY Corporation	REPORT NO	: 22IE0025-HO
EQUIPMENT	: Digital Video Camera Recorder	REGULATION	: Fcc Part15 Subpart C 15.247(a)(1)
MODEL	: DCR-IP220	TEST DISTANCE	: -
S/N	: 96	DATE	: 2002/6/7
FCC ID	: AK8DCRIP220	Temperature	: 24℃
POWER	: AC120V/60Hz	Humidity	: 62%
MODE	: Tx (Hopping on)		

ENGINEER : Hiroka Umeyama

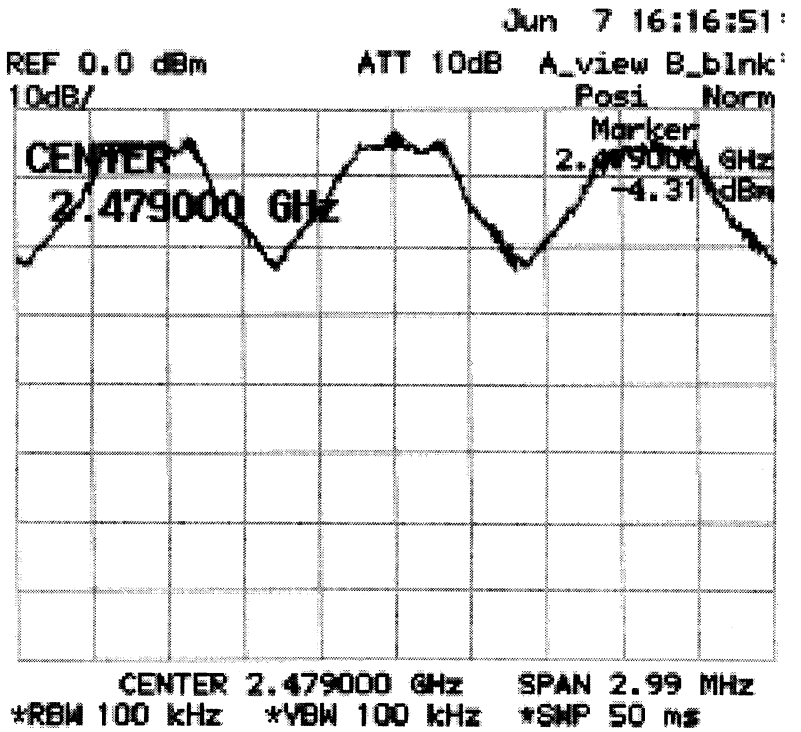
PK DETECT(S/A :span 3MHz, RBW 100kHz ,VBW 100kHz, sweep time AUTO)

CH	FREQ [MHz]	Channel separation [MHz]	Limit
Low	2402.0	1.000	>20dB Bandwidth and 25[kHz]
Mid	2441.0	1.000	>20dB Bandwidth and 25[kHz]
High	2480.0	1.000	>20dB Bandwidth and 25[kHz]

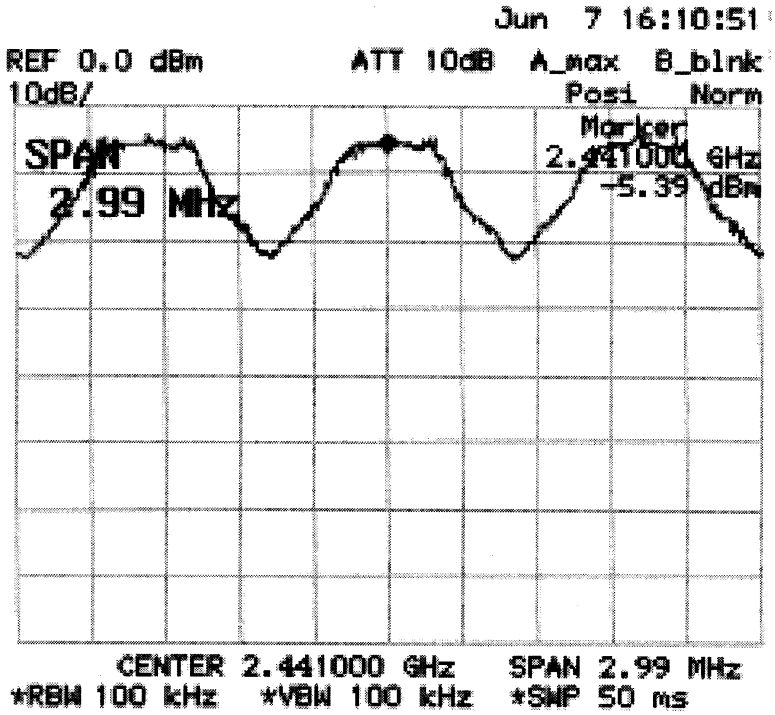
Carrier Frequency Separation :Tx(Hopping on)2402MHz



Carrier Frequency Separation :Tx(Hopping on)2441MHz



Carrier Frequency Separation :Tx(Hopping on)2480MHz



DATA OF 20dB BANDWIDTH (CONDUCTED)

A-PEX INTERNATIONAL CO., LTD.
EMC HEAD OFFICE DIVISON No.3 MEASUREMENT ROOM

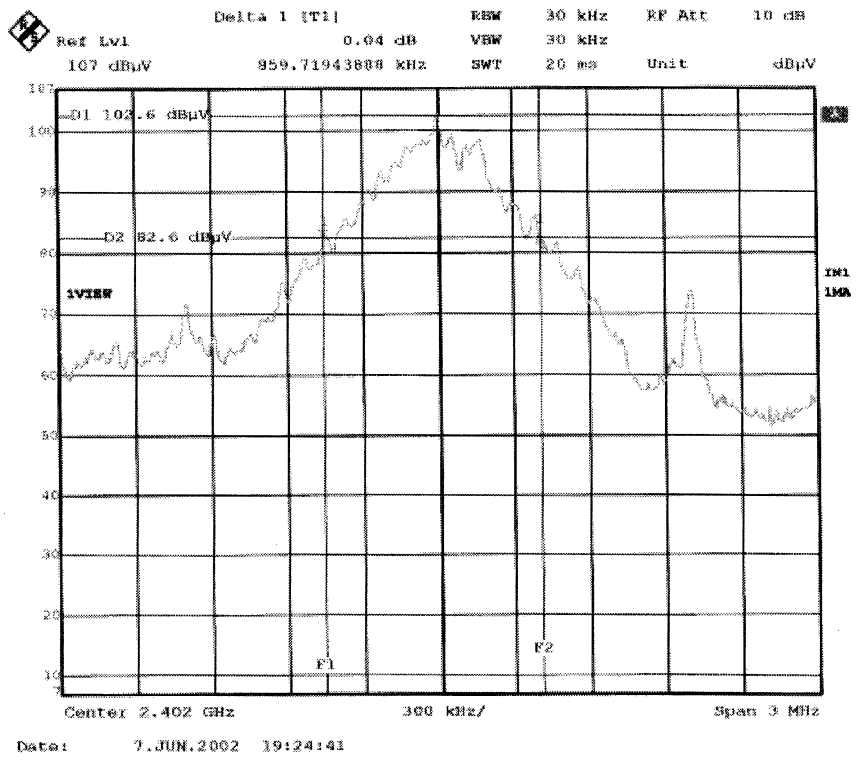
COMPANY	: SONY Corporation	REPORT NO	: 22IE0025-HO
EQUIPMENT	: Digital Video Camera Recorder	REGULATION	: Fcc Part15 Subpart C 15.247(a)(1)(ii)
MODEL	: DCR-IP220	TEST DISTANCE	: -
S/N	: 96	DATE	: 2002/6/7
FCC ID	: AK8DCRIP220	Temperature	: 24℃
POWER	: AC120V/60Hz	Humidity	: 62%
MODE	: Tx (Hopping off)		

ENGINEER : Hiroka Umeyama

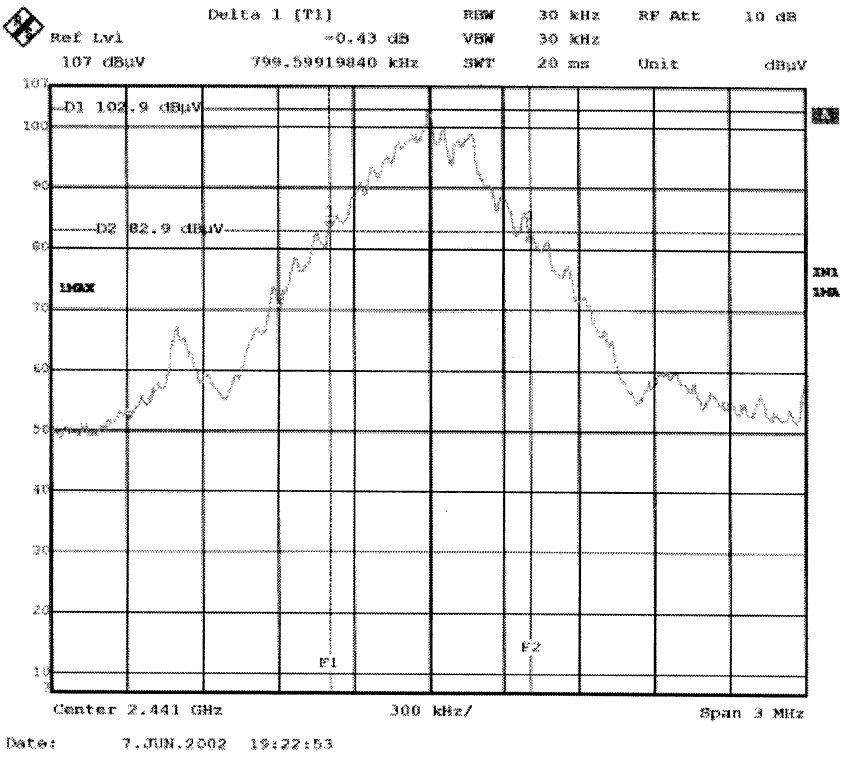
PK DETECT(S/A: span 3MHz, RBW 30kHz ,VBW 30kHz, sweep time AUTO)

CH	FREQ [MHz]	20dB Bandwidt [MHz]	Limit [MHz]
Low	2402.0	0.860	1.0
Mid	2441.0	0.800	1.0
High	2480.0	0.800	1.0

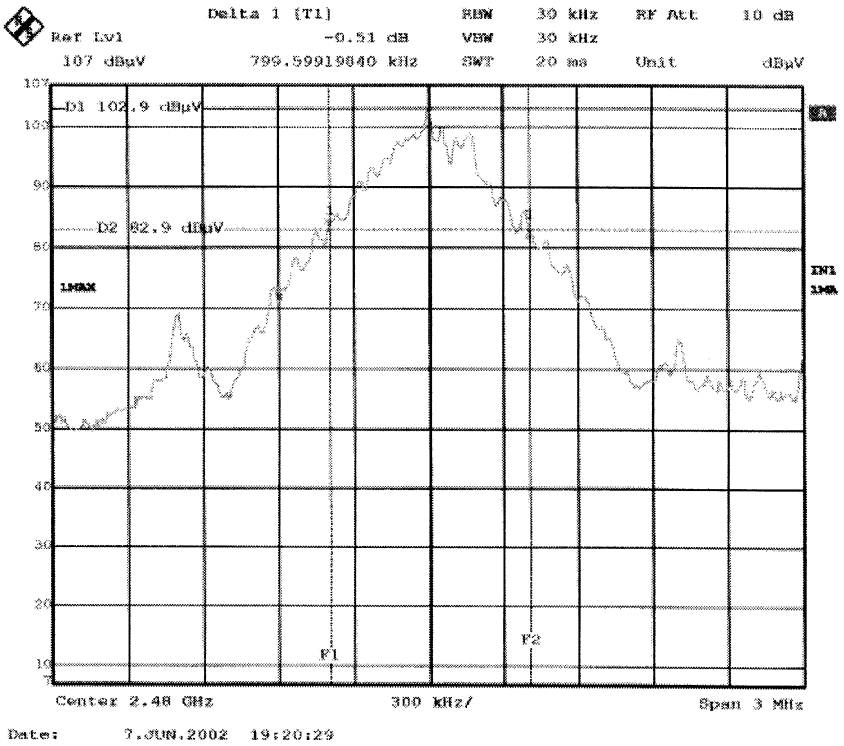
20dB Band Width :Tx(Hopping on)2402MHz



20dB Band Width :Tx(Hopping on)2441MHz



20dB Band Width :Tx(Hopping on)2480MHz



DATA OF NUMBER OF HOPPING FREQUENCY

A-PEX INTERNATIONAL CO., LTD.
EMC HEAD OFFICE DIVISON No.3 MEASUREMENT ROOM

COMPANY	: SONY Corporation	REPORT NO	: 22IE0025-HO
EQUIPMENT	: Digital Video Camera Recorder	REGULATION	: Fcc Part15 Subpart C 15.247(a)(1)(ii)
MODEL	: DCR-IP220	TEST DISTANCE	: -
S/N	: 96	DATE	: 2002/6/7
FCC ID	: AK8DCRIP220	Temperature	: 24℃
POWER	: AC120V/60Hz	Humidity	: 62%
MODE	: Tx (Hopping on) / Inquiry		

ENGINEER : Hiroka Umeyama

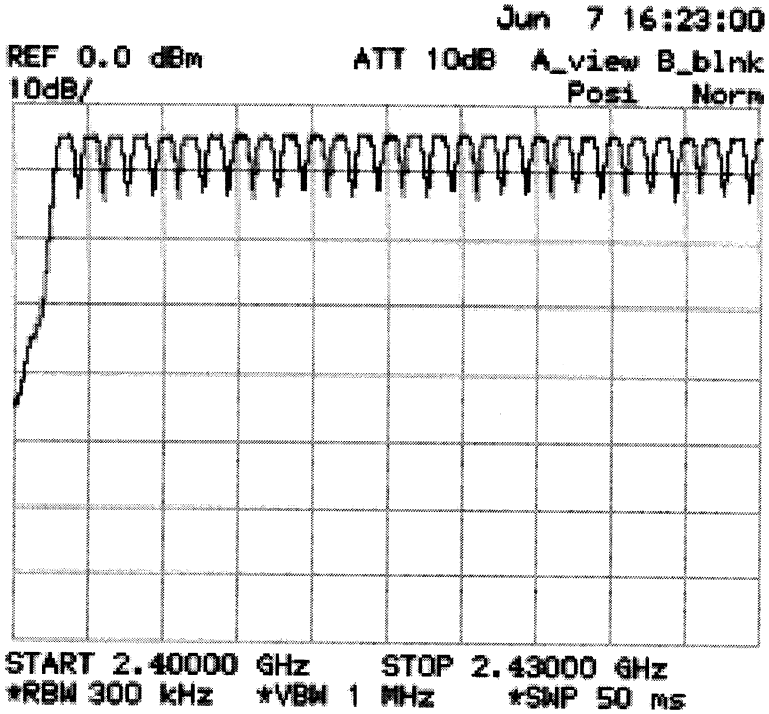
PK DETECT(S/A : RBW 300kHz ,VBW 1MHz, sweep time AUTO)

Mode	Number of channel [time]	Limit [time]
Tx(Hoppng on)	79.0	≧75

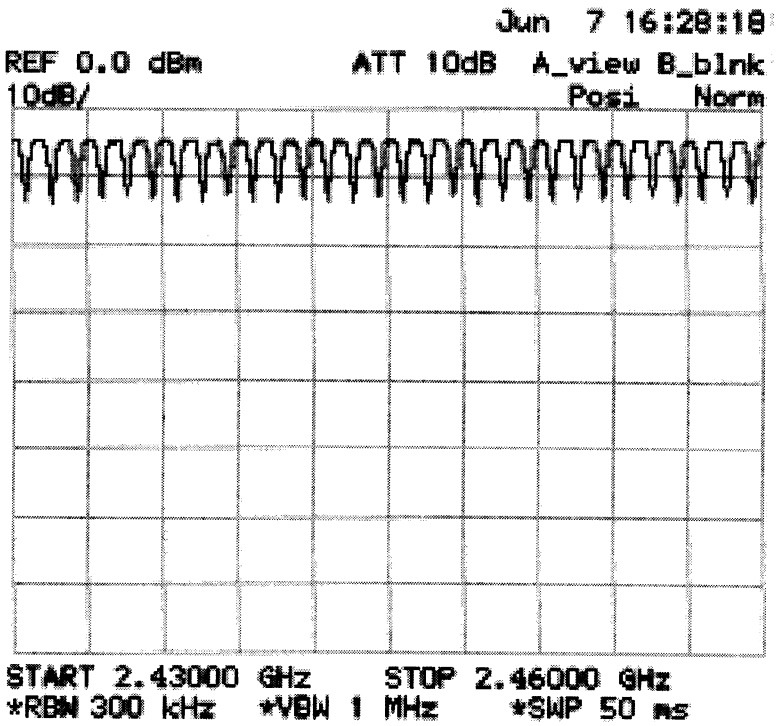
PK DETECT(S/A : RBW 300kHz ,VBW 1MHz, sweep time AUTO)

Mode	Number of channel [time]	Limit [time]
Inquiry	32.0	-

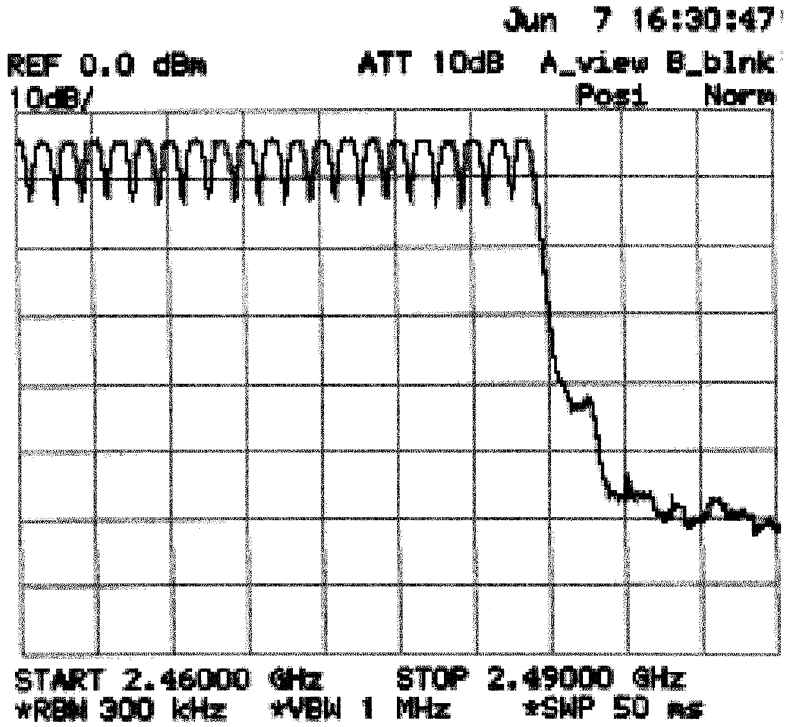
Number of Hopping Frequency :Tx(Hopping on)2400-2430MHz



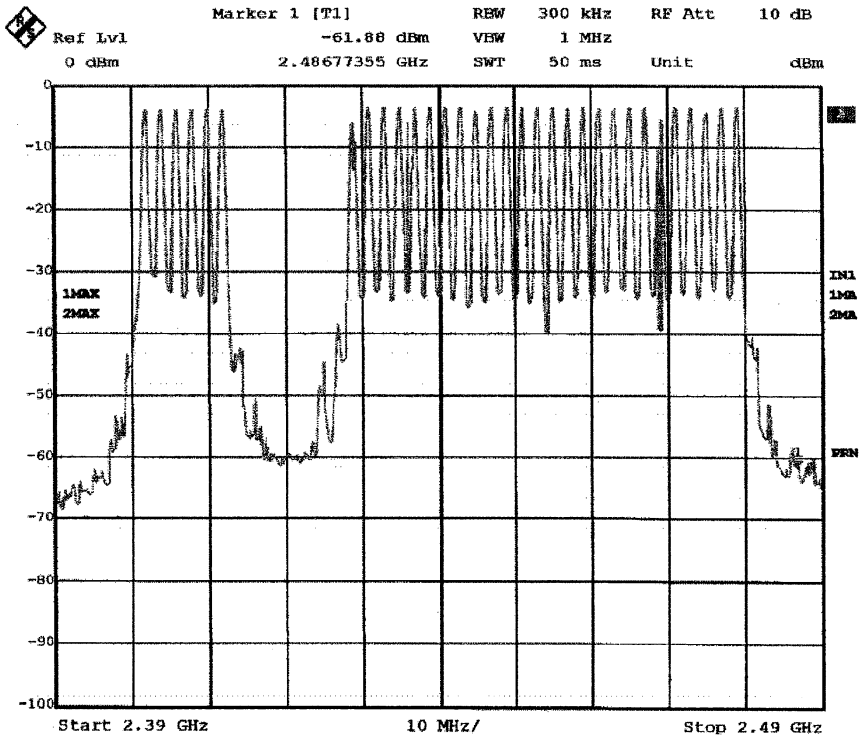
Number of Hopping Frequency :Tx(Hopping on)2430-2460MHz



Number of Hopping Frequency :Tx(Hopping on)2460-2490MHz



Number of Hopping Frequency :Inquiry



DATA OF DWELL TIME

A-PEX INTERNATIONAL CO., LTD.
EMC HEAD OFFICE DIVISON No.3 MEASUREMENT ROOM

COMPANY : SONY Corporation
EQUIPMENT : Digital Video Camera Recorder
MODEL : DCR-IP220
S/N : 96
FCC ID : AK8DCRIP220
POWER : AC120V/60Hz
MODE : Tx (Hopping off) / Inquiry / Loopback

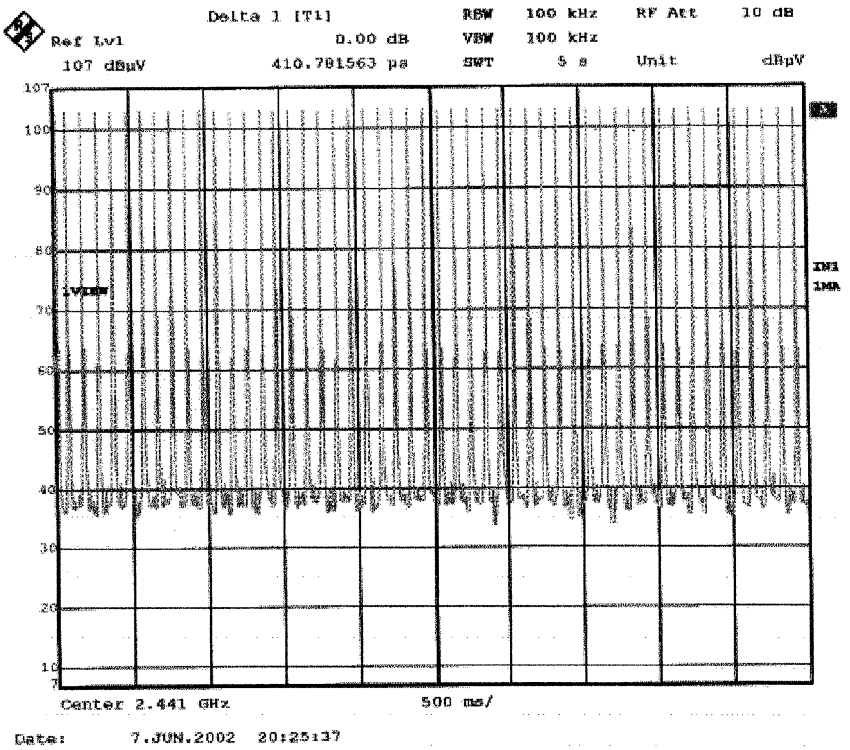
REPORT NO : 22IE0025-HO
REGULATION : Fcc Part15 Subpart C 15.247(a)(1)(ii)
TEST DISTANCE : -
DATE : 2002/6/7,12
Temperature : 24℃, 22℃
Humidity : 62%, 60%

ENGINEER : Hiroka Umeyama

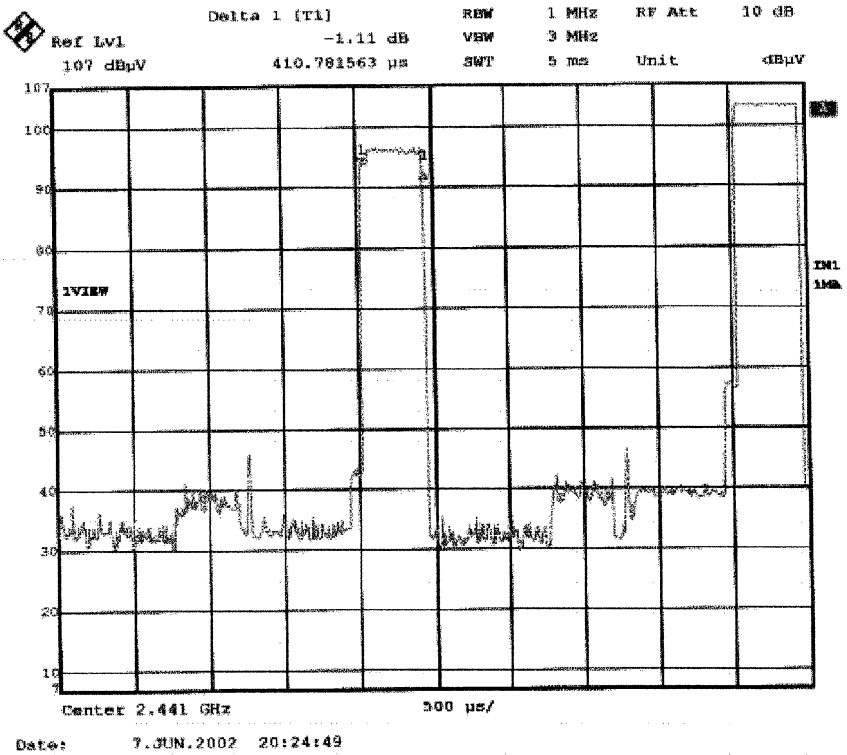
PK DETECT(S/A :span ZERO, RBW 1MHz,VBW 3MHz, sweep time 1ms-10ms)

Mode	Number of transmission in a 30 second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	50 times /5sec. x 6 = 300 times	0.411	124	400
DH3	25 times / 5sec. x 6 = 150 times	1.673	251	400
DH5	17 times / 5 sec. x 6 = 102 times	2.866	293	400
Loopback	18 + 24 + 13 + 10 + 13 + 16 = 94 times	1.523	144	400
Inquiry	10 times / 100msec. x 1.283 = 129 times	0.142	19	400

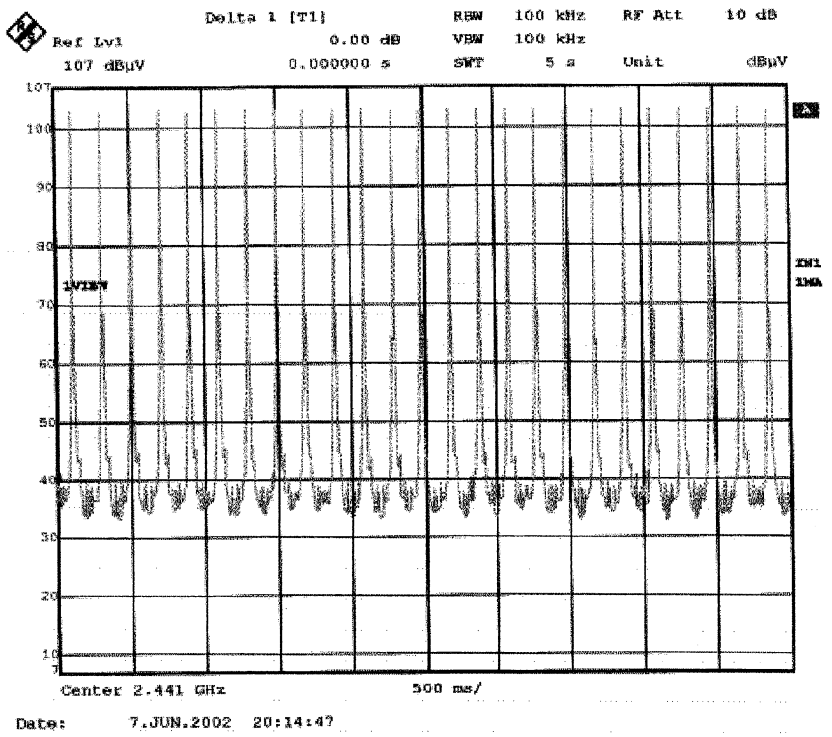
Dwell time :Tx(Hopping on)DH1(1)



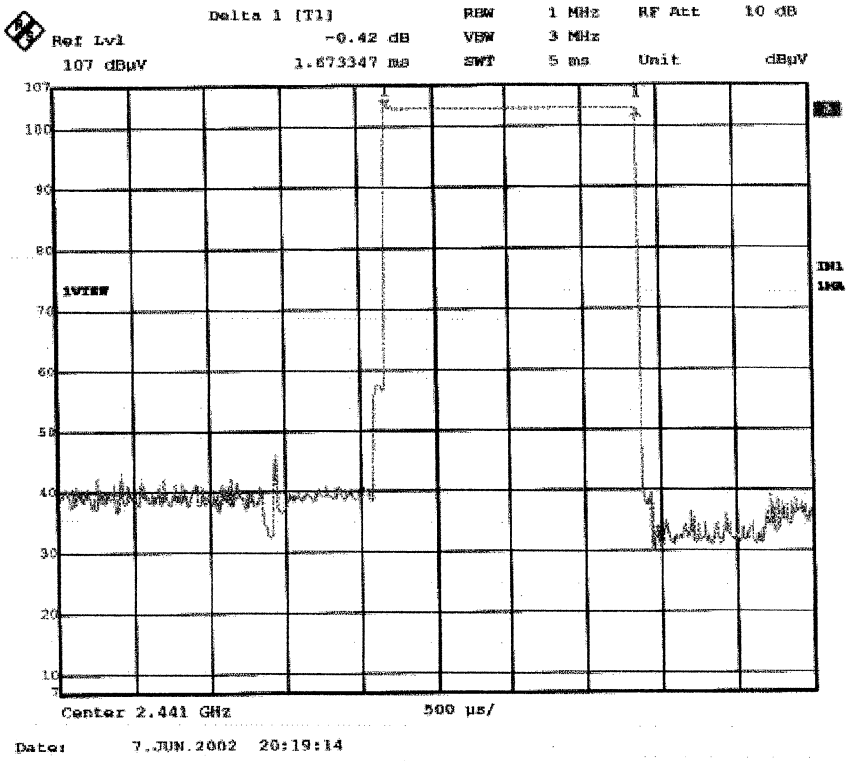
Dwell time :Tx(Hopping on)DH1(2)



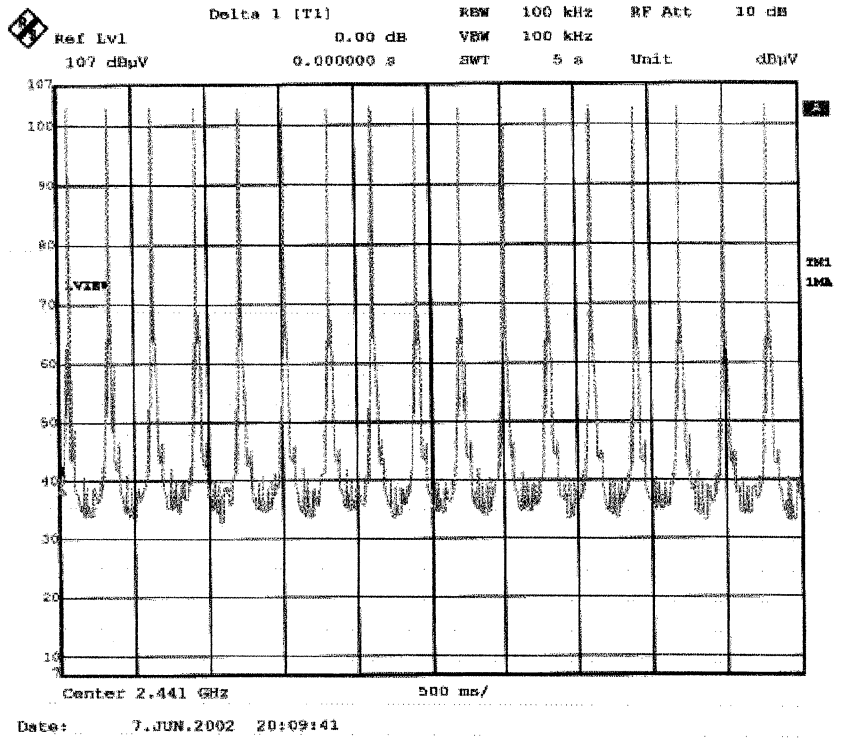
Dwell time :Tx(Hopping on)DH3(1)



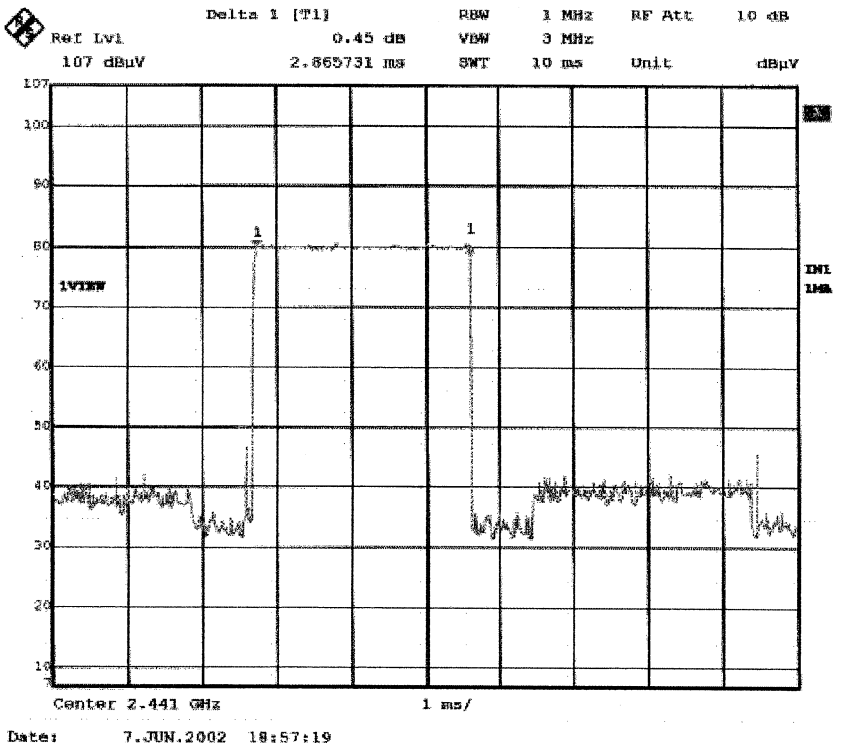
Dwell time :Tx(Hopping on)DH3(2)



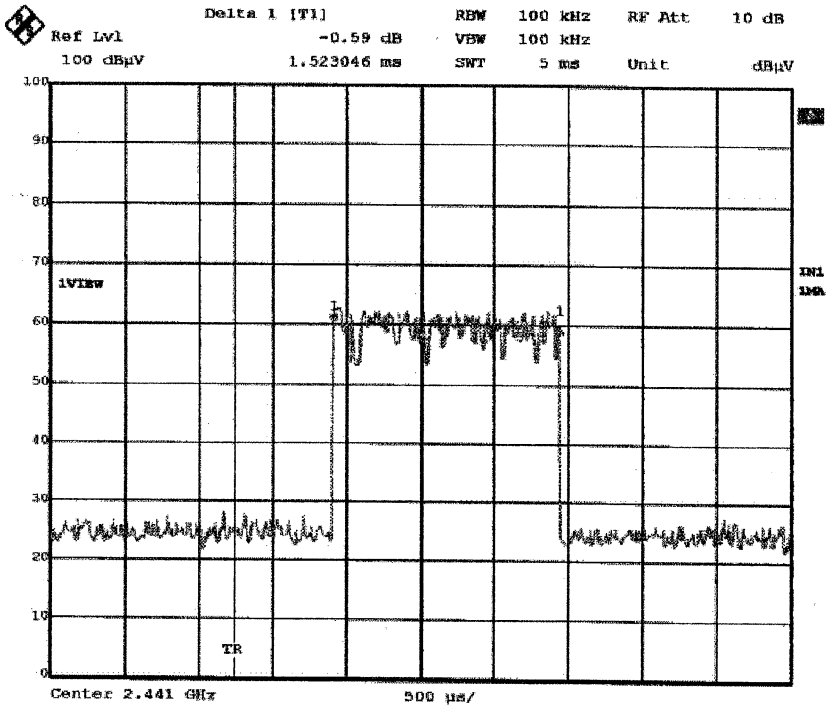
Dwell time :Tx(Hopping on)DH5(1)



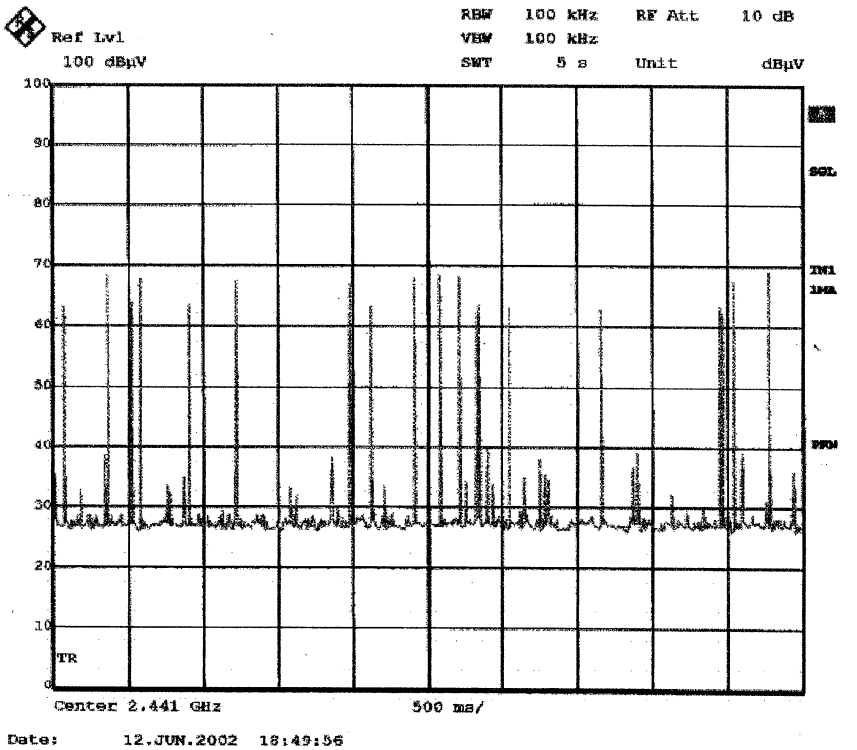
Dwell time :Tx(Hopping on)DH5(2)



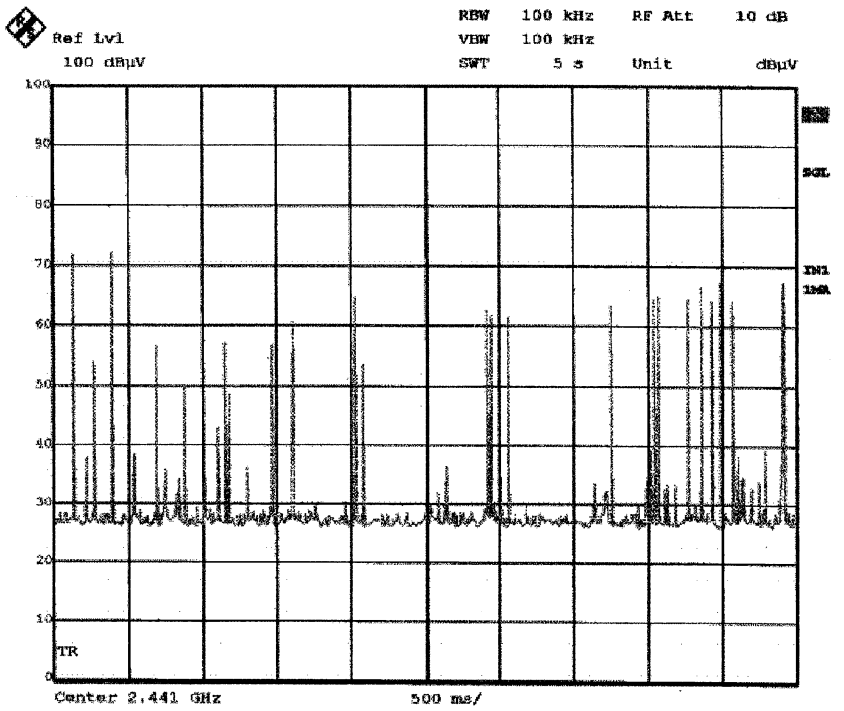
Dwell time :Loopback DH3(1)



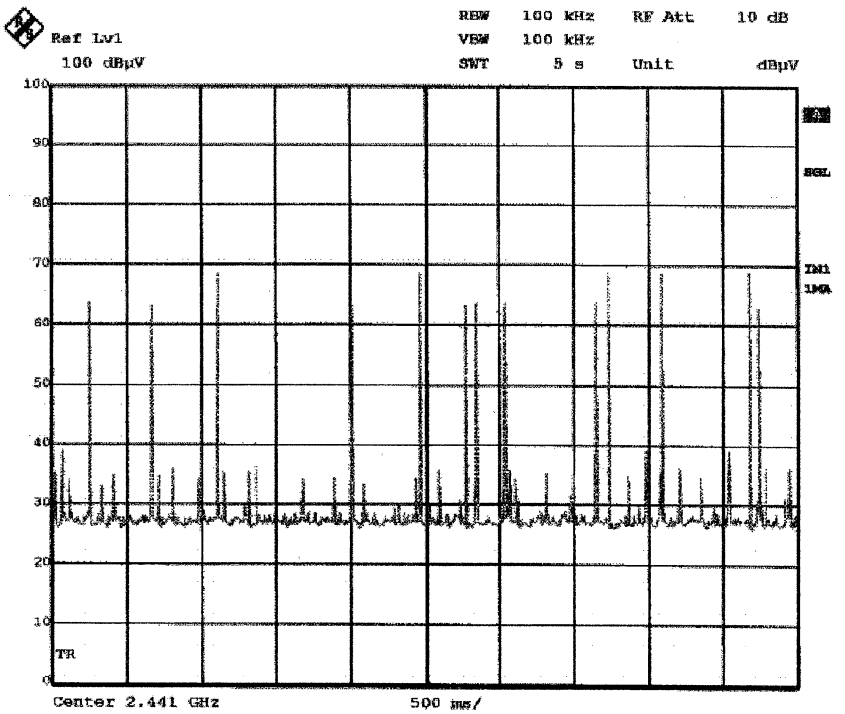
Dwell time :Loopback DH3(2)



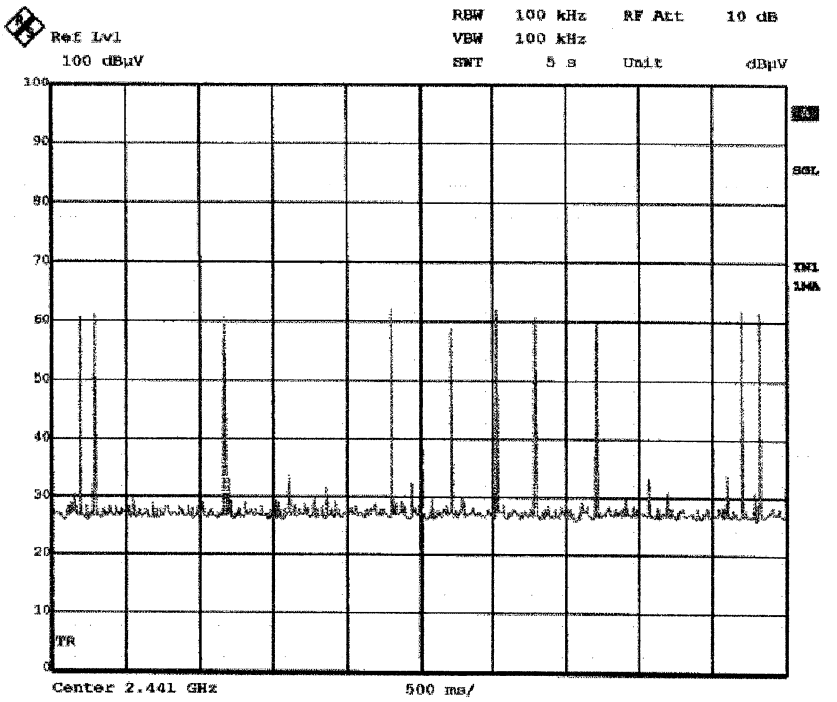
Dwell time :Loopback DH3(3)



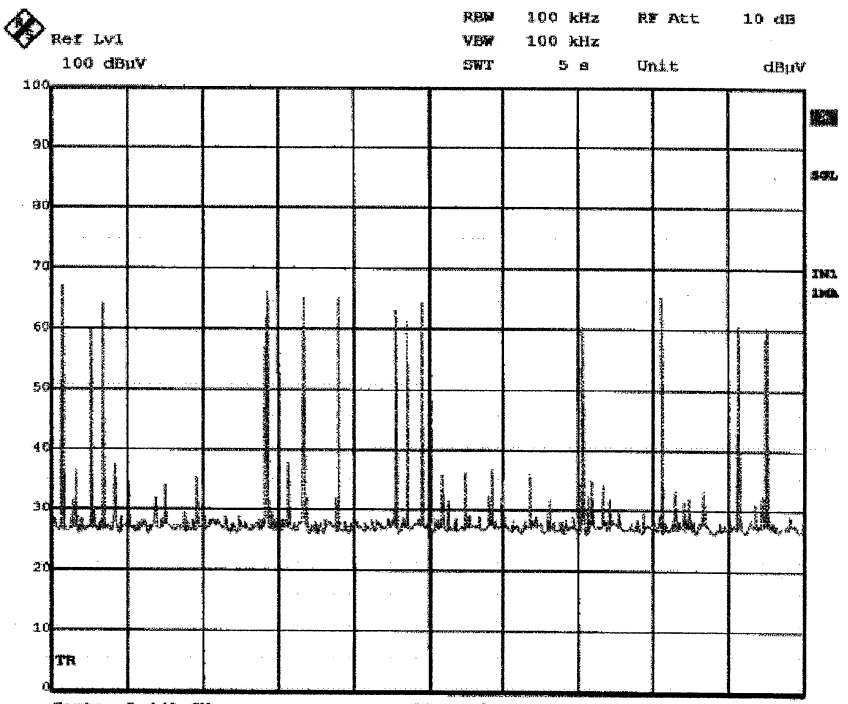
Dwell time :Loopback DH3(4)



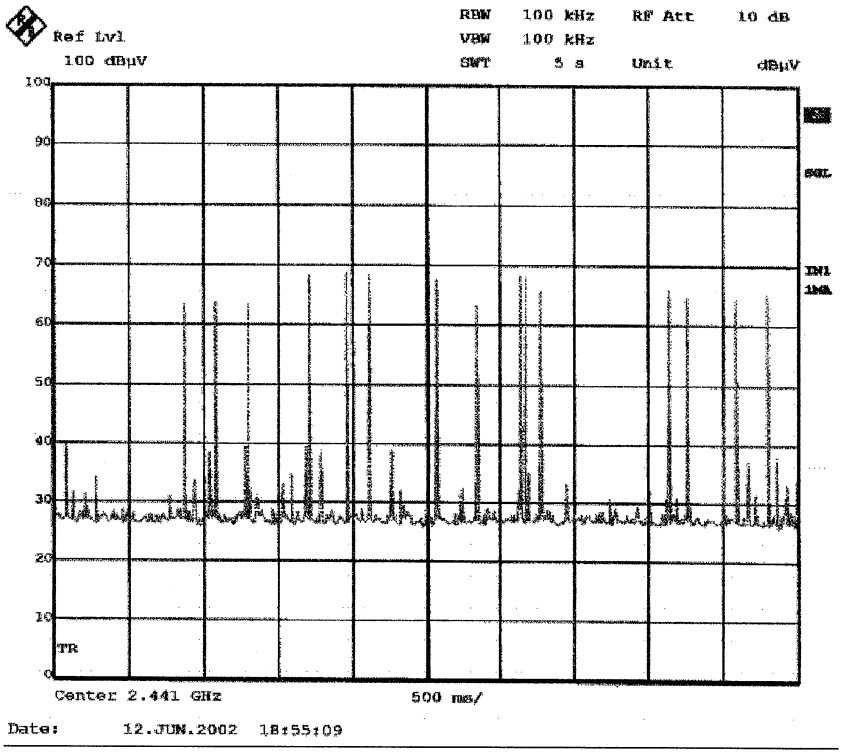
Dwell time :Loopback DH3(5)



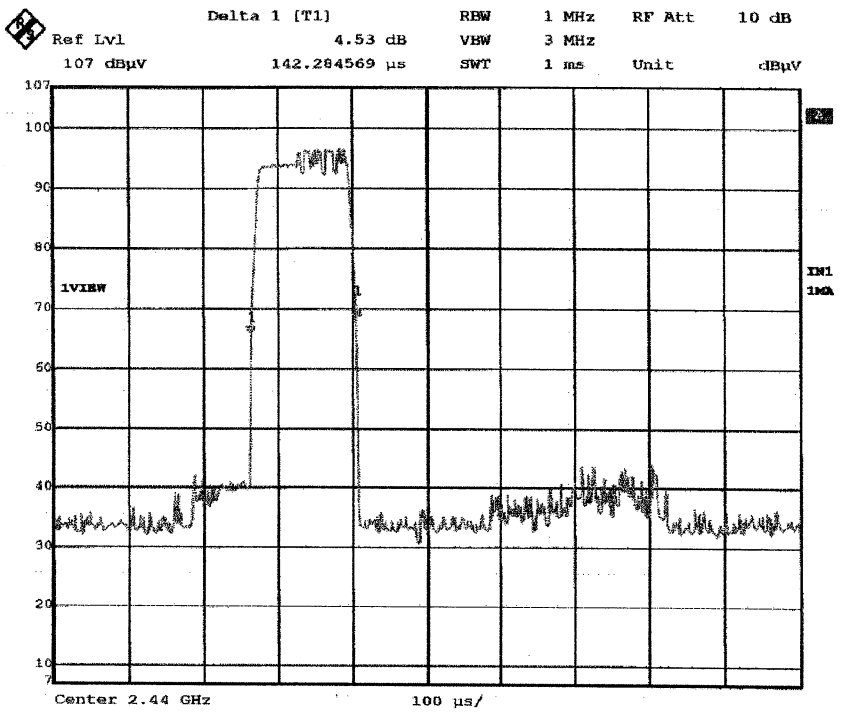
Dwell time :Loopback DH3(6)



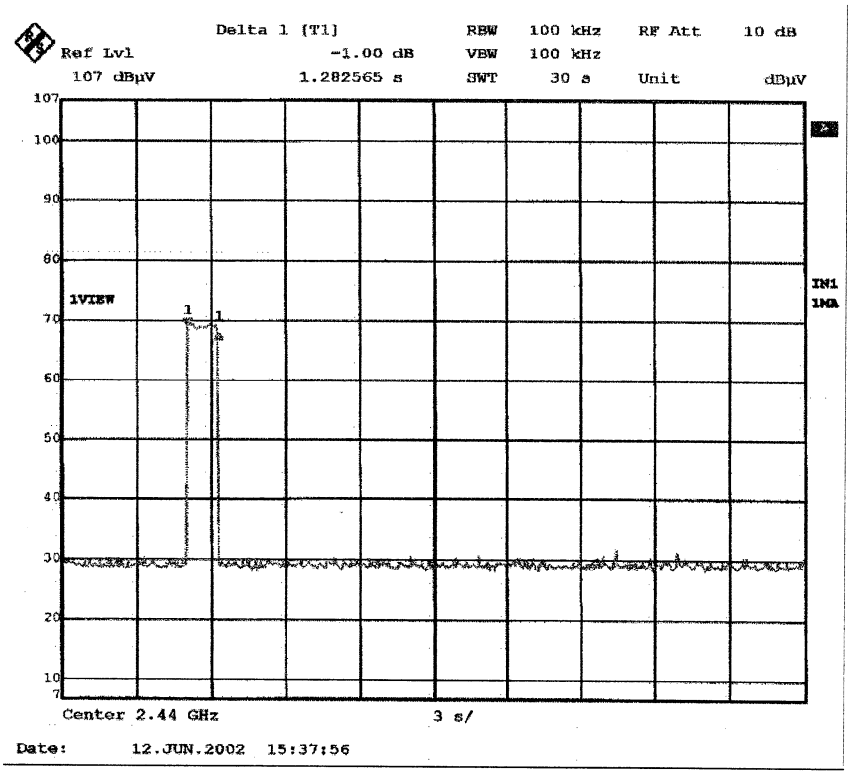
Dwell time :Loopback DH3(7)



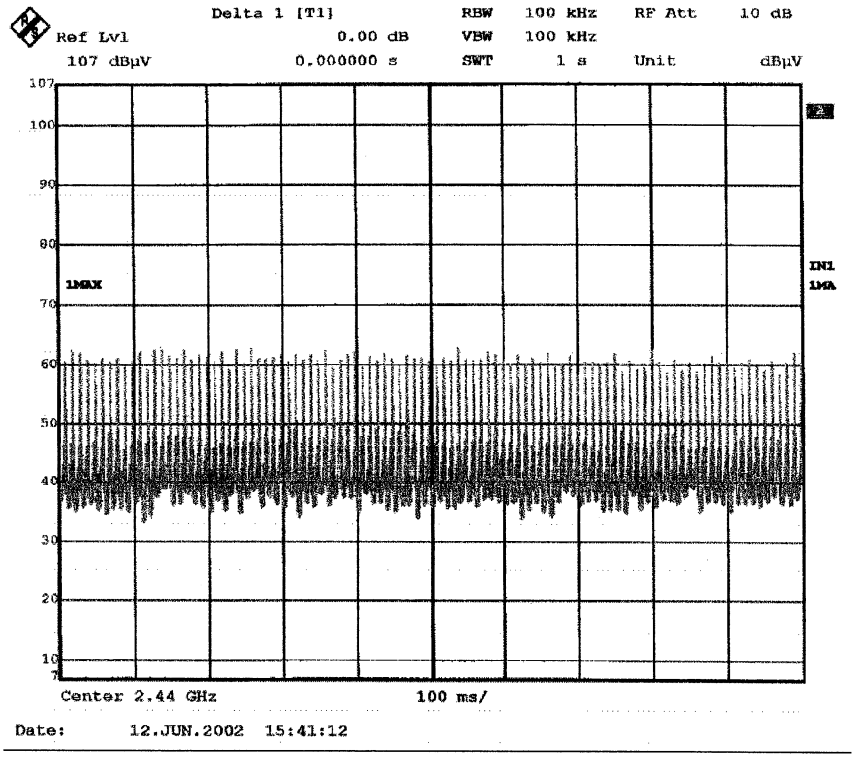
Dwell time :Inquiry (1)



Dwell time :Inquiry (2)



Dwell time :Inquiry (3)



DATA OF PEAK OUTPUT POWER(CONDUCTED)

A-PEX INTERNATIONAL CO., LTD.
EMC HEAD OFFICE DIVISON No.3 MEASUREMENT ROOM

COMPANY : SONY Corporation
EQUIPMENT : Digital Video Camera Recorder
MODEL : DCR-IP220
S/N : 96
FCC ID : AK8DCRIP220
POWER : AC120V/60Hz
MODE : Tx (Hopping on) / Inquiry

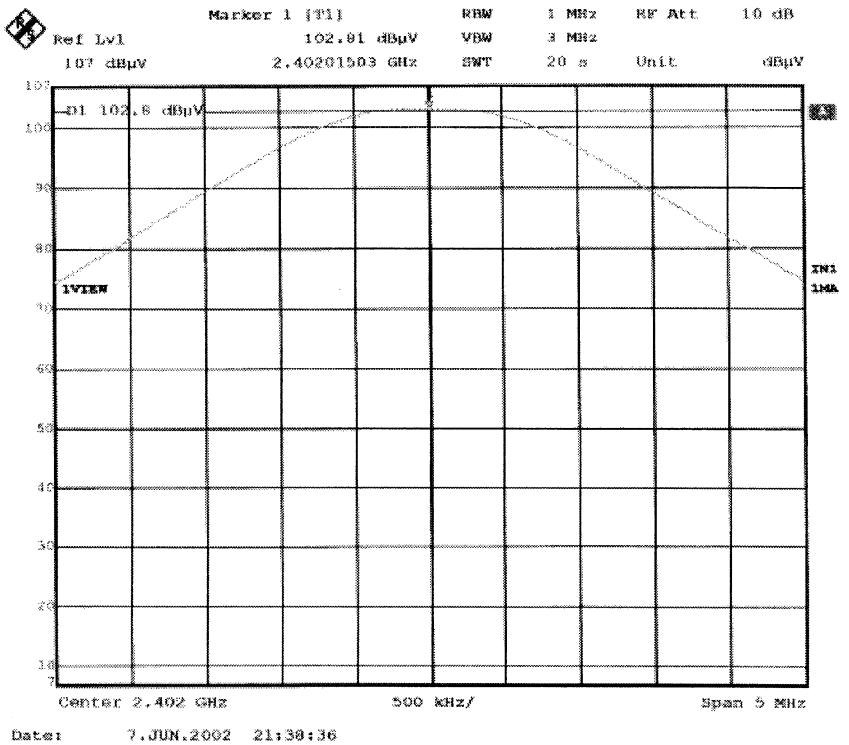
REPORT NO : 22IE0025-HO
REGULATION : Fcc Part15 Subpart C 15.247(b)(1)
TEST DISTANCE : -
DATE : 2002/6/7
Temperature : 24℃
Humidity : 62%

ENGINEER : Hiroka Umeyama

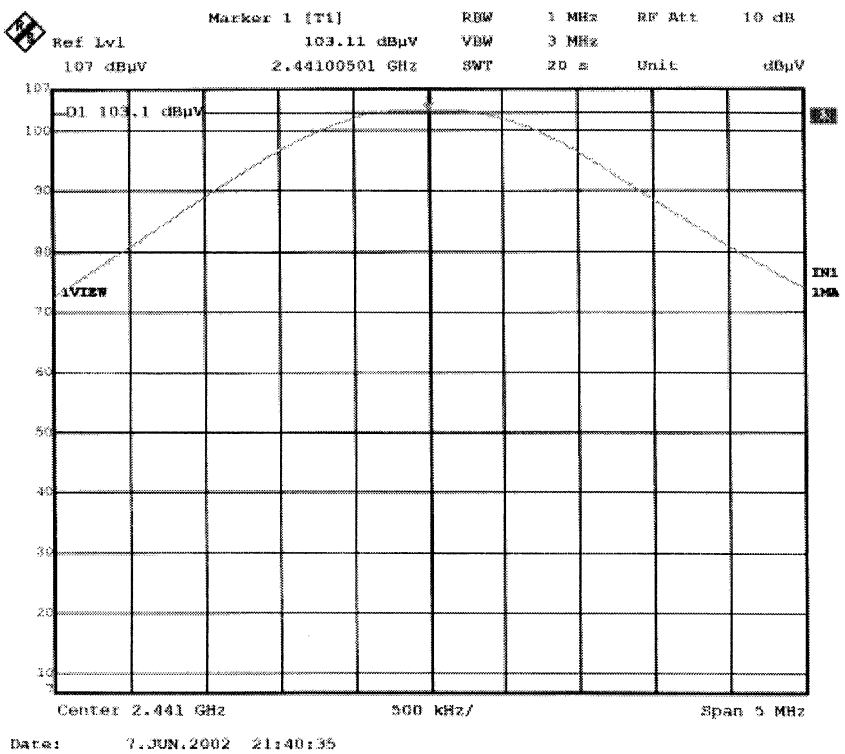
CH	FREQ [MHz]	T/R Reading [dBuV]	Cable Loss [dB]	Result [dBuV]	Result [dBm]	Limit (1W) [dBm]
Low	2402.0	103.0	1.7	104.7	-2.34	30.0
Mid	2441.0	103.1	1.8	104.9	-2.11	30.0
High	2480.0	103.0	1.8	104.8	-2.20	30.0

Sample Calculation :
Result = T/R Reading + Cable Loss

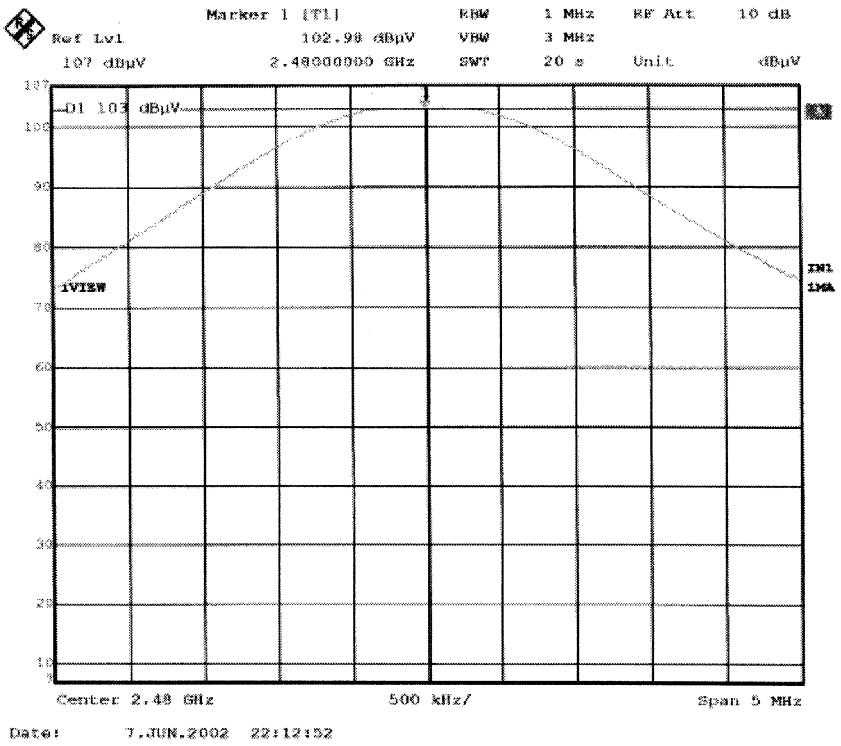
Peak Output Power(Conducted):Tx(2402MHz)



Peak Output Power(Conducted):Tx(2441MHz)



Peak Output Power(Conducted):Tx(2480MHz)



PEAK OUTPUT POWER (RADIATED)

A-PEX INTERNATIONAL CO., LTD.
EMC HEAD OFFICE DIVISON No.1 SEMI ANECHOIC CHAMBER

COMPANY : SONY Corporation
EQUIPMENT : Digital Video Camera Recorder
MODEL : DCR-IP220
S/N : 95
FCC ID : AK8DCRIP220
POWER : AC120V/60Hz
MODE : Tx (2402/2441/2480MHz)

REPORT NO : 22IE0025-HO
REGULATION : Fcc Part15 Subpart C 15.247(c)
TEST DISTANCE : 3m
DATE : 2002/6/10
Temperature : 23℃
Humidity : 61%

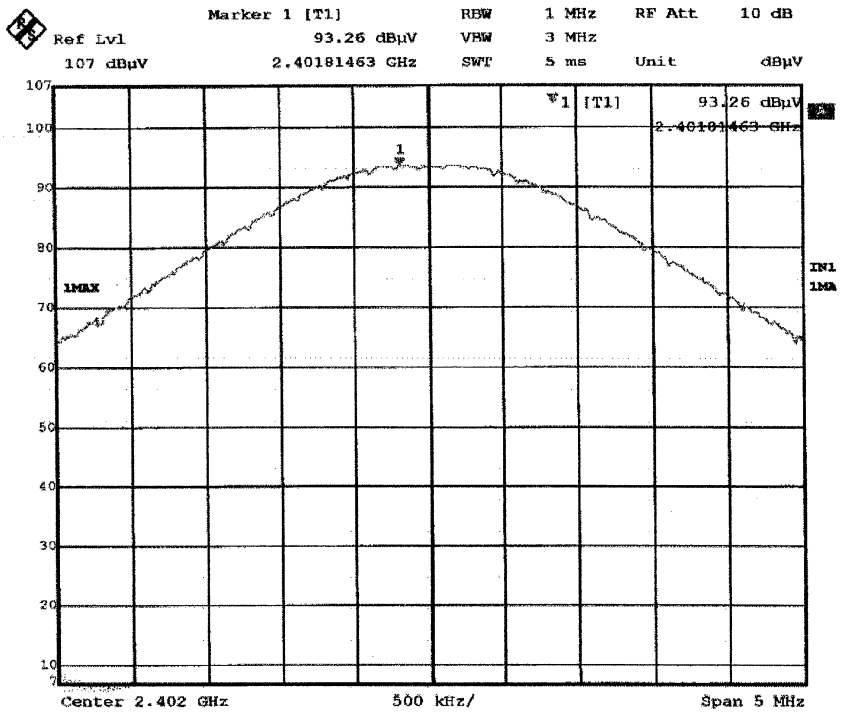
ENGINEER : Hiroka Umeyama

CH	FREQ	T/R READING		All	E1		E		Limit	Result		Result	
		HOR	VER	Factor	HOR	VER	HOR	VER	1W	HOR	VER	HOR	VER
	[MHz]	[dBuV]		[dB]	[dBuV/m]		[V/m]		[mW]	[mW]		[dBm]	
Low	2402.0	93.3	92.3	-4.0	89.3	88.3	0.0292	0.0260	1000.0	0.24	0.19	-6.2	-7.2
Mid	2441.0	90.9	94.5	-3.9	87.0	90.6	0.0224	0.0339	1000.0	0.14	0.32	-8.5	-4.9
High	2480.0	90.7	94.3	-3.6	87.1	90.7	0.0226	0.0343	1000.0	0.15	0.33	-8.4	-4.8

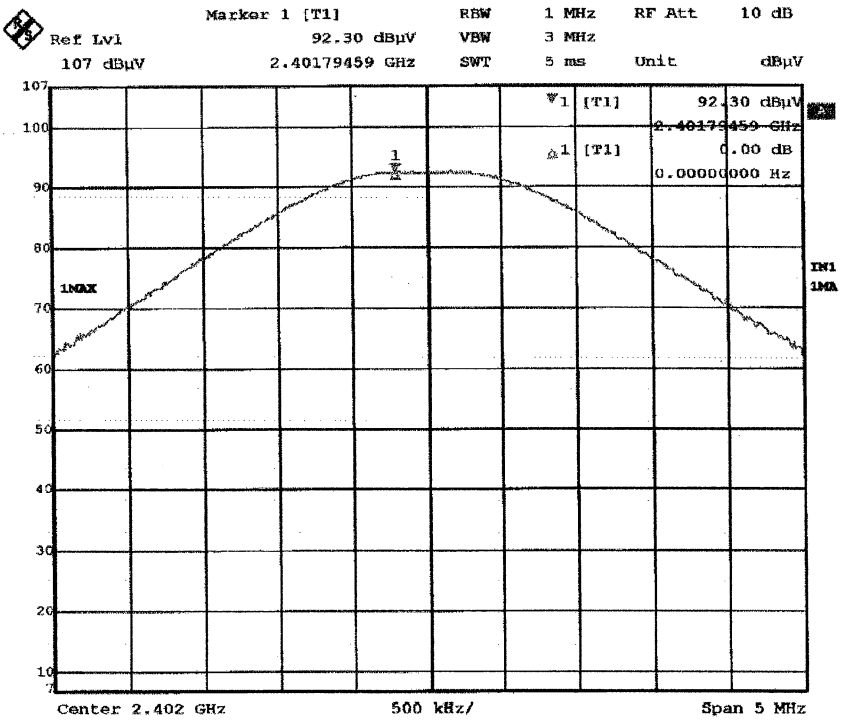
Sample Calculation :
All Factor = ANT Factor + Cable Loss
Low (2402MHz): ANT Factor (27.7dB) - Amp Gain(36.7dB) + Cable Loss(5.0dB)
Mid (2441MHz): ANT Factor (27.8dB) - Amp Gain(36.7dB) + Cable Loss(5.0dB)
High (2480MHz): ANT Factor (27.9dB) - Amp Gain(36.7dB) + Cable Loss(5.2dB)

Result[W] = $(E*d)^2 / (30*G)$
E1[dBuV/m] : T/R Reading + All Factor
E : Converted to V/m
d : Test distance(3.0m)
G : Numeric Antenna Gain (1.06)

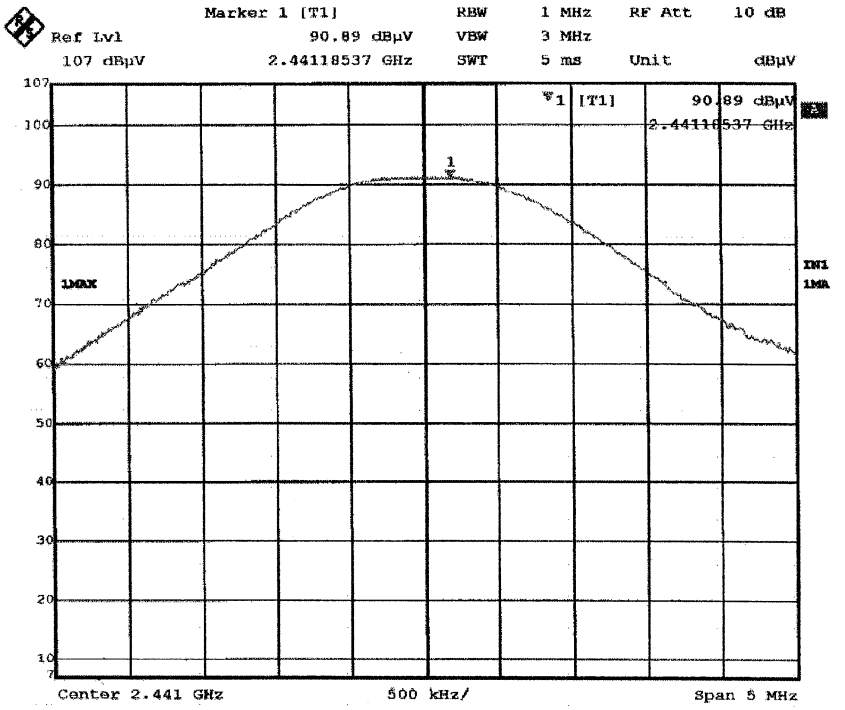
Peak Output Power(Radiated):Tx(2402MHz)HOR



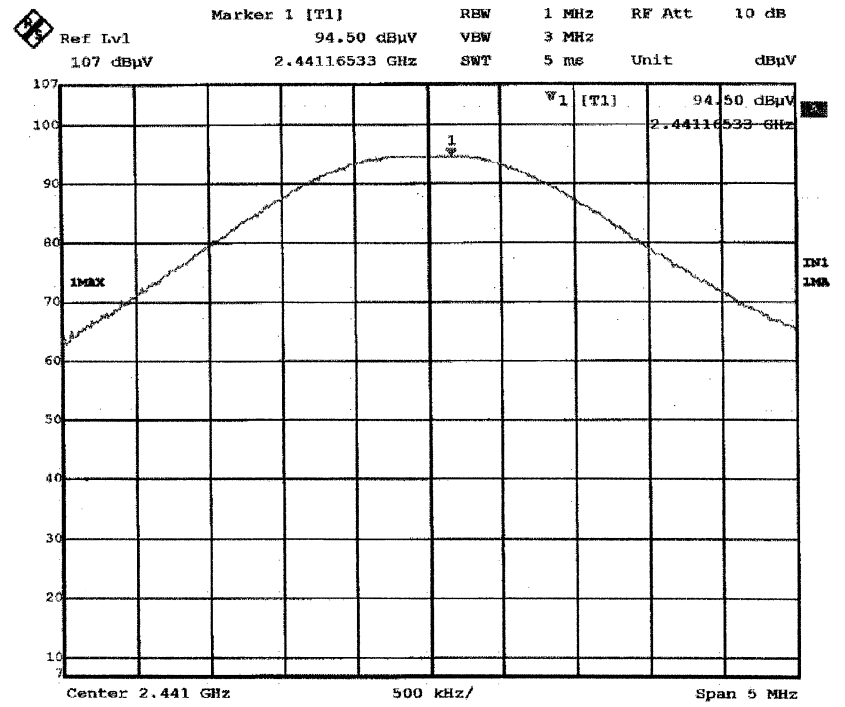
Peak Output Power(Radiated):Tx(2402MHz)VER



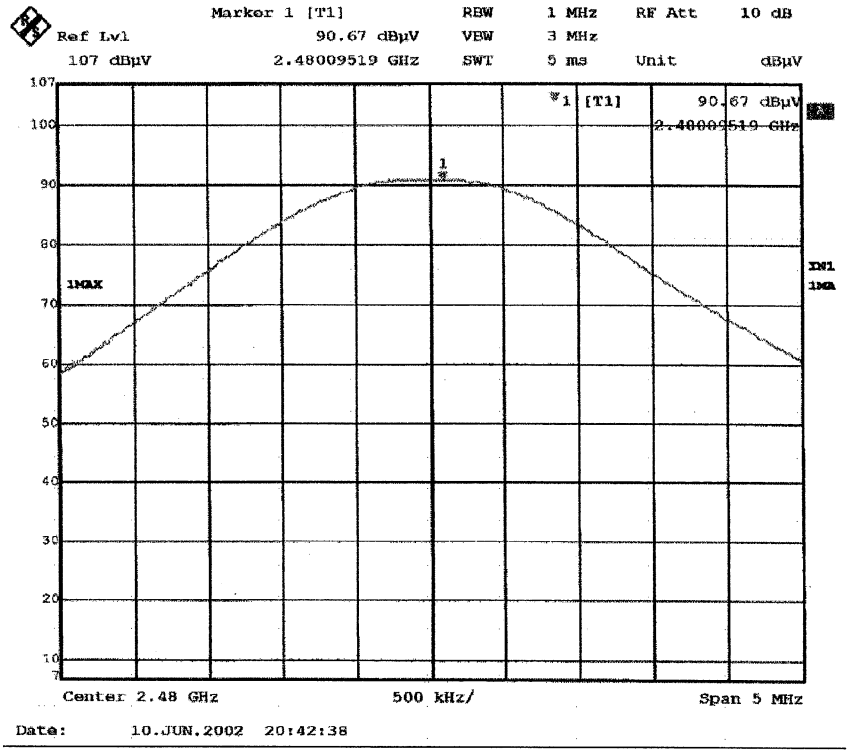
Peak Output Power(Radiated):Tx(2441MHz)HOR



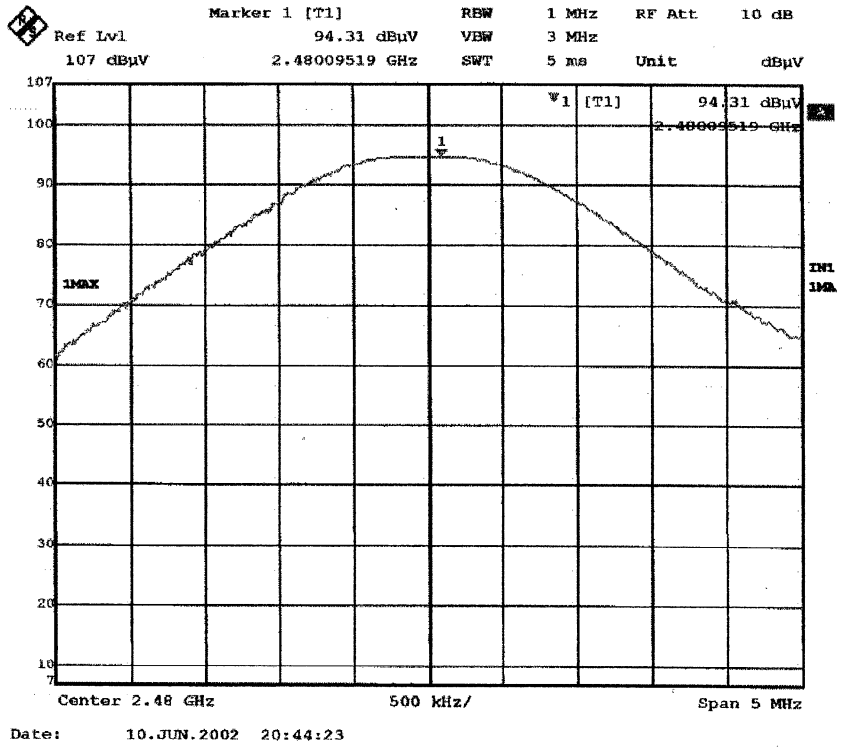
Peak Output Power(Radiated):Tx(2441MHz)VER



Peak Output Power(Radiated):Tx(2480MHz)HOR



Peak Output Power(Radiated):Tx(2480MHz)VER



DATA OF BAND EDGE

A-PEX INTERNATIONAL CO., LTD.
EMC HEAD OFFICE DIVISON No.3 MEASUREMENT ROOM

COMPANY	: SONY Corporation	REPORT NO	: 22IE0025-HO
EQUIPMENT	: Digital Video Camera Recorder	REGULATION	: Fcc Part15 Subpart C 15.247(c)
MODEL	: DCR-IP220	TEST DISTANCE	: -
S/N	: 96	DATE	: 2002/6/7
FCC ID	: AK8DCRIP220	Temperature	: 24℃
POWER	: AC120V/60Hz	Humidity	: 62%
MODE	: Tx (Hopping on) ,Tx (Hopping off 2402/2480MHz)		

ENGINEER : Hiroka Umeyama

PK DETECT(S/A :Span 20/10MHz, RBW 200/100kHz/1MHz ,VBW 200/100kHz/1MHz, sweep time AUTO)

[Hopping on] Conducted

Frequency [MHz]	Reading [dBuV]	Cable Loss [dB]	E [dBuV]	P [mW]	Difference of level [dB]	Field Strength [dBuV/m]	Limit
2390.0	38.7	1.7	40.4	0.000000219	-	28.9	<54[dBuV/m]
2400.0	63.2	1.7	64.9	-	39.8 *	-	>20[dB]
2483.5	45.2	1.8	47.0	0.000001000	-	35.5	<54[dBuV/m]

* Reference : Reading (102.9[dBuV]) + Cable Loss (1.8[dB]) = E (104.7[dBuV]) at 2480MHz.

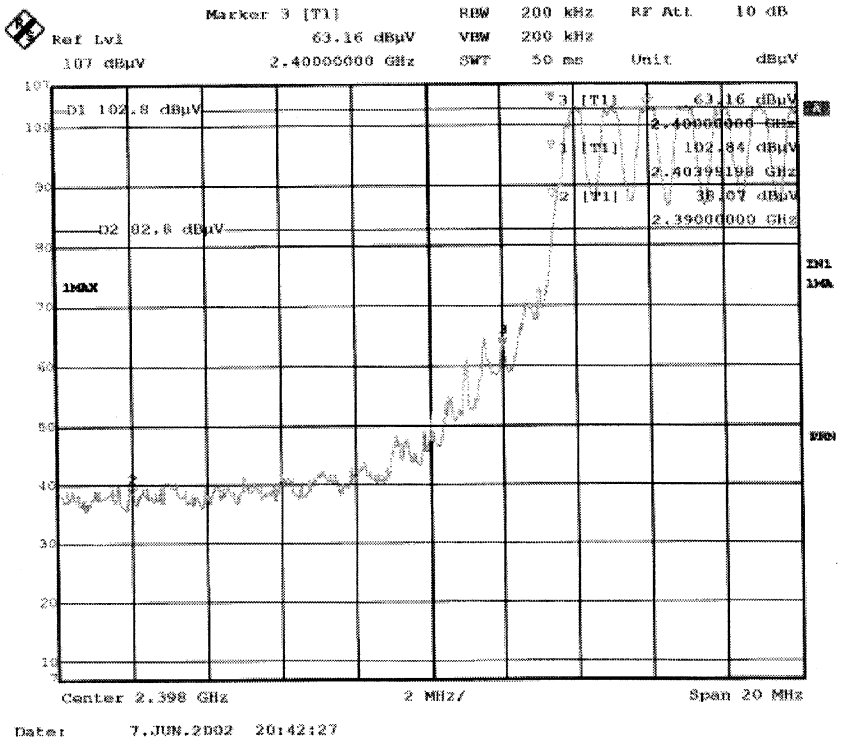
[Hopping off Tx (2402/2480MHz)] Conducted

Frequency [MHz]	Reading [dBuV]	Cable Loss [dB]	E [dBuV]	P [mW]	Difference of level [dB]	Field Strength [dBuV/m]	Limit
2390.0	45.7	1.7	47.4	0.000001096	-	35.9	<54[dBuV/m]
2400.0	70.6	1.7	72.3	-	32.3*	-	>20[dB]
2483.5	47.0	1.8	48.8	0.000001514	-	37.3	<54[dBuV/m]

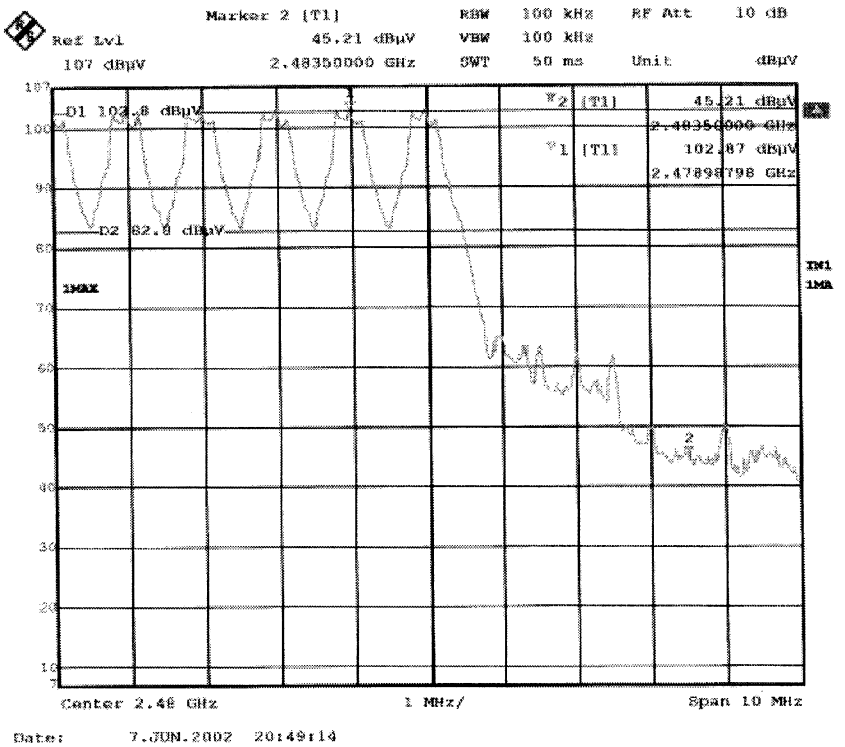
* Reference : Reading (102.8[dBuV]) + Cable Loss (1.8[dB]) = E (104.6[dBuV]) at 2480MHz.

Sample Calculation:
Field Strength = ($\sqrt{}$30*P*0.001*G) / d
E : Reading + Cable Loss
P : Converted to mW
d : Test distance(3.0m)
G : Numeric Antenna Gain (1.06)

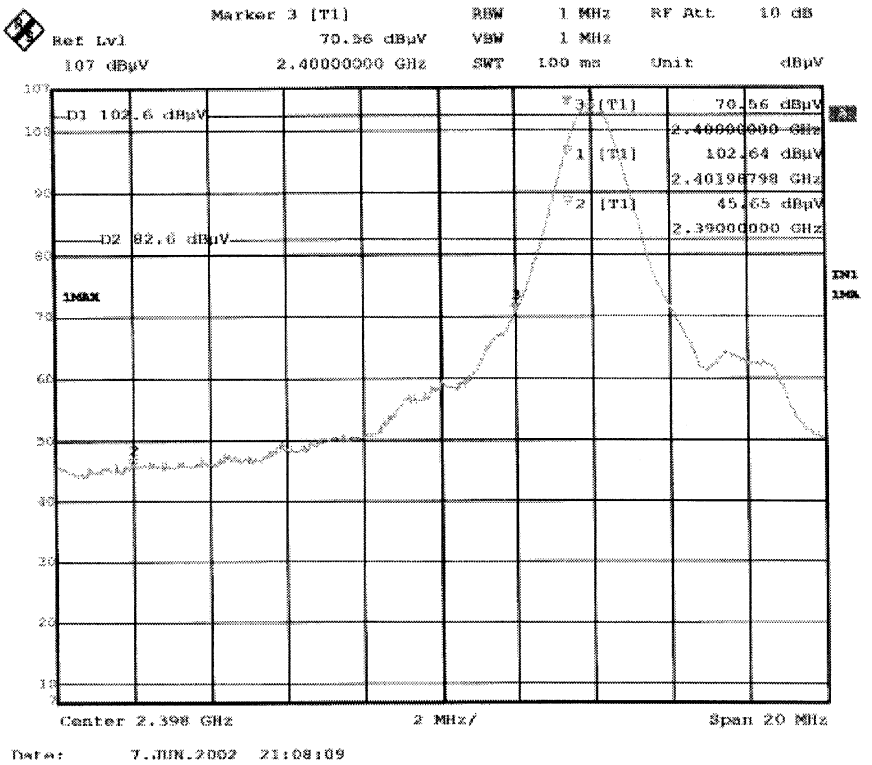
Band Edge :Tx(Hopping on)2402MHz



Band Edge :Tx(Hopping on)2480MHz



Band Edge :Tx(Hopping off)2402MHz



Band Edge :Tx(Hopping off)2480MHz