



EMI TEST REPORT

Test Report No. : 24CE0150-YK

Applicant: Fukuda Denshi Co., Ltd

Type of Equipment: Patient Monitor

Model No.: DS-7100 (type 7141)

FCC ID: DV8DS7100

Test standard: FCC Part 15 Subpart C, Section 15.207
FCC Part 95 Subpart H, Section 95.1115
(Except FCC 95.1115 (e) Frequency Stability)
FCC Part 2 Subpart J, Section 2.1049 and 2.1051

Test Result: Complied

1. This test report shall not be reproduced except in full or partial, without the written approval of UL Apex Co., Ltd.
2. The results in this report apply only to the sample tested.

Date of test:
EMI: November 12 -14, 2003

Tested by:
EMI: T. Imamura
Toyokazu Imamura

Approved by: Osamu Watatani
Osamu Watatani
Site Manager of Yamakita EMC Lab.

UL Apex Co., Ltd.

YAMAKITA EMC LAB.

907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

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MF060b(23.04.02)

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1 GENERAL INFORMATION

Company Name : Fukuda Denshi Co., Ltd.
Brand Name : FUKUDA DENSHI
Address : 3-39-4 Hongo, Bunkyo-ku, Tokyo, 113-8433 JAPAN
Telephone Number : +81 3 5684 1329
Facsimile Number : +81 3 5684 1321
Contact Person : Hideki Miyoshi and Yoshiharu Ezashi
Type of Equipment : Patient Monitor
Model Number : DS-7100 (type 7141)
Serial Number : 0309-6197
Rating : AC100-240V 50/60Hz (RF module:3.3VDC)
Condition of EUT : Production prototype
Country of Manufacture : Japan
Receipt Date of Sample : November 11, 2003
Regulation(s) : FCC Part15 Subpart C ,Section 15.207
FCC Part95 Subpart H ,Section 95.1115
(Except FCC 95.1115(e) Frequency stability)
FCC Part2 Subpart J, Section 2.1049 and 2.1051
Test Site : UL Apex Yamakita EMC Lab. No.1 Anechoic Chamber and No.4 Shielded Room

1.1 Tested Methodology

The measurement was performed according to the procedures in ANSI C63.4 (2001) and ANSI/TIA/EIA-603-A-2001.

1.2 Test Facility

This site has been fully described in a report submitted to FCC office, and accepted on November 8, 2002.

(No.1 Anechoic Chamber Registration No.: 95967)

NVLAP Lab. code : 200441-0

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2 PRODUCT DESCRIPTION

Fukuda Denshi Co., Ltd , Model: DS-7100 (type 7141) (referred to as the EUT in this report) is an Patient Monitor.
The clock frequencies used in EUT : 32MHz (CPU BUS), 40MHz (LCD),128MHz (CPU)

Frequency Characteristics	: 608.0125MHz through 613.9875MHz
Reference for Carrier Frequency	: 608-614MHz
Reference For Carrier Frequency Fixed Crystal Oscillator TCXO	: 14.4MHz
No. of Channels and channel Spacing	: 445 channels/ 12.5kHz channel spacing
Modulation	: Digital Frequency Shift Keying
Antenna Type	: $\lambda/4$ Monopole Antenna
Antenna connector type	: SML011
Antenna Gain	: 2.14dBi (max)
Mode of Operation	: Simplex
Temperature Range	: 10 to 40 deg. C.
RF Module Power supply	: DC 3.3V DC
ITU Emission Code(s)	: 8K50F1DAN

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3 SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured in typical fashion (as a customer would normally use it) for testing.

Test mode: Transmitting mode

Low channel	: 608.0125MHz
Middle channel	: 611.0000MHz
High channel	: 613.9875MHz

The EUT transmits under constant modulation.

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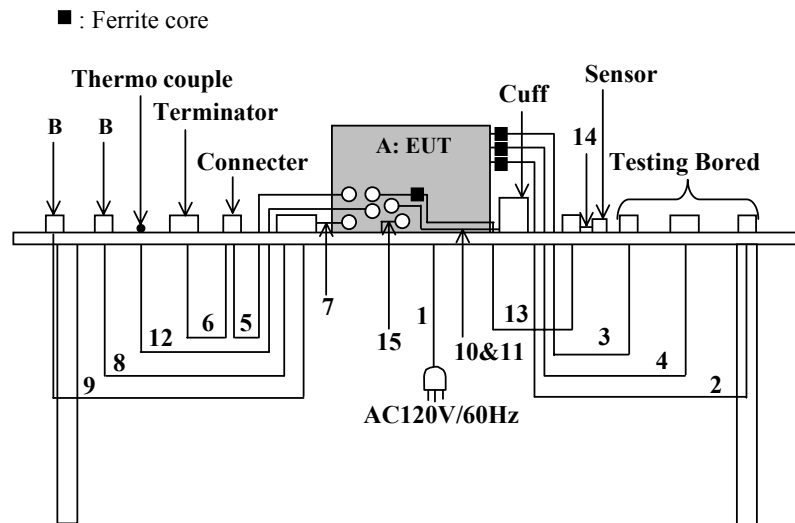
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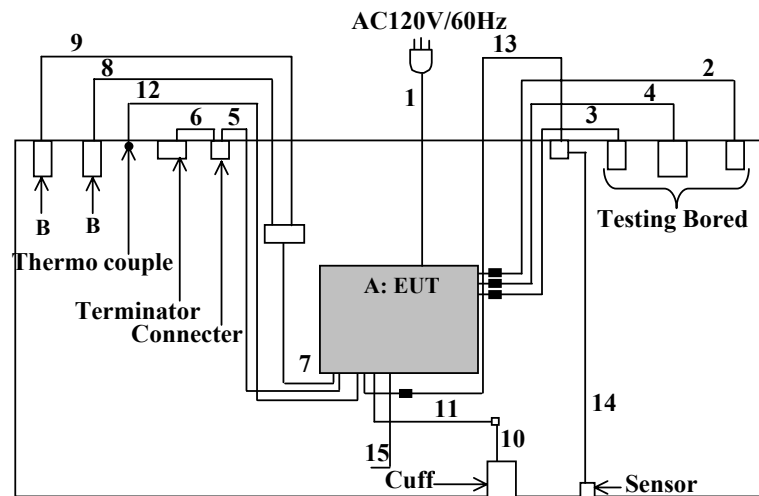
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3.2 Configuration of Tested System

Front View



Top View



*Cabling was taken into consideration and test data was taken under worse case conditions.

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Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remark	FCC ID
A	Patient monitor	DS-7100 (type 7141)	0309-6197	FUKUDA DENSHI	EUT.	DV8DS7100
B	Pressure simulator	041550-100	-	COBE	-	-

List of cables used

No.	Name	Model number	Length (m)	Shield	Backshell material
1	AC power cable	CS-34	3	Unshielded	Polyvinyl chloride
2	LAN cable	CJ-530C	10	Unshielded	Polyvinyl chloride
3	RS232C cable	CJ-325	4	Shielded	Polyvinyl chloride
4	Status cable	CJ-331	2	Shielded	Polyvinyl chloride
5	ECG relay cable	CI-700D-5	3	Shielded	Polyvinyl chloride
6	ECG lead cable	3380.0612.17	1.5	Shielded	Polyvinyl chloride
7	IBP relay cable	CJ-7546	0.4	Shielded	Polyvinyl chloride
8	IBP cable	COBE CDX III	3	Shielded	Polyvinyl chloride
9	IBP cable	COBE CDX III	3	Shielded	Polyvinyl chloride
10	Adult cuff	CUF-7102A	0.5	Air tube	Nylon
11	Air hose	OA-7109A	1.5	Air tube	Nylon
12	Temperature sensor cable	401J	3	Shielded	Polyvinyl chloride
13	SpO2 sensor cable	DOC-10	3.5	Shielded	Polyvinyl chloride
14	SpO2 sensor	DS-100A	0.5	Shielded	Polyvinyl chloride
15	EtCO2 cable	XS-04620	3	Air tube	Nylon

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4 MEASUREMENT UNCERTAINTY

Conducted emission test

The measurement uncertainty (with a 95% confidence level) for this test was $\pm 1.3\text{dB}$.

The data listed in this test report has enough margin, more than site margin.

Radiated emission test

The measurement uncertainty (with 95% confidence level) for this test using Biconical antenna is $\pm 4.8\text{dB}$.

The measurement uncertainty (with 95% confidence level) for this test using Logperiodic antenna is $\pm 5.2\text{dB}$.

The measurement uncertainty (with 95% confidence level) for this test using Horn antenna is $\pm 6.6\text{dB}$.

The result is within Yamakita EMC lab's uncertainty.

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5 SUMMARY OF TESTS

5.1 §15.207 Conducted Emissions (Limits by CISPR Pub.22 Class B)

Test Procedure

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane.

The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripheral was aligned and flushed with rear of tabletop.

All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from LISN, and excess AC cable was bundled in center. I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at 40cm height to the ground plane.

Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT on a shielded room.

The EUT was connected to a Line Impedance Stabilization Network (LISN).

An overview sweep with peak detection has been performed.

The measurements have been performed with a CISPR quasi-peak detector (IF BW 9kHz).

(Measurement range: 150kHz to 30MHz)

Test data : APPENDIX Page 16 to 24
Photographs of test setup : Page 14
Test result : Pass
Test instruments : KCC-A1/A3, KLS-01, KSA-04, KTR-01

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5.2 § 95.1115 (a) Filed Strength (Radiated)

Test Procedure

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

The Radiated Electric Field Strength intensity has been measured on an anechoic chamber with a ground plane and at a distance of 3m.

The measuring antenna height was varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

EUT emission levels were compared when the EUT antenna position was vertical polarization and horizontal polarization.

Maximum Filed Strength (Radiated)

The Radiated Electric Field Strength intensity has been measured on an anechoic chamber with a ground plane and at a distance of 3m.

Measurement range: CISPR QP Detector, IF BW 120kHz

Test data : APPENDIX Page25 to 27

Photographs of test setup: Page 15

Test result : Pass

Test instruments : KCC-A1/A3, KLA-03, KAF-05, KAT6-02, KTR-01, KAEC-01

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5.3 § 95.1115 (b) Out of Band Emissions (Radiated)

Test Procedure

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

The Radiated Electric Field Strength intensity has been measured on an anechoic chamber with a ground plane and at a distance of 3m.

The measuring antenna height was varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

EUT emission levels were compared when the EUT antenna position was vertical polarization and horizontal polarization.

Radiated Spurious emissions

The result was also satisfied the general limits specified in Sec.95.1115 (b).

To determine the level of band-edge spurious, we use the following procedure:

Set the resolution bandwidth to 1kHz in the peak detector mode. Measure the maximum level of the in-band channel closest to the band edge and the maximum level of the out-of-band emissions close to the same band edge. Determine the ratio of the in-band signal to the out-of-band emissions. Then, measure the level of the in-band channel in CISPR quasi-peak mode with 120kHz bandwidth. Using the ratio obtained, we calculate the equivalent level of the out-of-band emissions to determine compliance with the limits.

The emission tests, except for the band edge, were performed with the quasi-peak mode of the test receiver.

(Bandwidth: 120kHz)

Measurement range: 30MHz to 1000MHz CISPR QP Detector, IF BW 120kHz
: 1GHz to 7GHz AV Detector

Test data : APPENDIX Page 28 to 32 (30 –1000MHz)
: APPENDIX Page 33 to 39 (1 – 7GHz)
: APPENDIX Page 40 to 43 (Band Edges: 608MHz/614MHz, Restricted band Charts)

Photographs of test setup : Page 15

Test result : Pass

Test instruments : KCC-A1/A3, KCC-D11/D12, KBA-03, KLA-03, KHA-01, KSA-04,
KAF-05, KAF-02, KAT10-S1, KAT6-02, KFL-01, KTR-01, KAEC-01

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5.4 § 2.1049 Bandwidth (Antenna Port Conducted)

Test Procedure

The minimum 26dB bandwidth was measured with a spectrum analyzer connected to the antenna port.
The measurement was performed according to the procedures in ANSI C63.4-13.1.7 (2001).

Occupied Bandwidth (99%)

1. 608.0125MHz (Low): 7.7154kHz
2. 611.00MHz (Mid) : 7.6754kHz
3. 613.9875MHz (High): 7.6754kHz

20dB Bandwidth

1. 608.0125MHz (Low): 9.7996kHz
2. 611.00MHz (Mid) : 9.7395kHz
3. 613.9875MHz (High): 9.7094kHz

Test data : APPENDIX Page 44 to 45

Test instruments : KTR-01

5.5 § 2.1051 Out of Band Emissions (Antenna Port Conducted)

Test Procedure

The Out of Band Emissions (Conducted) was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX Page 46 to 51

Test result : Pass

Test instruments : KTR-01

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APPENDIX 1: Photographs of test setup

- 1. Page 14 : Conducted emission
- 2. Page 15 : Radiated emission

APPENDIX 2: Test Data

- 1. Page 16 - 24: Conducted emission
- 2. Page 25 - 27: Filed Strength (Radiated)
- 3. Page 28 - 39: Out of Band Emissions (Radiated)
- 4. Page 40 - 43: Band edges (Radiated)
- 5. Page 44 : Occupied Bandwidth (Antenna Port Conducted)
- 6. Page 45 : 20dB Bandwidth (Antenna Port Conducted)
- 7. Page 46 - 51: Out Band Emissions (Antenna Port Conducted)

APPENDIX 3: Test instruments

- Page 52 : Test instruments

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Conducted emission



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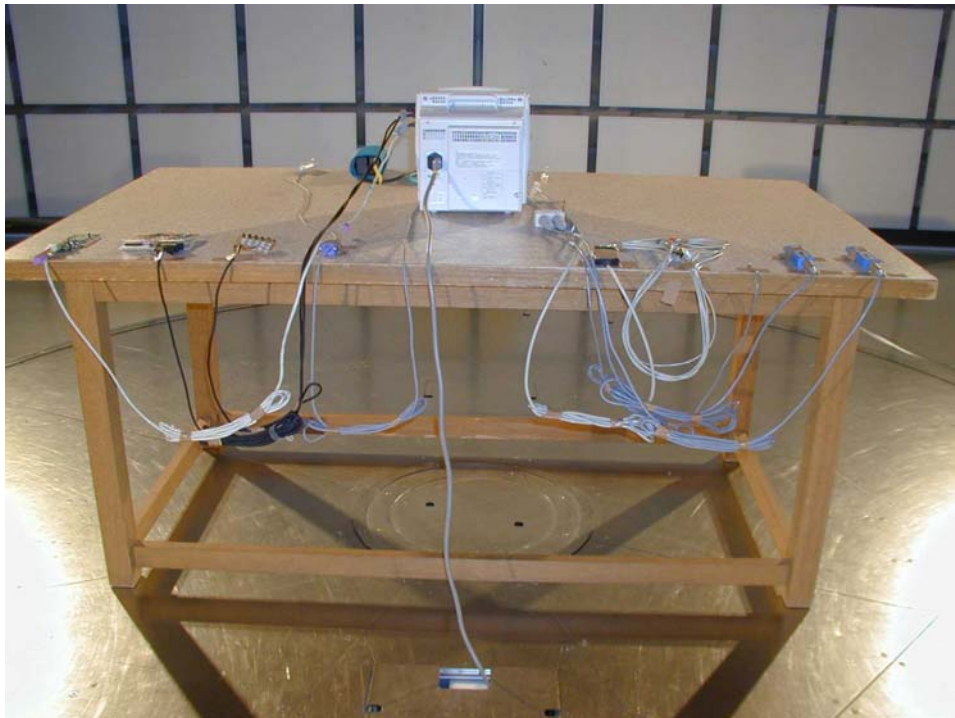
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Radiated emission



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DATA OF CONDUCTION TEST

UL Apex Co.,Ltd.
Yamakita No.2 Shielded Room
Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (608.0125MHz)
Remarks : -
Date : 11/13/2003
Phase : Single Phase
Temperature : 24 °C
Humidity : 50 %
Regulation : CISPR Pub. 22 CLASS B

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	READING (N)		READING (L1)		LISN FACTOR [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
		QP	AV	QP	AV				QP	AV	QP	AV	QP	AV
		[dBuV]		[dBuV]					[dBuV]		[dBuV]		[dB]	
1.	1.2359	33.5	32.7	34.7	31.7	0.1	0.1	0.0	34.9	32.9	56.0	46.0	21.1	13.1
2.	7.5724	41.9	39.4	45.8	40.8	0.3	0.3	0.0	46.4	41.4	60.0	50.0	13.6	8.6
3.	8.5010	48.0	45.8	48.2	45.9	0.3	0.3	0.0	48.8	46.5	60.0	50.0	11.2	3.5
4.	8.9658	50.3	47.1	49.2	46.7	0.4	0.3	0.0	51.0	47.8	60.0	50.0	9.0	2.2
5.	9.4286	50.3	47.3	49.6	47.0	0.4	0.3	0.0	51.0	48.0	60.0	50.0	9.0	2.0
6.	9.5836	49.2	46.5	48.9	46.4	0.4	0.3	0.0	49.9	47.2	60.0	50.0	10.1	2.8
7.	9.8073	55.5	42.0	55.7	41.6	0.4	0.3	0.0	56.4	42.7	60.0	50.0	3.6	7.3
8.	10.0466	48.9	46.3	48.7	46.1	0.4	0.3	0.0	49.6	47.0	60.0	50.0	10.4	3.0
9.	21.3965	46.1	34.7	46.3	34.1	1.0	0.4	0.0	47.7	36.1	60.0	50.0	12.3	13.9

CALCULATION: READING[dBμV] + LISN FACTOR[dB] + CABLE LOSS[dB] + ATTEN[dB].

■ LISN : KLS-01 (NSLK8126) ■ COAXIAL CABLE : KCC-A1/A3
■ EMI RECEIVER : KTR-01 (ES140)

DATA OF CONDUCTION TEST

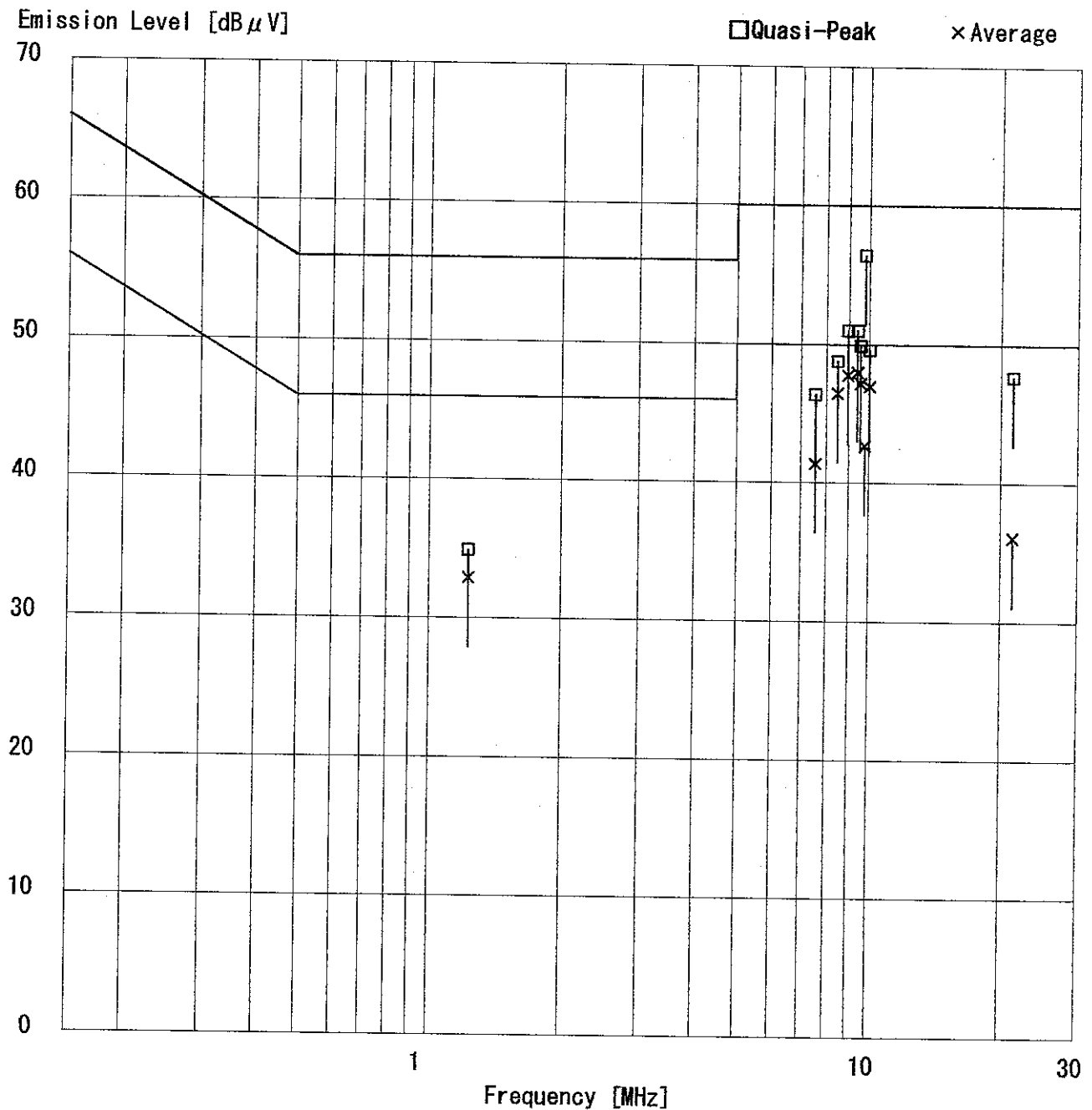
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Yamakita No.2 Shielded Room

Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (608.0125MHz)
Remarks : -
Date : 11/13/2003
Phase : Single Phase
Temperature : 24 °C
Humidity : 50 %
Regulation : CISPR Pub. 22 CLASS B

Engineer : Toyokazu Imamura



DATA OF CONDUCTION TEST CHART

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Yamakita No.2 Shielded Room

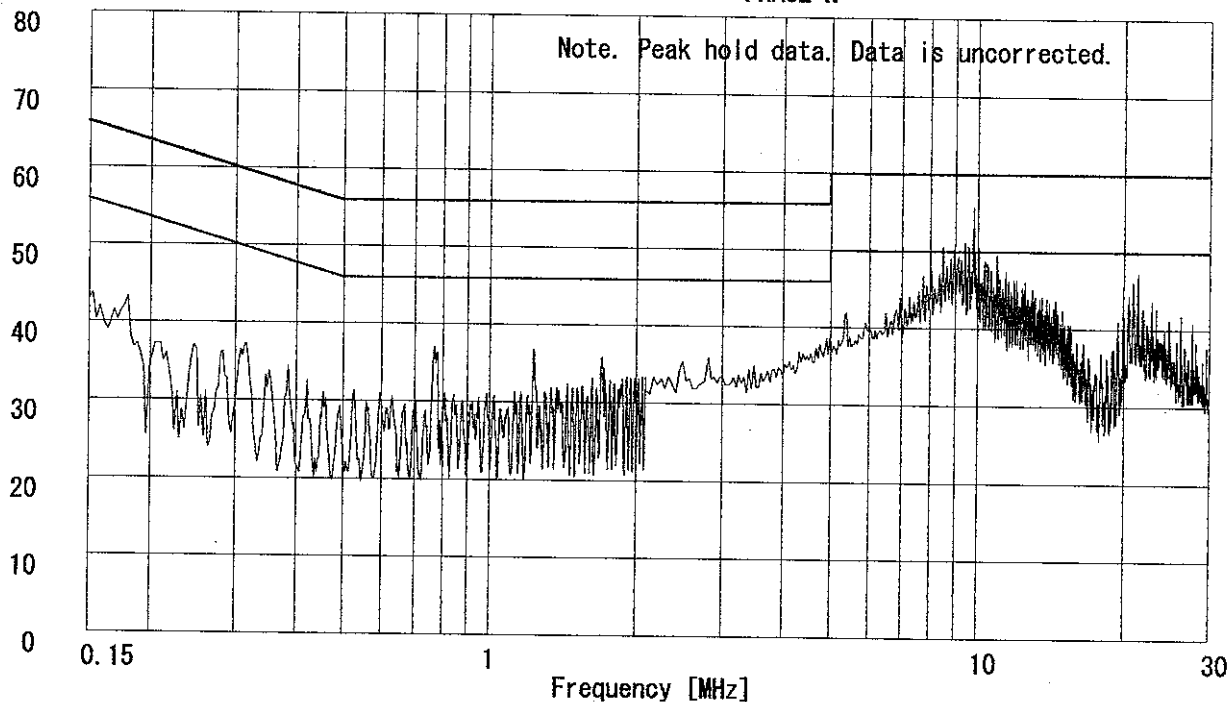
Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type 7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (608.0125MHz)
Remarks : -
Date : 11/13/2003
Phase : Single Phase
Temperature : 24 °C
Humidity : 50 %
Regulation 1 : CISPR Pub. 22 CLASS B
Regulation 2 : None

Engineer : Toyokazu Imamura

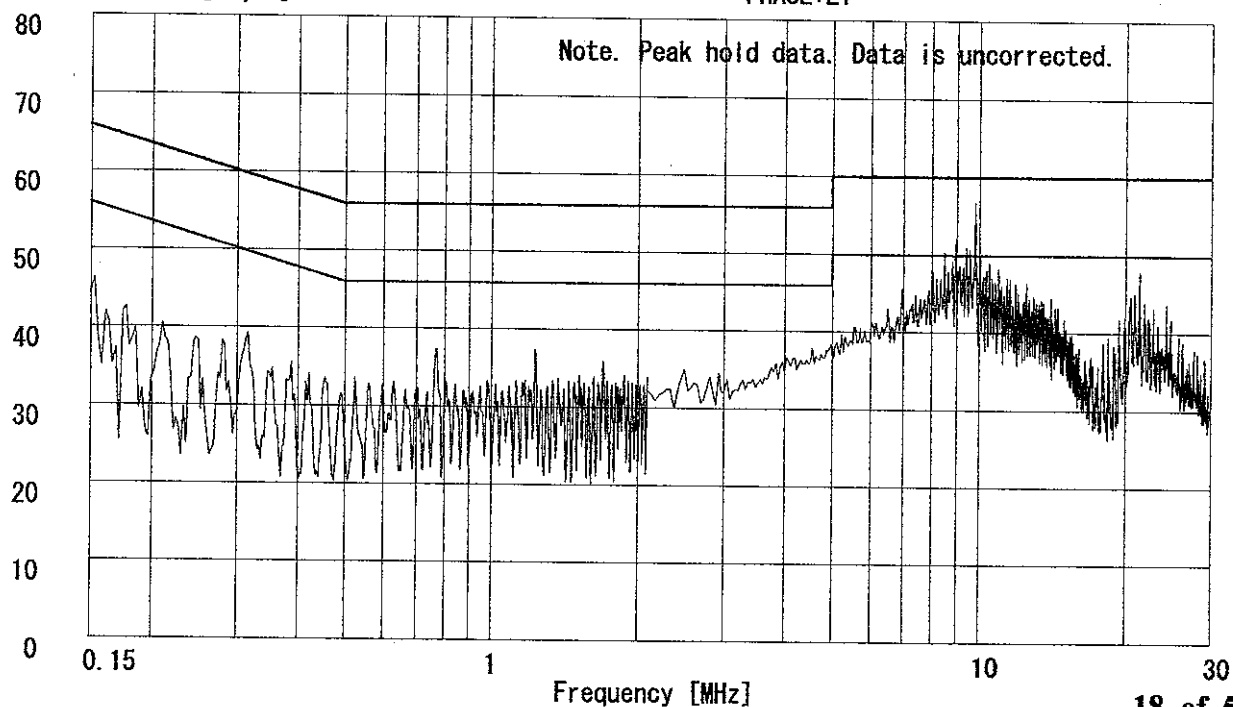
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST

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Yamakita No.2 Shielded Room
Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (611MHz)
Remarks : -
Date : 11/13/2003
Phase : Single Phase
Temperature : 24 °C
Humidity : 50 %
Regulation : CISPR Pub. 22 CLASS B

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	READING (N)		READING (L1)		LISN FACTOR [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]				QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]
1.	1.2359	33.0	32.7	31.7	31.1	0.1	0.1	0.0	33.2	32.9	56.0	46.0	22.8	13.1
2.	7.5752	42.5	40.0	42.6	39.7	0.3	0.3	0.0	43.2	40.6	60.0	50.0	16.8	9.4
3.	8.5017	48.7	46.1	48.5	46.1	0.3	0.3	0.0	49.3	46.7	60.0	50.0	10.7	3.3
4.	8.9658	49.4	47.3	49.3	47.3	0.4	0.3	0.0	50.1	48.0	60.0	50.0	9.9	2.0
5.	9.4288	49.7	47.3	49.6	47.2	0.4	0.3	0.0	50.4	48.0	60.0	50.0	9.6	2.0
6.	9.5851	50.0	46.2	49.5	45.7	0.4	0.3	0.0	50.7	46.9	60.0	50.0	9.3	3.1
7.	9.8073	55.2	41.2	55.2	41.0	0.4	0.3	0.0	55.9	41.9	60.0	50.0	4.1	8.1
8.	10.0472	49.4	46.6	49.0	46.4	0.4	0.3	0.0	50.1	47.3	60.0	50.0	9.9	2.7
9.	21.3751	46.4	34.4	46.5	33.5	1.0	0.4	0.0	47.9	35.8	60.0	50.0	12.1	14.2

CALCULATION: READING[dBμV] + LISN FACTOR[dB] + CABLE LOSS[dB] + ATTEN[dB].

■ LISN : KLS-01 (NSLK8126) ■ COAXIAL CABLE : KCC-A1/A3
■ EMI RECEIVER : KTR-01 (ES140)

DATA OF CONDUCTION TEST

UL Apex Co., Ltd.

Yamakita No.2 Shielded Room

Report No. : 24CE0150-YK

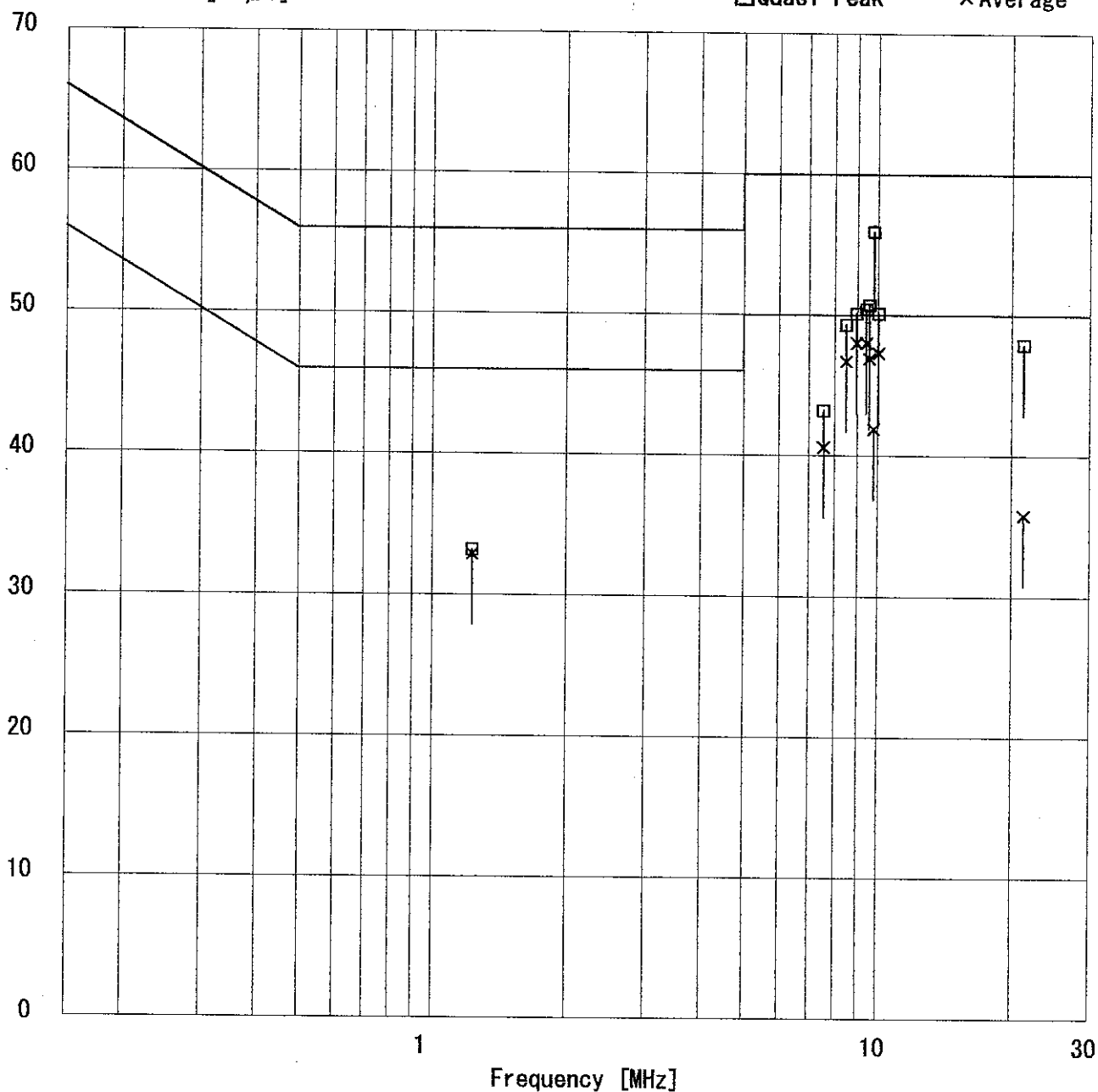
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Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type 7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (611MHz)
Remarks : -
Date : 11/13/2003
Phase : Single Phase
Temperature : 24 °C
Humidity : 50 %
Regulation : CISPR Pub. 22 CLASS B

Engineer : Toyokazu Imamura

Emission Level [dB μ V]

□ Quasi-Peak

× Average



DATA OF CONDUCTION TEST CHART

UL Apex Co.,Ltd.

Yamakita No.2 Shielded Room

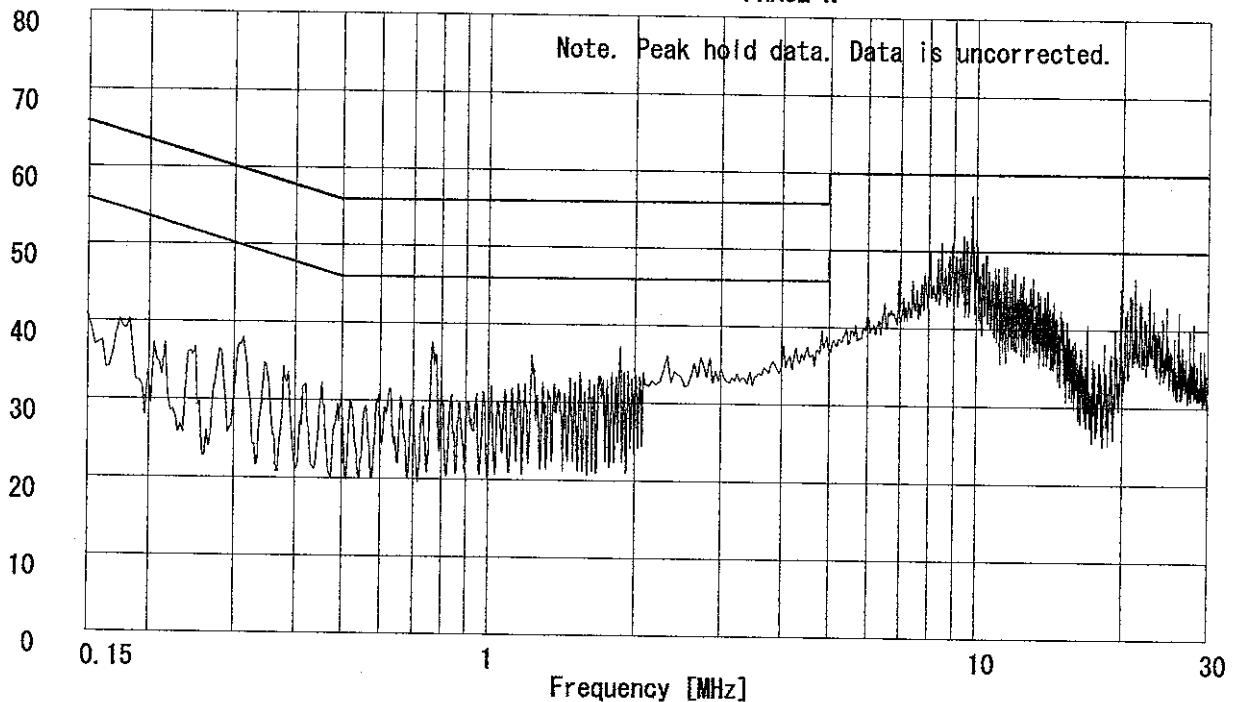
Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (611MHz)
Remarks : -
Date : 11/13/2003
Phase : Single Phase
Temperature : 24 °C
Humidity : 50 %
Regulation 1 : CISPR Pub. 22 CLASS B
Regulation 2 : None

Engineer : Toyokazu Imamura

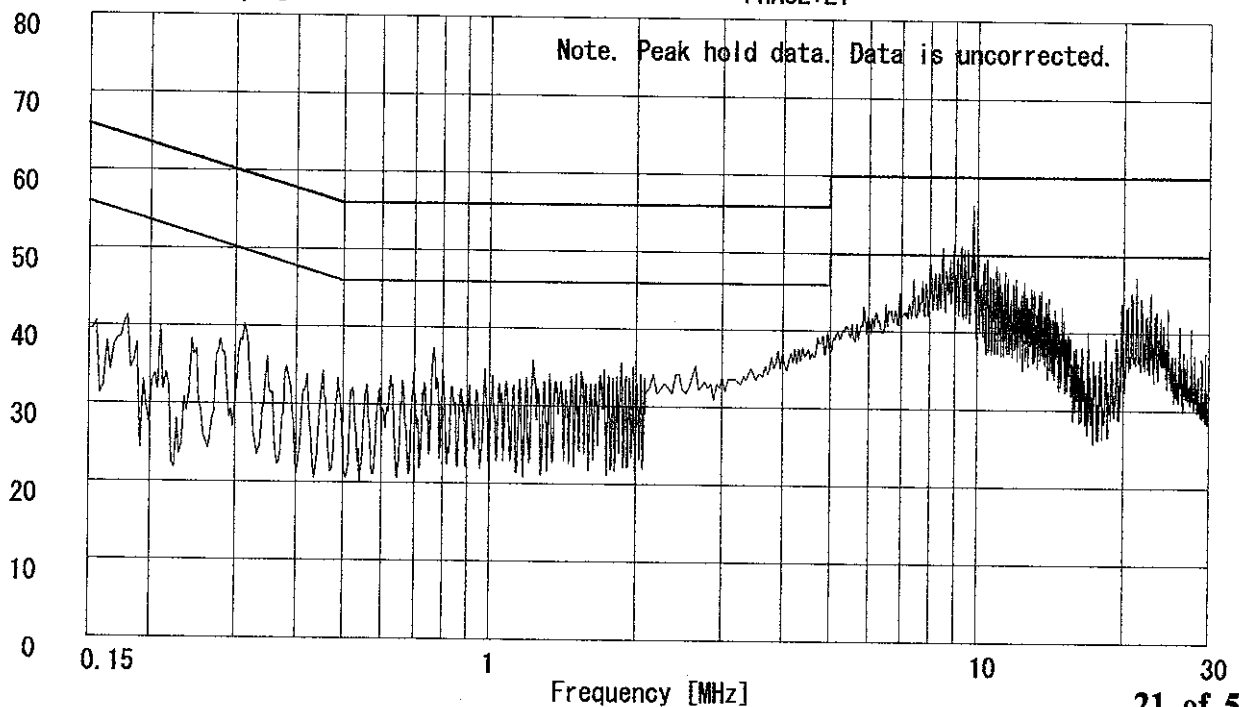
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST

UL Apex Co.,Ltd.
Yamakita No.2 Shielded Room
Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (613.9875MHz)
Remarks : -
Date : 11/13/2003
Phase : Single Phase
Temperature : 24 °C
Humidity : 50 %
Regulation : CISPR Pub. 22 CLASS B

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	READING (N)		READING (L1)		LISN FACTOR [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
		QP	AV	QP	AV				QP	AV	QP	AV	QP	AV
		[dBuV]		[dBuV]					[dBuV]		[dBuV]		[dB]	
1.	1.2360	32.9	32.6	31.5	31.0	0.1	0.1	0.0	33.1	32.8	56.0	46.0	22.9	13.2
2.	7.5729	42.7	40.0	42.9	40.2	0.3	0.3	0.0	43.5	40.8	60.0	50.0	16.5	9.2
3.	8.5015	48.2	46.2	48.1	46.2	0.3	0.3	0.0	48.8	46.8	60.0	50.0	11.2	3.2
4.	8.9661	49.5	47.4	49.4	47.4	0.4	0.3	0.0	50.2	48.1	60.0	50.0	9.8	1.9
5.	9.4294	49.8	47.4	49.6	47.3	0.4	0.3	0.0	50.5	48.1	60.0	50.0	9.5	1.9
6.	9.5837	50.2	47.0	49.6	46.8	0.4	0.3	0.0	50.9	47.7	60.0	50.0	9.1	2.3
7.	9.8074	55.2	41.2	55.3	41.2	0.4	0.3	0.0	56.0	41.9	60.0	50.0	4.0	8.1
8.	10.0469	49.1	46.7	49.0	46.5	0.4	0.3	0.0	49.8	47.4	60.0	50.0	10.2	2.6
9.	21.3716	46.4	34.6	46.5	35.2	1.0	0.4	0.0	47.9	36.6	60.0	50.0	12.1	13.4

CALCULATION: READING[dBμV] + LISN FACTOR[dB] + CABLE LOSS[dB] + ATTEN[dB].

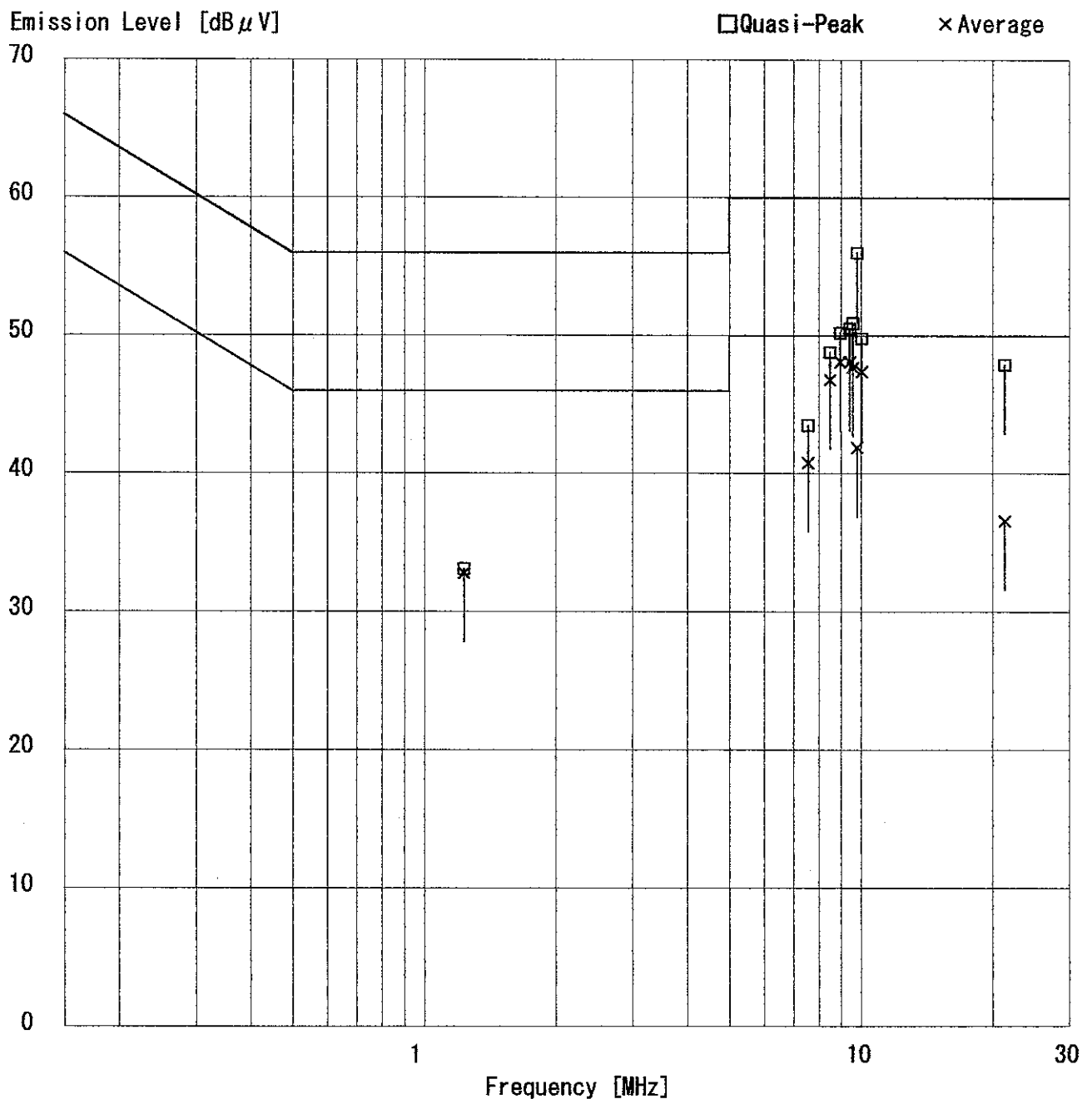
■ LISN : KLS-01 (NSLK8126) ■ COAXIAL CABLE : KCC-A1/A3
■ EMI RECEIVER : KTR-01 (ES140)

DATA OF CONDUCTION TEST

UL Apex Co.,Ltd.
Yamakita No.2 Shielded Room
Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (613.9875MHz)
Remarks : -
Date : 11/13/2003
Phase : Single Phase
Temperature : 24 °C
Humidity : 50 %
Regulation : CISPR Pub.22 CLASS B

Engineer : Toyokazu Imamura



DATA OF CONDUCTION TEST CHART

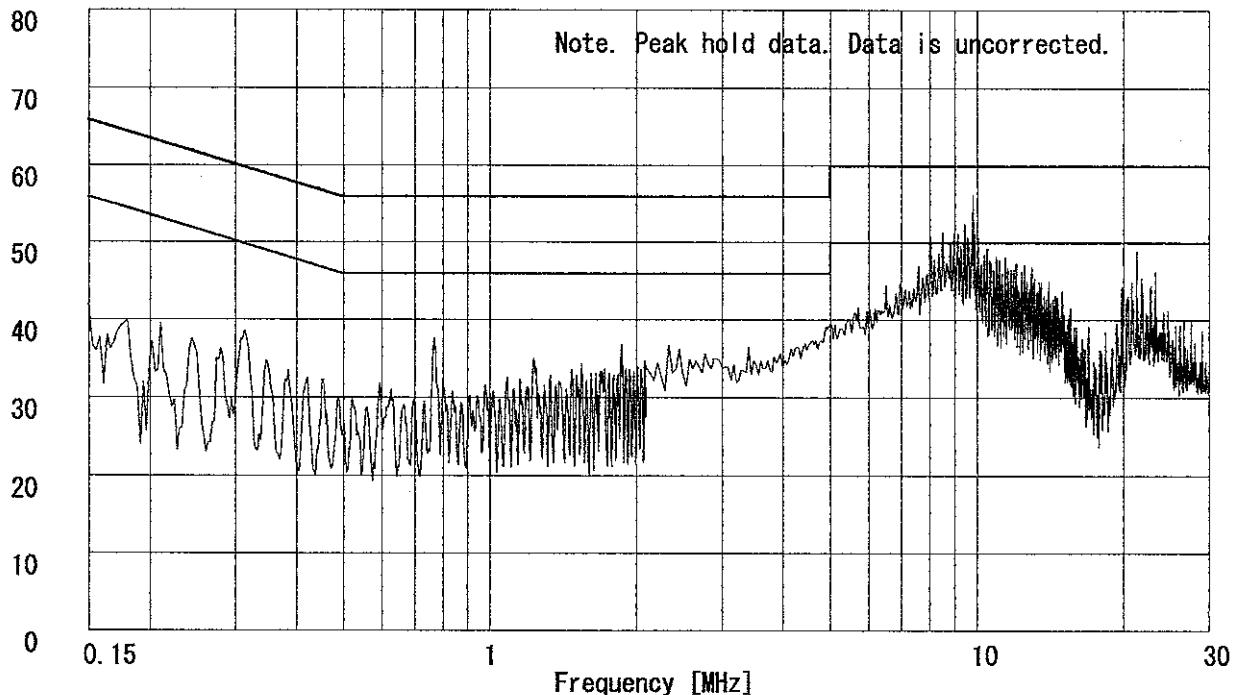
UL Apex Co.,Ltd.
Yamakita No.2 Shielded Room
Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (613.9875MHz)
Remarks : -
Date : 11/13/2003
Phase : Single Phase
Temperature : 24 °C
Humidity : 50 %
Regulation 1 : CISPR Pub. 22 CLASS B
Regulation 2 : None

Engineer : Toyokazu Imamura

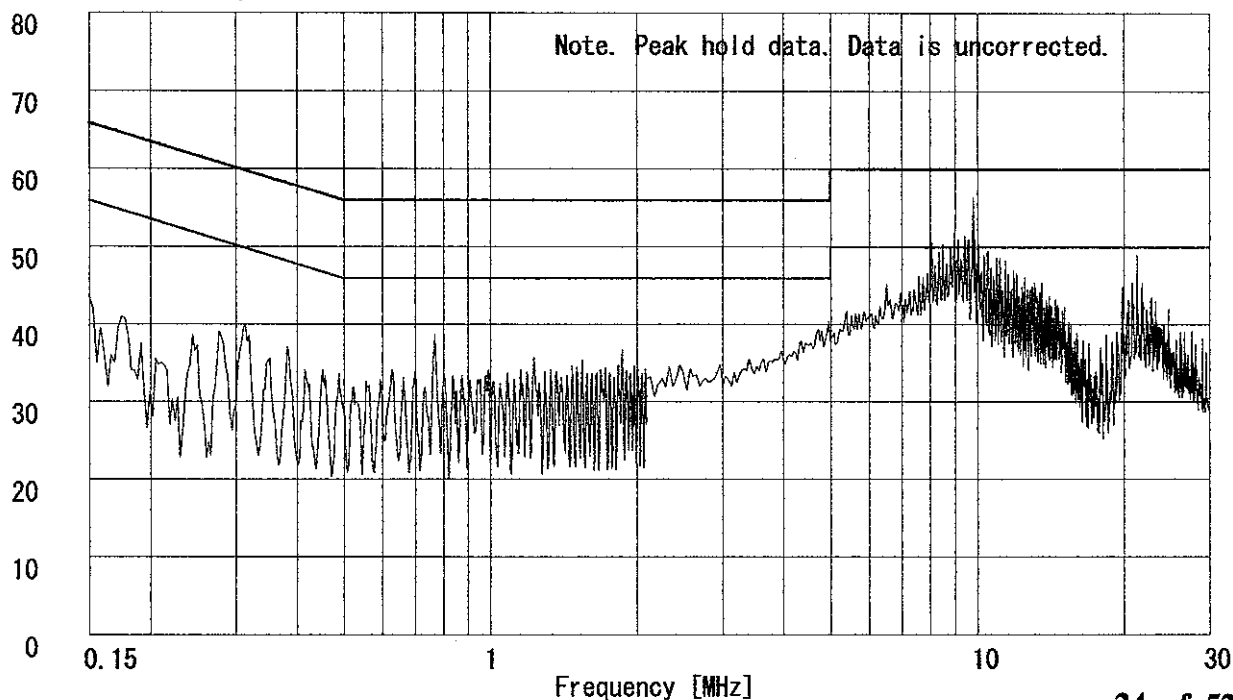
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF RADIATION TEST

UL Apex Co.,Ltd.
Yamakita No.1 Anechoic Chamber
Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (608.0125MHz)
Remarks : -
Date : 11/13/2003
Test Distance : 3 m
Temperature : 21 °C
Humidity : 65 %
Regulation : FCC Part95H § 95.1115(a)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	608.01	BB	95.1	93.0	19.9	29.3	2.7	6.1	94.5	92.4	106.0	11.5	13.6

CALCULATION: $\text{READING}[\text{dB } \mu \text{V}] + \text{ANT. FACTOR}[\text{dB/m}] + \text{CABLE LOSS}[\text{dB}] - \text{AMP. GAIN}[\text{dB}] + \text{ATTEN}[\text{dB}]$.

■ ANTENNA: KBA-03 (BBA9106) 30-299.99MHz/KLA-03 (USLP9143) 300-1000MHz
■ CABLE: KCC-A1/A3 ■ PREAMP: KAF-0 (8447D) ■ EMI RECEIVER: KTR-01 (ES140)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.
Yamakita No.1 Anechoic Chamber
Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (611MHz)
Remarks : -
Date : 11/13/2003
Test Distance : 3 m
Temperature : 21 °C
Humidity : 65 %
Regulation : FCC Part95H § 95.1115(a)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	611.00	BB	95.3	92.5	19.9	29.3	2.7	6.1	94.7	91.9	106.0	11.3	14.1

CALCULATION: READING[dB μ V] + ANT. FACTOR[dB/m] + CABLE LOSS[dB] - AMP. GAIN[dB] + ATTEN[dB].

■ ANTENNA: KBA-03 (BBA9106) 30-299.99MHz/KLA-03 (USLP9143) 300-1000MHz
■ CABLE: KCC-A1/A3 ■ PREAMP: KAF-0 (8447D) ■ EMI RECEIVER: KTR-01 (ES140)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.
Yamakita No.1 Anechoic Chamber
Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (613.9875MHz)
Remarks : -
Date : 11/13/2003
Test Distance : 3 m
Temperature : 21 °C
Humidity : 65 %
Regulation : FCC Part95H § 95.1115(a)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	613.99	BB	95.2	91.3	19.9	29.3	2.7	6.1	94.6	90.7	106.0	11.4	15.3

CALCULATION: $\text{READING}[\text{dB } \mu \text{V}] + \text{ANT. FACTOR}[\text{dB/m}] + \text{CABLE LOSS}[\text{dB}] - \text{AMP. GAIN}[\text{dB}] + \text{ATTEN}[\text{dB}]$.

■ ANTENNA: KBA-03 (BBA9106) 30-299.99MHz/KLA-03 (USLP9143) 300-1000MHz
■ CABLE: KCC-A1/A3 ■ PREAMP: KAF-0 (8447D) ■ EMI RECEIVER: KTR-01 (ES140)

DATA OF RADIATION TEST

UL Apex Co., Ltd.

Yamakita No.1 Anechoic Chamber

Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
 Kind of Equipment : Patient Monitor
 Model No. : DS-7100 (Type7141)
 Serial No. : 0309-6197
 Power : AC120V/60Hz
 Mode : Transmitting (608.0125MHz)
 Remarks : -
 Date : 11/13/2003
 Test Distance : 3 m
 Temperature : 21 °C
 Humidity : 65 %
 Regulation : FCC Part95H § 95.1115 (b) (1)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	105.01	BB	50.3	44.6	11.0	28.3	1.1	6.1	40.2	34.5	46.0	5.8	11.5
2.	115.00	BB	47.0	44.5	12.7	28.3	1.1	6.1	38.6	36.1	46.0	7.4	9.9
3.	119.99	BB	44.7	46.4	13.5	28.3	1.1	6.1	37.1	38.8	46.0	8.9	7.2
4.	141.43	BB	44.7	42.2	14.6	28.2	1.2	6.1	38.4	35.9	46.0	7.6	10.1
5.	153.73	BB	42.3	40.4	15.0	28.1	1.3	6.1	36.6	34.7	46.0	9.4	11.3
6.	239.97	BB	38.3	37.5	17.0	27.7	1.6	6.1	35.3	34.5	46.0	10.7	11.5
7.	246.50	BB	41.9	34.4	17.1	27.7	1.6	6.1	39.0	31.5	46.0	7.0	14.5
8.	320.00	BB	44.7	43.4	14.9	27.7	1.9	6.1	39.9	38.6	46.0	6.1	7.4
9.	360.00	BB	41.4	42.2	16.0	28.1	2.0	6.1	37.4	38.2	46.0	8.6	7.8
10.	480.00	BB	40.7	44.9	18.4	28.9	2.4	6.1	38.7	42.9	46.0	7.3	3.1
11.	512.00	BB	35.1	41.5	18.8	29.1	2.5	6.1	33.4	39.8	46.0	12.6	6.2
12.	608.00	BB	41.2	37.6	19.9	29.3	2.7	6.1	40.6	37.0	46.0	5.4	9.0
13.	622.40	BB	40.5	37.4	20.0	29.2	2.8	6.1	40.2	37.1	46.0	5.8	8.9
14.	639.99	BB	42.2	41.1	20.2	29.1	2.8	6.1	42.2	41.1	46.0	3.8	4.9
15.	767.98	BB	39.6	37.4	21.4	29.1	3.1	6.1	41.1	38.9	46.0	4.9	7.1
16.	832.00	BB	34.9	33.6	21.9	28.9	3.2	6.1	37.2	35.9	46.0	8.8	10.1

CALCULATION: $\text{READING}[\text{dB } \mu\text{V}] + \text{ANT. FACTOR}[\text{dB/m}] + \text{CABLE LOSS}[\text{dB}] - \text{AMP. GAIN}[\text{dB}] + \text{ATTEN}[\text{dB}]$.

■ ANTENNA: KBA-03 (BBA9106) 30-299.99MHz/KLA-03 (USLP9143) 300-1000MHz

■ CABLE: KCC-A1/A3 ■ PREAMP: KAF-0 (8447D) ■ EMI RECEIVER: KTR-01 (ES140)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.
Yamakita No.1 Anechoic Chamber
Report No. : 24CE0150-YK

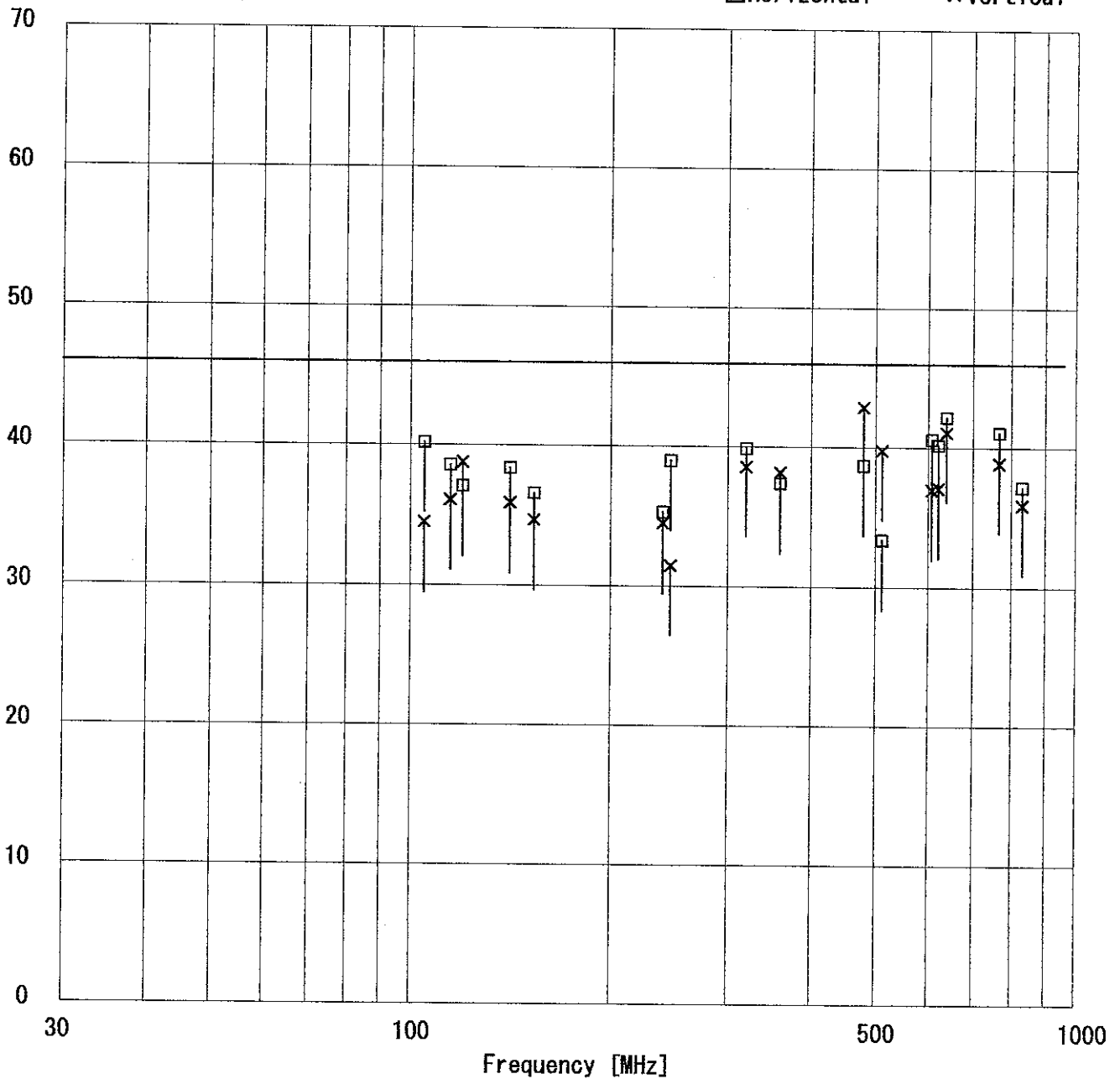
Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (608.0125MHz)
Remarks : -
Date : 11/13/2003
Test Distance : 3 m
Temperature : 21 °C
Humidity : 65 %
Regulation : FCC Part95H § 95.1115 (b) (1)

Engineer : Toyokazu Imamura

Emission Level [dB μ V/m]

□ Horizontal

× Vertical



DATA OF RADIATION TEST

UL Apex Co.,Ltd.

Yamakita No.1 Anechoic Chamber

Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
 Kind of Equipment : Patient Monitor
 Model No. : DS-7100 (Type7141)
 Serial No. : 0309-6197
 Power : AC120V/60Hz
 Mode : Transmitting (611MHz)
 Remarks : -
 Date : 11/13/2003
 Test Distance : 3 m
 Temperature : 21 °C
 Humidity : 63 %
 Regulation : FCC Part95H § 95.1115(b) (1)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	105.00	BB	46.6	43.5	11.0	28.3	1.1	6.1	36.5	33.4	46.0	9.5	12.6
2.	115.00	BB	43.7	41.2	12.7	28.3	1.1	6.1	35.3	32.8	46.0	10.7	13.2
3.	120.00	BB	46.5	45.5	13.5	28.3	1.1	6.1	38.9	37.9	46.0	7.1	8.1
4.	141.43	BB	43.8	43.7	14.6	28.2	1.2	6.1	37.5	37.4	46.0	8.5	8.6
5.	153.73	BB	41.5	40.2	15.0	28.1	1.3	6.1	35.8	34.5	46.0	10.2	11.5
6.	239.98	BB	37.8	40.6	17.0	27.7	1.6	6.1	34.8	37.6	46.0	11.2	8.4
7.	246.85	BB	39.3	34.6	17.1	27.7	1.6	6.1	36.4	31.7	46.0	9.6	14.3
8.	320.00	BB	43.4	40.5	14.9	27.7	1.9	6.1	38.6	35.7	46.0	7.4	10.3
9.	360.00	BB	39.4	41.8	16.0	28.1	2.0	6.1	35.4	37.8	46.0	10.6	8.2
10.	480.00	BB	42.3	42.9	18.4	28.9	2.4	6.1	40.3	40.9	46.0	5.7	5.1
11.	512.00	BB	34.6	42.2	18.8	29.1	2.5	6.1	32.9	40.5	46.0	13.1	5.5
12.	625.39	BB	39.5	35.5	20.1	29.2	2.8	6.1	39.3	35.3	46.0	6.7	10.7
13.	640.00	BB	41.4	38.4	20.2	29.1	2.8	6.1	41.4	38.4	46.0	4.6	7.6
14.	768.00	BB	38.0	37.1	21.4	29.1	3.1	6.1	39.5	38.6	46.0	6.5	7.4
15.	832.00	BB	34.1	34.5	21.9	28.9	3.2	6.1	36.4	36.8	46.0	9.6	9.2

CALCULATION: READING[dB μ V] + ANT. FACTOR[dB/m] + CABLE LOSS[dB] - AMP. GAIN[dB] + ATTEN[dB].

■ ANTENNA: KBA-03 (BBA9106) 30-299.99MHz/KLA-03 (USLP9143) 300-1000MHz
 ■ CABLE: KCC-A1/A3 ■ PREAMP: KAF-0 (8447D) ■ EMI RECEIVER: KTR-01 (ES140)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

Yamakita No.1 Anechoic Chamber

Report No. : 24CE0150-YK

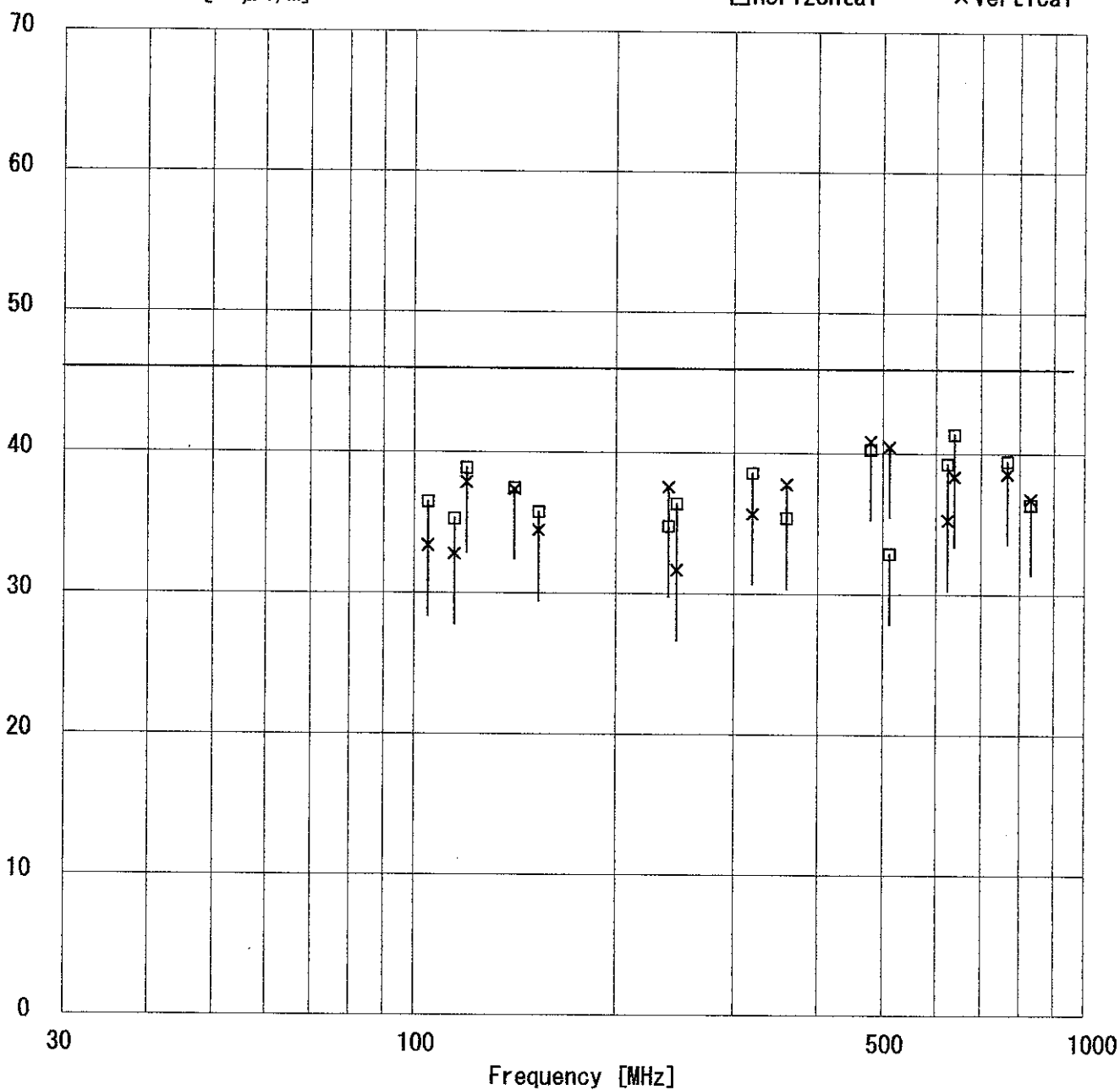
Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (611MHz)
Remarks : -
Date : 11/13/2003
Test Distance : 3 m
Temperature : 21 °C
Humidity : 63 %
Regulation : FCC Part95H § 95.1115 (b) (1)

Engineer : Toyokazu Imamura

Emission Level [dB μ V/m]

□ Horizontal

× Vertical



DATA OF RADIATION TEST

UL Apex Co.,Ltd.

Yamakita No.1 Anechoic Chamber

Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
 Kind of Equipment : Patient Monitor
 Model No. : DS-7100 (Type7141)
 Serial No. : 0309-6197
 Power : AC120V/60Hz
 Mode : Transmitting (613.9875MHz)
 Remarks : -
 Date : 11/13/2003
 Test Distance : 3 m
 Temperature : 21 °C
 Humidity : 63 %
 Regulation : FCC Part95H § 95.1115(b) (1)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	105.00	BB	47.2	43.6	11.0	28.3	1.1	6.1	37.1	33.5	46.0	8.9	12.5
2.	115.00	BB	44.9	41.5	12.7	28.3	1.1	6.1	36.5	33.1	46.0	9.5	12.9
3.	120.00	BB	46.5	44.7	13.5	28.3	1.1	6.1	38.9	37.1	46.0	7.1	8.9
4.	141.43	BB	43.7	43.7	14.6	28.2	1.2	6.1	37.4	37.4	46.0	8.6	8.6
5.	153.73	BB	41.2	40.2	15.0	28.1	1.3	6.1	35.5	34.5	46.0	10.5	11.5
6.	239.99	BB	37.8	41.0	17.0	27.7	1.6	6.1	34.8	38.0	46.0	11.2	8.0
7.	246.81	BB	39.6	34.0	17.1	27.7	1.6	6.1	36.7	31.1	46.0	9.3	14.9
8.	320.00	BB	43.1	43.2	14.9	27.7	1.9	6.1	38.3	38.4	46.0	7.7	7.6
9.	360.00	BB	39.6	41.3	16.0	28.1	2.0	6.1	35.6	37.3	46.0	10.4	8.7
10.	480.00	BB	41.3	43.1	18.4	28.9	2.4	6.1	39.3	41.1	46.0	6.7	4.9
11.	512.00	BB	33.4	40.8	18.8	29.1	2.5	6.1	31.7	39.1	46.0	14.3	6.9
12.	614.00	BB	41.2	37.6	19.9	29.3	2.7	6.1	40.6	37.0	46.0	5.4	9.0
13.	628.39	BB	40.0	34.6	20.1	29.2	2.8	6.1	39.8	34.4	46.0	6.2	11.6
14.	640.00	BB	41.4	39.8	20.2	29.1	2.8	6.1	41.4	39.8	46.0	4.6	6.2
15.	767.98	BB	38.3	37.1	21.4	29.1	3.1	6.1	39.8	38.6	46.0	6.2	7.4
16.	832.00	BB	34.8	33.6	21.9	28.9	3.2	6.1	37.1	35.9	46.0	8.9	10.1

CALCULATION: READING[dB μV] + ANT. FACTOR[dB/m] + CABLE LOSS[dB] - AMP. GAIN[dB] + ATTEN[dB].

■ ANTENNA: KBA-03 (BBA9106) 30-299.99MHz/KLA-03 (USLP9143) 300-1000MHz
 ■ CABLE: KCC-A1/A3 ■ PREAMP: KAF-0 (8447D) ■ EMI RECEIVER: KTR-01 (ES140)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.
Yamakita No.1 Anechoic Chamber
Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (613.9875MHz)
Remarks : -
Date : 11/13/2003
Test Distance : 3 m
Temperature : 21 °C
Humidity : 63 %
Regulation : FCC Part95H § 95.1115 (b) (1)

Engineer : Toyokazu Imamura

Emission Level [dB μ V/m]

□ Horizontal

× Vertical

70

60

50

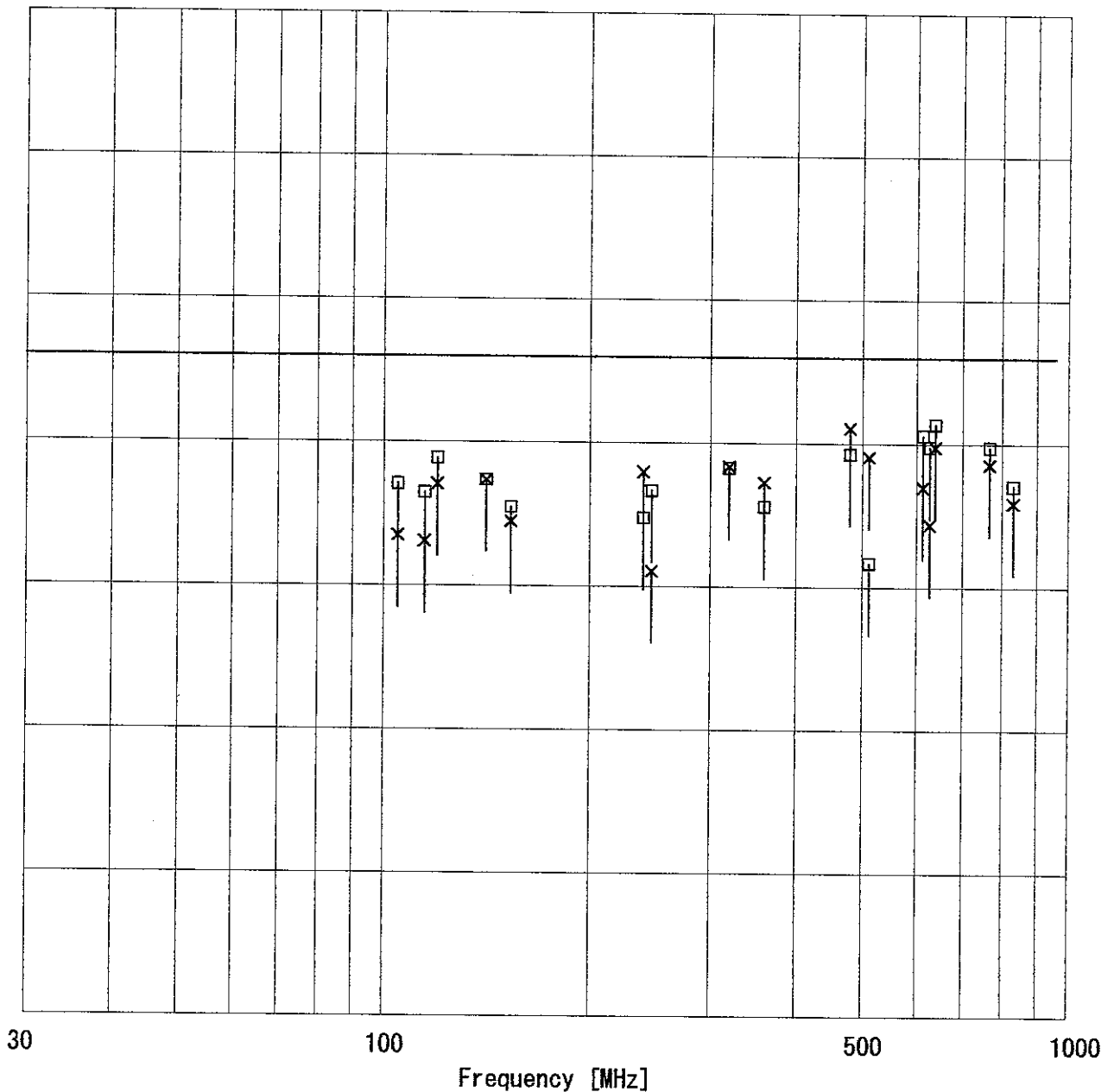
40

30

20

10

0



DATA OF RADIATION TEST

UL Apex Co.,Ltd.

Yamakita No.1 Anechoic Chamber

Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
 Kind of Equipment : Patient Monitor
 Model No. : DS-7100 (Type7141)
 Serial No. : 0309-6197
 Power : AC120V/60Hz
 Mode : Transmitting (608.0125MHz)
 Remarks : -
 Date : 11/12/2003
 Test Distance : 3 m
 Temperature : 21 °C
 Humidity : 65 %
 Regulation : FCC Part95H § 95.1115 (b) (2)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	1216.03	BB	36.3	37.1	25.8	38.0	3.7	10.0	37.8	38.6	53.9	16.1	15.3
2.	1824.04	BB	33.6	33.6	29.1	37.1	4.7	10.0	40.3	40.3	53.9	13.6	13.6
3.	2432.05	BB	38.5	33.9	30.6	36.9	5.4	10.0	47.6	43.0	53.9	6.3	10.9
4.	3040.06	BB	38.9	38.0	30.8	37.0	6.2	10.0	48.9	48.0	53.9	5.0	5.9
5.	3648.08	BB	46.9	46.7	32.3	36.7	6.9	0.9	50.3	50.1	53.9	3.6	3.8
6.	4256.09	BB	45.5	38.6	33.7	35.8	7.5	0.7	51.6	44.7	53.9	2.3	9.2
7.	4864.10	BB	35.1	34.1	35.5	35.2	8.0	0.6	44.0	43.0	53.9	9.9	10.9
8.	5472.11	BB	31.8	31.9	35.9	36.3	8.5	0.9	40.8	40.9	53.9	13.1	13.0
9.	6080.13	BB	33.2	33.2	37.2	36.4	8.9	0.5	43.4	43.4	53.9	10.5	10.5

CALCULATION: READING[dB μ V] + ANT. FACTOR[dB/m] + CABLE LOSS[dB] - AMP. GAIN[dB] + ATTEN[dB].

■ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■CABLE:KCC-D11/D12 ■PREAMP:KAF-02 (8449B) ■EMI RECEIVER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

Yamakita No.1 Anechoic Chamber

Report No. : 24CE0150-YK

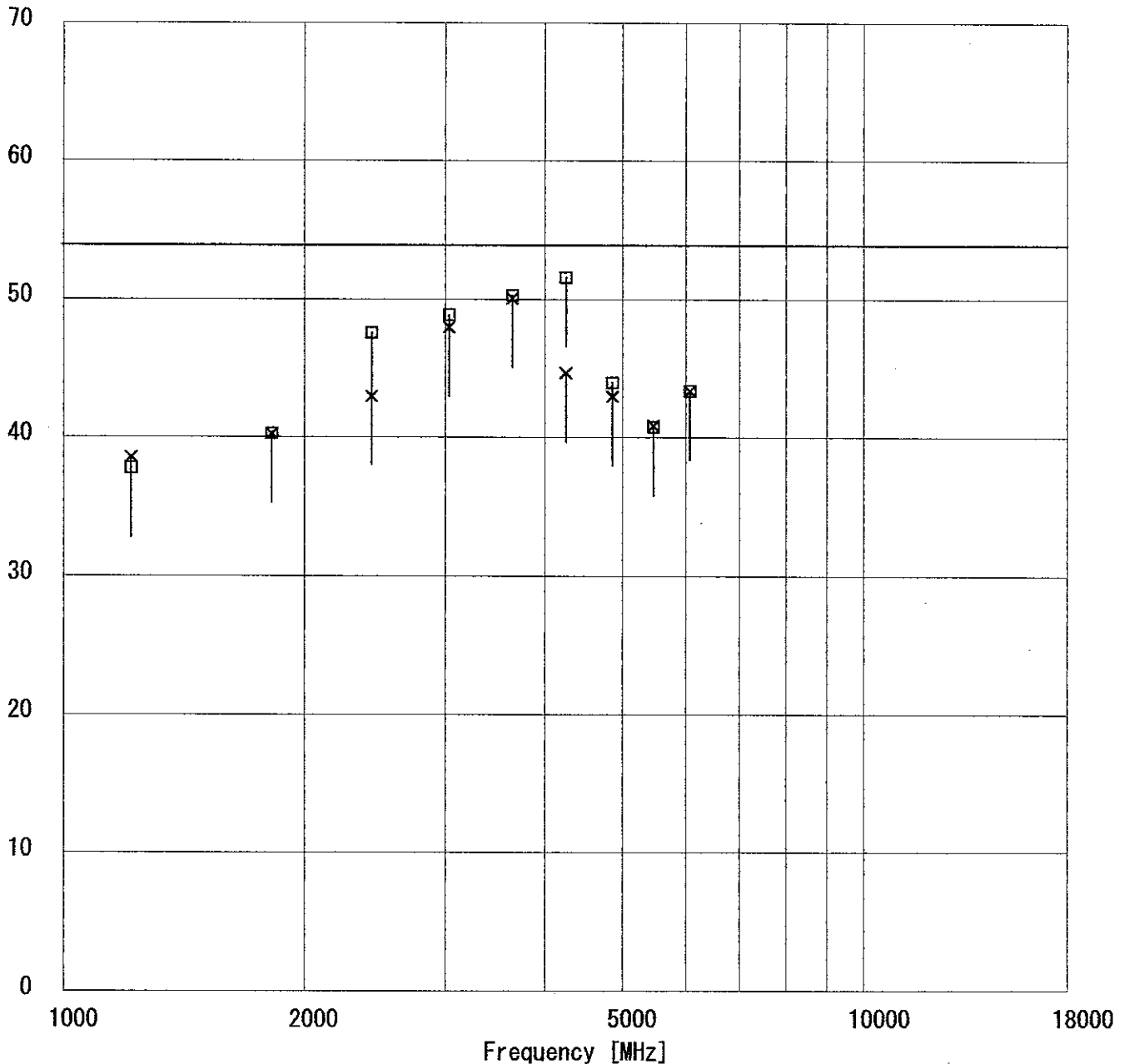
Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (608.0125MHz)
Remarks : -
Date : 11/12/2003
Test Distance : 3 m
Temperature : 21 °C
Humidity : 65 %
Regulation : FCC Part95H § 95.1115 (b) (2)

Engineer : Toyokazu Imamura

Emission Level [dB μ V/m]

□ Horizontal

× Vertical



DATA OF RADIATION TEST

UL Apex Co.,Ltd.

Yamakita No.1 Anechoic Chamber

Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
 Kind of Equipment : Patient Monitor
 Model No. : DS-7100 (Type7141)
 Serial No. : 0309-6197
 Power : AC120V/60Hz
 Mode : Transmitting (611MHz)
 Remarks : -
 Date : 11/12/2003
 Test Distance : 3 m
 Temperature : 21 °C
 Humidity : 65 %
 Regulation : FCC Part95H § 95.1115 (b) (2)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	1222.00	BB	33.5	34.2	25.9	38.0	3.7	10.0	35.1	35.8	53.9	18.8	18.1
2.	1833.00	BB	33.6	33.5	29.2	37.1	4.7	10.0	40.4	40.3	53.9	13.5	13.6
3.	2444.00	BB	37.1	32.2	30.6	36.9	5.4	10.0	46.2	41.3	53.9	7.7	12.6
4.	3055.00	BB	39.6	39.6	30.8	37.0	6.2	10.0	49.6	49.6	53.9	4.3	4.3
5.	3666.00	BB	44.6	45.8	32.4	36.7	7.0	0.9	48.2	49.4	53.9	5.7	4.5
6.	4277.00	BB	42.6	39.2	33.7	35.7	7.5	0.7	48.8	45.4	53.9	5.1	8.5
7.	4888.00	BB	31.9	33.3	35.6	35.2	8.1	0.6	41.0	42.4	53.9	12.9	11.5
8.	5499.00	BB	32.1	32.2	35.9	36.3	8.5	0.9	41.1	41.2	53.9	12.8	12.7
9.	6110.00	BB	33.2	33.2	37.2	36.4	8.9	0.4	43.3	43.3	53.9	10.6	10.6

CALCULATION: $READING[dB \mu V] + ANT. FACTOR[dB/m] + CABLE LOSS[dB] - AMP. GAIN[dB] + ATTEN[dB]$.

■ANTENNA: KHA-01 (SAS-200 571) 1-18GHz

■CABLE: KCC-D11/D12 ■PREAMP: KAF-02 (8449B) ■EMI RECEIVER: KTR-01 (ES140)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

Yamakita No.1 Anechoic Chamber

Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (611MHz)
Remarks : -
Date : 11/12/2003
Test Distance : 3 m
Temperature : 21 °C
Humidity : 65 %
Regulation : FCC Part95H § 95.1115 (b) (2)

Engineer : Toyokazu Imamura

Emission Level [dB μ V/m]

□ Horizontal

× Vertical

70

60

50

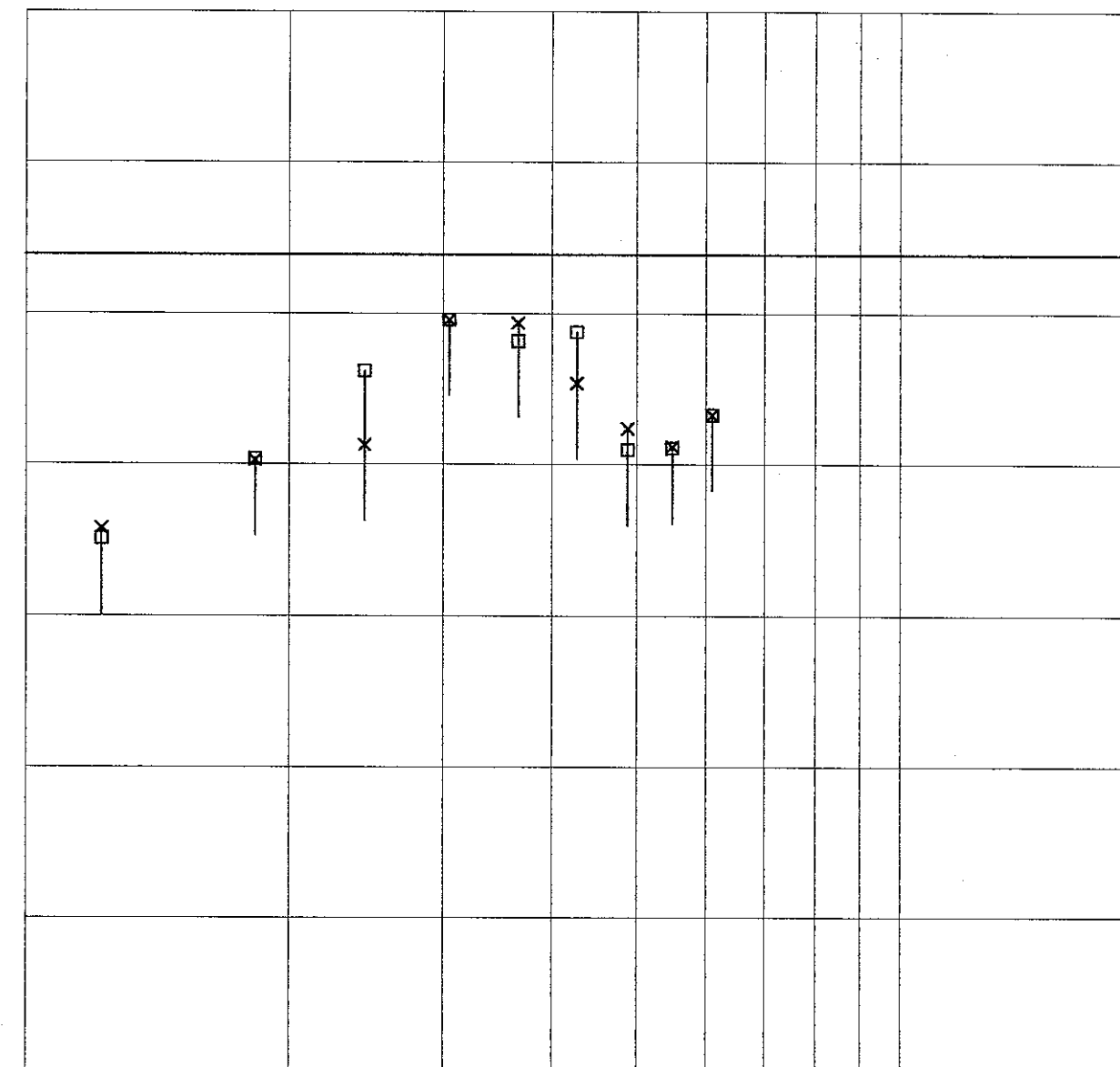
40

30

20

10

0



1000

2000

5000

10000

18000

Frequency [MHz]

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

Yamakita No.1 Anechoic Chamber

Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
Kind of Equipment : Patient Monitor
Model No. : DS-7100 (Type7141)
Serial No. : 0309-6197
Power : AC120V/60Hz
Mode : Transmitting (613.9875MHz)
Remarks : -
Date : 11/12/2003
Test Distance : 3 m
Temperature : 21 °C
Humidity : 65 %
Regulation : FCC Part95H § 95.1115 (b) (2)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	1227.98	BB	35.6	37.5	25.9	38.0	3.7	10.0	37.2	39.1	53.9	16.7	14.8
2.	1841.96	BB	33.6	33.5	29.2	37.1	4.7	0.0	30.4	30.3	53.9	23.5	23.6
3.	2455.95	BB	36.1	33.4	30.6	36.9	5.4	10.0	45.2	42.5	53.9	8.7	11.4
4.	3069.94	BB	40.4	39.1	30.8	37.0	6.3	10.0	50.5	49.2	53.9	3.4	4.7
5.	3683.93	BB	42.5	44.8	32.4	36.6	7.0	0.9	46.2	48.5	53.9	7.7	5.4
6.	4297.91	BB	40.8	37.6	33.7	35.7	7.5	0.7	47.0	43.8	53.9	6.9	10.1
7.	4911.90	BB	31.7	33.1	35.8	35.2	8.1	0.5	40.9	42.3	53.9	13.0	11.6
8.	5525.89	BB	34.0	33.4	36.0	36.3	8.6	0.9	43.2	42.6	53.9	10.7	11.3
9.	6139.88	BB	33.3	33.3	37.2	36.4	8.9	0.4	43.4	43.4	53.9	10.5	10.5

CALCULATION: READING[dB μ V] + ANT. FACTOR[dB/m] + CABLE LOSS[dB] - AMP. GAIN[dB] + ATTEN[dB].

■ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■CABLE:KCC-D11/D12 ■PREAMP:KAF-02 (8449B) ■EMI RECEIVER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

Yamakita No.1 Anechoic Chamber

Report No. : 24CE0150-YK

Applicant : Fukuda Denshi Co., Ltd
 Kind of Equipment : Patient Monitor
 Model No. : DS-7100 (Type7141)
 Serial No. : 0309-6197
 Power : AC120V/60Hz
 Mode : Transmitting (613.9875MHz)
 Remarks : -
 Date : 11/12/2003
 Test Distance : 3 m
 Temperature : 21 °C
 Humidity : 65 %
 Regulation : FCC Part95H § 95.1115 (b) (2)

Engineer : Toyokazu Imamura

Emission Level [dB μ V/m]

□ Horizontal

× Vertical

70

60

50

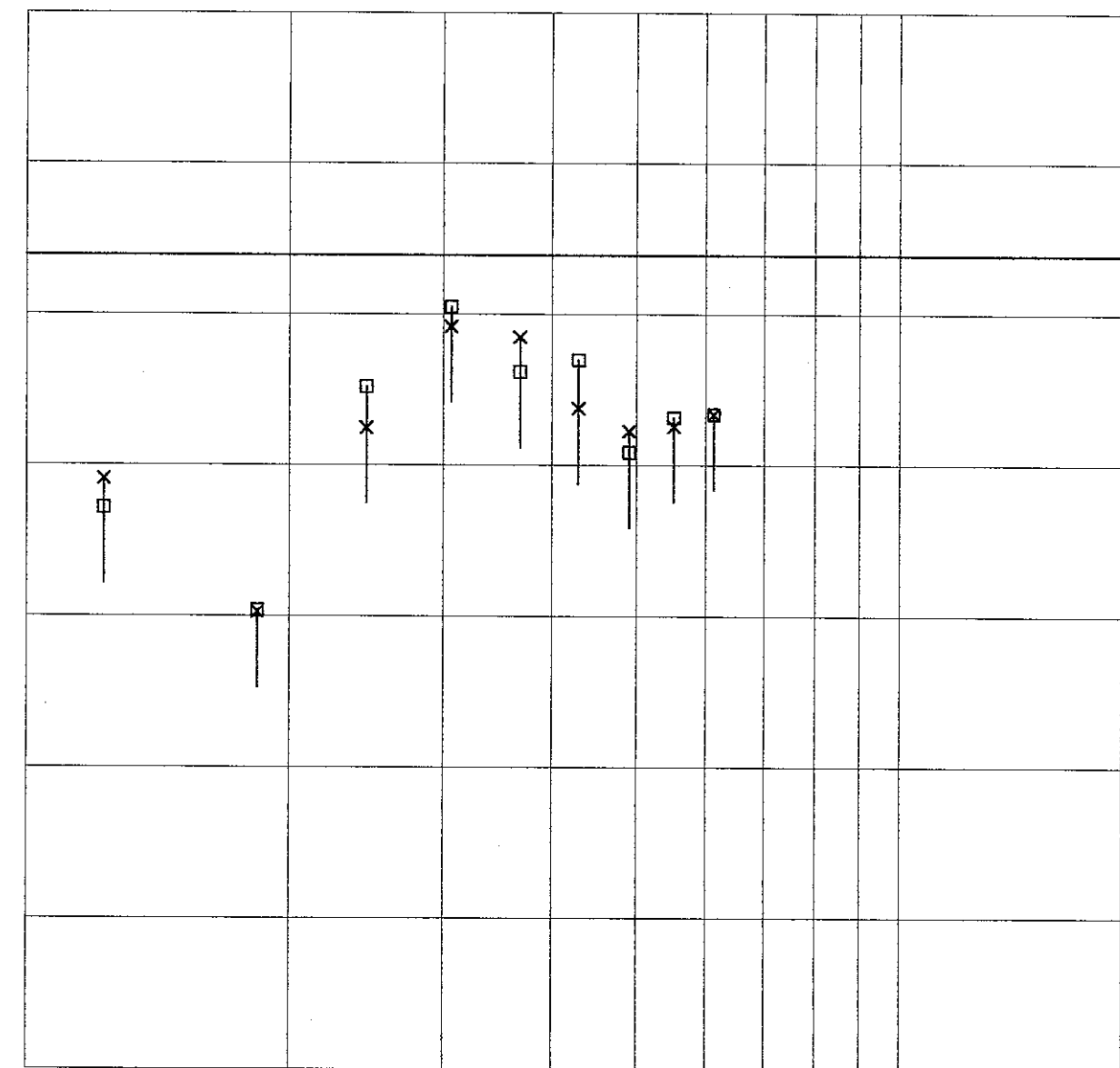
40

30

20

10

0



1000

2000

5000

10000

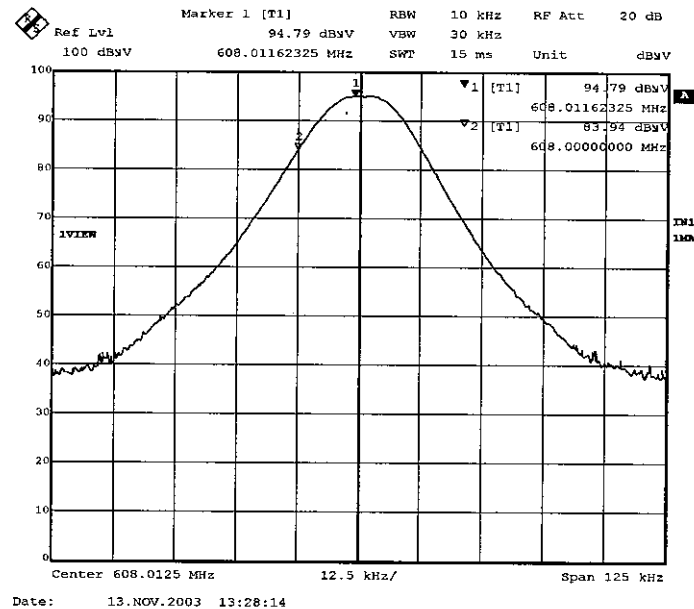
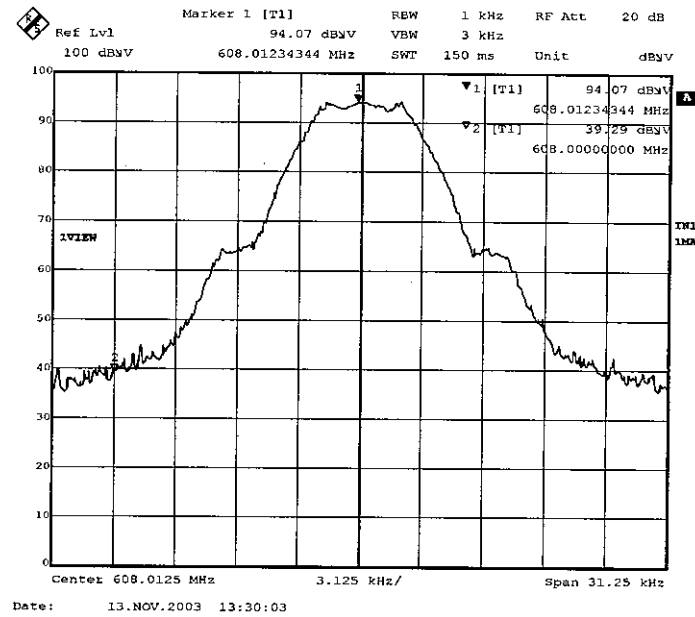
18000

Frequency [MHz]

608.00MHz

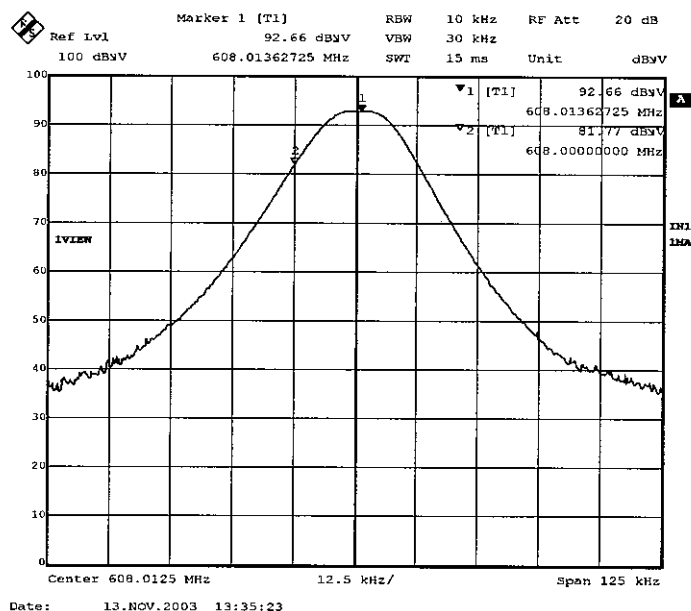
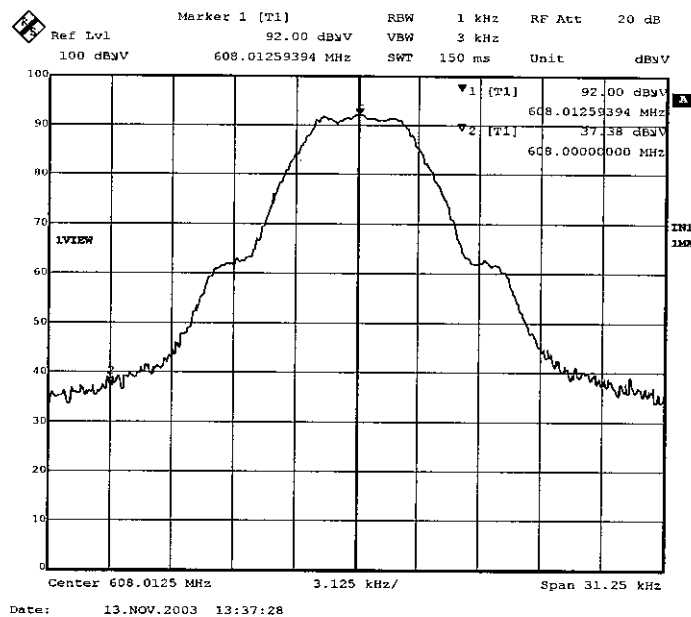
1. Horizontal/PK

T. Imamura



2. Vertical/PK

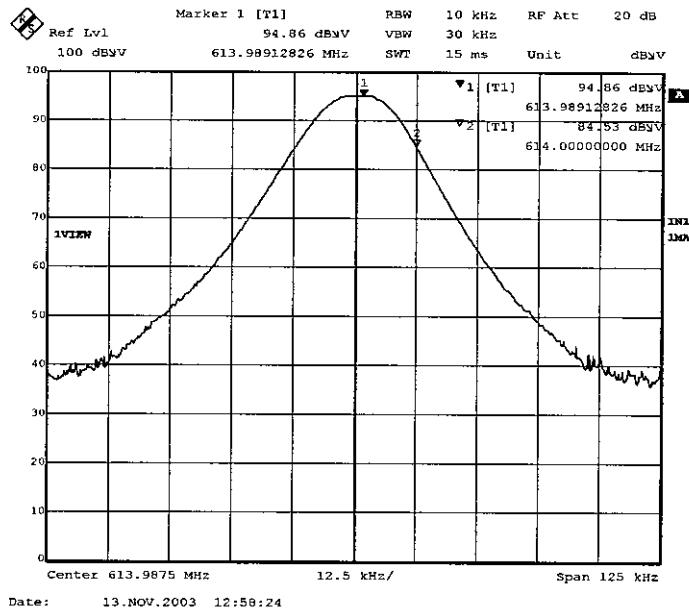
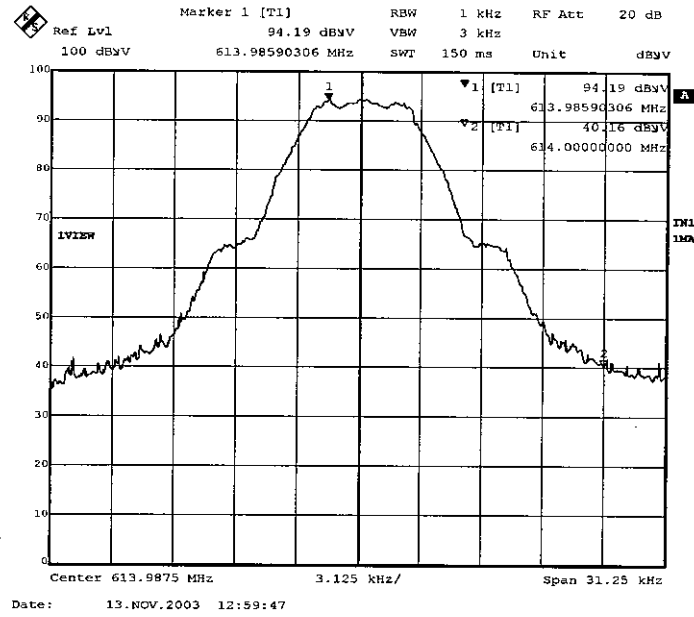
T. Amanna



614.00MHz

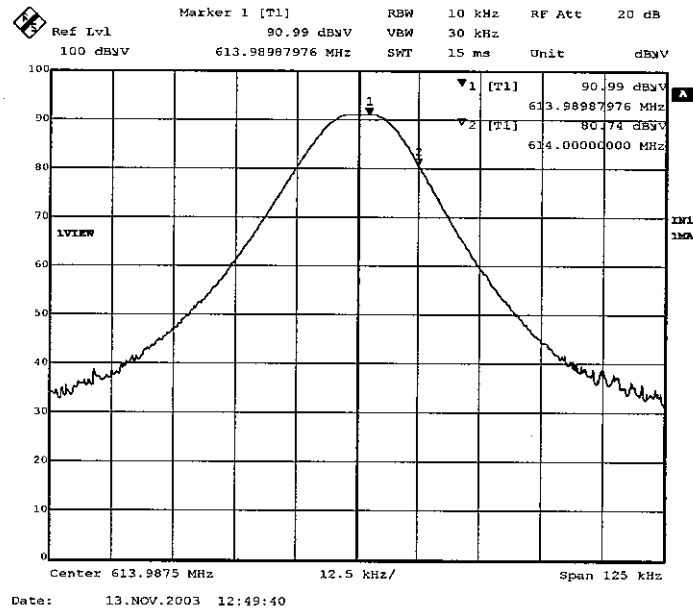
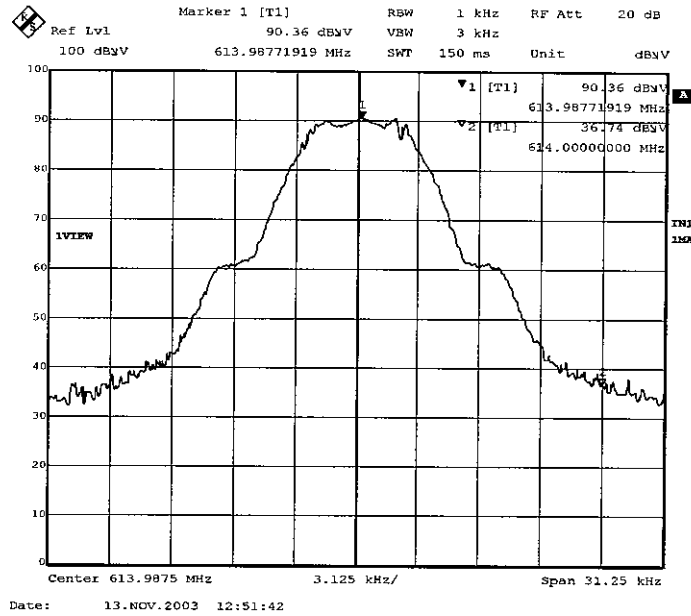
1. Horizontal/PK

T. Snamura



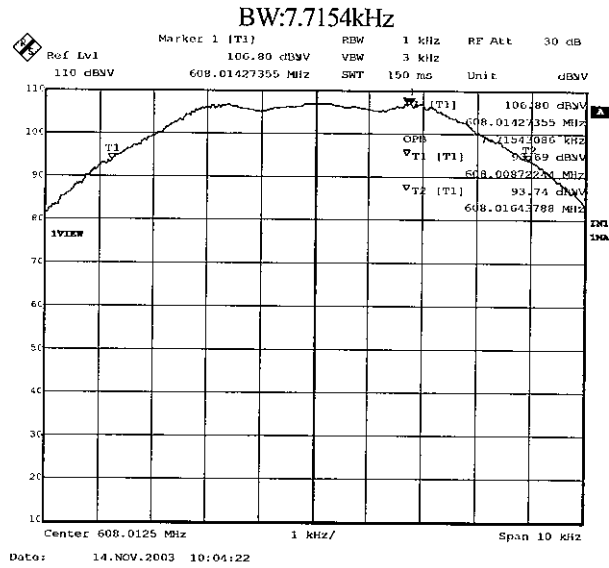
2. Vertical/PK

Y. Mammura

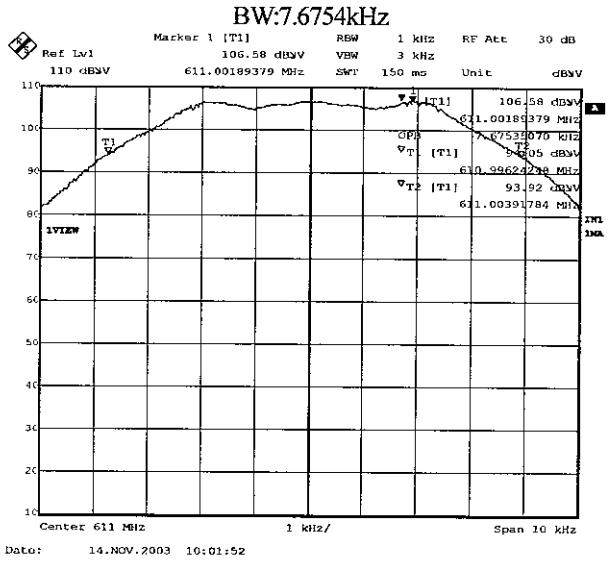


T. Amman

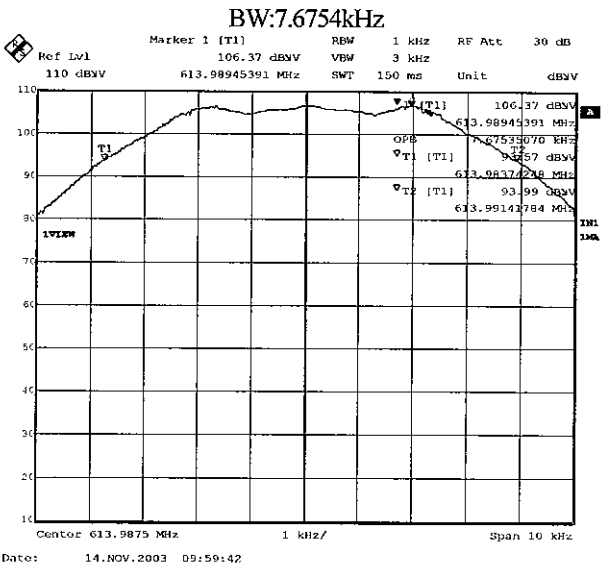
1. ch : 608.0125MHz



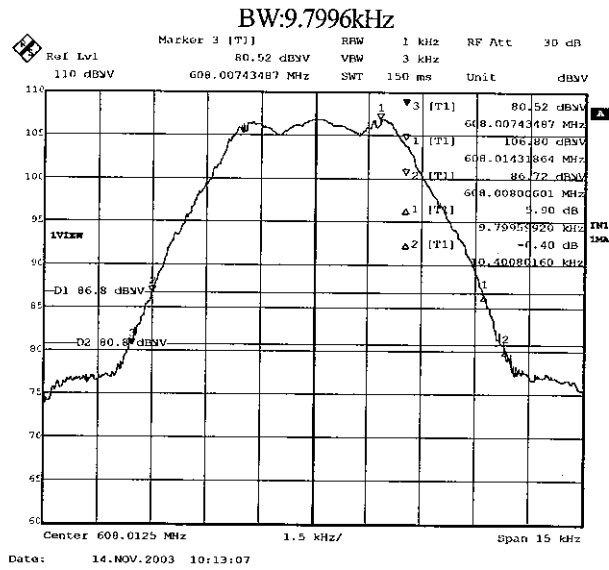
2. ch : 611.00MHz



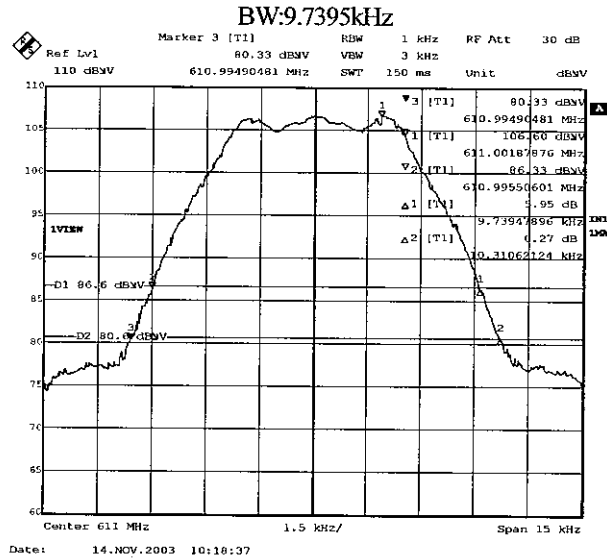
3. ch : 613.9875MHz



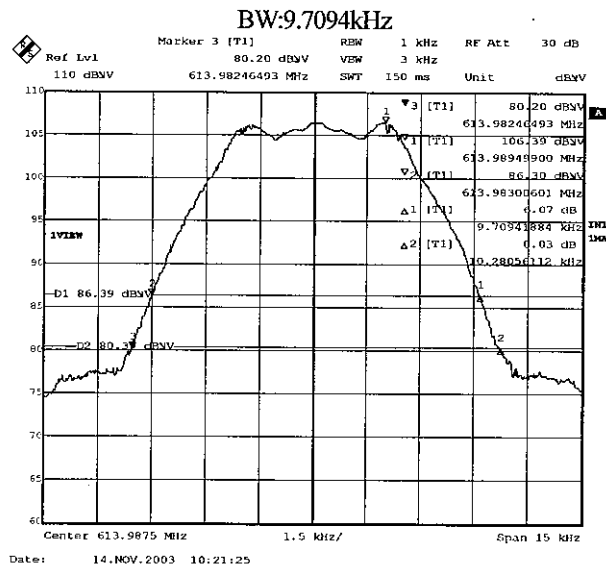
1. ch : 608.0125MHz



2. ch : 611.00MHz



3. ch : 613.9875MHz



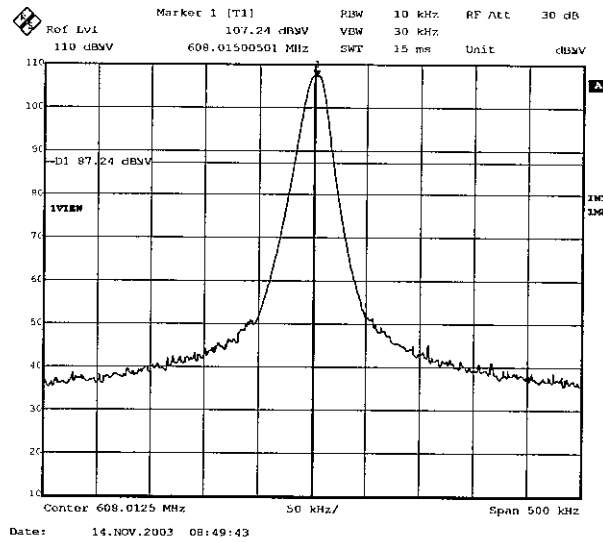
Out of Band Emissions (Conducted): FCC 2.1051

FCC ID: DV8DS7100
Job No: 24CE0150-YK

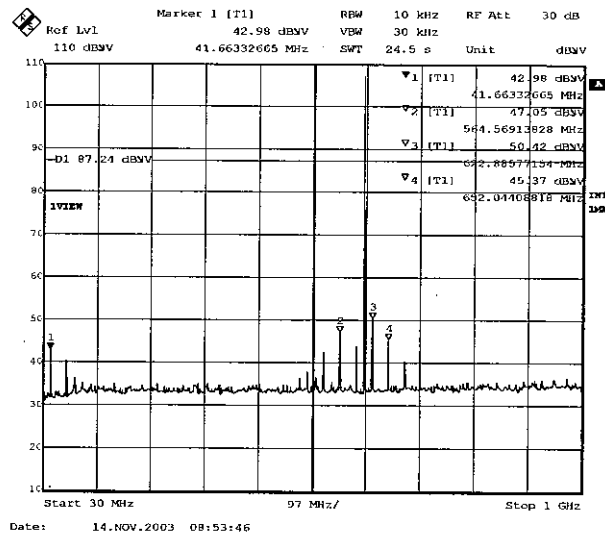
Ch 608.0125MHz

1.

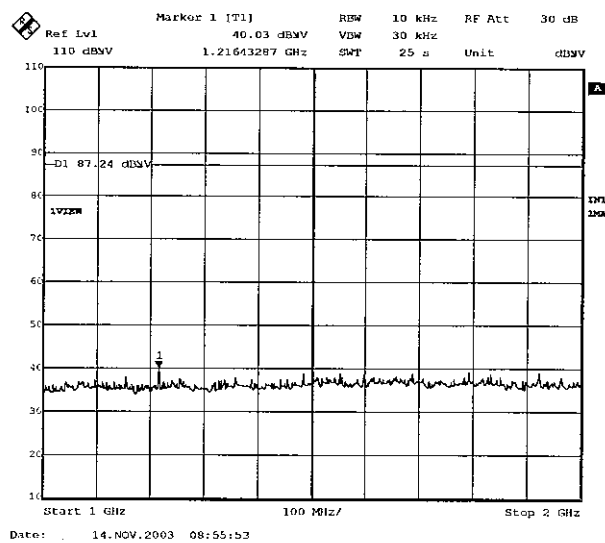
T. Amanna



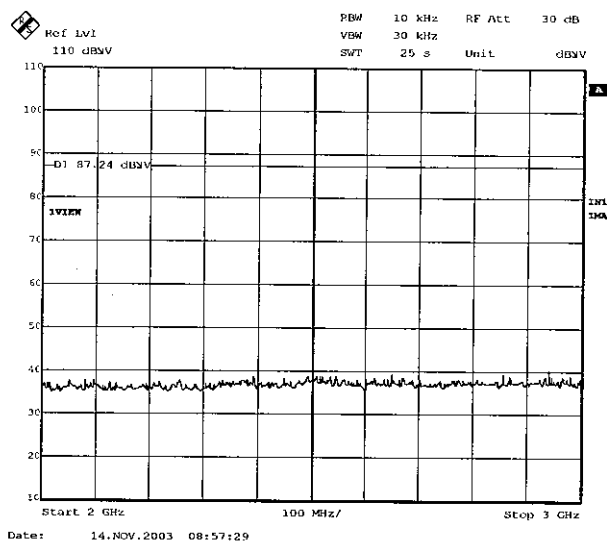
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3.

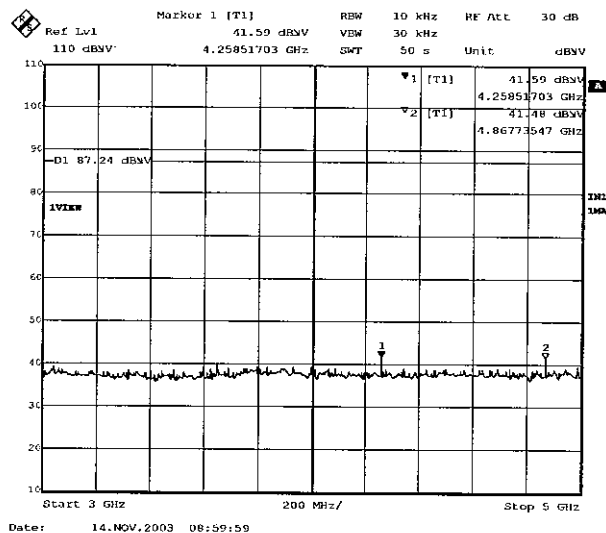


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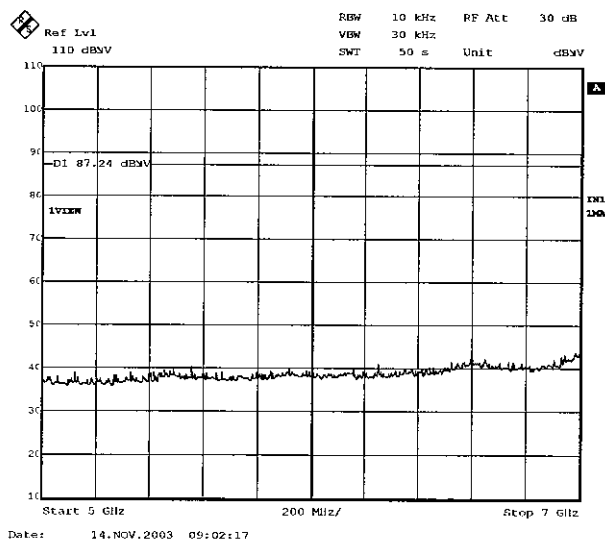


T. Amanna

5.



6.



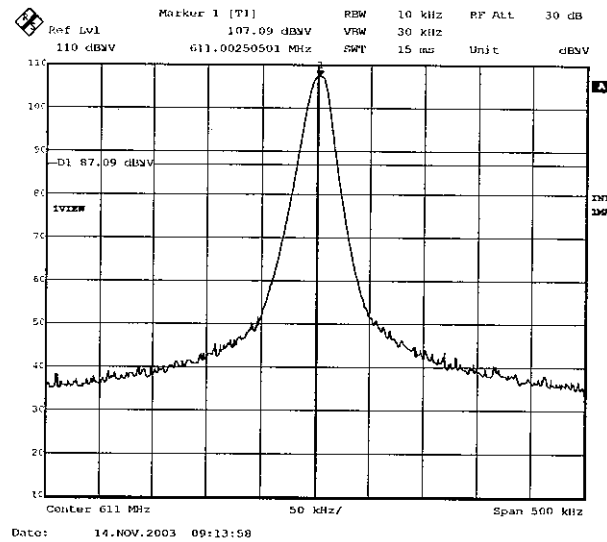
Out of Band Emissions (Conducted): FCC 2.1051

FCC ID: DV8DS7100
Job No: 24CE0150-YK

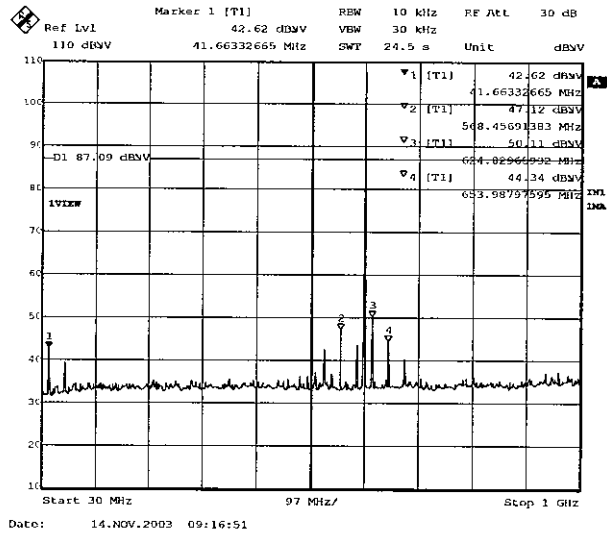
Ch 611.0000MHz

1.

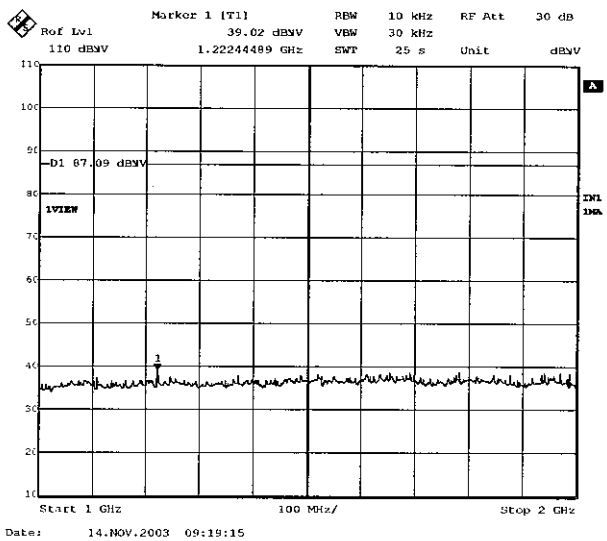
T. Amanna



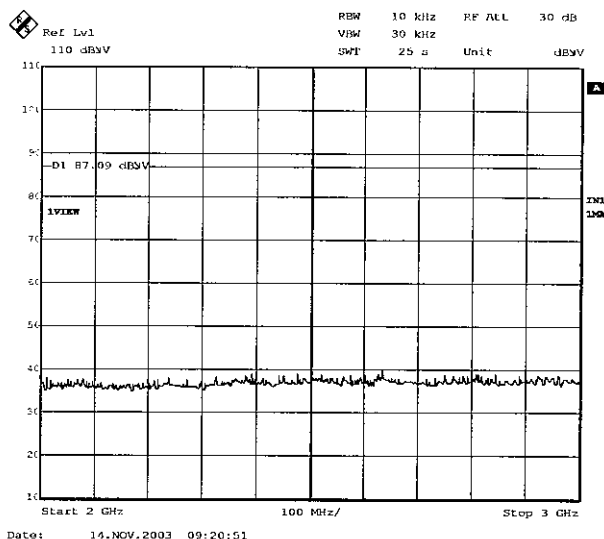
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3.

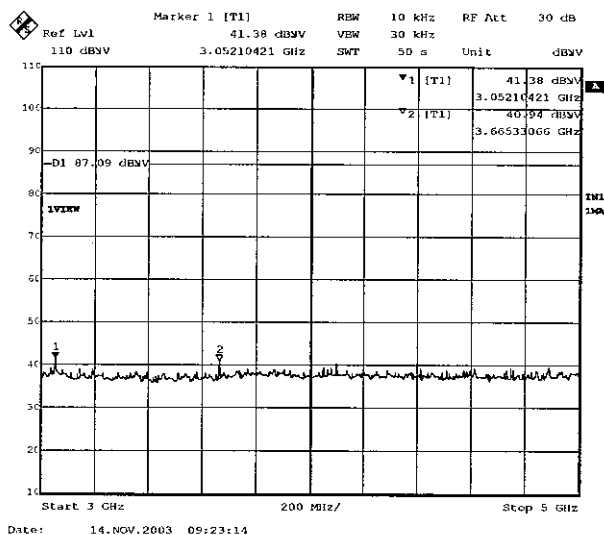


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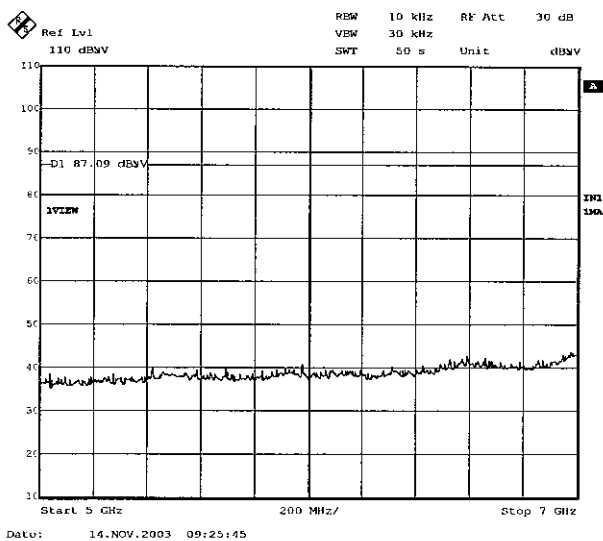


Y. Amanna

5.



6.



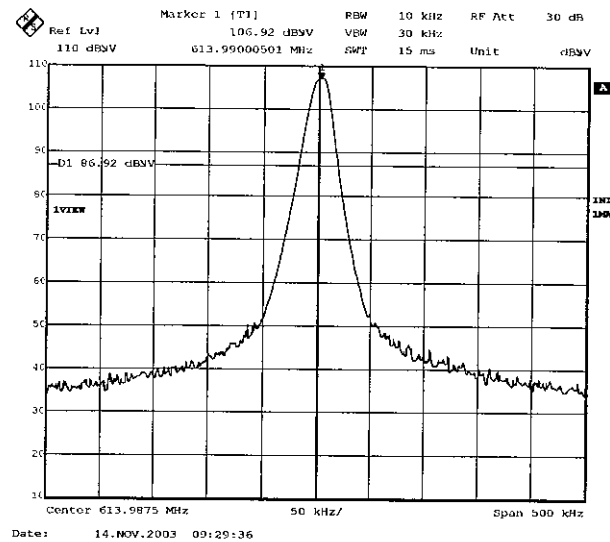
Out of Band Emissions (Conducted): FCC 2.1051

FCC ID: DV8DS7100
Job No: 24CE0150-YK

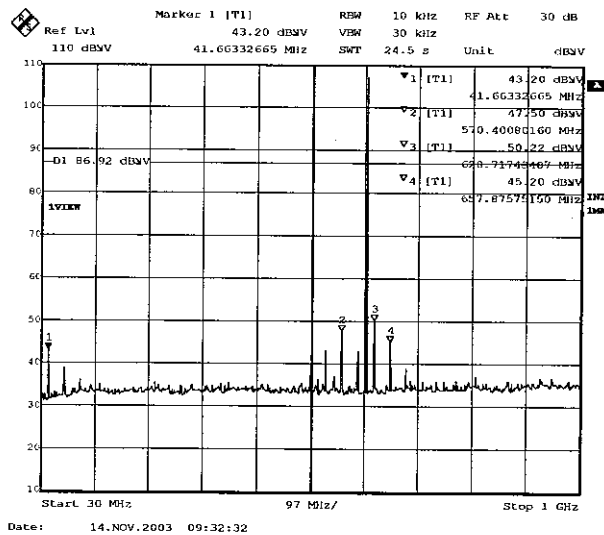
Ch 613.9875MHz

1.

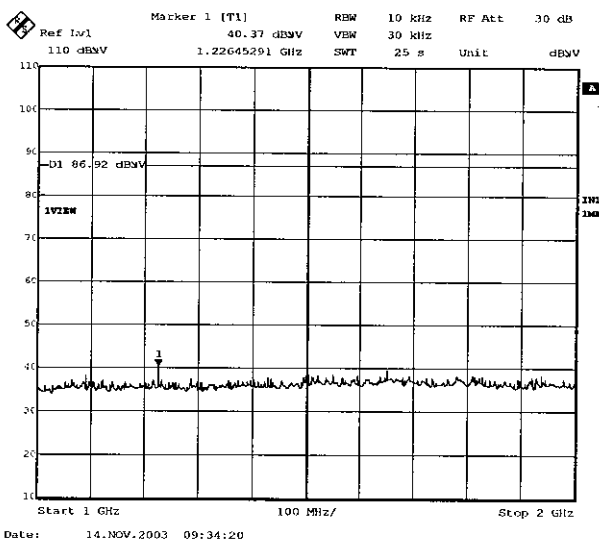
T. Amanna



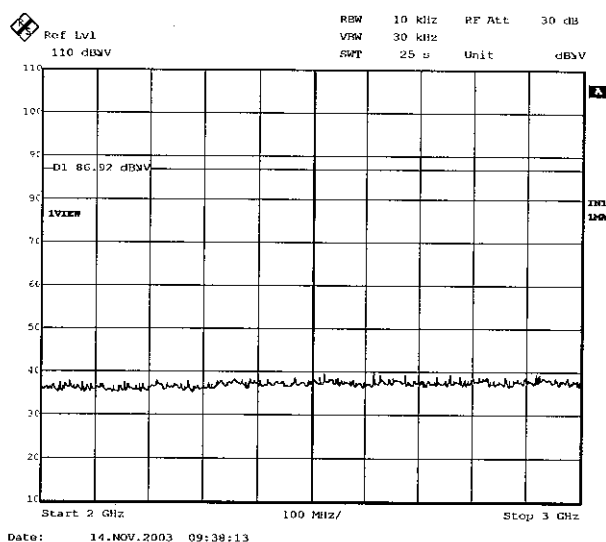
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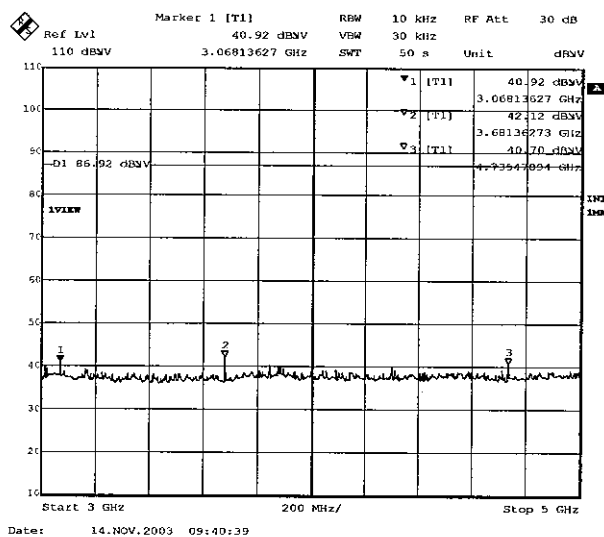
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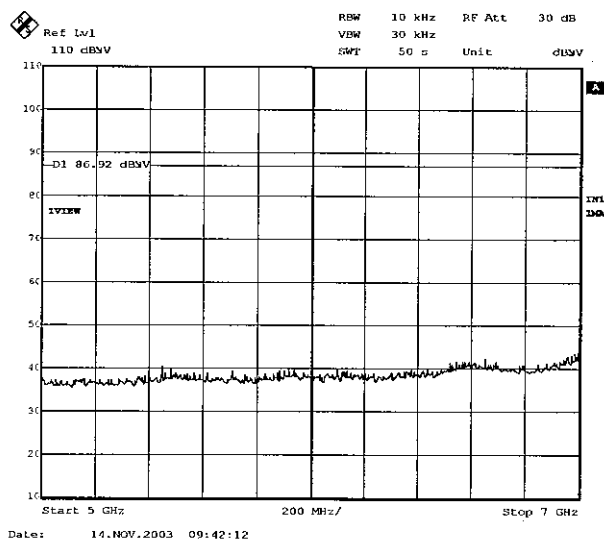
4.

*T. Amamura*

5.



6.



Test Report No : 24CE0150-YK

APPENDIX 3 Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
KCC-A1/A3	Coaxial Cable	Fujikura	5D-2W	CE/RE	2003/07/25 * 12
KLS-01	LISN(AMN)	Schwarzbeck	NSLK8126	CE	2003/07/25 * 12
KSA-04	Spectrum Analyzer	Advantest	R3271A	CE/RE	2003/09/17 * 12
KTR-01	Test Receiver	Rohde & Schwarz	ES140	CE/RE/AT	2003/07/25 * 12
KLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2003/02/06 * 12
KAF-05	Pre Amplifier	Agilent	8447D	RE	2003/06/12 * 12
KAT6-02	Attenuator	INMET	18N-6dB	RE	2003/05/12 * 12
KAEC-01(NSA)	Anechoic Chamber	JSE	Semi 3m	RE	2003/09/07 * 12
KCC-D11/D12	Coaxial cable	Suhner/storm	SCOFLEX103/ 90-388-020	RE	2003/10/20 * 12
KBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2003/02/06 * 12
KHA-01	Horn Antenna	A.H.Systems	SAS-200/571	RE	2003/08/11 * 12
KAF-02	Pre Amplifier	Hewlett Packard	8449B	RE	2003/05/08 * 12
KAT10-S1	Attenuator	Agilent	8449D 010	RE	2003/04/18 * 12
KFL-01	Highpass Filter	Hewlett Packard	84300 80038	RE	2003/04/18 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Test Item:

CE: Conducted emission,
RE: Radiated emission,
AT: Antenna terminal.