

EMI TEST REPORT

Test Report No. : 19G0003-05-2

Applicant: ALPINE ELECTRONICS, INC.
Type of Equipment: Car Audio Receiver with rear seat audio Transmitter
Model No.: RBU
Test standard: FCC Part 15 Subpart C
Test Result: Complied

1. This test report shall not be reproduced except in full, without the written approval of A-Pex International Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with above regulation. We hereby certify that the data contain a true representation of the EMC profile.
4. The test results in this test report are traceable to the national or international standards.
5. This test report does not constitute an endorsement by NIST/NVLAP or U.S. Government.

Date of test : December 27, 2000

Tested by : F. Matsuo

Fumiaki Matsuo

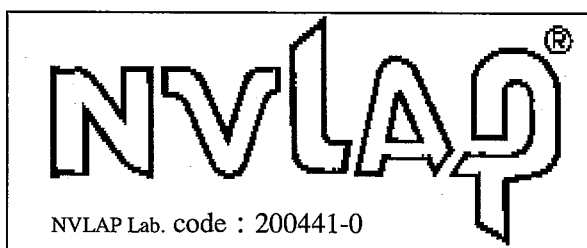
EMC Section

Approved by: T. Hashimoto **Date of issue:** January 16, 2001

Tetsuya Hashimoto

Director of EMC Section

Form Version No. 2



This laboratory is registered by the NIST/NVLAP, U.S.A. The tests reported herein have been performed in accordance with its terms of registration.

A-pex International Co., Ltd.

YAMAKITA LAB.

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

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MF060b(27.12.00)

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SECTION 1: Client information

Company Name : ALPINE ELECTRONICS, INC.
Brand Name : ALPINE
Address : 20-1 Yoshima-Kogyodanchi, Iwaki-city,
Fukushima, 970-1192 JAPAN
Telephone Number : +81-246-36-4111
Facsimile Number : +81-246-36-6090
Contact Person : Shinichi Asuke

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Unique Type Identification : Car Audio Receiver with rear seat audio Transmitter

Model No. : RBU
Rating : DC13.5V typ.
Country of Manufacture : JAPAN
Receipt Date of Sample : December 2, 2000

2.2 Product description

ALPINE ELECTRONICS, INC. Model: RBU (referred to as the EUT in this report) is a Car Audio Receiver with rear seat audio Transmitter.

Clock Frequency: 11.2896MHz, 6.00MHz (for TX), 4.00MHz, 38kHz (for TX), 32.768kHz.
Transmitting Frequency: 912.5MHz, 914MHz.(This EUT has two transmitting channels)
IF Frequency: 10.7MHz.

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SECTION 3: Test specification, methods & procedures

3.1 Test specification

Test Specification : FCC Part 15 Subpart C

Title : FCC 47CFR Part15 Radio Frequency Device
Subpart C Intentional Radiators

3.2 Methods & Procedures

| No. | Item | Test Procedure | Specification | Remarks |
|------------|-------------------|-----------------------|----------------------|--------------------------|
| 1 | Radiated emission | FCC/ANSI C63.4:1992 | - | Measuring distance of 3m |

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SECTION 4: Operation of E.U.T. during testing

4.1 Operating modes

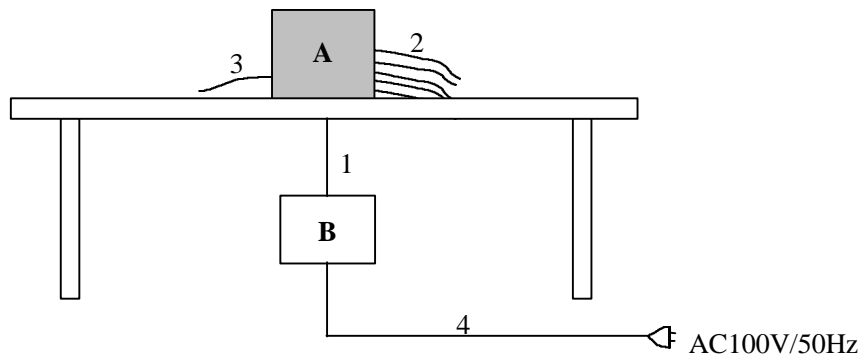
The EUT exercise program used during testing was designed to exercise the various system components in a manner similar to typical use.

Operation: 1) Transmitting Mode (912.5MHz CH-1, 914MHz CH-2)
2) Receiving Mode

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

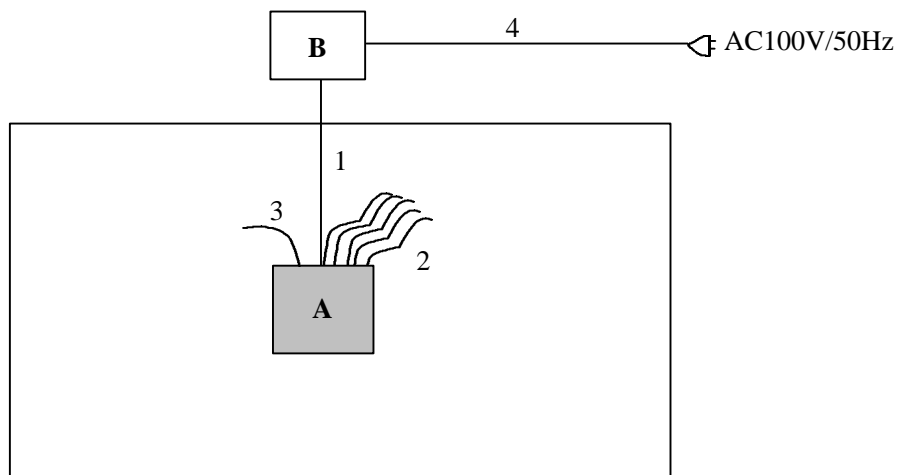
4.2 Configuration and peripherals

Front View



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

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 | FCC ID |
|-----|---|--------------|--------------------|--------------------------------|--------|
| A | Car Audio Receiver with rear seat audio Transmitter | RBU | TB1AA2100R 1170 | ALPINE ELECTRONICS, INC. | - |
| B | DC Power Supply | PAN35-10A | DE001677 | KIKUSUI | - |

Meshed column are represented EUT

List of cables used

| No. | Name | Length (m) | Shield | Backshell material |
|-----|-------------------------|------------|------------|--------------------|
| ① | DC Power Cable | 1.8 | Unshielded | P.V.C. |
| ② | Speaker & Control Cable | 0.3 | Unshielded | P.V.C. |
| ③ | Receiver Antenna Cable | 0.3 | Shielded | P.V.C. |
| ④ | AC Power Cable | 2.0 | Unshielded | P.V.C. |

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SECTION 5: Summary of test results

5.1 Test results

| No. | Item | Test Procedure | Specification | Remarks | Results |
|-----|-------------------|---------------------|---------------|--------------------------|----------|
| 1 | Radiated emission | FCC/ANSI C63.4:1992 | — | Measuring distance of 3m | Complied |

A-PEX INTERNATIONAL hereby confirms that E.U.T. , in the configuration tested, complies with the specifications FCC Part15 Subpart C.

5.1.1 Data of radiated emission test

FCC Part 15

The initial step in collecting radiated data was a spectrum analyzer peak scan of the measurement range (30MHz-10000MHz).

The final data was reported in the worst-case emissions.

The minimum margin to the limit is as follows :

Subpart C § 15.249 (a), (b), (d)

1) Transmitting Mode (CH-1)

| Frequency (MHz) | Receiver Reading (dBuV) | Correction Factor (dB/m) | Field Strength (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|-------------------------|--------------------------|-------------------------|----------------|-------------|
| 1825.06 | 55.6 | -3.8 | 51.8 | 54.0 | 2.2 |

2) Transmitting Mode (CH-2)

| Frequency (MHz) | Receiver Reading (dBuV) | Correction Factor (dB/m) | Field Strength (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|-------------------------|--------------------------|-------------------------|----------------|-------------|
| 1827.96 | 55.5 | -3.8 | 51.7 | 54.0 | 2.3 |

*30MHz-1000MHz: All readings are quasi-peak mode.

*1000MHz-2750MHz: All readings are AV mode. (We confirmed that peak mode data did not over limit 20dB)

*2750MHz-10000MHz: All readings are peak mode.

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Subpart C 15.249 (C)

1) Transmitting Mode (CH-1)

| Frequency (MHz) | Receiver Reading (dBuV) | Correction Factor (dB/m) | Field Strength (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------|-------------------------------|--------------------------------|-------------------------------|-------------------|----------------|
| 30.00 | 25.9 | -2.3 | 23.6 | 40.0 | 16.4 |

2) Transmitting Mode (CH-2)

| Frequency (MHz) | Receiver Reading (dBuV) | Correction Factor (dB/m) | Field Strength (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------|-------------------------------|--------------------------------|-------------------------------|-------------------|----------------|
| 30.05 | 30.1 | -2.3 | 27.8 | 40.0 | 12.2 |

3) Receiving Mode

| Frequency (MHz) | Receiver Reading (dBuV) | Correction Factor (dB/m) | Field Strength (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------|-------------------------------|--------------------------------|-------------------------------|-------------------|----------------|
| 30.01 | 26.5 | -2.3 | 24.2 | 40.0 | 15.8 |

* All readings are quasi-peak mode.

Subpart C 15.249 (e)

N/A

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Field strength calculation

The field strength is calculated by adding the Antenna Factor, Cable Factor and Antenna Pad, and subtracting the Amplifier Gain from the measured reading. The sample calculation is as follows :

$$FS = RA + \frac{AF + CF + AT - AG}{\text{Correction factor}}$$

where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Factor

AT = Antenna Pad

AG = Amplifier Gain

Subpart C 15.249 (a), (b), (d)

1) Transmitting Mode (CH-1)

Assume a receiver reading of 55.6dBuV is obtained. The antenna Factor of 28.9dB, Cable Factor of 4.0dB and Antenna Pad of 0.0dB is added.

The Amplifier Gain of 36.7dB is subtracted, giving a field strength of 51.8dBuV/m.

$$FS = 55.6 + 28.9 + 4.0 + 0.0 - 36.7 = 51.8\text{dBuV/m}$$

2) Transmitting Mode (CH-2)

Assume a receiver reading of 55.5dBuV is obtained. The antenna Factor of 28.9dB, Cable Factor of 4.0dB and Antenna Pad of 0.0dB is added.

The Amplifier Gain of 36.7dB is subtracted, giving a field strength of 51.7dBuV/m.

$$FS = 55.5 + 28.9 + 4.0 + 0.0 - 36.7 = 51.7\text{dBuV/m}$$

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Subpart C 15.249 (C)

1) Transmitting Mode (CH-1)

Assume a receiver reading of 25.9dBuV is obtained. The antenna Factor of 18.7dB, Cable Factor of 1.3dB and Antenna Pad of 6.0dB is added.

The Amplifier Gain of 28.3dB is subtracted, giving a field strength of 23.6dBuV/m.

$$FS = 25.9 + 18.7 + 1.3 + 6.0 - 28.3 = 23.6\text{dBuV/m}$$

2) Transmitting Mode (CH-2)

Assume a receiver reading of 30.1dBuV is obtained. The antenna Factor of 18.7dB, Cable Factor of 1.3dB and Antenna Pad of 6.0dB is added.

The Amplifier Gain of 28.3dB is subtracted, giving a field strength of 27.8dBuV/m.

$$FS = 30.1 + 18.7 + 1.3 + 6.0 - 28.3 = 27.8\text{dBuV/m}$$

3) Receiving Mode

Assume a receiver reading of 26.5dBuV is obtained. The antenna Factor of 18.7dB, Cable Factor of 1.3dB and Antenna Pad of 6.0dB is added.

The Amplifier Gain of 28.3dB is subtracted, giving a field strength of 24.2dBuV/m.

$$FS = 26.5 + 18.7 + 1.3 + 6.0 - 28.3 = 24.2\text{dBuV/m}$$

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5.2 Uncertainty

Radiated emission test

The measurement uncertainty (with a 95% confidence level) for this test was $\pm 3.3\text{dB}$.

The data listed in this test report may exceed the test limit because it does not have enough margin (more than 3.3dB).

5.3 Test instruments

Refer to SECTION 6: TEST INSTRUMENTS

5.4 Test location

A-PEX International Co.,Ltd. Yamakita No.1 Open Test Site.
907, Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken 258-0124 Japan
Telephone number : +81-465-77-1011
Facsimile number : +81-465-77-2112

This site has been fully described in a report dated September 24, 1999 submitted to FCC office, and accepted in a letter dated October 8, 1999 (95486)

*NVLAP Lab. code : 200441-0

5.5 Photographs of test setup

Refer to Appendix 1.

5.6 Data of EMI test

Refer to Appendix 2.

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SECTION 6: Test instruments

EMI test instrument

| Instrument | Manufacturer | Model No. | Control No. | Calibration date / Interval |
|---------------------|---------------------|------------------|--------------------|------------------------------------|
| Pre-Amplifier | Hewlett Packard | 8447D | KAF-01 | September 5, 2000 / 1year |
| Pre-Amplifier | Hewlett Packard | 8449B | KAF-02 | September 12, 2000 / 1year |
| Biconical Antenna | Schwarzbeck | BBA9106 | KBA-01 | September 3, 2000 / 1year |
| Logperiodic Antenna | Schwarzbeck | USLP9143 | KLA-02 | September 3, 2000 / 1year |
| DRG Horn Antenna | A.H.Systems | SAS-200/571 | KHA-01 | October 17, 1999 / 3year |
| Spectrum Analyzer | ADVANTEST | R3271 | SA-05 | December 9, 2000 / 1year |
| Test Receiver | Rohde & Schwarz | ESCS30 | KTR-02 | December 4, 2000 / 1year |

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

A-pex International Co., Ltd.

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SECTION 7: Radiated emission

7.1 Operating environment

The test was carried out in an open test site.

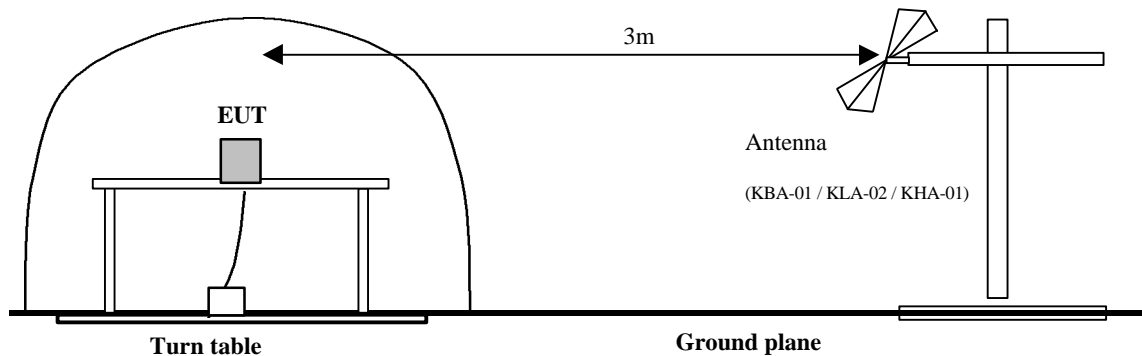
Temperature : 15 degree
Humidity : 40 %

7.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The rear of EUT, including peripherals was aligned and flush with rear of tabletop. 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 40cm height to the ground plane. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

A drawing of the set up is shown in fig. 1 and the photos of Appendix 1.

Figure 1. Drawing of the test set-up



7.3 Test conditions

Frequency range : 30MHz - 10000MHz
Test distance : 3m
EUT position : Table top

7.4 Test procedure

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

Pre check measurements were performed within a screened room or used search coil for ambient noise at high-level, especially from 272MHz to 288MHz. Measurements were performed with a quasi-peak detector.

The measuring antenna height was varied between 1 to 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. The EUT was put into operation at Transmitting Mode and Receiving Mode.

7.5 Results

Summary of the test results: Pass (The test data is shown in Appendix 2.)

Date: December 27, 2000

Test engineer: F. Matsuo

A-pex International Co., Ltd.

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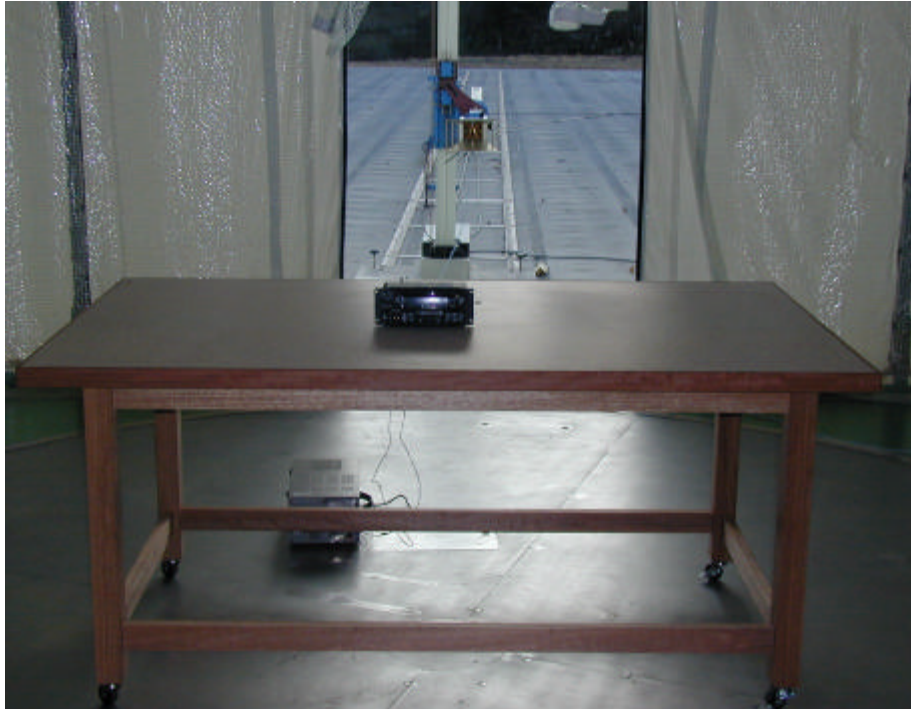
Facsimile: int +81 465 77 2112

APPENDIX 1: Photographs of test setup

This section contains the following photographs:

Page 16 : Radiated emission

Radiated emission



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APPENDIX 2: Data of EMI test

This section contains the following data

Radiated emission FCC Part 15 Subpart C 15.249 (a), (b), (d):

Transmitting (CH-1) A2-01 to A2-02

Transmitting (CH-2) A2-03 to A2-04

Radiated emission FCC Part 15 Subpart C 15.249 (C):

Transmitting (CH-1) A2-05 to A2-06

Transmitting (CH-2) A2-07 to A2-08

Receiving A2-09 to A2-10

Fundamental wave chart:

Transmitting (CH-1) A2-11

Transmitting (CH-2) A2-12

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DATA OF RADIATION TEST

A-PEX INTERNATIONAL CO., LTD.
YAMAKITA No.1 OPEN TEST SITE
Report No. : 19G0003-05-2

Applicant : ALPINE ELECTRONICS INC.
 Kind of Equipment : Car Audio Receiver with rear seat audio Transmitter
 Model No. : RBU
 Serial No. : TB1AA2100R1170
 Power : DC13.5V
 Mode : Transmitting (CH-1)
 Remarks :
 Date : 12/27/2000
 Test Distance : 3 m
 Temperature : 15 °C
 Humidity : 40 %
 Regulation : FCC15C 902-928MHz (3m)

F. Matsuo

 Engineer : Fumiaki Matsuo

| 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 | | | | | HOR [dB μ V/m] | VER | | HOR [dB] | VER |
| 1. | 912.49 | BB | 68.7 | 75.2 | 22.6 | 28.7 | 8.7 | 6.1 | 77.4 | 83.9 | 94.0 | 16.6 | 10.1 |
| 2. | 1825.06 | BB | 53.2 | 55.6 | 28.9 | 36.7 | 4.0 | 0.0 | 49.4 | 51.8 | 54.0 | 4.6 | 2.2 |
| 3. | 2737.53 | BB | 47.1 | 50.7 | 31.4 | 36.5 | 5.2 | 0.0 | 47.2 | 50.8 | 54.0 | 6.8 | 3.2 |
| 4. | 3649.98 | BB | 47.9 | 49.1 | 32.6 | 36.4 | 5.7 | 0.0 | 49.8 | 51.0 | 54.0 | 4.2 | 3.0 |
| 5. | 4560.30 | BB | 42.8 | 43.9 | 33.7 | 36.0 | 6.5 | 0.0 | 47.0 | 48.1 | 54.0 | 7.0 | 5.9 |
| 6. | 5472.43 | BB | 41.9 | 41.9 | 35.5 | 35.4 | 7.2 | 0.0 | 49.2 | 49.2 | 54.0 | 4.8 | 4.8 |

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

*KLA-01 (USLP9143) /KHA-01 (SAS-200/571)

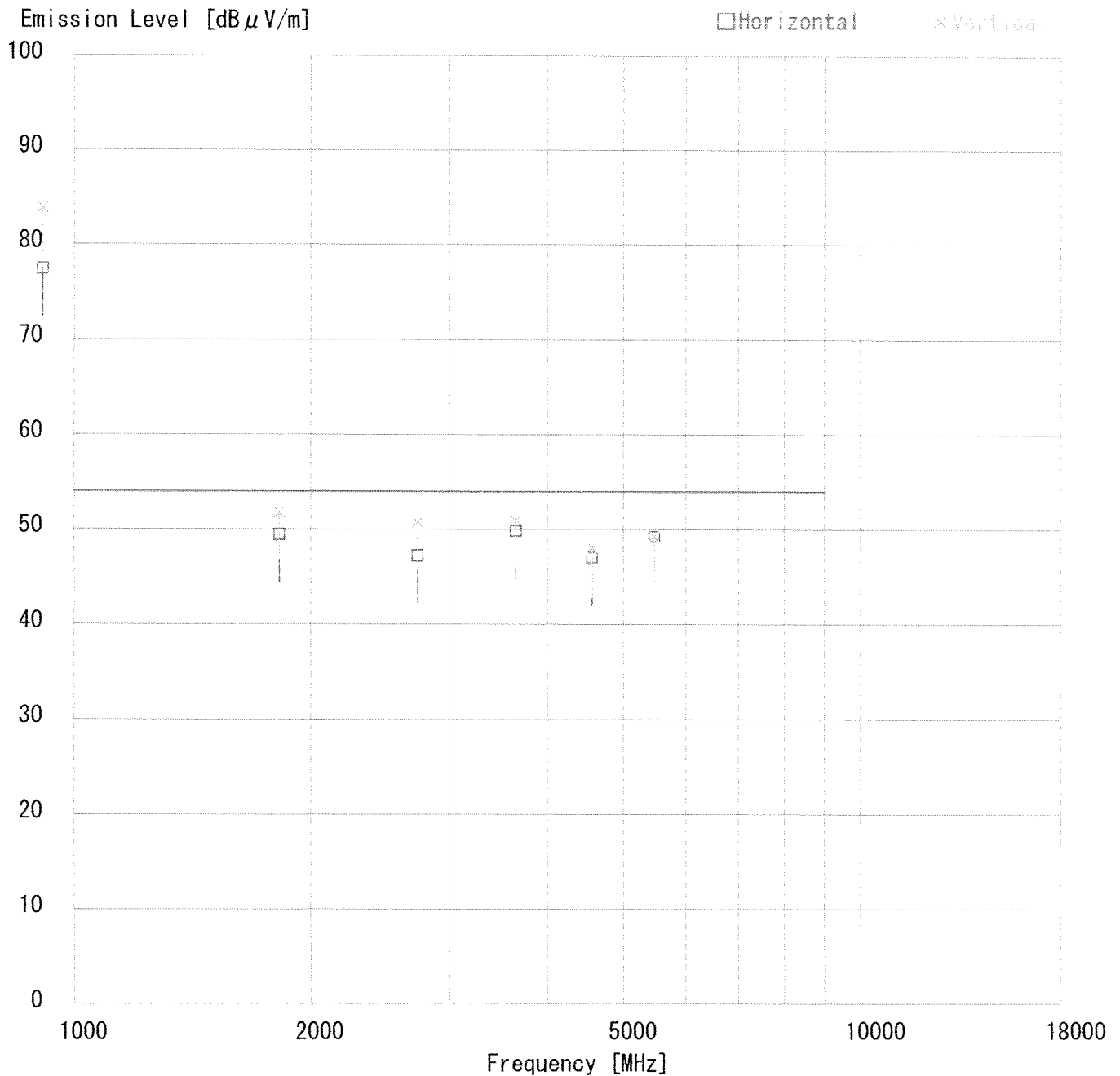
*CABLE: KCC-D1/D2*PREAMP: KAF-01/KAF-02*EMI RECEIVER :KTR-02 (ESCS30)

DATA OF RADIATION TEST

A-PEX INTERNATIONAL CO., LTD.
YAMAKITA No.1 OPEN TEST SITE
Report No. : 19G0003-05-2

Applicant : ALPINE ELECTRONICS INC.
Kind of Equipment : Car Audio Receiver with rear seat audio Transmitter
Model No. : RBU
Serial No. : TB1AA2100R1170
Power : DC13.5V
Mode : Transmitting (CH-1)
Remarks :
Date : 12/27/2000
Test Distance : 3 m
Temperature : 15 °C
Humidity : 40 %
Regulation : FCC15C 902-928MHz (3m)

F. Matsuo
Engineer : Fumiaki Matsuo



DATA OF RADIATION TEST

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 Kind of Equipment : Car Audio Receiver with rear seat audio Transmitter
 Model No. : RBU
 Serial No. : TB1AA2100R1170
 Power : DC13.5V
 Mode : Transmitting (CH-2)
 Remarks :
 Date : 12/27/2000
 Test Distance : 3 m
 Temperature : 15 °C
 Humidity : 40 %
 Regulation : FCC15C 902-928MHz (3m)

F. Matsuo

 Engineer : Fumiaki Matsuo

| 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 | | | | | HOR [dB μ V/m] | VER | | HOR [dB] | VER |
| 1. | 914.02 | BB | 69.0 | 75.5 | 22.6 | 28.7 | 8.7 | 6.1 | 77.7 | 84.2 | 94.0 | 16.3 | 9.8 |
| 2. | 1827.96 | BB | 51.7 | 55.5 | 28.9 | 36.7 | 4.0 | 0.0 | 47.9 | 51.7 | 54.0 | 6.1 | 2.3 |
| 3. | 2741.95 | BB | 47.2 | 51.6 | 31.4 | 36.5 | 5.2 | 0.0 | 47.3 | 51.7 | 54.0 | 6.7 | 2.3 |
| 4. | 3655.96 | BB | 45.3 | 49.8 | 32.6 | 36.4 | 5.7 | 0.0 | 47.2 | 51.7 | 54.0 | 6.8 | 2.3 |
| 5. | 4570.14 | BB | 43.5 | 41.8 | 33.7 | 36.0 | 6.5 | 0.0 | 47.7 | 46.0 | 54.0 | 6.3 | 8.0 |
| 6. | 5485.10 | BB | 43.5 | 41.8 | 35.5 | 35.4 | 7.2 | 0.0 | 50.8 | 49.1 | 54.0 | 3.2 | 4.9 |

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

*KLA-01 (USLP9143) / KHA-01 (SAS-200/571)

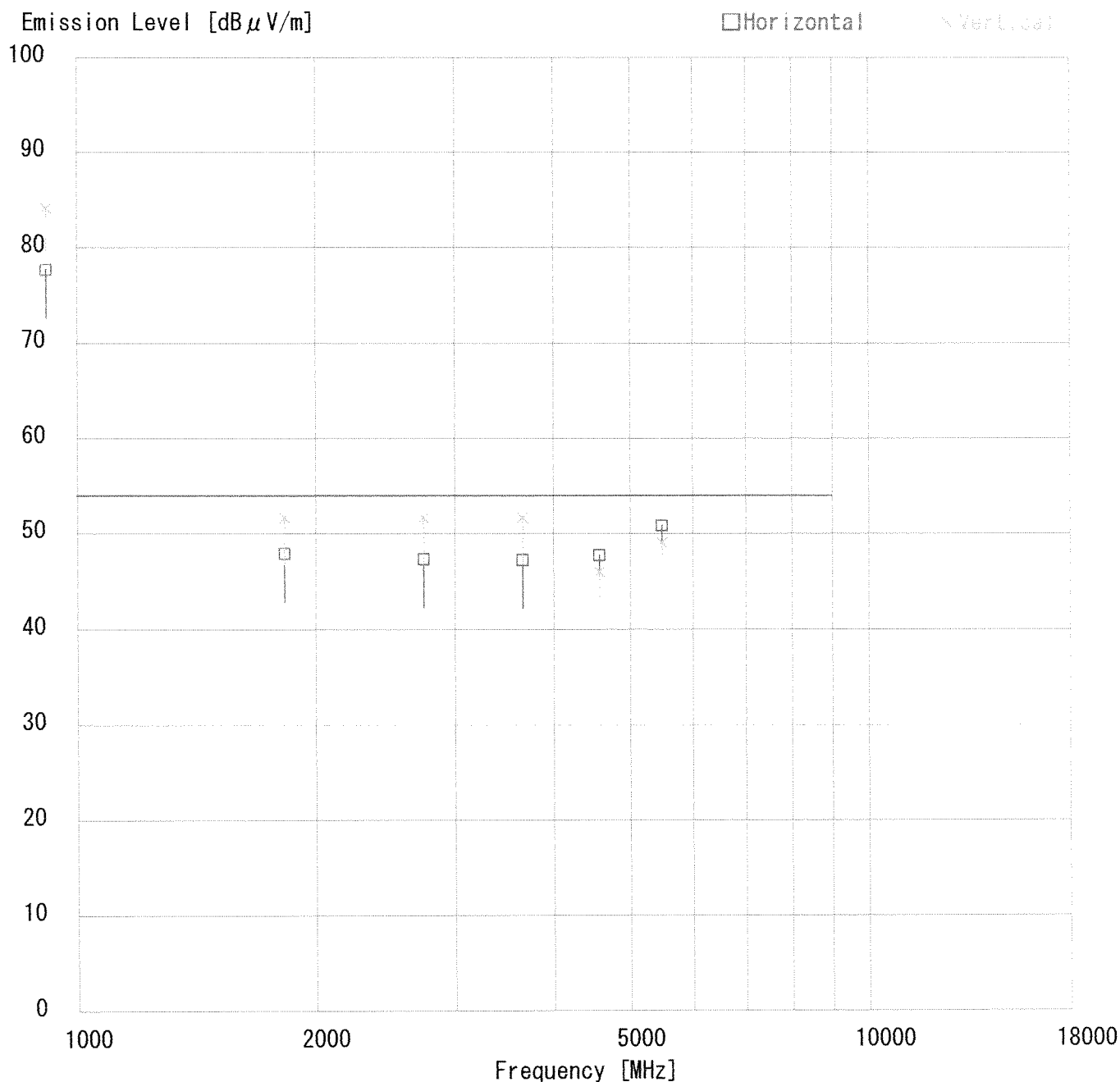
*CABLE: KCC-D1/D2 *PREAMP: KAF-01/KAF-02 *EMI RECEIVER : KTR-02 (ESCS30)

DATA OF RADIATION TEST

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YAMAKITA No.1 OPEN TEST SITE
Report No. : 19G0003-05-2

Applicant : ALPINE ELECTRONICS INC.
Kind of Equipment : Car Audio Receiver with rear seat audio Transmitter
Model No. : RBU
Serial No. : TB1AA2100R1170
Power : DC13.5V
Mode : Transmitting (CH-2)
Remarks :
Date : 12/27/2000
Test Distance : 3 m
Temperature : 15 °C
Humidity : 40 %
Regulation : FCC15C 902-928MHz (3m)

F. Matsuo
Engineer : Fumiaki Matsuo



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 Kind of Equipment : Car Audio Receiver with rear seat audio Transmitter
 Model No. : RBU
 Serial No. : TB1AA2100R1170
 Power : DC13.5V
 Mode : Transmitting(CH-1)
 Remarks :
 Date : 12/27/2000
 Test Distance : 3 m
 Temperature : 15 °C
 Humidity : 40 %
 Regulation : FCC Part15B CLASS B

F. Matsuo

 Engineer : Fumiaki Matsuo

| 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 | | | | | HOR [dB μ V/m] | VER | | HOR [dB] | VER |
| 1. | 30.00 | BB | 23.5 | 25.9 | 18.7 | 28.3 | 1.3 | 6.0 | 21.2 | 23.6 | 40.0 | 18.8 | 16.4 |
| 2. | 60.00 | BB | 25.9 | 29.4 | 7.3 | 28.1 | 1.9 | 6.0 | 13.0 | 16.5 | 40.0 | 27.0 | 23.5 |
| 3. | 78.00 | BB | 29.8 | 28.6 | 6.8 | 28.3 | 2.2 | 6.0 | 16.5 | 15.3 | 40.0 | 23.5 | 24.7 |
| 4. | 162.00 | BB | 20.2 | 20.8 | 15.6 | 28.2 | 3.2 | 6.0 | 16.8 | 17.4 | 43.5 | 26.7 | 26.1 |
| 5. | 531.23 | BB | 20.2 | 20.2 | 18.4 | 29.2 | 6.3 | 6.1 | 21.8 | 21.8 | 46.0 | 24.2 | 24.2 |
| 6. | 573.23 | BB | 20.8 | 20.6 | 18.9 | 29.2 | 6.6 | 6.1 | 23.2 | 23.0 | 46.0 | 22.8 | 23.0 |

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

*ANTENNA: KBA-01 (BBA9106) 30~299.99MHz /KLA-01 (USLP9143) 300~1000MHz

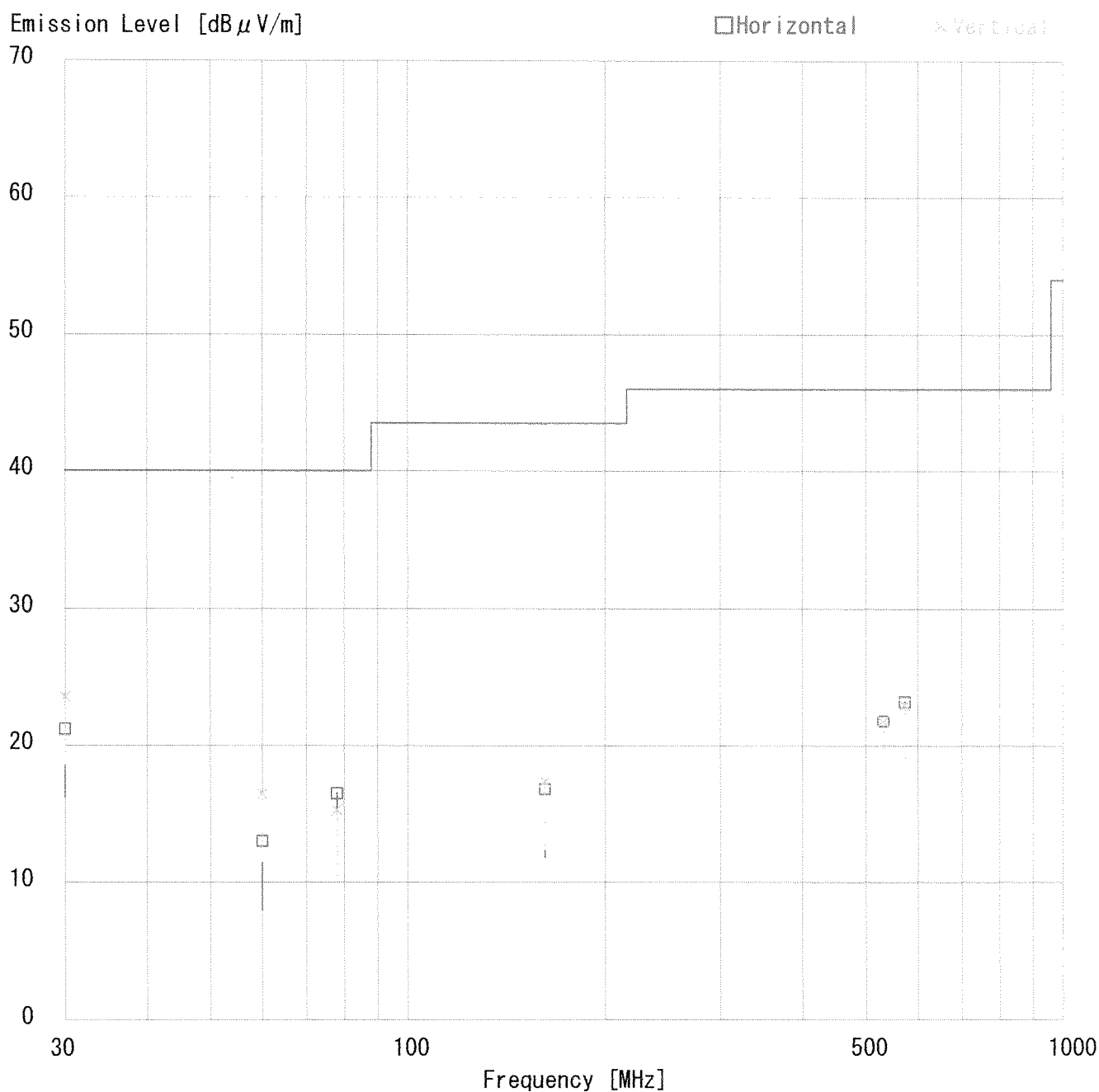
*CABLE: KCC-10/11/12/13/18*PREAMP: KAF-01 (8447D)*EMI RECEIVER: KTR-02 (ESCS30)

DATA OF RADIATION TEST

A-PEX INTERNATIONAL CO., LTD.
YAMAKITA No.1 OPEN TEST SITE
Report No. : 19G0003-05-2

Applicant : ALPINE ELECTRONICS INC.
Kind of Equipment : Car Audio Receiver with rear seat audio Transmitter
Model No. : RBU
Serial No. : TB1AA2100R1170
Power : DC13.5V
Mode : Transmitting(CH-1)
Remarks :
Date : 12/27/2000
Test Distance : 3 m
Temperature : 15 °C
Humidity : 40 %
Regulation : FCC Part15B CLASS B


Engineer : Fumiaki Matsuo



DATA OF RADIATION TEST

A-PEX INTERNATIONAL CO., LTD.
YAMAKITA No.1 OPEN TEST SITE
Report No. : 19G0003-05-2

Applicant : ALPINE ELECTRONICS INC.
 Kind of Equipment : Car Audio Receiver with rear seat audio Transmitter
 Model No. : RBU
 Serial No. : TB1AA2100R1170
 Power : DC13.5V
 Mode : Transmitting(CH-2)
 Remarks :
 Date : 12/27/2000
 Test Distance : 3 m
 Temperature : 15 °C
 Humidity : 40 %
 Regulation : FCC Part15B CLASS B



 Engineer : Fumiaki Matsuo

| 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 | | | | | HOR [dB μ V/m] | VER | | HOR [dB] | VER |
| 1. | 30.05 | BB | 24.5 | 30.1 | 18.7 | 28.3 | 1.3 | 6.0 | 22.2 | 27.8 | 40.0 | 17.8 | 12.2 |
| 2. | 60.00 | BB | 33.4 | 27.9 | 7.3 | 28.1 | 1.9 | 6.0 | 20.5 | 15.0 | 40.0 | 19.5 | 25.0 |
| 3. | 78.00 | BB | 28.5 | 29.0 | 6.8 | 28.3 | 2.2 | 6.0 | 15.2 | 15.7 | 40.0 | 24.8 | 24.3 |
| 4. | 162.00 | BB | 20.2 | 20.5 | 15.6 | 28.2 | 3.2 | 6.0 | 16.8 | 17.1 | 43.5 | 26.7 | 26.4 |
| 5. | 531.23 | BB | 20.2 | 20.2 | 18.4 | 29.2 | 6.3 | 6.1 | 21.8 | 21.8 | 46.0 | 24.2 | 24.2 |
| 6. | 573.23 | BB | 20.6 | 20.6 | 18.9 | 29.2 | 6.6 | 6.1 | 23.0 | 23.0 | 46.0 | 23.0 | 23.0 |

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

*ANTENNA: KBA-01 (BBA9106) 30~299.99MHz /KLA-01 (USLP9143) 300~1000MHz

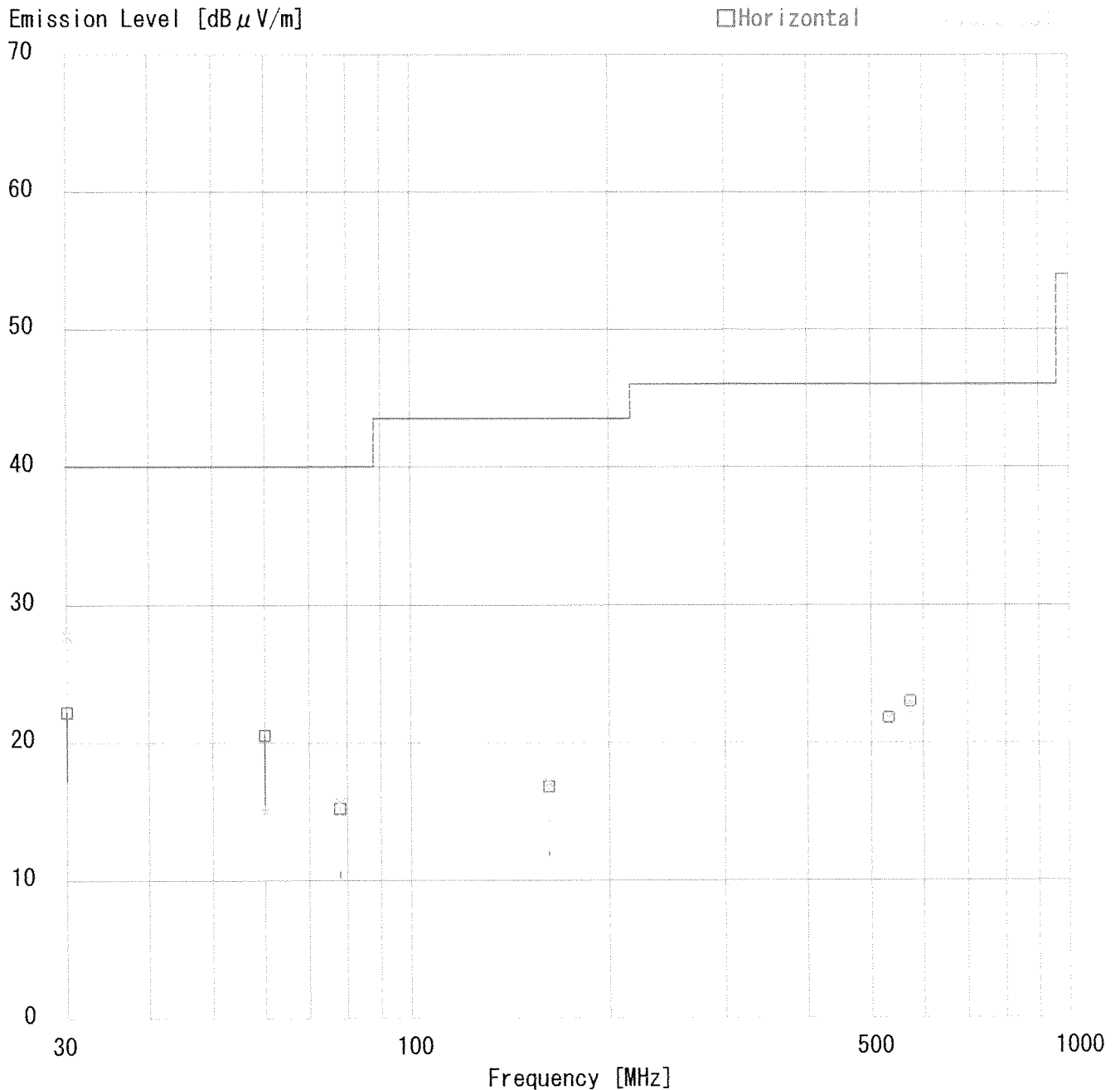
*CABLE: KCC-10/11/12/13/18*PREAMP: KAF-01 (8447D)*EMI RECEIVER: KTR-02 (ESCS30)

DATA OF RADIATION TEST

A-PEX INTERNATIONAL CO., LTD.
YAMAKITA No.1 OPEN TEST SITE
Report No. : 19G0003-05-2

Applicant : ALPINE ELECTRONICS INC.
Kind of Equipment : Car Audio Receiver with rear seat audio Transmitter
Model No. : RBU
Serial No. : TB1AA2100R1170
Power : DC13.5V
Mode : Transmitting(CH-2)
Remarks :
Date : 12/27/2000
Test Distance : 3 m
Temperature : 15 °C
Humidity : 40 %
Regulation : FCC Part15B CLASS B

F. Matsuo
Engineer : Fumiaki Matsuo



DATA OF RADIATION TEST

A-PEX INTERNATIONAL CO., LTD.
YAMAKITA No.1 OPEN TEST SITE
Report No. : 19G0003-05-2

Applicant : ALPINE ELECTRONICS INC.
Kind of Equipment : Car Audio Receiver with rear seat audio Transmitter
Model No. : RBU
Serial No. : TB1AA2100R1170
Power : DC13.5V
Mode : Receiving
Remarks :
Date : 12/27/2000
Test Distance : 3 m
Temperature : 15 °C
Humidity : 40 %
Regulation : FCC Part15B CLASS B


Engineer : Fumiaki Matsuo

| 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 | | | | | HOR [dB μ V/m] | VER | | HOR [dB] | VER |
| 1. | 30.01 | BB | 25.2 | 26.5 | 18.7 | 28.3 | 1.3 | 6.0 | 22.9 | 24.2 | 40.0 | 17.1 | 15.8 |
| 2. | 60.00 | BB | 32.5 | 28.5 | 7.3 | 28.1 | 1.9 | 6.0 | 19.6 | 15.6 | 40.0 | 20.4 | 24.4 |
| 3. | 78.00 | BB | 29.9 | 29.5 | 6.8 | 28.3 | 2.2 | 6.0 | 16.6 | 16.2 | 40.0 | 23.4 | 23.8 |
| 4. | 162.00 | BB | 20.3 | 21.0 | 15.6 | 28.2 | 3.2 | 6.0 | 16.9 | 17.6 | 43.5 | 26.6 | 25.9 |
| 5. | 531.23 | BB | 20.3 | 20.3 | 18.4 | 29.2 | 6.3 | 6.1 | 21.9 | 21.9 | 46.0 | 24.1 | 24.1 |
| 6. | 573.23 | BB | 21.0 | 20.7 | 18.9 | 29.2 | 6.6 | 6.1 | 23.4 | 23.1 | 46.0 | 22.6 | 22.9 |

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

*ANTENNA: KBA-01 (BBA9106) 30~299.99MHz /KLA-01 (USLP9143) 300~1000MHz

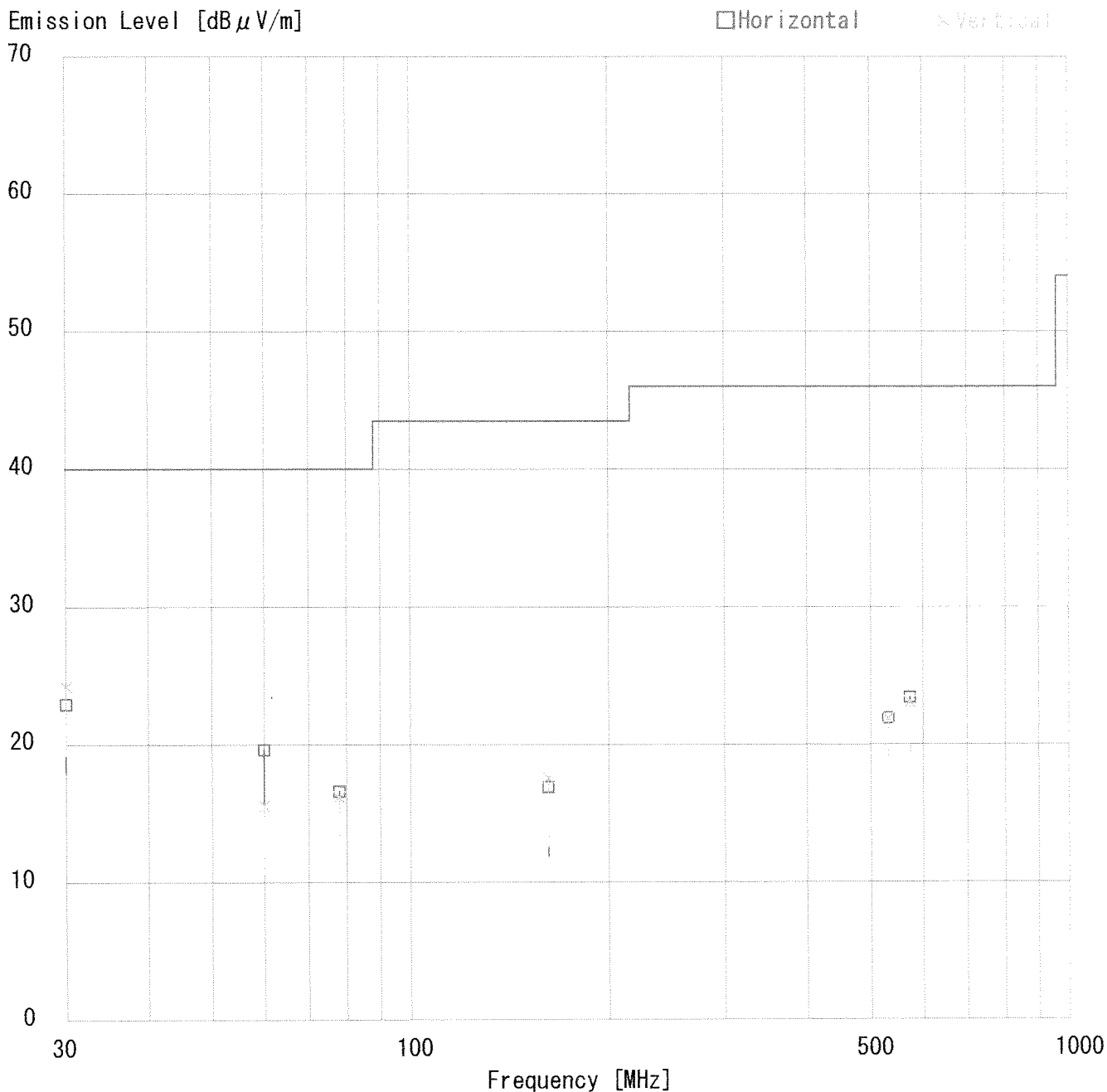
*CABLE: KCC-10/11/12/13/18*PREAMP: KAF-01 (8447D)*EMI RECEIVER :KTR-02 (ESCS30)

DATA OF RADIATION TEST

A-PEX INTERNATIONAL CO., LTD.
YAMAKITA No.1 OPEN TEST SITE
Report No. : 19G0003-05-2

Applicant : ALPINE ELECTRONICS INC.
Kind of Equipment : Car Audio Receiver with rear seat audio Transmitter
Model No. : RBU
Serial No. : TB1AA2100R1170
Power : DC13.5V
Mode : Receiving
Remarks :
Date : 12/27/2000
Test Distance : 3 m
Temperature : 15 °C
Humidity : 40 %
Regulation : FCC Part15B CLASS B

F. Matsuo
Engineer : Fumiaki Matsuo



DATA OF RADIATION TEST CHART

A-PEX INTERNATIONAL CO., LTD.
YAMAKITA No.1 OPEN TEST SITE
Report No. : 19G0003-05-2

Applicant : ALPINE ELECTRONICS INC.
Kind of Equipment : Car Audio Receiver with rear seat audio Transmitter
Model No. : RBU
Serial No. : TB1AA2100R1170
Power : DC13.5V
Mode : Transmitting(CH-1)
Remarks :
Date : 12/27/2000
Test Distance : 3 m
Temperature : 15 °C
Humidity : 40 %
Regulation 1 : FCC15C 902-928MHz (3m)
Regulation 2 : None

F. Matsuo
Engineer : Fumiaki Matsuo

