



# EMI TEST REPORT

Test Report No.: 13462774S-G-R1

**Applicant** : Panasonic Corporation  
**Type of EUT** : Car Navigation  
**Model Number of EUT** : AT2105  
**FCC ID** : ACJ932AT2105  
**Test regulation** : FCC Part 15 Subpart B: 2020  
**Test result** : Complied (Refer to Section 3.2)

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by any agency of the Federal Government.
6. This test report covers EMC technical requirements.  
It does not cover administrative issues such as Manual or non-EMC test related Requirements. (if applicable)
7. The all test items in this test report are conducted by UL Japan, Inc. Shonan EMC Lab.
8. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
9. This report is a revised version of 13462774S-G. 13462774S-G is replaced with this report.

**Date of test:** August 27 to September 5, 2020

**Representative test engineer:**

*Y. Matsuzawa*

Yohsuke Matsuzawa  
Engineer

Consumer Technology Division

**Approved by:**

*S. Takano*

Shinichi Takano

Engineer

Consumer Technology Division



- ☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.
- ☒ There is no testing item of "Non-accreditation".

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

## **REVISION HISTORY**

### **Original Test Report No.: 13462774S-G**

| Revision     | Test report No. | Date              | Page revised | Contents                                                                                                                                                                 |
|--------------|-----------------|-------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| - (Original) | 13462774S-G     | October 22, 2020  | -            | -                                                                                                                                                                        |
| 1            | 13462774S-G-R1  | November 20, 2020 | P.9          | Adding comment:<br>“* Pre-checks were performed with Main port and Sub port, the final measurement was conducted with the worst Main port.”                              |
|              |                 |                   | P.14         | Adding comment:<br>“The test was performed with 0 deg. fixed, since the position of the BT / WLAN antenna did not affect the noise of the FM reception characteristics.” |
|              |                 |                   | P.60         | Addition comment: *1)                                                                                                                                                    |

---

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

## Reference: Abbreviations (Including words undescribed in this report)

|                |                                                                 |                 |                                                                                |
|----------------|-----------------------------------------------------------------|-----------------|--------------------------------------------------------------------------------|
| AAN            | Asymmetric Artificial Network                                   | ISED            | Innovation, Science and Economic Development Canada                            |
| AC             | Alternating Current                                             | ISN             | Impedance Stabilization Network                                                |
| AM             | Amplitude Modulation                                            | ISO             | International Organization for Standardization                                 |
| AMN            | Artificial Mains Network                                        | JAB             | Japan Accreditation Board                                                      |
| Amp, AMP       | Amplifier                                                       | LAN             | Local Area Network                                                             |
| ANSI           | American National Standards Institute                           | LCL             | Longitudinal Conversion Loss                                                   |
| Ant, ANT       | Antenna                                                         | LIMS            | Laboratory Information Management System                                       |
| AP             | Access Point                                                    | LISN            | Line Impedance Stabilization Network                                           |
| ASK            | Amplitude Shift Keying                                          | MRA             | Mutual Recognition Arrangement                                                 |
| Atten., ATT    | Attenuator                                                      | NIST            | National Institute of Standards and Technology                                 |
| AV             | Average                                                         | NS              | No signal detect.                                                              |
| BPSK           | Binary Phase-Shift Keying                                       | NSA             | Normalized Site Attenuation                                                    |
| BR             | Bluetooth Basic Rate                                            | NVLAP           | National Voluntary Laboratory Accreditation Program                            |
| BT             | Bluetooth                                                       | OBW             | Occupied Band Width                                                            |
| BT LE          | Bluetooth Low Energy                                            | OFDM            | Orthogonal Frequency Division Multiplexing                                     |
| BW             | BandWidth                                                       | PK              | Peak                                                                           |
| C.F            | Correction Factor                                               | P <sub>LT</sub> | long-term flicker severity                                                     |
| Cal Int        | Calibration Interval                                            | POHC(A)         | Partial Odd Harmonic Current                                                   |
| CAV            | CISPR AV                                                        | Pol., Pola.     | Polarization                                                                   |
| CCK            | Complementary Code Keying                                       | PR-ASK          | Phase Reversal ASK                                                             |
| CDN            | Coupling Decoupling Network                                     | P <sub>ST</sub> | short-term flicker severity                                                    |
| Ch., CH        | Channel                                                         | QAM             | Quadrature Amplitude Modulation                                                |
| CISPR          | Comite International Special des Perturbations Radioelectriques | QP              | Quasi-Peak                                                                     |
| Corr.          | Correction                                                      | QPSK            | Quadri-Phase Shift Keying                                                      |
| CPE            | Customer premise equipment                                      | r.m.s., RMS     | Root Mean Square                                                               |
| CW             | Continuous Wave                                                 | RBW             | Resolution Band Width                                                          |
| DBPSK          | Differential BPSK                                               | RE              | Radio Equipment                                                                |
| DC             | Direct Current                                                  | REV             | Reverse                                                                        |
| DET            | Detector                                                        | RF              | Radio Frequency                                                                |
| Dmax           | maximum absolute voltage change during an observation period    | RFID            | Radio Frequency Identifier                                                     |
| DQPSK          | Differential QPSK                                               | RSS             | Radio Standards Specifications                                                 |
| DSSS           | Direct Sequence Spread Spectrum                                 | Rx              | Receiving                                                                      |
| EDR            | Enhanced Data Rate                                              | SINAD           | Ratio of (Signal + Noise + Distortion) to (Noise + Distortion)                 |
| e.i.r.p., EIRP | Equivalent Isotropically Radiated Power                         | S/N             | Signal to Noise ratio                                                          |
| EM clamp       | Electromagnetic clamp                                           | SA, S/A         | Spectrum Analyzer                                                              |
| EMC            | ElectroMagnetic Compatibility                                   | SG              | Signal Generator                                                               |
| EMI            | ElectroMagnetic Interference                                    | SVSWR           | Site-Voltage Standing Wave Ratio                                               |
| EMS            | ElectroMagnetic Susceptibility                                  | THC(A)          | Total Harmonic Current                                                         |
| EN             | European Norm                                                   | THD(%)          | Total Harmonic Distortion                                                      |
| e.r.p., ERP    | Effective Radiated Power                                        | TR              | Test Receiver                                                                  |
| EU             | European Union                                                  | Tx              | Transmitting                                                                   |
| EUT            | Equipment Under Test                                            | VBW             | Video BandWidth                                                                |
| Fac.           | Factor                                                          | Vert.           | Vertical                                                                       |
| FCC            | Federal Communications Commission                               | WLAN            | Wireless LAN                                                                   |
| FHSS           | Frequency Hopping Spread Spectrum                               | xDSL            | Generic term for all types of DSL technology<br>(DSL: Digital Subscriber Line) |
| FM             | Frequency Modulation                                            |                 |                                                                                |
| Freq.          | Frequency                                                       |                 |                                                                                |
| FSK            | Frequency Shift Keying                                          |                 |                                                                                |
| Fund           | Fundamental                                                     |                 |                                                                                |
| FWD            | Forward                                                         |                 |                                                                                |
| GFSK           | Gaussian Frequency-Shift Keying                                 |                 |                                                                                |
| GNSS           | Global Navigation Satellite System                              |                 |                                                                                |
| GPS            | Global Positioning System                                       |                 |                                                                                |
| Hori.          | Horizontal                                                      |                 |                                                                                |
| ICES           | Interference-Causing Equipment Standard                         |                 |                                                                                |
| I/O            | Input/Output                                                    |                 |                                                                                |
| IEC            | International Electrotechnical Commission                       |                 |                                                                                |
| IEEE           | Institute of Electrical and Electronics Engineers               |                 |                                                                                |
| IF             | Intermediate Frequency                                          |                 |                                                                                |
| ILAC           | International Laboratory Accreditation Conference               |                 |                                                                                |

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

## **CONTENTS**

|                                                                 | <b>PAGE</b> |
|-----------------------------------------------------------------|-------------|
| <b>SECTION 1 : Customer information</b>                         | <b>5</b>    |
| <b>SECTION 2 : Equipment under test (E.U.T.)</b>                | <b>5</b>    |
| <b>SECTION 3 : Test specification, procedures &amp; results</b> | <b>7</b>    |
| <b>SECTION 4 : Operation of E.U.T. during testing</b>           | <b>9</b>    |
| <b>SECTION 5 : Radiated emission</b>                            | <b>14</b>   |
| <b>SECTION 6 : Antenna power conduction for receivers</b>       | <b>17</b>   |
| <b>APPENDIX 1: Data of EMI test</b>                             | <b>18</b>   |
| <b>APPENDIX 2: Test instruments</b>                             | <b>56</b>   |
| <b>APPENDIX 3: Photographs of test setup</b>                    | <b>58</b>   |

---

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

## **SECTION 1: Customer information**

Company Name : Panasonic Corporation  
Address : 4261 Ikonobe-cho, Tsuzuki-ku, Yokohama-shi, Kanagawa-ken,  
224-8520, Japan  
Telephone Number : +81-50-3689-7112  
Contact Person : Takahisa Sakai

The information provided from the customer is as follows;

- Applicant, Type of Equipment, Model No. FCC ID on the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer information
- SECTION 2: Equipment under test (E.U.T.)
- SECTION 4: Operation of E.U.T. during testing
- \* The laboratory is exempted from liability of any test results affected from the above information in SECTION 2 and 4.

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

### **2.1 Identification of E.U.T.**

Type of Equipment : Car Navigation  
Model No. : AT2105  
Serial No. : Refer to SECTION 4.2  
Rating : DC 13.2 V  
Country of Mass-production : Japan, Mexico, Czech Republic  
Condition of EUT : Production prototype  
(Not for Sale: This sample is equivalent to mass-produced items.)  
Modification of EUT : No modification by the test lab.  
Receipt Date of Sample : July 31, 2020  
(Information from test lab.)

---

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

## 2.2 Product description

Model: AT2105 (referred to as the EUT in this report) is a Car Navigation

### Radio Specification

|                        | IEEE802.11b                              | IEEE802.11g                              | IEEE802.11n<br>(20 MHz band)                                  | IEEE802.11n<br>(40 MHz band)           |
|------------------------|------------------------------------------|------------------------------------------|---------------------------------------------------------------|----------------------------------------|
| Frequency of operation | 2412 MHz - 2462 MHz                      | 2412 MHz - 2462 MHz                      | 2412 MHz – 2462 MHz, 5180 MHz – 5240 MHz, 5745 MHz – 5825 MHz | 5190 MHz, 5230 MHz, 5755 MHz, 5795 MHz |
| Channel spacing        | 5 MHz                                    |                                          | 2.4 GHz band: 5 MHz<br>5 GHz band: 20 MHz                     | 40 MHz                                 |
| Modulation             | DSSS<br>(CCK, DQPSK, DBPSK)              | OFDM-CCK<br>(64QAM, 16QAM, QPSK, BPSK)   | OFDM<br>(64QAM, 16QAM, QPSK, BPSK)                            |                                        |
|                        | IEEE802.11a                              | IEEE802.11ac<br>(20 MHz band)            | IEEE802.11ac<br>(40 MHz band)                                 | IEEE802.11ac<br>(80 MHz band)          |
| Frequency of operation | 5180 MHz – 5240 MHz, 5745 MHz – 5825 MHz | 5180 MHz – 5240 MHz, 5745 MHz – 5825 MHz | 5190 MHz, 5230 MHz, 5755 MHz, 5795 MHz                        | 5210 MHz, 5775 MHz                     |
| Channel spacing        | 20 MHz                                   |                                          | 40 MHz                                                        | 80 MHz                                 |
| Modulation             | OFDM<br>(64QAM, 16QAM, QPSK, BPSK)       | OFDM<br>(256QAM,16QAM,QPSK,BPSK)         |                                                               |                                        |
|                        | Bluetooth (BR/EDR)                       | Bluetooth Low Energy                     |                                                               |                                        |
| Frequency of operation | 2402 MHz – 2480 MHz                      | 2402 MHz – 2480 MHz                      |                                                               |                                        |
| Channel spacing        | 1 MHz                                    | 2 MHz                                    |                                                               |                                        |
| Modulation             | FHSS, GFSK, $\pi/4$ DQPSK, 8DPSK         | FHSS, GFSK                               |                                                               |                                        |
| Antenna type           | Inverted F type antenna                  |                                          |                                                               |                                        |
| Antenna Gain           | RF0                                      | 2.4 GHz WLAN                             | -1.44 dBi                                                     |                                        |
|                        |                                          | U-NII-1                                  | -1.25 dBi                                                     |                                        |
|                        |                                          | U-NII-3                                  | 0.24 dBi                                                      |                                        |
|                        | RF1                                      | BT, BT LE                                | 0.05 dBi                                                      |                                        |
|                        |                                          | U-NII-1                                  | 0.33 dBi                                                      |                                        |
|                        |                                          | U-NII-3                                  | 0.01 dBi                                                      |                                        |
| Antenna Connector type | HFC IV Coaxial connector                 |                                          |                                                               |                                        |
| Operating Temperature  | -30 deg. C to + 65 deg. C                |                                          |                                                               |                                        |

#### FM tuner specification

Frequency of operation: 87.75 MHz - 107.9 MHz

Intermediate frequency:  $\pm 388$  kHz

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

## SECTION 3: Test specification, procedures & results

### 3.1 Test specification

Test specification : FCC Part 15 Subpart B: 2020  
FCC Part 15 final revised on October 13, 2020  
\* The revision does not affect the test result conducted before its effective date.

Title : FCC 47CFR Part 15 Radio Frequency Device  
Subpart B Unintentional Radiators

All the revisions made after testing date do not affect the test specification applied to the EUT.

### 3.2 Procedures & Results

| Item                                   | Test Procedure                              | Limits            | Deviation  | Worst margin                                                                                                        | Result         |
|----------------------------------------|---------------------------------------------|-------------------|------------|---------------------------------------------------------------------------------------------------------------------|----------------|
| Conducted emission                     | ANSI<br>C63.4:2014+A1:2017<br>IEEE 187:2003 | FCC 15.107<br>(a) | N/A<br>*1) | N/A                                                                                                                 | N/A            |
| Radiated emission *2)                  | ANSI<br>C63.4:2014+A1:2017<br>IEEE 187:2003 | FCC 15.109<br>(a) | N/A        | 5.8 dB<br>Freq.: 3525.520 MHz<br>Detector: AV<br>Polarization: Vertical<br>Mode:<br>FM Receiving (87.75 MHz) analog | Complied<br>a) |
| Antenna power conduction for receivers | ANSI<br>C63.4:2014+A1:2017<br>IEEE 187:2003 | FCC 15.111<br>(a) | N/A        | 7.6 dB<br>Freq.: 3465.216 MHz<br>Detector: PEAK<br>Mode:<br>FM Receiving (107.9 MHz) analog                         | Complied<br>b) |

Note: UL Japan's EMI Work Procedures No. 13-EM-W0420

\*1) The test is not applicable since the EUT does not have AC Mains.

\*2) Measurements have been performed up to 40 GHz since the highest frequency of internal source of the EUT is 5825 MHz.

a) Refer to Appendix 1 (data of Radiated emission)

b) Refer to Appendix 1 (data of Antenna Terminal)

Symbols:

Complied The data of this test item has enough margin, more than the measurement uncertainty.

Complied# The data of this test item meets the limits unless the measurement uncertainty is taken into consideration.

### 3.3 Additions to standards

No addition, deviation or exclusion has been made from standards.

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

### 3.4 Confirmation

UL Japan, Inc. hereby confirms that E.U.T., in the configuration tested, complies with the specifications  
FCC Part 15 Subpart B: 2020

### 3.5 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor  $k=2$ .

| Item                                                     | Frequency range | No.1 SAC*1/SR*2<br>(±) | No.2 SAC/SR<br>(±) | No.3 SAC/SR<br>(±) |
|----------------------------------------------------------|-----------------|------------------------|--------------------|--------------------|
| <b>Radiated emission<br/>(Measurement distance: 3 m)</b> | 30 MHz-200 MHz  | 4.6 dB                 | 4.6 dB             | 4.6 dB             |
|                                                          | 200 MHz-1 GHz   | 6.0 dB                 | 6.0 dB             | 6.0 dB             |
|                                                          | 1 GHz-6 GHz     | 4.9 dB                 | 4.9 dB             | 4.9 dB             |
|                                                          | 6 GHz-18 GHz    | 5.5 dB                 | 5.5 dB             | 5.5 dB             |
| <b>Radiated emission<br/>(Measurement distance: 1 m)</b> | 1 GHz-18 GHz    | 5.8 dB                 | 5.8 dB             | 5.8 dB             |
|                                                          | 18 GHz-40 GHz   | 5.7 dB                 | 5.7 dB             | 5.7 dB             |
| <b>Antenna Terminal Voltage*3</b>                        | 5 MHz-1000 MHz  | 2.8 dB                 |                    |                    |
|                                                          | 1 GHz-          | 2.4 dB                 |                    |                    |

\*1: SAC=Semi-Anechoic Chamber

\*2: SR= Shielded Room is applied besides radiated emission

\*3: Value of Antenna Terminal Voltage measurement is also applies to the No.5 and No.6 Shielded Room.

### 3.6 Test location

UL Japan, Inc. Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone number : +81 463 50 6400

Facsimile number : +81 463 50 6401

A2LA Certificate Number : 1266.03

FCC Test Firm Registration Number : 839876

ISED Lab Company Number : 2973D

|                            | Width x Depth x<br>Height (m) | Size of reference<br>ground plane (m)<br>/ horizontal<br>conducting plane | Maximum<br>measuremen<br>t distance |
|----------------------------|-------------------------------|---------------------------------------------------------------------------|-------------------------------------|
| No.1 Semi-anechoic chamber | 20.6 x 11.3 x 7.65            | 20.6 x 11.3                                                               | 10 m                                |
| No.2 Semi-anechoic chamber | 20.6 x 11.3 x 7.65            | 20.6 x 11.3                                                               | 10 m                                |
| No.3 Semi-anechoic chamber | 12.7 x 7.7 x 5.35             | 12.7 x 7.7                                                                | 5 m                                 |
| No.4 Semi-anechoic chamber | 8.1 x 5.1 x 3.55              | 8.1 x 5.1                                                                 | -                                   |
| No.1 Shielded room         | 6.8 x 4.1 x 2.7               | 6.8 x 4.1                                                                 | -                                   |
| No.2 Shielded room         | 6.8 x 4.1 x 2.7               | 6.8 x 4.1                                                                 | -                                   |
| No.3 Shielded room         | 6.3 x 4.7 x 2.7               | 6.3 x 4.7                                                                 | -                                   |
| No.4 Shielded room         | 4.4 x 4.7 x 2.7               | 4.4 x 4.7                                                                 | -                                   |
| No.5 Shielded room         | 7.8 x 6.4 x 2.7               | 7.8 x 6.4                                                                 | -                                   |
| No.6 Shielded room         | 7.8 x 6.4 x 2.7               | 7.8 x 6.4                                                                 | -                                   |
| No.7 Shielded room         | 2.76 x 3.76 x 2.4             | 2.76 x 3.76                                                               | -                                   |
| No.8 Shielded room         | 3.45 x 5.5 x 2.4              | 3.45 x 5.5                                                                | -                                   |
| No.1 Measurement room      | 2.55 x 4.1 x 2.5              | 2.55 x 4.1                                                                | -                                   |

### 3.7 Test Setup, Data of EMI & Test instruments

Refer to Appendix 1 to 3.

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

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

### **4.1 Operating mode**

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

Test sequence is used : FM Receiving (87.75 MHz / 97.9 MHz / 107.9 MHz)  
\*Analog and Digital  
\* Pre-checks were performed with Main port and Sub port, the final measurement was conducted with the worst Main port.

Firmware : YEP1RM06887 Ver.1.00

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

---

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

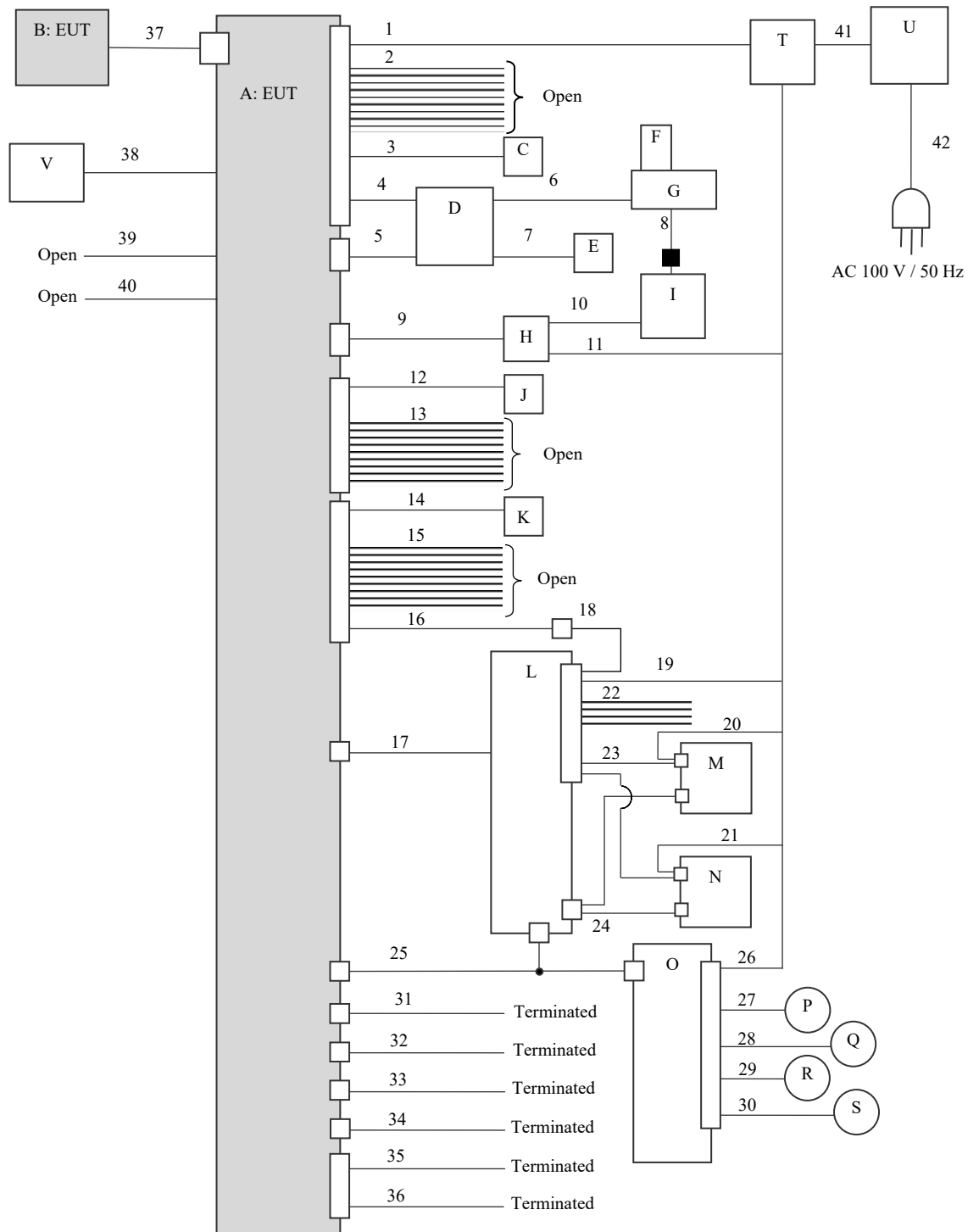
Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

## 4.2 Configuration and peripherals

### Radiated Emission test

■ : Ferrite core



- \* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.
- \* It was preliminary confirmed that there was no difference in emission level due to a standard ferrite core.

**UL Japan, Inc.**

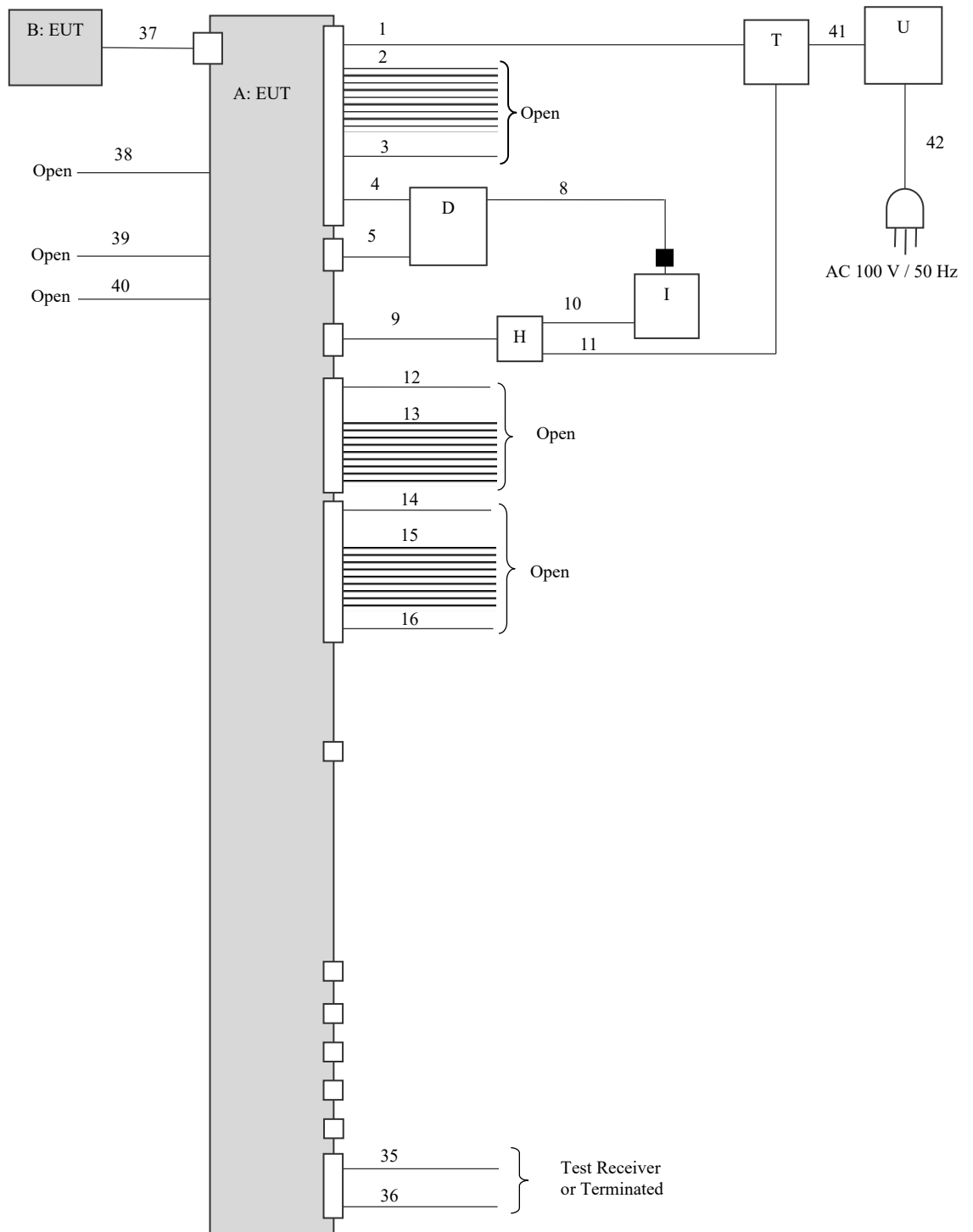
**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

## Antenna Terminal test



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

#### Description of EUT and Support equipment

| No. | Item              | Model number  | Serial number      | Manufacturer          | Remarks |
|-----|-------------------|---------------|--------------------|-----------------------|---------|
| A   | Car Navigation    | AT2105        | 002 *1)<br>001 *2) | Panasonic Corporation | EUT     |
| B   | Antenna           | CA-AL8BX0AJ   | 001                | Panasonic Corporation | EUT     |
| C   | Steering Switch   | -             | 1142               | Panasonic Corporation | -       |
| D   | IF Box            | DEP32-10078   | 033                | Panasonic Corporation | -       |
| E   | Bluetooth Speaker | SRS-X11       | 2154715            | Sony Corporation      | -       |
| F   | USB memory        | USM4GU        | -                  | Sony Corporation      | -       |
| G   | USB Hub           | U3H-A422BX    | 0600341            | ELECOM                | -       |
| H   | JIG Bord          | GVIF2HDJIG    | 16                 | Panasonic Corporation | -       |
| I   | Separate Display  | On-Lap 1102I  | 11102100908028     | TEKWIND               | -       |
| J   | Mic               | GP-SDA3510A   | 0DC062856          | Panasonic Corporation | -       |
| K   | Mic               | GP-SDA3510A   | 0DC062519          | Panasonic Corporation | -       |
| L   | RSE ECU           | CR-EL3BX0AJ   | 1S-188             | Panasonic Corporation | -       |
| M   | RSE Display       | CR-FL3BJ0AJ   | 107                | Panasonic Corporation | -       |
| N   | RSE Display       | CR-FL3BJ0AJ   | 108                | Panasonic Corporation | -       |
| O   | MOST AMP          | CL-DL47X2AJ   | -                  | Panasonic Corporation | -       |
| P   | Speaker           | KFC-RS160     | -                  | KENWOOD               | -       |
| Q   | Speaker           | KFC-RS160     | -                  | KENWOOD               | -       |
| R   | Speaker           | KFC-RS160     | -                  | KENWOOD               | -       |
| S   | Speaker           | KFC-RS160     | -                  | KENWOOD               | -       |
| T   | Terminal Block    | -             | -                  | -                     | -       |
| U   | Power Supply (DC) | PAN35-10A     | DE001677           | KIKUSUI               | -       |
| V   | Jig board         | RCarDBG_JTAG2 | WR12-3224          | WESTEK                | -       |

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

# List of cables used

| No. | Name                   | Length (m)               | Shield     |            | Remarks |
|-----|------------------------|--------------------------|------------|------------|---------|
|     |                        |                          | Cable      | Connector  |         |
| 1   | DC                     | 2.0                      | Unshielded | Unshielded | -       |
| 2   | Signal                 | 2.0                      | Unshielded | Unshielded | -       |
| 3   | Signal                 | 2.0 + 0.1                | Unshielded | Unshielded | -       |
| 4   | IF Box Power           | 2.0 + 0.3                | Unshielded | Unshielded | -       |
| 5   | Signal                 | 2.0                      | Unshielded | Unshielded | -       |
| 6   | USB                    | 0.07                     | Shielded   | Shielded   | -       |
| 7   | USB type C             | 0.9                      | Shielded   | Shielded   | -       |
| 8   | USB                    | 2.0                      | Shielded   | Shielded   | -       |
| 9   | GVIF(Separate Display) | 2.5                      | Shielded   | Shielded   | -       |
| 10  | HDMI                   | 1.2                      | Shielded   | Shielded   | -       |
| 11  | DC                     | 1.0                      | Unshielded | Unshielded | -       |
| 12  | Mic                    | 2.0 + 0.5 *1)<br>2.0 *2) | Unshielded | Unshielded | -       |
| 13  | Signal                 | 2.0                      | Unshielded | Unshielded | -       |
| 14  | Mic                    | 2.0 + 0.5 *1)<br>2.0 *2) | Unshielded | Unshielded | -       |
| 15  | Signal                 | 2.0                      | Unshielded | Unshielded | -       |
| 16  | Signal                 | 2.0                      | Unshielded | Unshielded | -       |
| 17  | RSE                    | 3.0                      | Shielded   | Shielded   | -       |
| 18  | Signal                 | 1.0                      | Unshielded | Unshielded | -       |
| 19  | DC                     | 1.0                      | Unshielded | Unshielded | -       |
| 20  | DC                     | 2.0                      | Unshielded | Unshielded | -       |
| 21  | DC                     | 2.0                      | Unshielded | Unshielded | -       |
| 22  | Signal                 | 1.0                      | Unshielded | Unshielded | -       |
| 23  | Main(RSE)              | 1.0                      | Shielded   | Shielded   | -       |
| 24  | RSE DISP-ECU           | 2.0                      | Unshielded | Unshielded | -       |
| 25  | MOST AMP               | 2.5                      | Unshielded | Unshielded | -       |
| 26  | DC                     | 1.0                      | Unshielded | Unshielded | -       |
| 27  | Speaker                | 1.0                      | Unshielded | Unshielded | -       |
| 28  | Speaker                | 1.0                      | Unshielded | Unshielded | -       |
| 29  | Speaker                | 1.0                      | Unshielded | Unshielded | -       |
| 30  | Speaker                | 1.0                      | Unshielded | Unshielded | -       |
| 31  | A2B                    | 3.0                      | Unshielded | Unshielded | -       |
| 32  | DCM                    | 3.0                      | Shielded   | Shielded   | -       |
| 33  | GPS                    | 0.12 + 1.5               | Shielded   | Shielded   | -       |
| 34  | Sirius XM              | 2.5                      | Unshielded | Unshielded | -       |
| 35  | FM                     | 1.5                      | Shielded   | Shielded   | -       |
| 36  | FM                     | 1.5                      | Shielded   | Shielded   | -       |
| 37  | BT/WLAN Antenna        | 0.3                      | Shielded   | Shielded   | -       |
| 38  | Signal                 | 0.1                      | Unshielded | Unshielded | *3)     |
| 39  | Signal                 | 0.2                      | Unshielded | Unshielded | *3)     |
| 40  | UART                   | 0.3                      | Unshielded | Unshielded | *3)     |
| 41  | DC                     | 2.4                      | Unshielded | Unshielded | -       |
| 42  | AC                     | 2.0                      | Unshielded | Unshielded | -       |

\*1) Used for Radiated Emission test

\*2) Used for Antenna Terminal test

\*3) This cable is for testing and is not included with products.

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

## **SECTION 5: Radiated emission**

### **5.1 Operating environment**

Test room : Refer to data  
Temperature : Refer to data  
Humidity : Refer to data

### **5.2 Test configuration**

EUT was placed on a platform of nominal size, 1.0 m by 2.0 m, raised 0.8 m above the conducting ground plane. The table is made of expanded polystyrol and expanded polypropylene and the table top is covered with polycarbonate. That has very low permittivity. The rear of EUT, including its peripherals was aligned and flushed with rear of tabletop. I/O cables that were connected to the peripherals were bundled in center. They were folded back and for the forming a bundle 30 cm to 40 cm long and were hanged at a 40 cm height to the ground plane. Photographs of the set up are shown in Appendix 3.

### **5.3 Test conditions**

Frequency range : 30 MHz - 40 GHz  
EUT position : Table top

### **5.4 Test procedure**

The Radiated Electric Field Strength intensity has been measured on an anechoic chamber with a ground plane and at a distance of 3 m. Measurements were performed with quasi-peak, peak and average detector. The measuring antenna height was varied between 1 and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. Test antenna was aimed at the EUT for receiving the maximum signal and always kept within the illumination area of the 3 dB beamwidth of the antenna.

The measurements were performed for both vertical and horizontal antenna polarization. The radiated emission measurements were made with the following detector function of the test receiver.

The noise levels were confirmed at each position of 0 deg. and 30 deg. of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

The test was performed with 0 deg. fixed, since the position of the BT / WLAN antenna did not affect the noise of the FM reception characteristics.

|               |                                         |                                           |
|---------------|-----------------------------------------|-------------------------------------------|
|               | <u>30 MHz -1000 MHz (Test receiver)</u> | <u>1 GHz – 40 GHz (Spectrum analyzer)</u> |
| Detector Type | : QP                                    | AV *1) PK                                 |
| IF Band width | : 120 kHz                               | RBW 1 MHz/ VBW 10 Hz RBW 1 MHz/ VBW 3 MHz |

\*1) When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

---

**UL Japan, Inc.**

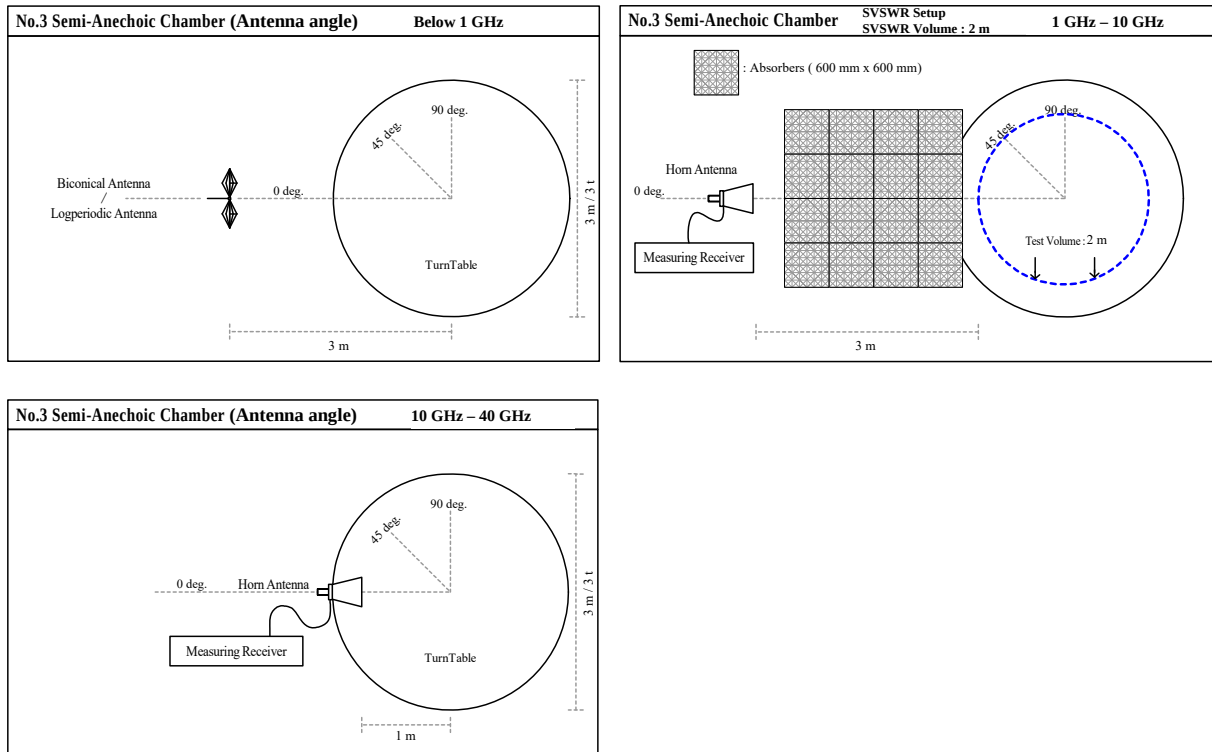
**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

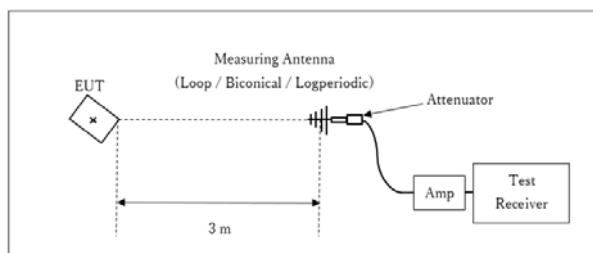
Facsimile: +81 463 50 6401

**Figure 1. Antenna angle**



**Figure 2: Test Setup**

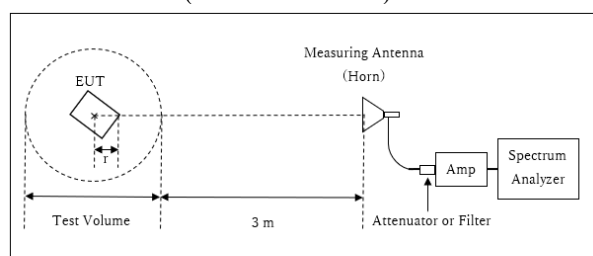
Below 1 GHz



\* : Center of turn table

Test Distance: 3 m

1 GHz - 13 GHz ( 1 GHz - 10 GHz )



r : Radius of an outer periphery of EUT

\* : Center of turn table

Distance Factor:  $20 \times \log (3.00 \text{ m} / 3.00 \text{ m}) = 0.0 \text{ dB}$

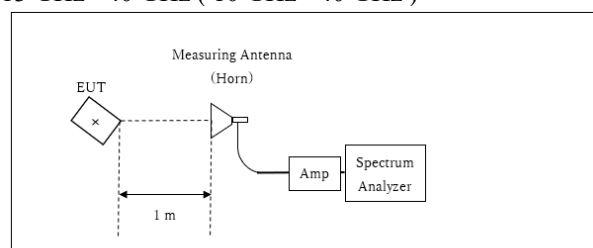
\* Test Distance:  $(3 + \text{SVSWR Volume} / 2) - r = 3.00 \text{ m}$

SVSWR Volume : 2.00 m

(SVSWR Volume has been calibrated based on CISPR 16-1-4.)

r = 1.00 m

13 GHz - 40 GHz ( 10 GHz - 40 GHz )



\* : Center of turn table

Distance Factor:  $20 \times \log (1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

\*Test Distance: 1 m

## 5.5 Results

Summary of the test results : Pass

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

## **SECTION 6: Antenna power conduction for receivers**

### **6.1 Operating environment**

Test room : Refer to data  
Temperature : Refer to data  
Humidity : Refer to data

### **6.2 Test configuration**

The EUT was placed on a non-metallic table height of 0.8 m above the reference ground plane. Photographs of the set up are shown in Appendix 1.

### **6.3 Test conditions**

Frequency range : 30 MHz - 40 GHz  
EUT position : Table top

### **6.4 Test procedure**

The antenna power conduction for receivers was made with the following detector function of the test receiver.

|               |                                         |                                           |
|---------------|-----------------------------------------|-------------------------------------------|
|               | <u>30 MHz -1000 MHz (Test receiver)</u> | <u>1 GHz – 40 GHz (Spectrum analyzer)</u> |
| Detector Type | : QP                                    | Peak                                      |
| IF Band width | : 120 kHz                               | RBW: 1 MHz/ VBW: 3 MHz                    |

### **6.5 Results**

Summary of the test results : Pass

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

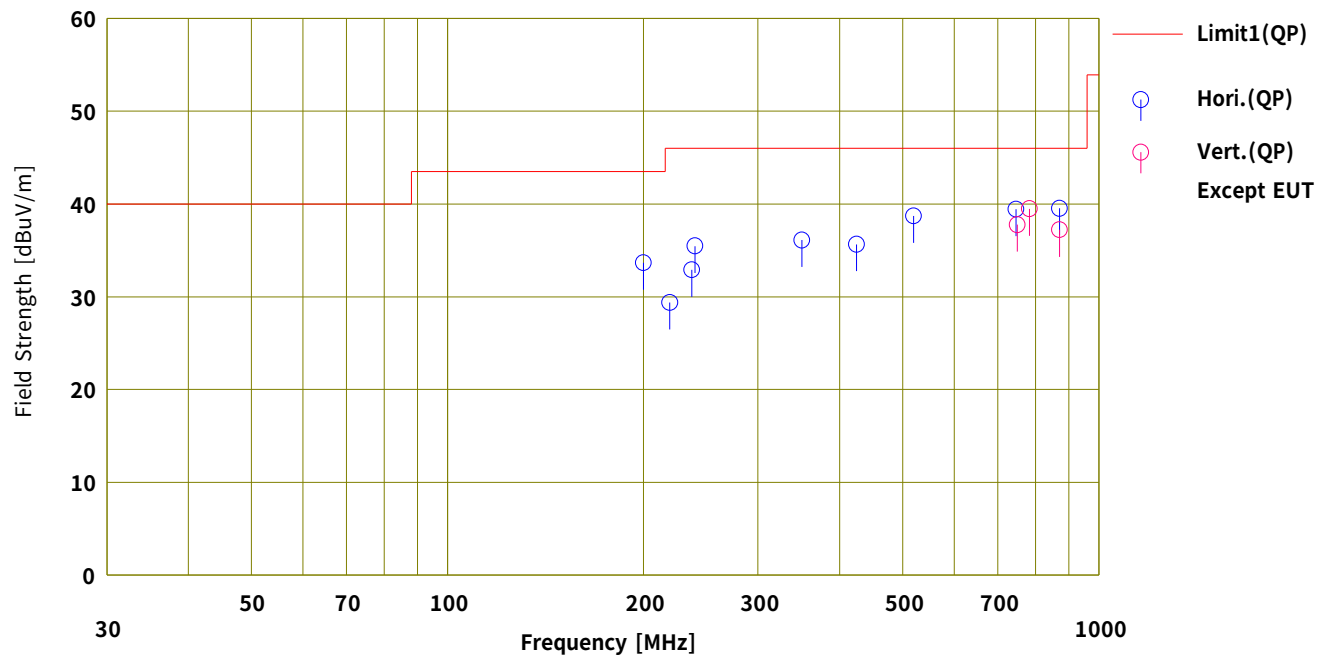
Date : 2020/08/27

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori)

Mode : FM Receiving (97.9 MHz)\_analog  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 23 deg.C / 57 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yasumasa Owaki



| No. | Freq.<br>[MHz] | Reading | Ant.Fac<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | S.Fac<br>[dB] | Result   | Limit    | Margin | Pola.<br>[H/V] | Height<br>[cm] | Angle<br>[deg] | Ant.<br>Type | Comment |
|-----|----------------|---------|-------------------|--------------|--------------|---------------|----------|----------|--------|----------------|----------------|----------------|--------------|---------|
|     |                | <QP>    |                   |              |              |               | <QP>     | <QP>     | <QP>   |                |                |                |              |         |
|     |                | [dBuV]  |                   |              |              |               | [dBuV/m] | [dBuV/m] | [dB]   |                |                |                |              |         |
| 1   | 199.999        | 41.30   | 16.56             | 7.98         | 32.04        | -0.15         | 33.65    | 43.50    | 9.8    | Hori.          | 171            | 313            | BC           |         |
| 2   | 219.523        | 42.10   | 11.21             | 8.09         | 32.02        | 0.00          | 29.38    | 46.00    | 16.6   | Hori.          | 155            | 336            | LP           |         |
| 3   | 237.331        | 45.20   | 11.51             | 8.19         | 32.00        | 0.00          | 32.90    | 46.00    | 13.1   | Hori.          | 173            | 329            | LP           |         |
| 4   | 240.005        | 47.70   | 11.57             | 8.20         | 32.00        | 0.00          | 35.47    | 46.00    | 10.5   | Hori.          | 138            | 332            | LP           |         |
| 5   | 350.011        | 44.20   | 15.03             | 8.79         | 31.93        | 0.00          | 36.09    | 46.00    | 9.9    | Hori.          | 116            | 306            | LP           |         |
| 6   | 425.010        | 42.40   | 16.06             | 9.12         | 31.94        | 0.00          | 35.64    | 46.00    | 10.3   | Hori.          | 100            | 287            | LP           |         |
| 7   | 519.752        | 43.50   | 17.67             | 9.49         | 31.95        | 0.00          | 38.71    | 46.00    | 7.2    | Hori.          | 100            | 337            | LP           |         |
| 8   | 746.608        | 40.70   | 20.14             | 10.33        | 31.74        | 0.00          | 39.43    | 46.00    | 6.5    | Hori.          | 100            | 36             | LP           |         |
| 9   | 870.610        | 38.00   | 22.00             | 10.73        | 31.21        | 0.00          | 39.52    | 46.00    | 6.4    | Hori.          | 100            | 142            | LP           |         |
| 10  | 749.687        | 39.00   | 20.16             | 10.34        | 31.73        | 0.00          | 37.77    | 46.00    | 8.2    | Vert.          | 100            | 168            | LP           |         |
| 11  | 782.904        | 40.20   | 20.53             | 10.44        | 31.69        | 0.00          | 39.48    | 46.00    | 6.5    | Vert.          | 100            | 155            | LP           |         |
| 12  | 870.641        | 35.70   | 22.00             | 10.73        | 31.21        | 0.00          | 37.22    | 46.00    | 8.7    | Vert.          | 100            | 12             | LP           |         |

**DATA OF RADIATED EMISSION TEST**

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

Date : 2020/08/27

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori)

Mode : FM Receiving (87.75 MHz)\_analog  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 23 deg.C / 57 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yasumasa Owaki

## &lt;&lt; QP DATA &gt;&gt;

| No. | Freq.<br>[MHz] | Reading<br><QP> | Ant.Fac<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | S.Fac<br>[dB] | Result<br><QP> | Limit<br><QP> | Margin<br><QP> | Pola.<br>[H/V] | Height<br>[cm] | Angle<br>[deg] | Ant.<br>Type | Comment |
|-----|----------------|-----------------|-------------------|--------------|--------------|---------------|----------------|---------------|----------------|----------------|----------------|----------------|--------------|---------|
|     |                | [dBuV]          |                   |              |              |               | [dBuV/m]       | [dBuV/m]      | [dB]           |                |                |                |              |         |
| 1   | 87.362         | 32.40           | 7.67              | 7.16         | 32.15        | 0.39          | 15.47          | 40.00         | 24.5           | Hori.          | 392            | 262            | BC           |         |
| 2   | 88.138         | 32.20           | 7.83              | 7.17         | 32.14        | 0.38          | 15.44          | 43.50         | 28.0           | Hori.          | 391            | 270            | BC           |         |
| 3   | 174.724        | 31.20           | 15.73             | 7.81         | 32.06        | 0.00          | 22.68          | 43.50         | 20.8           | Hori.          | 183            | 86             | BC           |         |
| 4   | 176.276        | 32.10           | 15.87             | 7.82         | 32.06        | -0.01         | 23.72          | 43.50         | 19.7           | Hori.          | 200            | 84             | BC           |         |
| 5   | 262.086        | 36.00           | 12.32             | 8.33         | 31.98        | 0.00          | 24.67          | 46.00         | 21.3           | Hori.          | 130            | 152            | LP           |         |
| 6   | 264.414        | 36.40           | 12.46             | 8.34         | 31.98        | 0.00          | 25.22          | 46.00         | 20.7           | Hori.          | 140            | 155            | LP           |         |
| 7   | 349.448        | 34.20           | 15.02             | 8.79         | 31.93        | 0.00          | 26.08          | 46.00         | 19.9           | Hori.          | 100            | 115            | LP           |         |
| 8   | 352.552        | 33.90           | 15.07             | 8.80         | 31.93        | 0.00          | 25.84          | 46.00         | 20.1           | Hori.          | 100            | 117            | LP           |         |
| 9   | 87.362         | 28.60           | 7.67              | 7.16         | 32.15        | 0.39          | 11.67          | 40.00         | 28.3           | Vert.          | 100            | 75             | BC           |         |
| 10  | 88.138         | 28.20           | 7.83              | 7.17         | 32.14        | 0.38          | 11.44          | 43.50         | 32.0           | Vert.          | 100            | 72             | BC           |         |
| 11  | 174.724        | 27.50           | 15.73             | 7.81         | 32.06        | 0.00          | 18.98          | 43.50         | 24.5           | Vert.          | 100            | 67             | BC           |         |
| 12  | 176.276        | 27.40           | 15.87             | 7.82         | 32.06        | -0.01         | 19.02          | 43.50         | 24.4           | Vert.          | 100            | 79             | BC           |         |
| 13  | 262.086        | 28.20           | 12.32             | 8.33         | 31.98        | 0.00          | 16.87          | 46.00         | 29.1           | Vert.          | 100            | 137            | LP           |         |
| 14  | 264.414        | 29.40           | 12.46             | 8.34         | 31.98        | 0.00          | 18.22          | 46.00         | 27.7           | Vert.          | 100            | 139            | LP           |         |
| 15  | 349.448        | 26.50           | 15.02             | 8.79         | 31.93        | 0.00          | 18.38          | 46.00         | 27.6           | Vert.          | 100            | 359            | LP           |         |
| 16  | 352.552        | 26.80           | 15.07             | 8.80         | 31.93        | 0.00          | 18.74          | 46.00         | 27.2           | Vert.          | 100            | 356            | LP           |         |

# DATA OF RADIATED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

Date : 2020/08/27

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori)

Mode : FM Receiving (97.9 MHz)\_analog  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 23 deg.C / 57 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yasumasa Owaki

## &lt;&lt; QP DATA &gt;&gt;

| No. | Freq.   | Reading | Ant.Fac | Loss | Gain  | S.Fac | Result   | Limit    | Margin | Pola. | Height | Angle | Ant. Type | Comment |
|-----|---------|---------|---------|------|-------|-------|----------|----------|--------|-------|--------|-------|-----------|---------|
|     |         | <QP>    |         |      |       |       | <QP>     | <QP>     | <QP>   |       |        |       |           |         |
|     | [MHz]   | [dBuV]  | [dB/m]  | [dB] | [dB]  | [dB]  | [dBuV/m] | [dBuV/m] | [dB]   | [H/V] | [cm]   | [deg] |           |         |
| 1   | 97.512  | 31.00   | 9.65    | 7.26 | 32.14 | 0.13  | 15.90    | 43.50    | 27.6   | Hori. | 206    | 107   | BC        |         |
| 2   | 98.288  | 30.60   | 9.81    | 7.26 | 32.14 | 0.11  | 15.64    | 43.50    | 27.8   | Hori. | 205    | 113   | BC        |         |
| 3   | 195.024 | 34.80   | 16.50   | 7.94 | 32.05 | -0.14 | 27.05    | 43.50    | 16.4   | Hori. | 171    | 324   | BC        |         |
| 4   | 196.576 | 34.10   | 16.50   | 7.95 | 32.05 | -0.14 | 26.36    | 43.50    | 17.1   | Hori. | 173    | 329   | BC        |         |
| 5   | 292.536 | 31.90   | 13.43   | 8.49 | 31.97 | 0.00  | 21.85    | 46.00    | 24.1   | Hori. | 107    | 89    | LP        |         |
| 6   | 294.864 | 32.00   | 13.44   | 8.50 | 31.96 | 0.00  | 21.98    | 46.00    | 24.0   | Hori. | 104    | 87    | LP        |         |
| 7   | 390.048 | 31.80   | 15.43   | 8.95 | 31.93 | 0.00  | 24.25    | 46.00    | 21.7   | Hori. | 100    | 96    | LP        |         |
| 8   | 393.152 | 32.70   | 15.53   | 8.96 | 31.93 | 0.00  | 25.26    | 46.00    | 20.7   | Hori. | 100    | 93    | LP        |         |
| 9   | 97.512  | 26.40   | 9.65    | 7.26 | 32.14 | 0.13  | 11.30    | 43.50    | 32.2   | Vert. | 100    | 292   | BC        |         |
| 10  | 98.288  | 25.60   | 9.81    | 7.26 | 32.14 | 0.11  | 10.64    | 43.50    | 32.8   | Vert. | 100    | 241   | BC        |         |
| 11  | 195.024 | 27.60   | 16.50   | 7.94 | 32.05 | -0.14 | 19.85    | 43.50    | 23.6   | Vert. | 100    | 85    | BC        |         |
| 12  | 196.576 | 27.20   | 16.50   | 7.95 | 32.05 | -0.14 | 19.46    | 43.50    | 24.0   | Vert. | 100    | 96    | BC        |         |
| 13  | 292.536 | 24.90   | 13.43   | 8.49 | 31.97 | 0.00  | 14.85    | 46.00    | 31.1   | Vert. | 166    | 323   | LP        |         |
| 14  | 294.864 | 27.90   | 13.44   | 8.50 | 31.96 | 0.00  | 17.88    | 46.00    | 28.1   | Vert. | 156    | 315   | LP        |         |
| 15  | 390.048 | 26.80   | 15.43   | 8.95 | 31.93 | 0.00  | 19.25    | 46.00    | 26.7   | Vert. | 127    | 58    | LP        |         |
| 16  | 393.152 | 27.90   | 15.53   | 8.96 | 31.93 | 0.00  | 20.46    | 46.00    | 25.5   | Vert. | 114    | 61    | LP        |         |

# DATA OF RADIATED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

Date : 2020/08/27

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori)

Mode : FM Receiving (107.9 MHz)\_analog  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 23 deg.C / 57 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yasumasa Owaki

## &lt;&lt; QP DATA &gt;&gt;

| No. | Freq.   | Reading | Ant.Fac | Loss | Gain  | S.Fac | Result   | Limit    | Margin | Pola. | Height | Angle | Ant. Type | Comment |
|-----|---------|---------|---------|------|-------|-------|----------|----------|--------|-------|--------|-------|-----------|---------|
|     |         | <QP>    |         |      |       |       | <QP>     | <QP>     | <QP>   |       |        |       |           |         |
|     | [MHz]   | [dBuV]  | [dB/m]  | [dB] | [dB]  | [dB]  | [dBuV/m] | [dBuV/m] | [dB]   | [H/V] | [cm]   | [deg] |           |         |
| 1   | 107.512 | 31.40   | 11.43   | 7.34 | 32.13 | -0.09 | 17.95    | 43.50    | 25.5   | Hori. | 293    | 312   | BC        |         |
| 2   | 108.288 | 25.00   | 11.54   | 7.34 | 32.13 | -0.10 | 11.65    | 43.50    | 31.8   | Hori. | 297    | 359   | BC        |         |
| 3   | 215.024 | 40.30   | 11.22   | 8.06 | 32.03 | 0.00  | 27.55    | 43.50    | 15.9   | Hori. | 149    | 349   | LP        |         |
| 4   | 216.576 | 39.80   | 11.21   | 8.07 | 32.02 | 0.00  | 27.06    | 46.00    | 18.9   | Hori. | 151    | 339   | LP        |         |
| 5   | 322.536 | 35.50   | 14.24   | 8.65 | 31.95 | 0.00  | 26.44    | 46.00    | 19.5   | Hori. | 100    | 58    | LP        |         |
| 6   | 324.864 | 36.30   | 14.32   | 8.66 | 31.95 | 0.00  | 27.33    | 46.00    | 18.6   | Hori. | 112    | 59    | LP        |         |
| 7   | 430.048 | 29.50   | 16.09   | 9.14 | 31.94 | 0.00  | 22.79    | 46.00    | 23.2   | Hori. | 100    | 149   | LP        |         |
| 8   | 433.152 | 27.70   | 16.13   | 9.15 | 31.94 | 0.00  | 21.04    | 46.00    | 24.9   | Hori. | 100    | 145   | LP        |         |
| 9   | 107.512 | 27.90   | 11.43   | 7.34 | 32.13 | -0.09 | 14.45    | 43.50    | 29.0   | Vert. | 261    | 147   | BC        |         |
| 10  | 108.288 | 26.00   | 11.54   | 7.34 | 32.13 | -0.10 | 12.65    | 43.50    | 30.8   | Vert. | 100    | 124   | BC        |         |
| 11  | 215.024 | 29.90   | 11.22   | 8.06 | 32.03 | 0.00  | 17.15    | 43.50    | 26.3   | Vert. | 100    | 81    | LP        |         |
| 12  | 216.576 | 31.70   | 11.21   | 8.07 | 32.02 | 0.00  | 18.96    | 46.00    | 27.0   | Vert. | 100    | 120   | LP        |         |
| 13  | 322.536 | 28.90   | 14.24   | 8.65 | 31.95 | 0.00  | 19.84    | 46.00    | 26.1   | Vert. | 185    | 268   | LP        |         |
| 14  | 324.864 | 29.90   | 14.32   | 8.66 | 31.95 | 0.00  | 20.93    | 46.00    | 25.0   | Vert. | 192    | 268   | LP        |         |
| 15  | 430.048 | 25.60   | 16.09   | 9.14 | 31.94 | 0.00  | 18.89    | 46.00    | 27.1   | Vert. | 139    | 182   | LP        |         |
| 16  | 433.152 | 23.70   | 16.13   | 9.15 | 31.94 | 0.00  | 17.04    | 46.00    | 28.9   | Vert. | 143    | 180   | LP        |         |

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

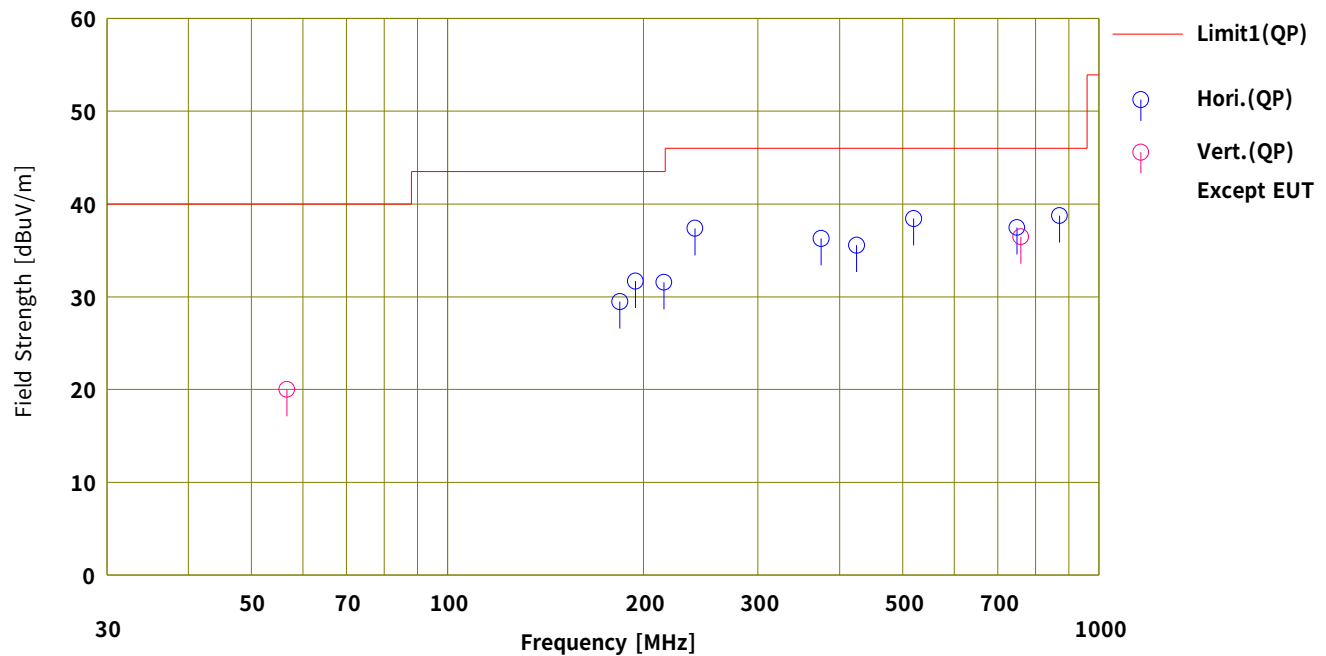
Date : 2020/08/27

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori)

Mode : FM Receiving (97.9 MHz)\_digital  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 23 deg.C / 60 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yohsuke Matsuzawa



| No. | Freq.<br>[MHz] | Reading | Ant.Fac<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | S.Fac<br>[dB] | Result   | Limit    | Margin | Pola.<br>[H/V] | Height<br>[cm] | Angle<br>[deg] | Ant.<br>Type | Comment |
|-----|----------------|---------|-------------------|--------------|--------------|---------------|----------|----------|--------|----------------|----------------|----------------|--------------|---------|
|     |                | <QP>    |                   |              |              |               | <QP>     | <QP>     | <QP>   |                |                |                |              |         |
|     |                | [dBuV]  |                   |              |              |               | [dBuV/m] | [dBuV/m] | [dB]   |                |                |                |              |         |
| 1   | 184.007        | 37.60   | 16.14             | 7.87         | 32.06        | -0.08         | 29.47    | 43.50    | 14.0   | Hori.          | 257            | 208            | BC           |         |
| 2   | 194.389        | 39.50   | 16.45             | 7.93         | 32.05        | -0.14         | 31.69    | 43.50    | 11.8   | Hori.          | 161            | 316            | BC           |         |
| 3   | 214.974        | 44.30   | 11.22             | 8.06         | 32.03        | 0.00          | 31.55    | 43.50    | 11.9   | Hori.          | 166            | 345            | LP           |         |
| 4   | 240.004        | 49.60   | 11.57             | 8.20         | 32.00        | 0.00          | 37.37    | 46.00    | 8.6    | Hori.          | 159            | 331            | LP           |         |
| 5   | 375.025        | 44.20   | 15.11             | 8.89         | 31.93        | 0.00          | 36.27    | 46.00    | 9.7    | Hori.          | 100            | 38             | LP           |         |
| 6   | 425.018        | 42.30   | 16.06             | 9.12         | 31.94        | 0.00          | 35.54    | 46.00    | 10.4   | Hori.          | 100            | 285            | LP           |         |
| 7   | 520.073        | 43.20   | 17.67             | 9.49         | 31.95        | 0.00          | 38.41    | 46.00    | 7.5    | Hori.          | 100            | 337            | LP           |         |
| 8   | 748.926        | 38.70   | 20.15             | 10.34        | 31.73        | 0.00          | 37.46    | 46.00    | 8.5    | Hori.          | 100            | 23             | LP           |         |
| 9   | 870.819        | 37.20   | 22.00             | 10.73        | 31.20        | 0.00          | 38.73    | 46.00    | 7.2    | Hori.          | 100            | 275            | LP           |         |
| 10  | 56.703         | 36.50   | 9.01              | 6.87         | 32.16        | -0.21         | 20.01    | 40.00    | 19.9   | Vert.          | 100            | 219            | BC           |         |
| 11  | 759.393        | 37.50   | 20.29             | 10.38        | 31.72        | 0.00          | 36.45    | 46.00    | 9.5    | Vert.          | 100            | 163            | LP           |         |

**DATA OF RADIATED EMISSION TEST**

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

Date : 2020/08/27

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori)

Mode : FM Receiving (87.75 MHz)\_digital  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 23 deg.C / 57 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yasumasa Owaki

## &lt;&lt; QP DATA &gt;&gt;

| No. | Freq.   | Reading | Ant.Fac | Loss | Gain  | S.Fac | Result   | Limit    | Margin | Pola. | Height | Angle | Ant. Type | Comment |
|-----|---------|---------|---------|------|-------|-------|----------|----------|--------|-------|--------|-------|-----------|---------|
|     |         | <QP>    |         |      |       |       | <QP>     | <QP>     | <QP>   |       |        |       |           |         |
|     |         | [dBuV]  |         |      |       |       | [dBuV/m] | [dBuV/m] | [dB]   |       |        |       |           |         |
| 1   | 87.362  | 32.30   | 7.67    | 7.16 | 32.15 | 0.39  | 15.37    | 40.00    | 24.6   | Hori. | 396    | 269   | BC        |         |
| 2   | 88.138  | 31.90   | 7.83    | 7.17 | 32.14 | 0.38  | 15.14    | 43.50    | 28.3   | Hori. | 398    | 281   | BC        |         |
| 3   | 174.724 | 30.50   | 15.73   | 7.81 | 32.06 | 0.00  | 21.98    | 43.50    | 21.5   | Hori. | 182    | 350   | BC        |         |
| 4   | 176.276 | 28.70   | 15.87   | 7.82 | 32.06 | -0.01 | 20.32    | 43.50    | 23.1   | Hori. | 189    | 350   | BC        |         |
| 5   | 262.086 | 32.00   | 12.32   | 8.33 | 31.98 | 0.00  | 20.67    | 46.00    | 25.3   | Hori. | 153    | 157   | LP        |         |
| 6   | 264.414 | 31.90   | 12.46   | 8.34 | 31.98 | 0.00  | 20.72    | 46.00    | 25.2   | Hori. | 144    | 151   | LP        |         |
| 7   | 349.448 | 34.10   | 15.02   | 8.79 | 31.93 | 0.00  | 25.98    | 46.00    | 20.0   | Hori. | 100    | 113   | LP        |         |
| 8   | 352.552 | 34.30   | 15.07   | 8.80 | 31.93 | 0.00  | 26.24    | 46.00    | 19.7   | Hori. | 100    | 110   | LP        |         |
| 9   | 87.362  | 29.20   | 7.67    | 7.16 | 32.15 | 0.39  | 12.27    | 40.00    | 27.7   | Vert. | 108    | 90    | BC        |         |
| 10  | 88.138  | 28.90   | 7.83    | 7.17 | 32.14 | 0.38  | 12.14    | 43.50    | 31.3   | Vert. | 109    | 78    | BC        |         |
| 11  | 174.724 | 26.60   | 15.73   | 7.81 | 32.06 | 0.00  | 18.08    | 43.50    | 25.4   | Vert. | 100    | 71    | BC        |         |
| 12  | 176.276 | 25.70   | 15.87   | 7.82 | 32.06 | -0.01 | 17.32    | 43.50    | 26.1   | Vert. | 100    | 60    | BC        |         |
| 13  | 262.086 | 26.20   | 12.32   | 8.33 | 31.98 | 0.00  | 14.87    | 46.00    | 31.1   | Vert. | 208    | 26    | LP        |         |
| 14  | 264.414 | 26.40   | 12.46   | 8.34 | 31.98 | 0.00  | 15.22    | 46.00    | 30.7   | Vert. | 196    | 40    | LP        |         |
| 15  | 349.448 | 26.80   | 15.02   | 8.79 | 31.93 | 0.00  | 18.68    | 46.00    | 27.3   | Vert. | 174    | 300   | LP        |         |
| 16  | 352.552 | 27.10   | 15.07   | 8.80 | 31.93 | 0.00  | 19.04    | 46.00    | 26.9   | Vert. | 180    | 298   | LP        |         |

**DATA OF RADIATED EMISSION TEST**

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

Date : 2020/08/27

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori)

Mode : FM Receiving (97.9 MHz)\_digital  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 23 deg.C / 57 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yasumasa Owaki

## &lt;&lt; QP DATA &gt;&gt;

| No. | Freq.   | Reading | Ant.Fac | Loss | Gain  | S.Fac | Result   | Limit    | Margin | Pola. | Height | Angle | Ant. Type | Comment |
|-----|---------|---------|---------|------|-------|-------|----------|----------|--------|-------|--------|-------|-----------|---------|
|     |         | <QP>    |         |      |       |       | <QP>     | <QP>     | <QP>   |       |        |       |           |         |
|     | [MHz]   | [dBuV]  | [dB/m]  | [dB] | [dB]  | [dB]  | [dBuV/m] | [dBuV/m] | [dB]   | [H/V] | [cm]   | [deg] |           |         |
| 1   | 97.512  | 31.10   | 9.65    | 7.26 | 32.14 | 0.13  | 16.00    | 43.50    | 27.5   | Hori. | 203    | 102   | BC        |         |
| 2   | 98.288  | 30.50   | 9.81    | 7.26 | 32.14 | 0.11  | 15.54    | 43.50    | 27.9   | Hori. | 198    | 114   | BC        |         |
| 3   | 195.024 | 34.60   | 16.50   | 7.94 | 32.05 | -0.14 | 26.85    | 43.50    | 16.6   | Hori. | 180    | 328   | BC        |         |
| 4   | 196.576 | 33.90   | 16.50   | 7.95 | 32.05 | -0.14 | 26.16    | 43.50    | 17.3   | Hori. | 176    | 321   | BC        |         |
| 5   | 292.536 | 31.50   | 13.43   | 8.49 | 31.97 | 0.00  | 21.45    | 46.00    | 24.5   | Hori. | 112    | 91    | LP        |         |
| 6   | 294.864 | 32.40   | 13.44   | 8.50 | 31.96 | 0.00  | 22.38    | 46.00    | 23.6   | Hori. | 117    | 92    | LP        |         |
| 7   | 390.048 | 31.80   | 15.43   | 8.95 | 31.93 | 0.00  | 24.25    | 46.00    | 21.7   | Hori. | 100    | 323   | LP        |         |
| 8   | 393.152 | 32.90   | 15.53   | 8.96 | 31.93 | 0.00  | 25.46    | 46.00    | 20.5   | Hori. | 100    | 321   | LP        |         |
| 9   | 97.512  | 25.70   | 9.65    | 7.26 | 32.14 | 0.13  | 10.60    | 43.50    | 32.9   | Vert. | 100    | 31    | BC        |         |
| 10  | 98.288  | 25.50   | 9.81    | 7.26 | 32.14 | 0.11  | 10.54    | 43.50    | 32.9   | Vert. | 123    | 42    | BC        |         |
| 11  | 195.024 | 26.30   | 16.50   | 7.94 | 32.05 | -0.14 | 18.55    | 43.50    | 24.9   | Vert. | 100    | 355   | BC        |         |
| 12  | 196.576 | 27.30   | 16.50   | 7.95 | 32.05 | -0.14 | 19.56    | 43.50    | 23.9   | Vert. | 100    | 355   | BC        |         |
| 13  | 292.536 | 25.40   | 13.43   | 8.49 | 31.97 | 0.00  | 15.35    | 46.00    | 30.6   | Vert. | 162    | 325   | LP        |         |
| 14  | 294.864 | 28.80   | 13.44   | 8.50 | 31.96 | 0.00  | 18.78    | 46.00    | 27.2   | Vert. | 155    | 319   | LP        |         |
| 15  | 390.048 | 26.90   | 15.43   | 8.95 | 31.93 | 0.00  | 19.35    | 46.00    | 26.6   | Vert. | 330    | 52    | LP        |         |
| 16  | 393.152 | 27.50   | 15.53   | 8.96 | 31.93 | 0.00  | 20.06    | 46.00    | 25.9   | Vert. | 104    | 64    | LP        |         |

**DATA OF RADIATED EMISSION TEST**

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

Date : 2020/08/27

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori)

Mode : FM Receiving (107.9 MHz)\_digital  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 23 deg.C / 57 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yasumasa Owaki

## &lt;&lt; QP DATA &gt;&gt;

| No. | Freq.   | Reading | Ant.Fac | Loss | Gain  | S.Fac | Result   | Limit    | Margin | Pola. | Height | Angle | Ant. Type | Comment |
|-----|---------|---------|---------|------|-------|-------|----------|----------|--------|-------|--------|-------|-----------|---------|
|     |         | <QP>    |         |      |       |       | <QP>     | <QP>     | <QP>   |       |        |       |           |         |
|     |         | [dBuV]  |         |      |       |       | [dBuV/m] | [dBuV/m] | [dB]   |       |        |       |           |         |
| 1   | 107.512 | 31.70   | 11.43   | 7.34 | 32.13 | -0.09 | 18.25    | 43.50    | 25.2   | Hori. | 288    | 308   | BC        |         |
| 2   | 108.288 | 25.10   | 11.54   | 7.34 | 32.13 | -0.10 | 11.75    | 43.50    | 31.7   | Hori. | 288    | 351   | BC        |         |
| 3   | 215.024 | 40.20   | 11.22   | 8.06 | 32.03 | 0.00  | 27.45    | 43.50    | 16.0   | Hori. | 152    | 339   | LP        |         |
| 4   | 216.576 | 39.80   | 11.21   | 8.07 | 32.02 | 0.00  | 27.06    | 46.00    | 18.9   | Hori. | 162    | 339   | LP        |         |
| 5   | 322.536 | 34.40   | 14.24   | 8.65 | 31.95 | 0.00  | 25.34    | 46.00    | 20.6   | Hori. | 100    | 103   | LP        |         |
| 6   | 324.864 | 35.80   | 14.32   | 8.66 | 31.95 | 0.00  | 26.83    | 46.00    | 19.1   | Hori. | 100    | 61    | LP        |         |
| 7   | 430.048 | 29.30   | 16.09   | 9.14 | 31.94 | 0.00  | 22.59    | 46.00    | 23.4   | Hori. | 100    | 165   | LP        |         |
| 8   | 433.152 | 27.90   | 16.13   | 9.15 | 31.94 | 0.00  | 21.24    | 46.00    | 24.7   | Hori. | 100    | 168   | LP        |         |
| 9   | 107.512 | 29.80   | 11.43   | 7.34 | 32.13 | -0.09 | 16.35    | 43.50    | 27.1   | Vert. | 100    | 306   | BC        |         |
| 10  | 108.288 | 25.30   | 11.54   | 7.34 | 32.13 | -0.10 | 11.95    | 43.50    | 31.5   | Vert. | 100    | 126   | BC        |         |
| 11  | 215.024 | 28.10   | 11.22   | 8.06 | 32.03 | 0.00  | 15.35    | 43.50    | 28.1   | Vert. | 100    | 79    | LP        |         |
| 12  | 216.576 | 28.50   | 11.21   | 8.07 | 32.02 | 0.00  | 15.76    | 46.00    | 30.2   | Vert. | 100    | 80    | LP        |         |
| 13  | 322.536 | 28.90   | 14.24   | 8.65 | 31.95 | 0.00  | 19.84    | 46.00    | 26.1   | Vert. | 194    | 269   | LP        |         |
| 14  | 324.864 | 29.90   | 14.32   | 8.66 | 31.95 | 0.00  | 20.93    | 46.00    | 25.0   | Vert. | 191    | 267   | LP        |         |
| 15  | 430.048 | 25.70   | 16.09   | 9.14 | 31.94 | 0.00  | 18.99    | 46.00    | 27.0   | Vert. | 146    | 186   | LP        |         |
| 16  | 433.152 | 24.20   | 16.13   | 9.15 | 31.94 | 0.00  | 17.54    | 46.00    | 28.4   | Vert. | 125    | 139   | LP        |         |

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

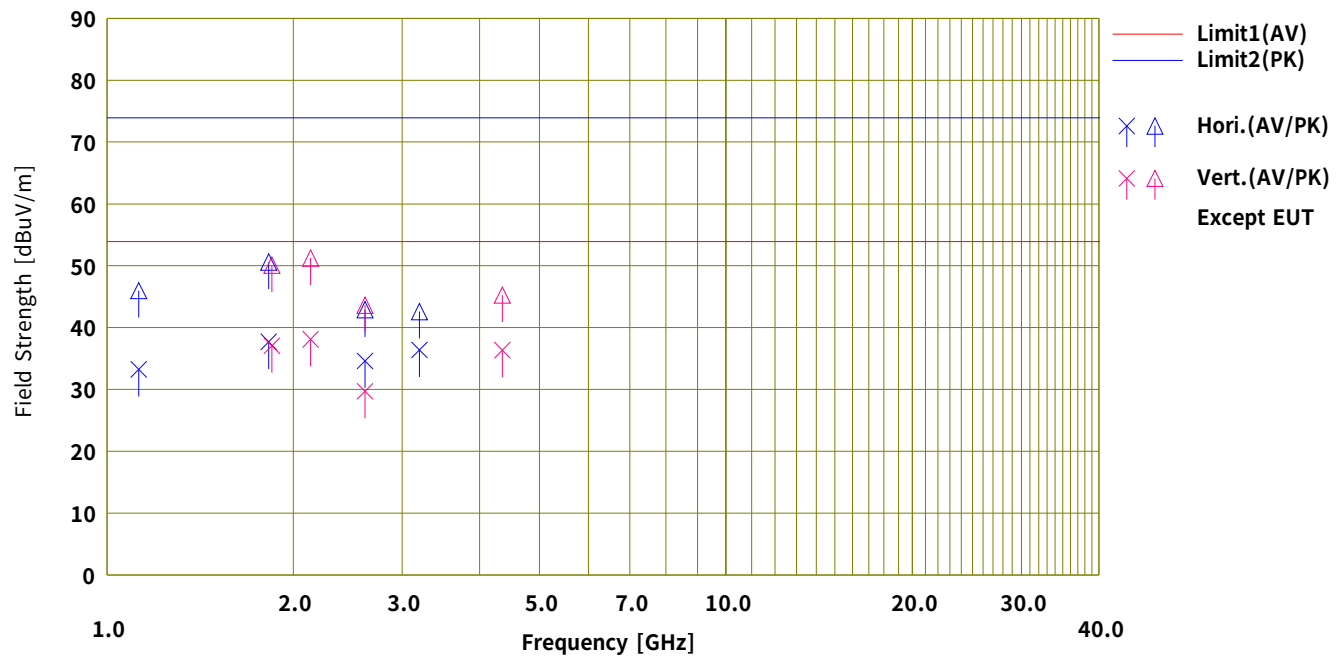
Date : 2020/08/27

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori), Test Distance: 300 cm

Mode : FM Receiving (97.9 MHz)\_analog  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 23 deg.C / 57 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yohsuke Matsuzawa



| No. | Freq.<br>[MHz] | Reading |        | Ant.Fac<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result   |          | Limit    |          | Margin |      | Pola.<br>[H/V] | Height<br>[cm] | Angle<br>[deg] | Ant.<br>Type | Comment |
|-----|----------------|---------|--------|-------------------|--------------|--------------|----------|----------|----------|----------|--------|------|----------------|----------------|----------------|--------------|---------|
|     |                | <AV>    | <PK>   |                   |              |              | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |                |                |                |              |         |
|     |                | [dBuV]  | [dBuV] |                   |              |              | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |                |                |                |              |         |
| 1   | 1125.779       | 46.32   | 59.05  | 25.18             | 2.90         | 41.15        | 33.25    | 45.98    | 53.90    | 73.90    | 20.6   | 27.9 | Hori.          | 203            | 141            | 31SH3        |         |
| 2   | 1825.250       | 49.55   | 62.45  | 25.84             | 3.71         | 41.39        | 37.71    | 50.61    | 53.90    | 73.90    | 16.1   | 23.2 | Hori.          | 100            | 50             | 31SH3        |         |
| 3   | 2612.152       | 43.62   | 51.88  | 28.28             | 4.45         | 41.73        | 34.62    | 42.88    | 53.90    | 73.90    | 19.2   | 31.0 | Hori.          | 309            | 179            | 31SH3        |         |
| 4   | 3198.712       | 44.18   | 50.38  | 29.23             | 4.95         | 41.97        | 36.39    | 42.59    | 53.90    | 73.90    | 17.5   | 31.3 | Hori.          | 100            | 144            | 31SH3        |         |
| 5   | 1848.070       | 48.86   | 61.87  | 25.90             | 3.73         | 41.41        | 37.08    | 50.09    | 53.90    | 73.90    | 16.8   | 23.8 | Vert.          | 100            | 198            | 31SH3        |         |
| 6   | 2132.330       | 47.68   | 60.81  | 27.99             | 4.02         | 41.57        | 38.12    | 51.25    | 53.90    | 73.90    | 15.7   | 22.6 | Vert.          | 138            | 53             | 31SH3        |         |
| 7   | 2611.585       | 38.69   | 52.63  | 28.28             | 4.45         | 41.73        | 29.69    | 43.63    | 53.90    | 73.90    | 24.2   | 30.2 | Vert.          | 100            | 210            | 31SH3        |         |
| 8   | 4353.592       | 42.62   | 51.50  | 30.64             | 5.81         | 42.72        | 36.35    | 45.23    | 53.90    | 73.90    | 17.5   | 28.6 | Vert.          | 100            | 156            | 31SH3        |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable)[dB] + D.Fac[dB] - Gain(AMP)[dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

Date : 2020/08/27

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori), Test Distance: 300 cm

Mode : FM Receiving (87.75 MHz)\_analog  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 23 deg.C / 57 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yohsuke Matsuzawa

## &lt;&lt; AV/PK DATA &gt;&gt;

| No. | Freq.    | Reading |        | Ant.Fac | Loss | Gain  | Result   |          | Limit    |          | Margin |      | Pola. | Height | Angle | Ant. Type | Comment |
|-----|----------|---------|--------|---------|------|-------|----------|----------|----------|----------|--------|------|-------|--------|-------|-----------|---------|
|     |          | <AV>    | <PK>   |         |      |       | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |       |        |       |           |         |
|     |          | [dBuV]  | [dBuV] |         |      |       | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |       |        |       |           |         |
| 1   | 1850.898 | 47.71   | 60.74  | 25.91   | 3.74 | 41.41 | 35.95    | 48.98    | 53.90    | 73.90    | 17.9   | 24.9 | Hori. | 121    | 48    | 31SH3     |         |
| 2   | 2115.312 | 42.87   | 59.61  | 27.81   | 4.00 | 41.57 | 33.11    | 49.85    | 53.90    | 73.90    | 20.7   | 24.0 | Hori. | 100    | 216   | 31SH3     |         |
| 3   | 3172.968 | 35.48   | 46.58  | 29.29   | 4.93 | 41.95 | 27.75    | 38.85    | 53.90    | 73.90    | 26.1   | 35.0 | Hori. | 100    | 1     | 31SH3     |         |
| 4   | 3437.382 | 35.72   | 47.93  | 28.84   | 5.15 | 42.14 | 27.57    | 39.78    | 53.90    | 73.90    | 26.3   | 34.1 | Hori. | 100    | 358   | 31SH3     |         |
| 5   | 3525.520 | 54.47   | 57.55  | 29.26   | 5.21 | 42.20 | 46.74    | 49.82    | 53.90    | 73.90    | 7.1    | 24.0 | Hori. | 175    | 206   | 31SH3     |         |
| 6   | 4406.900 | 37.38   | 50.45  | 30.72   | 5.85 | 42.78 | 31.17    | 44.24    | 53.90    | 73.90    | 22.7   | 29.6 | Hori. | 103    | 119   | 31SH3     |         |
| 7   | 5200.142 | 37.36   | 49.33  | 31.94   | 6.43 | 43.17 | 32.56    | 44.53    | 53.90    | 73.90    | 21.3   | 29.3 | Hori. | 100    | 357   | 31SH3     |         |
| 8   | 1850.898 | 47.76   | 60.37  | 25.91   | 3.74 | 41.41 | 36.00    | 48.61    | 53.90    | 73.90    | 17.9   | 25.2 | Vert. | 100    | 67    | 31SH3     |         |
| 9   | 2115.312 | 45.81   | 58.86  | 27.81   | 4.00 | 41.57 | 36.05    | 49.10    | 53.90    | 73.90    | 17.8   | 24.8 | Vert. | 151    | 52    | 31SH3     |         |
| 10  | 3172.968 | 35.73   | 47.15  | 29.29   | 4.93 | 41.95 | 28.00    | 39.42    | 53.90    | 73.90    | 25.9   | 34.4 | Vert. | 100    | 356   | 31SH3     |         |
| 11  | 3437.382 | 36.16   | 48.38  | 28.84   | 5.15 | 42.14 | 28.01    | 40.23    | 53.90    | 73.90    | 25.8   | 33.6 | Vert. | 103    | 355   | 31SH3     |         |
| 12  | 3525.520 | 55.78   | 58.18  | 29.26   | 5.21 | 42.20 | 48.05    | 50.45    | 53.90    | 73.90    | 5.8    | 23.4 | Vert. | 105    | 221   | 31SH3     |         |
| 13  | 4406.900 | 36.83   | 49.02  | 30.72   | 5.85 | 42.78 | 30.62    | 42.81    | 53.90    | 73.90    | 23.2   | 31.0 | Vert. | 100    | 171   | 31SH3     |         |
| 14  | 5200.142 | 37.27   | 49.58  | 31.94   | 6.43 | 43.17 | 32.47    | 44.78    | 53.90    | 73.90    | 21.4   | 29.1 | Vert. | 100    | 3     | 31SH3     |         |

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable)[dB]+D.Fac[dB]-Gain(AMP)[dB]  
 Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

Date : 2020/08/27

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori), Test Distance: 300 cm

Mode : FM Receiving (97.9 MHz)\_analog  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 23 deg.C / 57 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yohsuke Matsuzawa

## &lt;&lt; AV/PK DATA &gt;&gt;

| No. | Freq.    | Reading |        | Ant.Fac | Loss | Gain  | Result   |          | Limit    |          | Margin |      | Pola. | Height | Angle | Ant. Type | Comment |
|-----|----------|---------|--------|---------|------|-------|----------|----------|----------|----------|--------|------|-------|--------|-------|-----------|---------|
|     |          | <AV>    | <PK>   |         |      |       | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |       |        |       |           |         |
|     |          | [dBuV]  | [dBuV] |         |      |       | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |       |        |       |           |         |
| 1   | 1852.728 | 48.83   | 62.48  | 25.92   | 3.74 | 41.41 | 37.08    | 50.73    | 53.90    | 73.90    | 16.8   | 23.1 | Hori. | 100    | 1     | 31SH3     |         |
| 2   | 1950.240 | 40.18   | 53.17  | 26.35   | 3.84 | 41.49 | 28.88    | 41.87    | 53.90    | 73.90    | 25.0   | 32.0 | Hori. | 100    | 50    | 31SH3     |         |
| 3   | 2340.288 | 39.52   | 53.12  | 28.50   | 4.21 | 41.65 | 30.58    | 44.18    | 53.90    | 73.90    | 23.3   | 29.7 | Hori. | 203    | 170   | 31SH3     |         |
| 4   | 3120.384 | 35.12   | 49.38  | 29.31   | 4.89 | 41.92 | 27.40    | 41.66    | 53.90    | 73.90    | 26.5   | 32.2 | Hori. | 100    | 230   | 31SH3     |         |
| 5   | 3510.432 | 54.45   | 57.65  | 29.18   | 5.21 | 42.19 | 46.65    | 49.85    | 53.90    | 73.90    | 7.2    | 24.0 | Hori. | 170    | 207   | 31SH3     |         |
| 6   | 3607.944 | 34.84   | 48.03  | 29.59   | 5.28 | 42.22 | 27.49    | 40.68    | 53.90    | 73.90    | 26.4   | 33.2 | Hori. | 100    | 245   | 31SH3     |         |
| 7   | 4802.968 | 36.55   | 49.63  | 31.60   | 6.15 | 42.92 | 31.38    | 44.46    | 53.90    | 73.90    | 22.5   | 29.4 | Hori. | 100    | 118   | 31SH3     |         |
| 8   | 1852.728 | 47.66   | 61.84  | 25.92   | 3.74 | 41.41 | 35.91    | 50.09    | 53.90    | 73.90    | 17.9   | 23.8 | Vert. | 235    | 174   | 31SH3     |         |
| 9   | 1950.240 | 44.54   | 57.01  | 26.35   | 3.84 | 41.49 | 33.24    | 45.71    | 53.90    | 73.90    | 20.6   | 28.1 | Vert. | 100    | 183   | 31SH3     |         |
| 10  | 2340.288 | 39.45   | 51.50  | 28.50   | 4.21 | 41.65 | 30.51    | 42.56    | 53.90    | 73.90    | 23.3   | 31.3 | Vert. | 100    | 130   | 31SH3     |         |
| 11  | 3120.384 | 40.63   | 52.27  | 29.31   | 4.89 | 41.92 | 32.91    | 44.55    | 53.90    | 73.90    | 20.9   | 29.3 | Vert. | 100    | 145   | 31SH3     |         |
| 12  | 3510.432 | 55.06   | 57.66  | 29.18   | 5.21 | 42.19 | 47.26    | 49.86    | 53.90    | 73.90    | 6.6    | 24.0 | Vert. | 100    | 224   | 31SH3     |         |
| 13  | 3607.944 | 34.86   | 47.50  | 29.59   | 5.28 | 42.22 | 27.51    | 40.15    | 53.90    | 73.90    | 26.3   | 33.7 | Vert. | 100    | 359   | 31SH3     |         |
| 14  | 4802.968 | 37.68   | 49.81  | 31.60   | 6.15 | 42.92 | 32.51    | 44.64    | 53.90    | 73.90    | 21.3   | 29.2 | Vert. | 208    | 160   | 31SH3     |         |

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable)[dB]+D.Fac[dB]-Gain(AMP)[dB]  
 Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

**DATA OF RADIATED EMISSION TEST**

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

Date : 2020/08/27

Company : Panasonic Corporation

Kind of EUT : Car Navigation

Model No. : AT2105

Serial No. : No.002

Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori), Test Distance: 300 cm

Mode : FM Receiving (107.9 MHz)\_analog

Order No. : 13462774S

Power : DC 13.2 V

Temp./Humi. : 23 deg.C / 57 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yohsuke Matsuzawa

## &lt;&lt; AV/PK DATA &gt;&gt;

| No. | Freq.<br>[MHz] | Reading |        | Ant.Fac<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result   |          | Limit    |          | Margin |      | Pola.<br>[H/V] | Height<br>[cm] | Angle<br>[deg] | Ant.<br>Type | Comment |
|-----|----------------|---------|--------|-------------------|--------------|--------------|----------|----------|----------|----------|--------|------|----------------|----------------|----------------|--------------|---------|
|     |                | <AV>    | <PK>   |                   |              |              | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |                |                |                |              |         |
|     |                | [dBuV]  | [dBuV] |                   |              |              | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |                |                |                |              |         |
| 1   | 1840.896       | 51.68   | 65.94  | 25.88             | 3.72         | 41.40        | 39.88    | 54.14    | 53.90    | 73.90    | 14.0   | 19.7 | Hori.          | 126            | 51             | 31SH3        |         |
| 2   | 2165.760       | 41.42   | 53.79  | 28.33             | 4.05         | 41.59        | 32.21    | 44.58    | 53.90    | 73.90    | 21.6   | 29.3 | Hori.          | 240            | 145            | 31SH3        |         |
| 3   | 2923.776       | 38.81   | 51.61  | 28.96             | 4.72         | 41.81        | 30.68    | 43.48    | 53.90    | 73.90    | 23.2   | 30.4 | Hori.          | 100            | 215            | 31SH3        |         |
| 4   | 3465.216       | 55.31   | 57.89  | 28.97             | 5.18         | 42.16        | 47.30    | 49.88    | 53.90    | 73.90    | 6.6    | 24.0 | Hori.          | 187            | 206            | 31SH3        |         |
| 5   | 3898.368       | 39.37   | 50.96  | 30.12             | 5.47         | 42.30        | 32.66    | 44.25    | 53.90    | 73.90    | 21.2   | 29.6 | Hori.          | 100            | 318            | 31SH3        |         |
| 6   | 4223.232       | 38.30   | 50.55  | 30.37             | 5.72         | 42.58        | 31.81    | 44.06    | 53.90    | 73.90    | 22.0   | 29.8 | Hori.          | 100            | 154            | 31SH3        |         |
| 7   | 5414.400       | 39.78   | 52.45  | 32.12             | 6.58         | 43.40        | 35.08    | 47.75    | 53.90    | 73.90    | 18.8   | 26.1 | Hori.          | 186            | 2              | 31SH3        |         |
| 8   | 5955.840       | 38.02   | 51.38  | 33.26             | 6.94         | 43.39        | 34.83    | 48.19    | 53.90    | 73.90    | 19.0   | 25.7 | Hori.          | 100            | 241            | 31SH3        |         |
| 9   | 1840.896       | 50.36   | 64.76  | 25.88             | 3.72         | 41.40        | 38.56    | 52.96    | 53.90    | 73.90    | 15.3   | 20.9 | Vert.          | 100            | 70             | 31SH3        |         |
| 10  | 2165.760       | 44.12   | 56.46  | 28.33             | 4.05         | 41.59        | 34.91    | 47.25    | 53.90    | 73.90    | 18.9   | 26.6 | Vert.          | 243            | 147            | 31SH3        |         |
| 11  | 2923.776       | 40.89   | 53.07  | 28.96             | 4.72         | 41.81        | 32.76    | 44.94    | 53.90    | 73.90    | 21.1   | 28.9 | Vert.          | 222            | 70             | 31SH3        |         |
| 12  | 3465.216       | 55.09   | 58.20  | 28.97             | 5.18         | 42.16        | 47.08    | 50.19    | 53.90    | 73.90    | 6.8    | 23.7 | Vert.          | 168            | 235            | 31SH3        |         |
| 13  | 3898.368       | 39.63   | 52.64  | 30.12             | 5.47         | 42.30        | 32.92    | 45.93    | 53.90    | 73.90    | 20.9   | 27.9 | Vert.          | 112            | 296            | 31SH3        |         |
| 14  | 4223.232       | 38.47   | 52.02  | 30.37             | 5.72         | 42.58        | 31.98    | 45.53    | 53.90    | 73.90    | 21.9   | 28.3 | Vert.          | 133            | 32             | 31SH3        |         |
| 15  | 5414.400       | 38.90   | 51.16  | 32.12             | 6.58         | 43.40        | 34.20    | 46.46    | 53.90    | 73.90    | 19.7   | 27.4 | Vert.          | 100            | 203            | 31SH3        |         |
| 16  | 5955.840       | 38.23   | 51.35  | 33.26             | 6.94         | 43.39        | 35.04    | 48.16    | 53.90    | 73.90    | 18.8   | 25.7 | Vert.          | 100            | 198            | 31SH3        |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable)[dB] + D.Fac[dB] - Gain(AMP)[dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

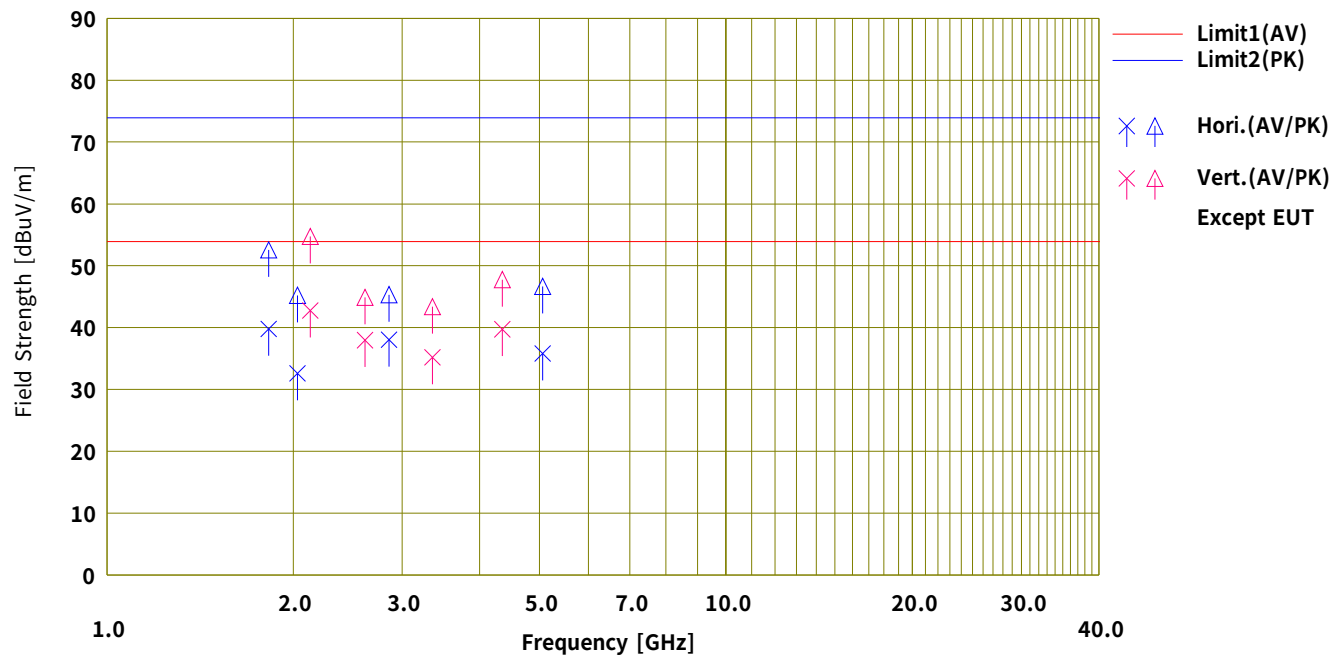
Date : 2020/08/28

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori), Test Distance: 300 cm

Mode : FM Receiving (97.9 MHz)\_digital  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 23 deg.C / 57 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yohsuke Matsuzawa



| No. | Freq.<br>[MHz] | Reading |        | Ant.Fac<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result   |          | Limit    |          | Margin |      | Pola.<br>[H/V] | Height<br>[cm] | Angle<br>[deg] | Ant.<br>Type | Comment |
|-----|----------------|---------|--------|-------------------|--------------|--------------|----------|----------|----------|----------|--------|------|----------------|----------------|----------------|--------------|---------|
|     |                | <AV>    | <PK>   |                   |              |              | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |                |                |                |              |         |
|     |                | [dBuV]  | [dBuV] |                   |              |              | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |                |                |                |              |         |
| 1   | 1824.473       | 51.66   | 64.43  | 25.83             | 3.71         | 41.39        | 39.81    | 52.58    | 53.90    | 73.90    | 14.0   | 21.3 | Hori.          | 145            | 51             | 31SH3        |         |
| 2   | 2032.551       | 43.32   | 55.92  | 26.92             | 3.91         | 41.54        | 32.61    | 45.21    | 53.90    | 73.90    | 21.2   | 28.6 | Hori.          | 119            | 13             | 31SH3        |         |
| 3   | 2857.711       | 46.30   | 53.59  | 28.85             | 4.67         | 41.79        | 38.03    | 45.32    | 53.90    | 73.90    | 15.8   | 28.5 | Hori.          | 186            | 347            | 31SH3        |         |
| 4   | 5057.730       | 40.37   | 51.22  | 32.13             | 6.33         | 43.01        | 35.82    | 46.67    | 53.90    | 73.90    | 18.0   | 27.2 | Hori.          | 112            | 134            | 31SH3        |         |
| 5   | 2131.336       | 52.32   | 64.31  | 27.98             | 4.02         | 41.57        | 42.75    | 54.74    | 53.90    | 73.90    | 11.1   | 19.1 | Vert.          | 254            | 7              | 31SH3        |         |
| 6   | 2611.895       | 46.98   | 53.90  | 28.28             | 4.45         | 41.73        | 37.98    | 44.90    | 53.90    | 73.90    | 15.9   | 29.0 | Vert.          | 100            | 143            | 31SH3        |         |
| 7   | 3357.294       | 43.50   | 51.67  | 28.71             | 5.09         | 42.09        | 35.21    | 43.38    | 53.90    | 73.90    | 18.6   | 30.5 | Vert.          | 100            | 165            | 31SH3        |         |
| 8   | 4353.779       | 46.01   | 54.04  | 30.64             | 5.81         | 42.72        | 39.74    | 47.77    | 53.90    | 73.90    | 14.1   | 26.1 | Vert.          | 100            | 222            | 31SH3        |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable)[dB] + D.Fac[dB] - Gain(AMP)[dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

Date : 2020/08/28

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori), Test Distance: 300 cm

Mode : FM Receiving (87.75 MHz)\_digital  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 24 deg.C / 62 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Shiro Kobayashi

## &lt;&lt; AV/PK DATA &gt;&gt;

| No. | Freq.    | Reading |        | Ant.Fac | Loss | Gain  | Result   |          | Limit    |          | Margin |      | Pola. | Height | Angle | Ant. Type | Comment |
|-----|----------|---------|--------|---------|------|-------|----------|----------|----------|----------|--------|------|-------|--------|-------|-----------|---------|
|     |          | <AV>    | <PK>   |         |      |       | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |       |        |       |           |         |
|     |          | [dBuV]  | [dBuV] |         |      |       | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |       |        |       |           |         |
| 1   | 2115.312 | 48.60   | 60.87  | 27.81   | 4.00 | 41.57 | 38.84    | 51.11    | 53.90    | 73.90    | 15.0   | 22.7 | Hori. | 105    | 25    | 31SH3     |         |
| 2   | 3172.968 | 36.66   | 48.20  | 29.29   | 4.93 | 41.95 | 28.93    | 40.47    | 53.90    | 73.90    | 24.9   | 33.4 | Hori. | 196    | 145   | 31SH3     |         |
| 3   | 3437.382 | 36.10   | 48.03  | 28.84   | 5.15 | 42.14 | 27.95    | 39.88    | 53.90    | 73.90    | 25.9   | 34.0 | Hori. | 100    | 128   | 31SH3     |         |
| 4   | 3525.520 | 55.05   | 57.81  | 29.26   | 5.21 | 42.20 | 47.32    | 50.08    | 53.90    | 73.90    | 6.5    | 23.8 | Hori. | 127    | 206   | 31SH3     |         |
| 5   | 4406.900 | 39.28   | 51.02  | 30.72   | 5.85 | 42.78 | 33.07    | 44.81    | 53.90    | 73.90    | 20.8   | 29.0 | Hori. | 195    | 64    | 31SH3     |         |
| 6   | 5200.142 | 38.09   | 49.66  | 31.94   | 6.43 | 43.17 | 33.29    | 44.86    | 53.90    | 73.90    | 20.6   | 29.0 | Hori. | 100    | 177   | 31SH3     |         |
| 7   | 2115.312 | 48.25   | 59.72  | 27.81   | 4.00 | 41.57 | 38.49    | 49.96    | 53.90    | 73.90    | 15.4   | 23.9 | Vert. | 100    | 240   | 31SH3     |         |
| 8   | 3172.968 | 36.16   | 47.33  | 29.29   | 4.93 | 41.95 | 28.43    | 39.60    | 53.90    | 73.90    | 25.4   | 34.3 | Vert. | 183    | 162   | 31SH3     |         |
| 9   | 3437.382 | 36.06   | 48.31  | 28.84   | 5.15 | 42.14 | 27.91    | 40.16    | 53.90    | 73.90    | 25.9   | 33.7 | Vert. | 100    | 130   | 31SH3     |         |
| 10  | 3525.520 | 55.72   | 58.29  | 29.26   | 5.21 | 42.20 | 47.99    | 50.56    | 53.90    | 73.90    | 5.9    | 23.3 | Vert. | 100    | 221   | 31SH3     |         |
| 11  | 4406.900 | 39.12   | 51.12  | 30.72   | 5.85 | 42.78 | 32.91    | 44.91    | 53.90    | 73.90    | 20.9   | 28.9 | Vert. | 110    | 7     | 31SH3     |         |
| 12  | 5200.142 | 39.85   | 51.00  | 31.94   | 6.43 | 43.17 | 35.05    | 46.20    | 53.90    | 73.90    | 18.8   | 27.7 | Vert. | 100    | 190   | 31SH3     |         |

**DATA OF RADIATED EMISSION TEST**

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

Date : 2020/08/28

Company : Panasonic Corporation

Kind of EUT : Car Navigation

Model No. : AT2105

Serial No. : No.002

Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori), Test Distance: 300 cm

Mode : FM Receiving (97.9 MHz)\_digital

Order No. : 13462774S

Power : DC 13.2 V

Temp./Humi. : 24 deg.C / 62 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Shiro Kobayashi

## &lt;&lt; AV/PK DATA &gt;&gt;

| No. | Freq.    | Reading |        | Ant.Fac | Loss | Gain  | Result   |          | Limit    |          | Margin |      | Pola. | Height | Angle | Ant. Type | Comment |
|-----|----------|---------|--------|---------|------|-------|----------|----------|----------|----------|--------|------|-------|--------|-------|-----------|---------|
|     |          | <AV>    | <PK>   |         |      |       | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |       |        |       |           |         |
|     |          | [dBuV]  | [dBuV] |         |      |       | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |       |        |       |           |         |
| 1   | 1852.528 | 50.65   | 62.30  | 25.92   | 3.74 | 41.41 | 38.90    | 50.55    | 53.90    | 73.90    | 15.0   | 23.3 | Hori. | 100    | 144   | 31SH3     |         |
| 2   | 1950.240 | 51.63   | 62.89  | 26.35   | 3.84 | 41.49 | 40.33    | 51.59    | 53.90    | 73.90    | 13.5   | 22.3 | Hori. | 133    | 144   | 31SH3     |         |
| 3   | 2340.288 | 42.03   | 53.46  | 28.50   | 4.21 | 41.65 | 33.09    | 44.52    | 53.90    | 73.90    | 20.8   | 29.3 | Hori. | 111    | 44    | 31SH3     |         |
| 4   | 3120.384 | 36.85   | 48.49  | 29.31   | 4.89 | 41.92 | 29.13    | 40.77    | 53.90    | 73.90    | 24.7   | 33.1 | Hori. | 179    | 147   | 31SH3     |         |
| 5   | 3510.432 | 55.00   | 57.85  | 29.18   | 5.21 | 42.19 | 47.20    | 50.05    | 53.90    | 73.90    | 6.7    | 23.8 | Hori. | 161    | 206   | 31SH3     |         |
| 6   | 3607.944 | 36.09   | 47.95  | 29.59   | 5.28 | 42.22 | 28.74    | 40.60    | 53.90    | 73.90    | 25.1   | 33.3 | Hori. | 100    | 70    | 31SH3     |         |
| 7   | 4802.968 | 39.07   | 51.22  | 31.60   | 6.15 | 42.92 | 33.90    | 46.05    | 53.90    | 73.90    | 20.0   | 27.8 | Hori. | 280    | 163   | 31SH3     |         |
| 8   | 1852.528 | 49.70   | 60.89  | 25.92   | 3.74 | 41.41 | 37.95    | 49.14    | 53.90    | 73.90    | 15.9   | 24.7 | Vert. | 100    | 75    | 31SH3     |         |
| 9   | 1950.240 | 51.93   | 64.00  | 26.35   | 3.84 | 41.49 | 40.63    | 52.70    | 53.90    | 73.90    | 13.2   | 21.2 | Vert. | 118    | 136   | 31SH3     |         |
| 10  | 2340.288 | 42.92   | 55.22  | 28.50   | 4.21 | 41.65 | 33.98    | 46.28    | 53.90    | 73.90    | 19.9   | 27.6 | Vert. | 100    | 134   | 31SH3     |         |
| 11  | 3120.384 | 37.15   | 48.80  | 29.31   | 4.89 | 41.92 | 29.43    | 41.08    | 53.90    | 73.90    | 24.4   | 32.8 | Vert. | 100    | 324   | 31SH3     |         |
| 12  | 3510.432 | 55.65   | 58.10  | 29.18   | 5.21 | 42.19 | 47.85    | 50.30    | 53.90    | 73.90    | 6.0    | 23.6 | Vert. | 100    | 222   | 31SH3     |         |
| 13  | 3607.944 | 36.10   | 47.46  | 29.59   | 5.28 | 42.22 | 28.75    | 40.11    | 53.90    | 73.90    | 25.1   | 33.7 | Vert. | 100    | 121   | 31SH3     |         |
| 14  | 4802.968 | 38.65   | 50.02  | 31.60   | 6.15 | 42.92 | 33.48    | 44.85    | 53.90    | 73.90    | 20.4   | 29.0 | Vert. | 119    | 181   | 31SH3     |         |

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable)[dB]+D.Fac[dB]-Gain(AMP)[dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber

Date : 2020/08/28

Company : Panasonic Corporation  
 Kind of EUT : Car Navigation  
 Model No. : AT2105  
 Serial No. : No.002  
 Remarks : Local, EUT: 0 deg(Vert), 0 deg(Hori) Ant: 0 deg(Vert), 0 deg(Hori), Test Distance: 300 cm

Mode : FM Receiving (107.9 MHz)\_digital  
 Order No. : 13462774S  
 Power : DC 13.2 V  
 Temp./Humi. : 24 deg.C / 62 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Shiro Kobayashi

## &lt;&lt; AV/PK DATA &gt;&gt;

| No. | Freq.    | Reading |        | Ant.Fac | Loss | Gain  | Result   |          | Limit    |          | Margin |      | Pola. | Height | Angle | Ant. Type | Comment |
|-----|----------|---------|--------|---------|------|-------|----------|----------|----------|----------|--------|------|-------|--------|-------|-----------|---------|
|     |          | <AV>    | <PK>   |         |      |       | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |       |        |       |           |         |
|     |          | [dBuV]  | [dBuV] |         |      |       | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |       |        |       |           |         |
| 1   | 1840.896 | 49.54   | 61.18  | 25.88   | 3.72 | 41.40 | 37.74    | 49.38    | 53.90    | 73.90    | 16.1   | 24.5 | Hori. | 100    | 154   | 31SH3     |         |
| 2   | 2165.760 | 44.56   | 56.84  | 28.33   | 4.05 | 41.59 | 35.35    | 47.63    | 53.90    | 73.90    | 18.5   | 26.2 | Hori. | 100    | 353   | 31SH3     |         |
| 3   | 2923.776 | 42.40   | 53.77  | 28.96   | 4.72 | 41.81 | 34.27    | 45.64    | 53.90    | 73.90    | 19.6   | 28.2 | Hori. | 306    | 177   | 31SH3     |         |
| 4   | 3465.216 | 55.43   | 58.18  | 28.97   | 5.18 | 42.16 | 47.42    | 50.17    | 53.90    | 73.90    | 6.4    | 23.7 | Hori. | 179    | 205   | 31SH3     |         |
| 5   | 3898.368 | 38.15   | 49.35  | 30.12   | 5.47 | 42.30 | 31.44    | 42.64    | 53.90    | 73.90    | 22.4   | 31.2 | Hori. | 100    | 324   | 31SH3     |         |
| 6   | 4223.232 | 39.17   | 50.29  | 30.37   | 5.72 | 42.58 | 32.68    | 43.80    | 53.90    | 73.90    | 21.2   | 30.1 | Hori. | 105    | 121   | 31SH3     |         |
| 7   | 5414.400 | 37.84   | 49.72  | 32.12   | 6.58 | 43.40 | 33.14    | 45.02    | 53.90    | 73.90    | 20.7   | 28.8 | Hori. | 100    | 118   | 31SH3     |         |
| 8   | 5955.840 | 37.43   | 49.21  | 33.26   | 6.94 | 43.39 | 34.24    | 46.02    | 53.90    | 73.90    | 19.6   | 27.8 | Hori. | 100    | 178   | 31SH3     |         |
| 9   | 1840.896 | 53.67   | 64.56  | 25.88   | 3.72 | 41.40 | 41.87    | 52.76    | 53.90    | 73.90    | 12.0   | 21.1 | Vert. | 241    | 144   | 31SH3     |         |
| 10  | 2165.760 | 48.01   | 59.09  | 28.33   | 4.05 | 41.59 | 38.80    | 49.88    | 53.90    | 73.90    | 15.1   | 24.0 | Vert. | 273    | 57    | 31SH3     |         |
| 11  | 2923.776 | 40.30   | 51.19  | 28.96   | 4.72 | 41.81 | 32.17    | 43.06    | 53.90    | 73.90    | 21.7   | 30.8 | Vert. | 100    | 72    | 31SH3     |         |
| 12  | 3465.216 | 55.94   | 58.45  | 28.97   | 5.18 | 42.16 | 47.93    | 50.44    | 53.90    | 73.90    | 5.9    | 23.4 | Vert. | 100    | 224   | 31SH3     |         |
| 13  | 3898.368 | 38.81   | 50.79  | 30.12   | 5.47 | 42.30 | 32.10    | 44.08    | 53.90    | 73.90    | 21.8   | 29.8 | Vert. | 102    | 65    | 31SH3     |         |
| 14  | 4223.232 | 39.64   | 51.66  | 30.37   | 5.72 | 42.58 | 33.15    | 45.17    | 53.90    | 73.90    | 20.7   | 28.7 | Vert. | 295    | 179   | 31SH3     |         |
| 15  | 5414.400 | 38.04   | 49.73  | 32.12   | 6.58 | 43.40 | 33.34    | 45.03    | 53.90    | 73.90    | 20.5   | 28.8 | Vert. | 153    | 196   | 31SH3     |         |
| 16  | 5955.840 | 37.51   | 49.24  | 33.26   | 6.94 | 43.39 | 34.32    | 46.05    | 53.90    | 73.90    | 19.5   | 27.8 | Vert. | 100    | 197   | 31SH3     |         |

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.2 Shielded Room  
Date : 04/Sep/2020

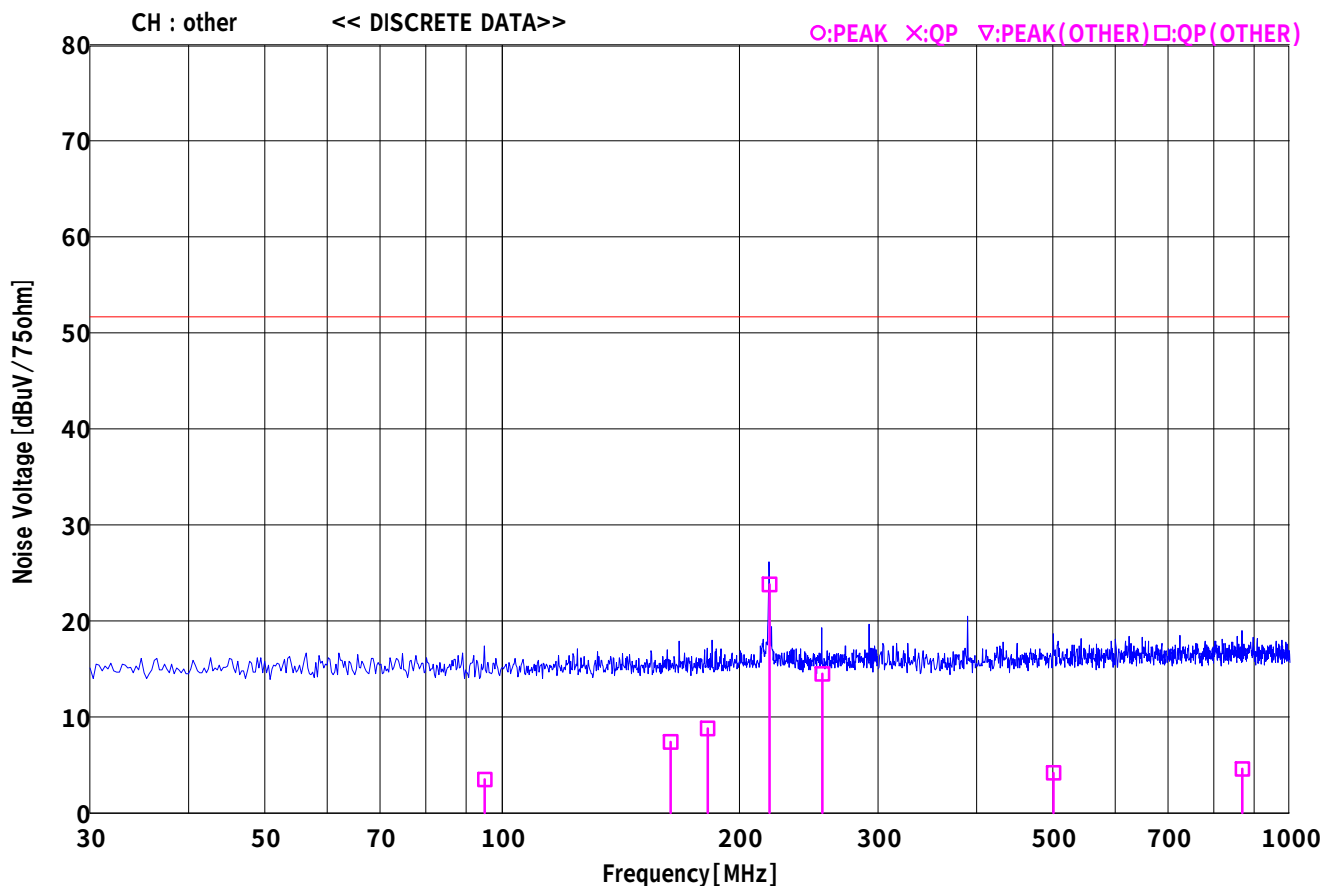
Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_analog  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 25 deg.C / 56 %RH

Remarks : Main port, Other

Engineer : Shuma Terasawa

LIMIT : — FCC Part15 SubpartB\_Antenna terminal



Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + Matching Pad - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.2 Shielded Room  
Date : 04 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_analog  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 25 deg.C / 56 %RH

Remarks : Main port, Other

Engineer : Shuma Terasawa

LIMIT : FCC Part15 SubpartB\_Antenna terminal

| CH    | Freq     | Reading |      | Factor      | Result      |      | Limit | Margin |
|-------|----------|---------|------|-------------|-------------|------|-------|--------|
|       |          | PEAK    | QP   |             | PEAK        | QP   |       |        |
|       | [MHz]    | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| other | *95.070  | ----    | 16.6 | -13.1       | ----        | 3.5  | 51.7  | 48.2   |
|       | *163.650 | ----    | 20.2 | -12.8       | ----        | 7.4  | 51.7  | 44.3   |
|       | *182.280 | ----    | 21.6 | -12.8       | ----        | 8.8  | 51.7  | 42.9   |
|       | *218.461 | ----    | 36.6 | -12.8       | ----        | 23.8 | 51.7  | 27.9   |
|       | *254.911 | ----    | 27.3 | -12.8       | ----        | 14.5 | 51.7  | 37.2   |
|       | *500.904 | ----    | 16.4 | -12.2       | ----        | 4.2  | 51.7  | 47.5   |
|       | *869.810 | ----    | 16.4 | -11.8       | ----        | 4.6  | 51.7  | 47.1   |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + Matching Pad - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.2 Shielded Room  
Date : 04 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (87.75 MHz)\_analog  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 25 deg.C / 56 %RH

Remarks : Main port, Local

Engineer : Shuma Terasawa

LIMIT(Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT(Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH        | Freq<br>[MHz] | Reading |      | Factor<br>[dB] | Result      |      | Limit<br>[dBuV / 75] | Margin<br>[dB] |
|-----------|---------------|---------|------|----------------|-------------|------|----------------------|----------------|
|           |               | PEAK    | QP   |                | PEAK        | QP   |                      |                |
|           |               | [dBuV]  |      |                | [dBuV / 75] |      |                      |                |
| 87.75 MHz | 87.362        | ----    | 16.4 | -13.1          | ----        | 3.3  | 51.7                 | 48.4           |
|           | 174.724       | ----    | 16.5 | -12.8          | ----        | 3.7  | 51.7                 | 48.0           |
|           | 262.086       | ----    | 16.7 | -12.8          | ----        | 3.9  | 51.7                 | 47.8           |
|           | 349.448       | ----    | 16.5 | -12.6          | ----        | 3.9  | 51.7                 | 47.8           |
|           | 436.810       | ----    | 17.7 | -12.3          | ----        | 5.4  | 51.7                 | 46.3           |
|           | 524.172       | ----    | 16.2 | -12.2          | ----        | 4.0  | 51.7                 | 47.7           |
|           | 611.534       | ----    | 16.3 | -11.9          | ----        | 4.4  | 51.7                 | 47.3           |
|           | 698.896       | ----    | 16.3 | -11.8          | ----        | 4.5  | 51.7                 | 47.2           |
|           | 786.258       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|           | 873.620       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|           | 960.982       | ----    | 16.6 | -11.9          | ----        | 4.7  | 51.7                 | 47.0           |
|           | 88.138        | ----    | 18.3 | -13.1          | ----        | 5.2  | 51.7                 | 46.5           |
|           | 176.276       | ----    | 17.6 | -12.8          | ----        | 4.8  | 51.7                 | 46.9           |
|           | 264.414       | ----    | 25.5 | -12.7          | ----        | 12.8 | 51.7                 | 38.9           |
|           | 352.552       | ----    | 34.1 | -12.5          | ----        | 21.6 | 51.7                 | 30.1           |
|           | 440.690       | ----    | 19.1 | -12.3          | ----        | 6.8  | 51.7                 | 44.9           |
|           | 528.828       | ----    | 16.6 | -12.2          | ----        | 4.4  | 51.7                 | 47.3           |
|           | 616.966       | ----    | 16.4 | -11.9          | ----        | 4.5  | 51.7                 | 47.2           |
|           | 705.104       | ----    | 21.5 | -11.8          | ----        | 9.7  | 51.7                 | 42.0           |
|           | 793.242       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|           | 881.380       | ----    | 16.6 | -11.8          | ----        | 4.8  | 51.7                 | 46.9           |
|           | 969.518       | ----    | 16.7 | -11.9          | ----        | 4.8  | 51.7                 | 46.9           |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + Matching Pad - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.2 Shielded Room  
Date : 04 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_analog  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 25 deg.C / 56 %RH

Remarks : Main port, Local

Engineer : Shuma Terasawa

LIMIT(Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT(Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH       | Freq<br>[MHz] | Reading |      | Factor<br>[dB] | Result      |      | Limit<br>[dBuV / 75] | Margin<br>[dB] |
|----------|---------------|---------|------|----------------|-------------|------|----------------------|----------------|
|          |               | PEAK    | QP   |                | PEAK        | QP   |                      |                |
|          |               | [dBuV]  |      |                | [dBuV / 75] |      |                      |                |
| 97.9 MHz | 97.512        | ----    | 19.0 | -13.1          | ----        | 5.9  | 51.7                 | 45.8           |
|          | 195.024       | ----    | 18.3 | -12.8          | ----        | 5.5  | 51.7                 | 46.2           |
|          | 292.536       | ----    | 28.4 | -12.6          | ----        | 15.8 | 51.7                 | 35.9           |
|          | 390.048       | ----    | 30.6 | -12.5          | ----        | 18.1 | 51.7                 | 33.6           |
|          | 487.560       | ----    | 17.1 | -12.3          | ----        | 4.8  | 51.7                 | 46.9           |
|          | 585.072       | ----    | 16.5 | -12.0          | ----        | 4.5  | 51.7                 | 47.2           |
|          | 682.584       | ----    | 16.5 | -11.8          | ----        | 4.7  | 51.7                 | 47.0           |
|          | 780.096       | ----    | 19.5 | -11.8          | ----        | 7.7  | 51.7                 | 44.0           |
|          | 877.608       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|          | 975.120       | ----    | 16.6 | -11.9          | ----        | 4.7  | 51.7                 | 47.0           |
|          | 98.288        | ----    | 16.5 | -13.1          | ----        | 3.4  | 51.7                 | 48.3           |
|          | 196.576       | ----    | 17.2 | -12.8          | ----        | 4.4  | 51.7                 | 47.3           |
|          | 294.864       | ----    | 18.9 | -12.6          | ----        | 6.3  | 51.7                 | 45.4           |
|          | 393.152       | ----    | 16.4 | -12.5          | ----        | 3.9  | 51.7                 | 47.8           |
|          | 491.440       | ----    | 16.4 | -12.2          | ----        | 4.2  | 51.7                 | 47.5           |
|          | 589.728       | ----    | 16.2 | -12.0          | ----        | 4.2  | 51.7                 | 47.5           |
|          | 688.016       | ----    | 16.3 | -11.8          | ----        | 4.5  | 51.7                 | 47.2           |
|          | 786.304       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|          | 884.592       | ----    | 16.5 | -11.8          | ----        | 4.7  | 51.7                 | 47.0           |
|          | 982.880       | ----    | 16.6 | -12.0          | ----        | 4.6  | 51.7                 | 47.1           |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + Matching Pad - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.2 Shielded Room  
Date : 04 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (107.9 MHz)\_analog  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 25 deg.C / 56 %RH

Remarks : Main port, Local

Engineer : Shuma Terasawa

LIMIT(Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT(Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH        | Freq<br>[MHz] | Reading |      | Factor<br>[dB] | Result      |      | Limit<br>[dBuV / 75] | Margin<br>[dB] |
|-----------|---------------|---------|------|----------------|-------------|------|----------------------|----------------|
|           |               | PEAK    | QP   |                | PEAK        | QP   |                      |                |
|           |               | [dBuV]  |      |                | [dBuV / 75] |      |                      |                |
| 107.9 MHz | 108.288       | ----    | 17.6 | -13.0          | ----        | 4.6  | 51.7                 | 47.1           |
|           | 216.576       | ----    | 25.2 | -12.8          | ----        | 12.4 | 51.7                 | 39.3           |
|           | 324.864       | ----    | 29.2 | -12.6          | ----        | 16.6 | 51.7                 | 35.1           |
|           | 433.152       | ----    | 27.8 | -12.3          | ----        | 15.5 | 51.7                 | 36.2           |
|           | 541.440       | ----    | 17.0 | -12.2          | ----        | 4.8  | 51.7                 | 46.9           |
|           | 649.728       | ----    | 17.4 | -11.9          | ----        | 5.5  | 51.7                 | 46.2           |
|           | 758.016       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|           | 866.304       | ----    | 20.4 | -11.8          | ----        | 8.6  | 51.7                 | 43.1           |
|           | 974.592       | ----    | 16.7 | -11.9          | ----        | 4.8  | 51.7                 | 46.9           |
|           | 107.512       | ----    | 16.4 | -13.0          | ----        | 3.4  | 51.7                 | 48.3           |
|           | 215.024       | ----    | 24.0 | -12.8          | ----        | 11.2 | 51.7                 | 40.5           |
|           | 322.536       | ----    | 16.5 | -12.6          | ----        | 3.9  | 51.7                 | 47.8           |
|           | 430.048       | ----    | 16.6 | -12.4          | ----        | 4.2  | 51.7                 | 47.5           |
|           | 537.560       | ----    | 16.3 | -12.2          | ----        | 4.1  | 51.7                 | 47.6           |
|           | 645.072       | ----    | 16.5 | -11.9          | ----        | 4.6  | 51.7                 | 47.1           |
|           | 752.584       | ----    | 16.3 | -11.8          | ----        | 4.5  | 51.7                 | 47.2           |
|           | 860.096       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|           | 967.608       | ----    | 16.6 | -11.9          | ----        | 4.7  | 51.7                 | 47.0           |

Calculation:Rsult[dBuV]=Reading[dBuV]+Fac(Cable+Matching Pad -Amp) [dB]+1.76(50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.2 Shielded Room  
Date : 04 / Sep / 2020

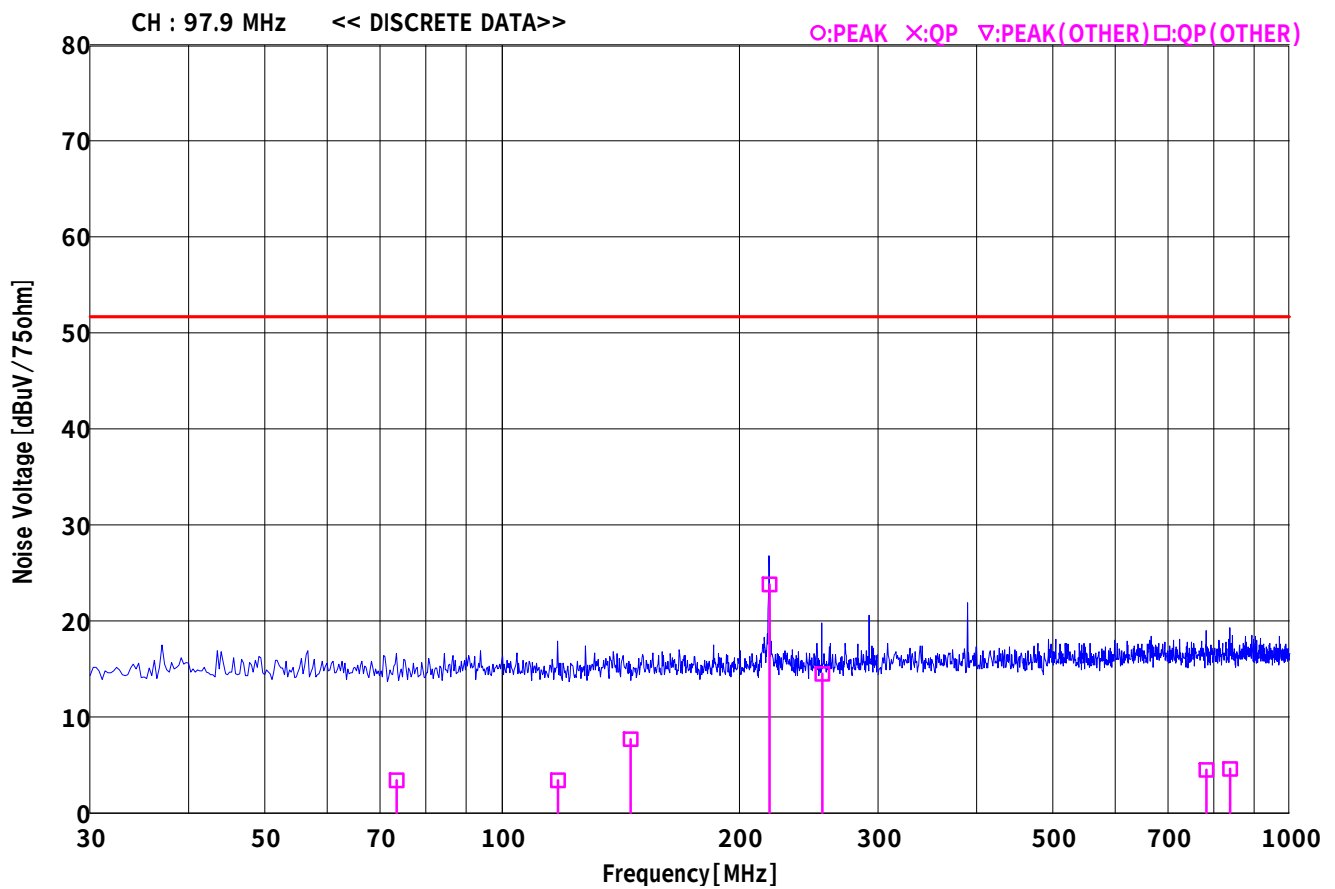
Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_digital  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 25 deg.C / 56 %RH

Remarks : Main port, Other

Engineer : Shuma Terasawa

LIMIT : — FCC Part15 SubpartB\_Antenna terminal



Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + Matching Pad - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.2 Shielded Room  
Date : 04 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_digital  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 25 deg.C / 56 %RH

Remarks : Main port, Other

Engineer : Shuma Terasawa

LIMIT : FCC Part15 SubpartB\_Antenna terminal

| CH    | Freq     | Reading |      | Factor      | Result      |      | Limit | Margin |
|-------|----------|---------|------|-------------|-------------|------|-------|--------|
|       |          | PEAK    | QP   |             | PEAK        | QP   |       |        |
|       | [MHz]    | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| other | *73.470  | ----    | 16.5 | -13.1       | ----        | 3.4  | 51.7  | 48.3   |
|       | *117.749 | ----    | 16.4 | -13.0       | ----        | 3.4  | 51.7  | 48.3   |
|       | *145.560 | ----    | 20.7 | -13.0       | ----        | 7.7  | 51.7  | 44.0   |
|       | *218.461 | ----    | 36.6 | -12.8       | ----        | 23.8 | 51.7  | 27.9   |
|       | *254.911 | ----    | 27.3 | -12.8       | ----        | 14.5 | 51.7  | 37.2   |
|       | *783.008 | ----    | 16.3 | -11.8       | ----        | 4.5  | 51.7  | 47.2   |
|       | *839.009 | ----    | 16.4 | -11.8       | ----        | 4.6  | 51.7  | 47.1   |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + Matching Pad - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Shielded Room  
Date : 04 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (87.75 MHz)\_digital  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 25 deg.C / 56 %RH

Remarks : Main port, Local

Engineer : Shuma Terasawa

LIMIT (Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT (Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH        | Freq<br>[MHz] | Reading |      | Factor<br>[dB] | Result      |      | Limit<br>[dBuV / 75] | Margin<br>[dB] |
|-----------|---------------|---------|------|----------------|-------------|------|----------------------|----------------|
|           |               | PEAK    | QP   |                | PEAK        | QP   |                      |                |
|           |               | [dBuV]  |      |                | [dBuV / 75] |      |                      |                |
| 87.75 MHz | 87.362        | ----    | 16.4 | -13.1          | ----        | 3.3  | 51.7                 | 48.4           |
|           | 174.724       | ----    | 16.4 | -12.8          | ----        | 3.6  | 51.7                 | 48.1           |
|           | 262.086       | ----    | 16.7 | -12.8          | ----        | 3.9  | 51.7                 | 47.8           |
|           | 349.448       | ----    | 16.4 | -12.6          | ----        | 3.8  | 51.7                 | 47.9           |
|           | 436.810       | ----    | 17.6 | -12.3          | ----        | 5.3  | 51.7                 | 46.4           |
|           | 524.172       | ----    | 16.2 | -12.2          | ----        | 4.0  | 51.7                 | 47.7           |
|           | 611.534       | ----    | 16.3 | -11.9          | ----        | 4.4  | 51.7                 | 47.3           |
|           | 698.896       | ----    | 16.3 | -11.8          | ----        | 4.5  | 51.7                 | 47.2           |
|           | 786.258       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|           | 873.620       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|           | 960.982       | ----    | 16.6 | -11.9          | ----        | 4.7  | 51.7                 | 47.0           |
|           | 88.138        | ----    | 18.3 | -13.1          | ----        | 5.2  | 51.7                 | 46.5           |
|           | 176.276       | ----    | 17.6 | -12.8          | ----        | 4.8  | 51.7                 | 46.9           |
|           | 264.414       | ----    | 25.5 | -12.7          | ----        | 12.8 | 51.7                 | 38.9           |
|           | 352.552       | ----    | 34.1 | -12.5          | ----        | 21.6 | 51.7                 | 30.1           |
|           | 440.690       | ----    | 19.1 | -12.3          | ----        | 6.8  | 51.7                 | 44.9           |
|           | 528.828       | ----    | 16.6 | -12.2          | ----        | 4.4  | 51.7                 | 47.3           |
|           | 616.966       | ----    | 16.4 | -11.9          | ----        | 4.5  | 51.7                 | 47.2           |
|           | 705.104       | ----    | 21.5 | -11.8          | ----        | 9.7  | 51.7                 | 42.0           |
|           | 793.242       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|           | 881.380       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|           | 969.518       | ----    | 16.6 | -11.9          | ----        | 4.7  | 51.7                 | 47.0           |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + Matching Pad - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.2 Shielded Room  
Date : 04 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_digital  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 25 deg.C / 56 %RH

Remarks : Main port, Local

Engineer : Shuma Terasawa

LIMIT(Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT(Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH       | Freq<br>[MHz] | Reading |      | Factor<br>[dB] | Result      |      | Limit<br>[dBuV / 75] | Margin<br>[dB] |
|----------|---------------|---------|------|----------------|-------------|------|----------------------|----------------|
|          |               | PEAK    | QP   |                | PEAK        | QP   |                      |                |
|          |               | [dBuV]  |      |                | [dBuV / 75] |      |                      |                |
| 97.9 MHz | 97.512        | ----    | 19.1 | -13.1          | ----        | 6.0  | 51.7                 | 45.7           |
|          | 195.024       | ----    | 18.4 | -12.8          | ----        | 5.6  | 51.7                 | 46.1           |
|          | 292.536       | ----    | 28.1 | -12.6          | ----        | 15.5 | 51.7                 | 36.2           |
|          | 390.048       | ----    | 30.7 | -12.5          | ----        | 18.2 | 51.7                 | 33.5           |
|          | 487.560       | ----    | 17.1 | -12.3          | ----        | 4.8  | 51.7                 | 46.9           |
|          | 585.072       | ----    | 16.9 | -12.0          | ----        | 4.9  | 51.7                 | 46.8           |
|          | 682.584       | ----    | 16.5 | -11.8          | ----        | 4.7  | 51.7                 | 47.0           |
|          | 780.096       | ----    | 19.5 | -11.8          | ----        | 7.7  | 51.7                 | 44.0           |
|          | 877.608       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|          | 975.120       | ----    | 16.6 | -11.9          | ----        | 4.7  | 51.7                 | 47.0           |
|          | 98.288        | ----    | 16.5 | -13.1          | ----        | 3.4  | 51.7                 | 48.3           |
|          | 196.576       | ----    | 17.2 | -12.8          | ----        | 4.4  | 51.7                 | 47.3           |
|          | 294.864       | ----    | 20.5 | -12.6          | ----        | 7.9  | 51.7                 | 43.8           |
|          | 393.152       | ----    | 16.3 | -12.5          | ----        | 3.8  | 51.7                 | 47.9           |
|          | 491.440       | ----    | 16.4 | -12.2          | ----        | 4.2  | 51.7                 | 47.5           |
|          | 589.728       | ----    | 16.1 | -12.0          | ----        | 4.1  | 51.7                 | 47.6           |
|          | 688.016       | ----    | 16.3 | -11.8          | ----        | 4.5  | 51.7                 | 47.2           |
|          | 786.304       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|          | 884.592       | ----    | 16.5 | -11.8          | ----        | 4.7  | 51.7                 | 47.0           |
|          | 982.880       | ----    | 16.5 | -12.0          | ----        | 4.5  | 51.7                 | 47.2           |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + Matching Pad - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.2 Shielded Room  
Date : 04 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (107.9 MHz)\_digital  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 25 deg.C / 56 %RH

Remarks : Main port, Local

Engineer : Shuma Terasawa

LIMIT(Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT(Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH        | Freq<br>[MHz] | Reading |      | Factor<br>[dB] | Result      |      | Limit<br>[dBuV / 75] | Margin<br>[dB] |
|-----------|---------------|---------|------|----------------|-------------|------|----------------------|----------------|
|           |               | PEAK    | QP   |                | PEAK        | QP   |                      |                |
|           |               | [dBuV]  |      |                | [dBuV / 75] |      |                      |                |
| 107.9 MHz | 108.288       | ----    | 17.5 | -13.0          | ----        | 4.5  | 51.7                 | 47.2           |
|           | 216.576       | ----    | 25.2 | -12.8          | ----        | 12.4 | 51.7                 | 39.3           |
|           | 324.864       | ----    | 29.2 | -12.6          | ----        | 16.6 | 51.7                 | 35.1           |
|           | 433.152       | ----    | 27.8 | -12.3          | ----        | 15.5 | 51.7                 | 36.2           |
|           | 541.440       | ----    | 17.0 | -12.2          | ----        | 4.8  | 51.7                 | 46.9           |
|           | 649.728       | ----    | 17.4 | -11.9          | ----        | 5.5  | 51.7                 | 46.2           |
|           | 758.016       | ----    | 16.3 | -11.8          | ----        | 4.5  | 51.7                 | 47.2           |
|           | 866.304       | ----    | 20.6 | -11.8          | ----        | 8.8  | 51.7                 | 42.9           |
|           | 974.592       | ----    | 16.7 | -11.9          | ----        | 4.8  | 51.7                 | 46.9           |
|           | 107.512       | ----    | 16.4 | -13.0          | ----        | 3.4  | 51.7                 | 48.3           |
|           | 215.024       | ----    | 24.0 | -12.8          | ----        | 11.2 | 51.7                 | 40.5           |
|           | 322.536       | ----    | 16.6 | -12.6          | ----        | 4.0  | 51.7                 | 47.7           |
|           | 430.048       | ----    | 16.6 | -12.4          | ----        | 4.2  | 51.7                 | 47.5           |
|           | 537.560       | ----    | 16.3 | -12.2          | ----        | 4.1  | 51.7                 | 47.6           |
|           | 645.072       | ----    | 16.4 | -11.9          | ----        | 4.5  | 51.7                 | 47.2           |
|           | 752.584       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|           | 860.096       | ----    | 16.4 | -11.8          | ----        | 4.6  | 51.7                 | 47.1           |
|           | 967.608       | ----    | 16.7 | -11.9          | ----        | 4.8  | 51.7                 | 46.9           |

Calculation:Rsult[dBuV]=Reading[dBuV]+Fac(Cable+Matching Pad -Amp) [dB]+1.76(50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 05 / Sep / 2020

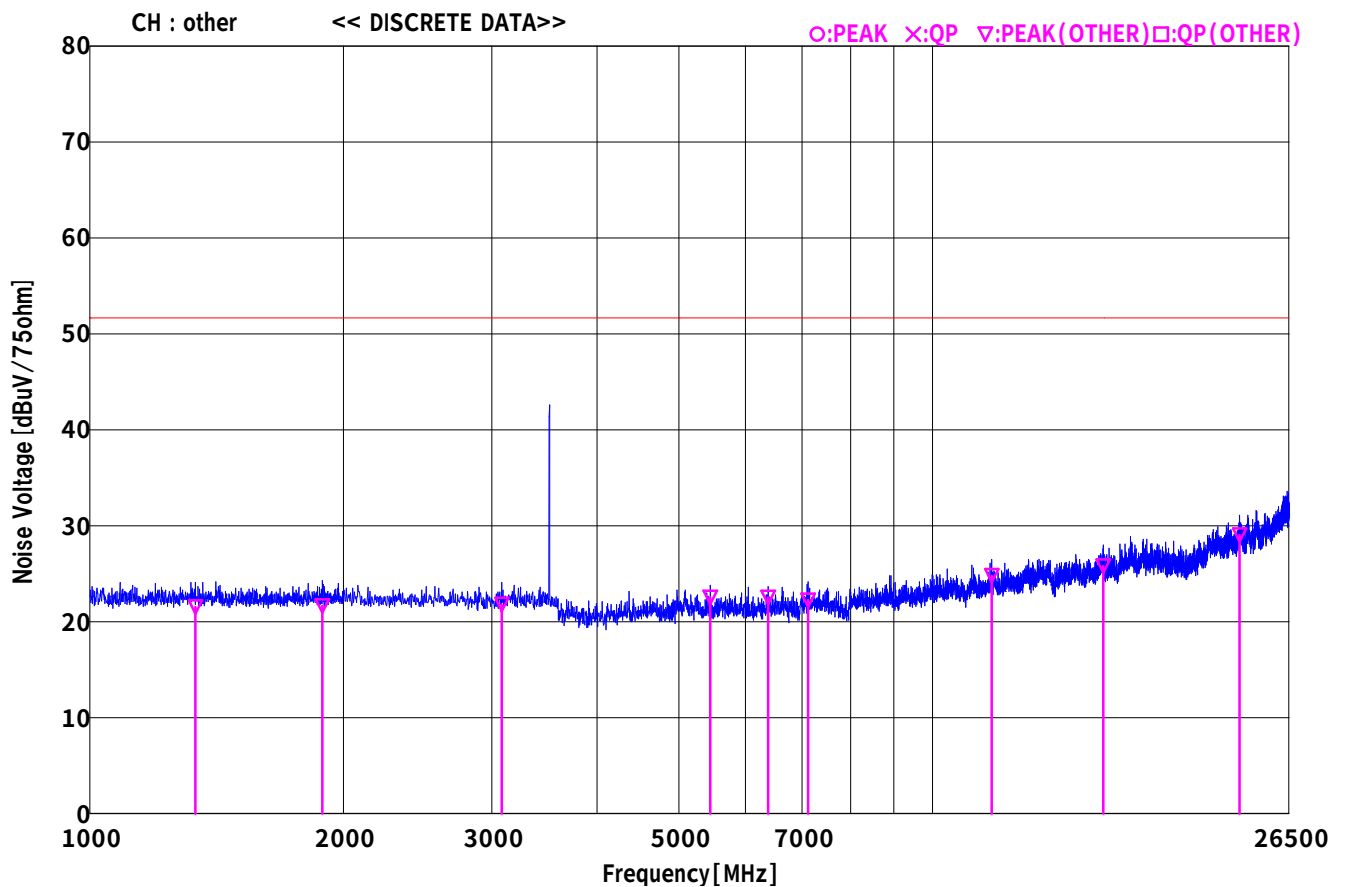
Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_analog  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 24 deg.C / 52 %RH

Remarks : Main port, Other

Engineer : Kouki Yamada

LIMIT : — FCC Part15 SubpartB\_Antenna terminal



Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + ATT - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 05 / Sep / 2020

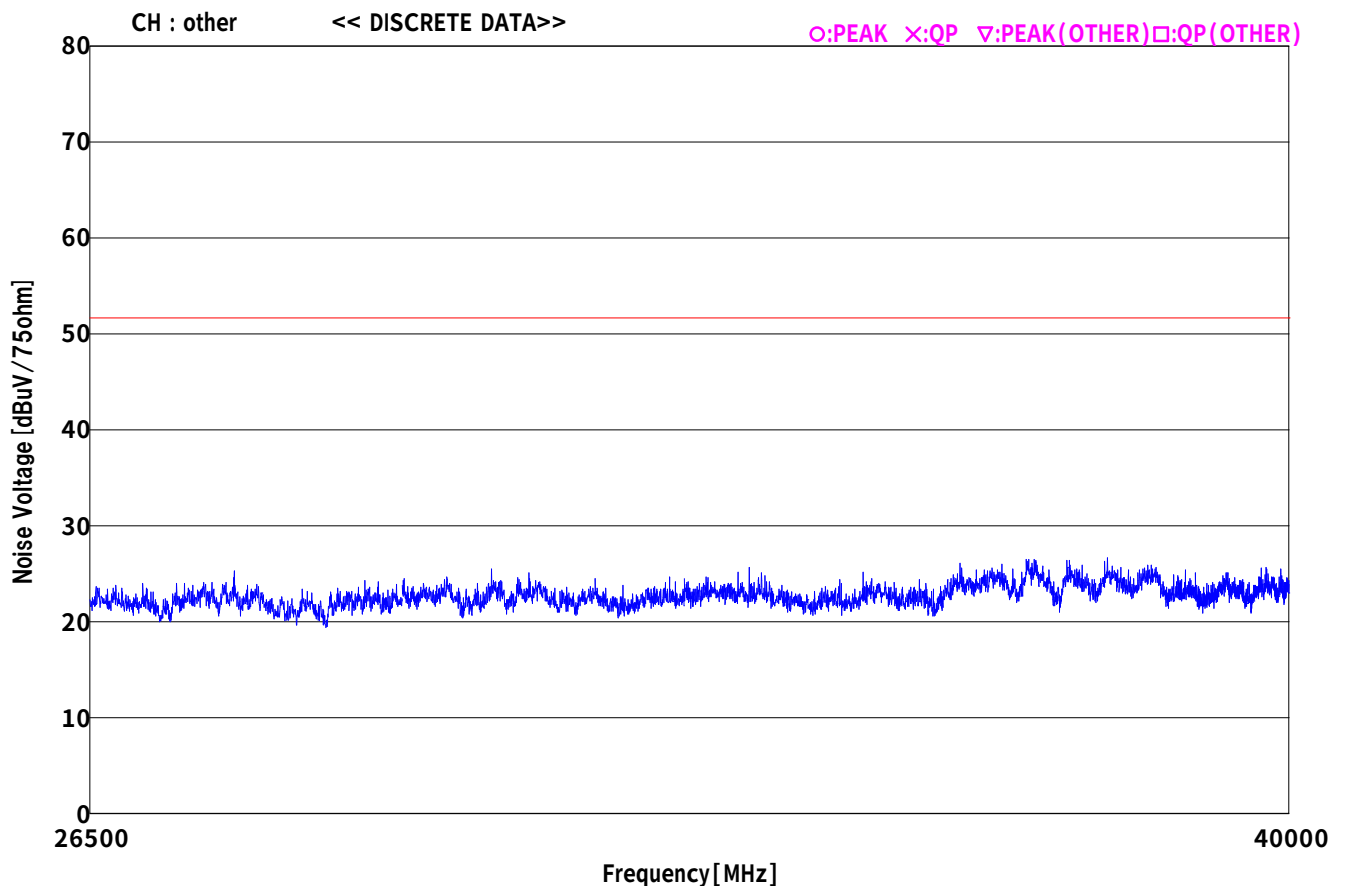
Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_analog  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 24 deg.C / 52 %RH

Remarks : Main port, Other

Engineer : Kouki Yamada

LIMIT : — FCC Part15 SubpartB\_Antenna terminal



Calculation:Result [dBuV]=Reading [dBuV]+Fac (Cable+ATT -Amp) [dB]+1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 05 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_analog  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 24 deg.C / 52 %RH

Remarks : Main port, Other

Engineer : Kouki Yamada

LIMIT : FCC Part15 SubpartB\_Antenna terminal

| CH    | Freq       | Reading |      | Factor      | Result      |      | Limit | Margin |
|-------|------------|---------|------|-------------|-------------|------|-------|--------|
|       |            | PEAK    | QP   |             | PEAK        | QP   |       |        |
|       | [MHz]      | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| other | *1335.000  | 46.7    | ---- | -25.1       | 21.6        | ---- | 51.7  | 30.2   |
|       | *1888.000  | 46.0    | ---- | -24.3       | 21.7        | ---- | 51.7  | 30.0   |
|       | *3083.000  | 45.8    | ---- | -24.0       | 21.8        | ---- | 51.7  | 29.9   |
|       | *5450.000  | 45.2    | ---- | -22.7       | 22.5        | ---- | 51.7  | 29.2   |
|       | *6386.000  | 45.2    | ---- | -22.6       | 22.6        | ---- | 51.7  | 29.2   |
|       | *7121.000  | 44.9    | ---- | -22.6       | 22.3        | ---- | 51.7  | 29.4   |
|       | *11762.000 | 45.7    | ---- | -20.9       | 24.8        | ---- | 51.7  | 26.9   |
|       | *15956.000 | 45.7    | ---- | -19.9       | 25.8        | ---- | 51.7  | 25.9   |
|       | *23162.000 | 46.5    | ---- | -17.4       | 29.1        | ---- | 51.7  | 22.6   |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + ATT - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 05 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (87.75 MHz)\_analog  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 24 deg.C / 52 %RH

Remarks : Main port, Local

Engineer : Kouki Yamada

LIMIT(Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT(Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH        | Freq     | Reading |      | Factor      | Result      |      | Limit | Margin |
|-----------|----------|---------|------|-------------|-------------|------|-------|--------|
|           |          | PEAK    | QP   |             | PEAK        | QP   |       |        |
|           | [MHz]    | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 87.75 MHz | 1410.208 | 47.2    | ---- | -24.9       | 22.3        | ---- | 51.7  | 29.4   |
|           | 1747.240 | 45.8    | ---- | -24.4       | 21.4        | ---- | 51.7  | 30.3   |
|           | 1762.760 | 46.1    | ---- | -24.3       | 21.8        | ---- | 51.7  | 29.9   |
|           | 2115.312 | 45.7    | ---- | -24.2       | 21.5        | ---- | 51.7  | 30.2   |
|           | 2467.864 | 45.8    | ---- | -24.0       | 21.8        | ---- | 51.7  | 29.9   |
|           | 3172.968 | 46.0    | ---- | -23.9       | 22.1        | ---- | 51.7  | 29.6   |
|           | 3494.480 | 45.6    | ---- | -23.6       | 22.0        | ---- | 51.7  | 29.8   |
|           | 3525.520 | 65.8    | ---- | -23.6       | 42.2        | ---- | 51.7  | 9.5    |
|           | 7051.040 | 46.0    | ---- | -22.6       | 23.4        | ---- | 51.7  | 28.3   |

Calculation: Result[dBuV] = Reading[dBuV] + Fac(Cable+ATT-Amp)[dB] + 1.76(50 ohm to 75 ohm)[dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 05 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_analog  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 24 deg.C / 52 %RH

Remarks : Main port, Local

Engineer : Kouki Yamada

LIMIT (Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT (Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH       | Freq     | Reading |      | Factor      | Result      |      | Limit | Margin |
|----------|----------|---------|------|-------------|-------------|------|-------|--------|
|          |          | PEAK    | QP   |             | PEAK        | QP   |       |        |
|          | [MHz]    | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 97.9 MHz | 1560.192 | 46.4    | ---- | -24.7       | 21.7        | ---- | 51.7  | 30.0   |
|          | 1755.216 | 46.0    | ---- | -24.3       | 21.7        | ---- | 51.7  | 30.0   |
|          | 1950.240 | 46.1    | ---- | -24.2       | 21.9        | ---- | 51.7  | 29.8   |
|          | 3120.384 | 45.4    | ---- | -23.9       | 21.5        | ---- | 51.7  | 30.2   |
|          | 3510.432 | 66.0    | ---- | -23.6       | 42.4        | ---- | 51.7  | 9.3    |
|          | 6630.816 | 45.2    | ---- | -22.5       | 22.7        | ---- | 51.7  | 29.0   |
|          | 7020.864 | 45.3    | ---- | -22.6       | 22.7        | ---- | 51.7  | 29.0   |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + ATT - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 05 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (107.9 MHz)\_analog  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 24 deg.C / 52 %RH

Remarks : Main port, Local

Engineer : Kouki Yamada

LIMIT (Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT (Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH        | Freq     | Reading |      | Factor    | Result    |      | Limit | Margin |
|-----------|----------|---------|------|-----------|-----------|------|-------|--------|
|           |          | PEAK    | QP   |           | PEAK      | QP   |       |        |
|           | [MHz]    | [dBuV]  | [dB] | [dBuV/75] | [dBuV/75] | [dB] |       |        |
| 107.9 MHz | 1299.456 | 47.4    | ---- | -25.2     | 22.2      | ---- | 51.7  | 29.5   |
|           | 1732.608 | 46.4    | ---- | -24.4     | 22.0      | ---- | 51.7  | 29.7   |
|           | 1840.896 | 46.2    | ---- | -24.3     | 21.9      | ---- | 51.7  | 29.8   |
|           | 2165.760 | 45.2    | ---- | -24.2     | 21.0      | ---- | 51.7  | 30.7   |
|           | 3032.064 | 45.4    | ---- | -24.1     | 21.3      | ---- | 51.7  | 30.4   |
|           | 3465.216 | 67.7    | ---- | -23.6     | 44.1      | ---- | 51.7  | 7.6    |
|           | 6930.432 | 46.4    | ---- | -22.6     | 23.8      | ---- | 51.7  | 27.9   |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + ATT - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 05 / Sep / 2020

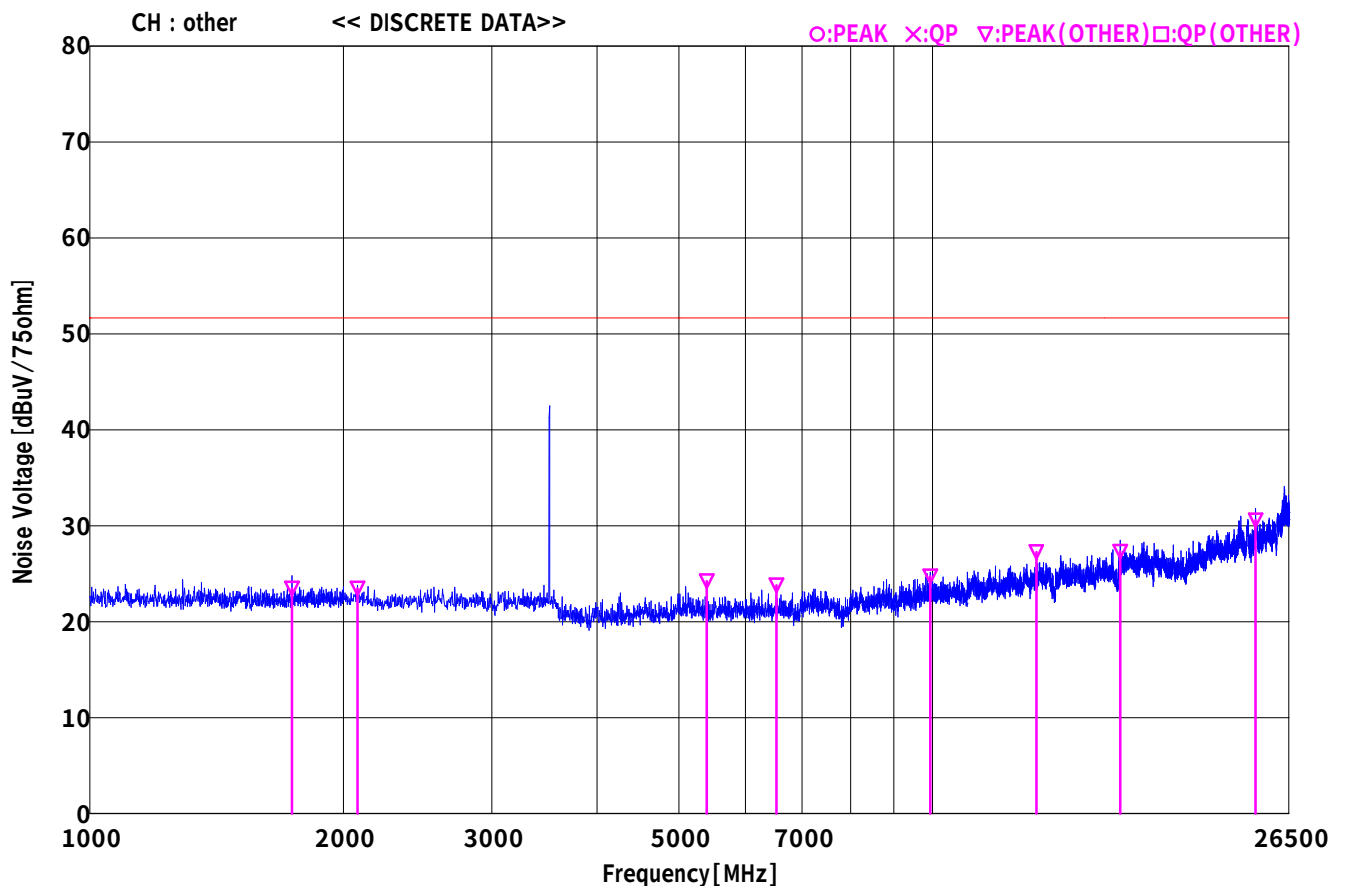
Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_digital  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 24 deg.C / 52 %RH

Remarks : Main port, Other

Engineer : Kouki Yamada

LIMIT : — FCC Part15 SubpartB\_Antenna terminal



Calculation:Result[dBuV]=Reading[dBuV]+Fac(Cable+ATT-Amp)[dB]+1.76(50 ohm to 75 ohm)[dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 05 / Sep / 2020

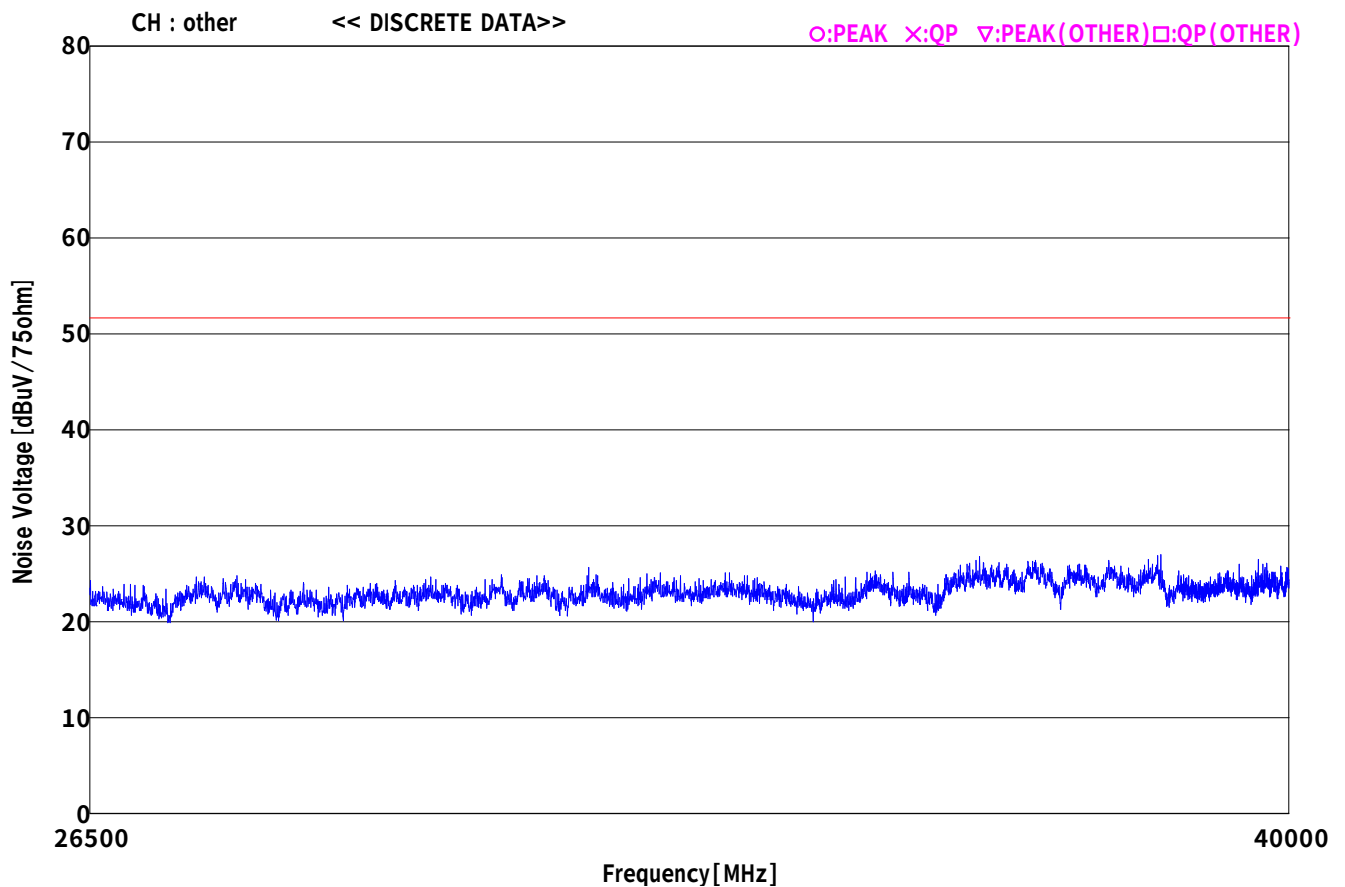
Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_digital  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 24 deg.C / 52 %RH

Remarks : Main port, Other

Engineer : Kouki Yamada

LIMIT : — FCC Part15 SubpartB\_Antenna terminal



Calculation:Result[dBuV]=Reading[dBuV]+Fac(Cable+ATT-Amp)[dB]+1.76(50 ohm to 75 ohm)[dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 05 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_digital  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 24 deg.C / 52 %RH

Remarks : Main port, Other

Engineer : Kouki Yamada

LIMIT : FCC Part15 SubpartB\_Antenna terminal

| CH    | Freq       | Reading |      | Factor      | Result      |      | Limit | Margin |
|-------|------------|---------|------|-------------|-------------|------|-------|--------|
|       |            | PEAK    | QP   |             | PEAK        | QP   |       |        |
|       | [MHz]      | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| other | *1737.000  | 47.9    | ---- | -24.4       | 23.5        | ---- | 51.7  | 28.2   |
|       | *2078.000  | 47.7    | ---- | -24.2       | 23.5        | ---- | 51.7  | 28.2   |
|       | *5396.000  | 47.0    | ---- | -22.7       | 24.3        | ---- | 51.7  | 27.5   |
|       | *6530.000  | 46.3    | ---- | -22.5       | 23.8        | ---- | 51.7  | 27.9   |
|       | *9941.000  | 46.8    | ---- | -22.0       | 24.8        | ---- | 51.7  | 27.0   |
|       | *13283.000 | 46.2    | ---- | -18.9       | 27.3        | ---- | 51.7  | 24.4   |
|       | *16706.000 | 46.3    | ---- | -19.0       | 27.3        | ---- | 51.7  | 24.4   |
|       | *24194.000 | 47.7    | ---- | -17.1       | 30.6        | ---- | 51.7  | 21.1   |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + ATT - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 05 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (87.75 MHz)\_digital  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 24 deg.C / 52 %RH

Remarks : Main port, Local

Engineer : Kouki Yamada

LIMIT (Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT (Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH        | Freq     | Reading |      | Factor      | Result      |      | Limit | Margin |
|-----------|----------|---------|------|-------------|-------------|------|-------|--------|
|           |          | PEAK    | QP   |             | PEAK        | QP   |       |        |
|           | [MHz]    | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 87.75 MHz | 1410.208 | 47.5    | ---- | -24.9       | 22.6        | ---- | 51.7  | 29.1   |
|           | 1747.240 | 45.9    | ---- | -24.4       | 21.5        | ---- | 51.7  | 30.2   |
|           | 1762.760 | 45.8    | ---- | -24.3       | 21.5        | ---- | 51.7  | 30.2   |
|           | 2115.312 | 45.5    | ---- | -24.2       | 21.3        | ---- | 51.7  | 30.4   |
|           | 2467.864 | 45.8    | ---- | -24.0       | 21.8        | ---- | 51.7  | 29.9   |
|           | 3172.968 | 45.0    | ---- | -23.9       | 21.1        | ---- | 51.7  | 30.6   |
|           | 3494.480 | 44.8    | ---- | -23.6       | 21.2        | ---- | 51.7  | 30.5   |
|           | 3525.520 | 65.6    | ---- | -23.6       | 42.0        | ---- | 51.7  | 9.7    |
|           | 7051.040 | 44.7    | ---- | -22.6       | 22.1        | ---- | 51.7  | 29.6   |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + ATT - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 05 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (97.9 MHz)\_digital  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 24 deg.C / 52 %RH

Remarks : Main port, Local

Engineer : Kouki Yamada

LIMIT (Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT (Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH       | Freq     | Reading |      | Factor      | Result      |      | Limit | Margin |
|----------|----------|---------|------|-------------|-------------|------|-------|--------|
|          |          | PEAK    | QP   |             | PEAK        | QP   |       |        |
|          | [MHz]    | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 97.9 MHz | 1560.192 | 46.5    | ---- | -24.7       | 21.8        | ---- | 51.7  | 29.9   |
|          | 1755.216 | 45.6    | ---- | -24.3       | 21.3        | ---- | 51.7  | 30.4   |
|          | 1950.240 | 46.9    | ---- | -24.2       | 22.7        | ---- | 51.7  | 29.0   |
|          | 3120.384 | 45.5    | ---- | -23.9       | 21.6        | ---- | 51.7  | 30.1   |
|          | 3510.432 | 66.0    | ---- | -23.6       | 42.4        | ---- | 51.7  | 9.3    |
|          | 6630.816 | 44.7    | ---- | -22.5       | 22.2        | ---- | 51.7  | 29.5   |
|          | 7020.864 | 45.5    | ---- | -22.6       | 22.9        | ---- | 51.7  | 28.8   |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + ATT - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 05 / Sep / 2020

Company : Panasonic Corporation  
Kind of EUT : Car Navigation  
Model No. : AT2105  
Serial No. : No.002

Mode : FM Receiving (107.9 MHz)\_digital  
Order No. : 13462774S  
Power : DC 13.2 V  
Temp./Humi. : 24 deg.C / 52 %RH

Remarks : Main port, Local

Engineer : Kouki Yamada

LIMIT (Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT (Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH        | Freq     | Reading |      | Factor      | Result      |      | Limit | Margin |
|-----------|----------|---------|------|-------------|-------------|------|-------|--------|
|           |          | PEAK    | QP   |             | PEAK        | QP   |       |        |
|           | [MHz]    | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 107.9 MHz | 1299.456 | 46.1    | ---- | -25.2       | 20.9        | ---- | 51.7  | 30.8   |
|           | 1732.608 | 46.5    | ---- | -24.4       | 22.1        | ---- | 51.7  | 29.6   |
|           | 1840.896 | 45.6    | ---- | -24.3       | 21.3        | ---- | 51.7  | 30.4   |
|           | 2165.760 | 45.4    | ---- | -24.2       | 21.2        | ---- | 51.7  | 30.5   |
|           | 3032.064 | 44.9    | ---- | -24.1       | 20.8        | ---- | 51.7  | 30.9   |
|           | 3465.216 | 67.4    | ---- | -23.6       | 43.8        | ---- | 51.7  | 7.9    |
|           | 6930.432 | 46.1    | ---- | -22.6       | 23.5        | ---- | 51.7  | 28.2   |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + ATT - Amp) [dB] + 1.76 (50 ohm to 75 ohm) [dB]

**APPENDIX 3**

## Test Instruments

## EMI test equipment

| Test Name | Local ID                       | LIMS ID | Description                   | Manufacturer                                | Model                                | Serial                  | Last Calibration Date | Calibration Interval (Month) |
|-----------|--------------------------------|---------|-------------------------------|---------------------------------------------|--------------------------------------|-------------------------|-----------------------|------------------------------|
| AT        | COTS-SEMI-2                    | 144866  | EMI Software for AV Equipment | TSJ (Techno Science Japan)                  | TEPTO-DV(AT,TV)                      | 2                       | -                     | -                            |
| AT        | KAF-02                         | 144878  | Pre Amplifier                 | Hewlett Packard                             | 8449B                                | 3008A01268              | 2020/04/02            | 12                           |
| AT        | SAF-07                         | 145006  | Pre Amplifier                 | TSJ (Techno Science Japan)                  | MLA-8k03-D01-35                      | 81212                   | 2020/06/24            | 12                           |
| AT        | SAT10-09                       | 145132  | Attenuator                    | Weinschel Corp.                             | 54A-10                               | W5692                   | 2019/11/05            | 12                           |
| AT        | SCC-AT1/AT2/KM P-09            | 180424  | Coaxial cable, Matching pad   | TAMAGAWA                                    | 5D2W/ZT-130                          | -/1454514E              | 2020/06/24            | 12                           |
| AT        | SCC-G12                        | 145040  | Coaxial Cable                 | Suhner                                      | SUCOFLEX 102                         | 30790/2                 | 2020/03/02            | 12                           |
| AT        | SCC-G63                        | 196946  | Coaxial Cable                 | HUBER+SUNER                                 | SUCOFLEX 102                         | 803411/2                | 2020/03/10            | 12                           |
| AT        | SOS-16                         | 167990  | Humidity Indicator            | CUSTOM. Inc                                 | CTH-202                              | 708Q08R                 | 2019/12/19            | 12                           |
| AT        | STR-01                         | 145790  | Test Receiver                 | Rohde & Schwarz                             | ESU40                                | 100093                  | 2020/04/24            | 12                           |
| AT        | STS-01                         | 145792  | Digital Hitester              | Hioki                                       | 3805-50                              | 80997812                | 2019/10/01            | 12                           |
| AT,RE     | SAF-10                         | 145129  | Pre Amplifier                 | Toyo Corporation                            | HAP26-40W                            | 10                      | 2020/03/03            | 12                           |
| RE        | COTS-SEMI-5                    | 170932  | EMI Software                  | TSJ (Techno Science Japan)                  | TEPTO-DV3(RE,CE,ME,PE)               | -                       | -                     | -                            |
| RE        | KJM-02                         | 146432  | Measure                       | TAJIMA                                      | GL19-55                              | -                       | -                     | -                            |
| RE        | SAEC-03(NSA)                   | 145565  | Semi-Anechoic Chamber         | TDK                                         | SAEC-03(NSA)                         | 3                       | 2020/04/12            | 12                           |
| RE        | SAEC-03(SVSWR)                 | 145566  | Semi-Anechoic Chamber         | TDK                                         | SAEC-03(SVSWR)                       | 3                       | 2020/05/11            | 12                           |
| RE        | SAF-03                         | 145126  | Pre Amplifier                 | SONOMA                                      | 310N                                 | 290213                  | 2020/02/19            | 12                           |
| RE        | SAF-06                         | 145005  | Pre Amplifier                 | Toyo Corporation                            | TPA0118-36                           | 1440491                 | 2020/02/20            | 12                           |
| RE        | SAF-08                         | 145007  | Pre Amplifier                 | Toyo Corporation                            | HAP18-26W                            | 19                      | 2020/03/03            | 12                           |
| RE        | SAT6-13                        | 167094  | Attenuator                    | JFW                                         | 50HF-006N                            | -                       | 2020/02/21            | 12                           |
| RE        | SBA-03                         | 145023  | Biconical Antenna             | Schwarzbeck Mess - Elektronik               | BBA9106                              | 91032666                | 2020/05/17            | 12                           |
| RE        | SCC-C1/C2/C3/C4/C5/C10/SRSE-03 | 145171  | Coaxial Cable&RF Selector     | Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO | 8D2W/12DSFA/141PE/141PE/141PE/NS4906 | -/0901-271(RF Selector) | 2020/04/12            | 12                           |
| RE        | SCC-G15                        | 145176  | Coaxial Cable                 | Suhner                                      | SUCOFLEX 102                         | 32703/2                 | 2020/03/04            | 12                           |
| RE        | SCC-G40                        | 166491  | Coaxial Cable                 | Junkosha                                    | MWX221-01000NFSNMS/B                 | 1612S005                | 2020/01/08            | 12                           |
| RE        | SCC-G43                        | 156380  | Coaxial Cable                 | HUBER+SUNER                                 | SUCOFLEX_104_E                       | SN MY 13406/4E          | 2020/06/04            | 12                           |
| RE        | SCC-G57                        | 179540  | Coaxial Cable                 | Huber+Suhner                                | SUCOFLEX 102                         | 802815/2                | 2020/05/12            | 12                           |
| RE        | SCC-G58                        | 183047  | Coaxial Cable                 | HUBER+SUNER                                 | SUCOFLEX 104                         | 800287/4A               | 2020/06/04            | 12                           |
| RE        | SCC-G70                        | 200010  | Coaxial Cable                 | HUBER+SUNER                                 | SUCOFLEX 104                         | 575618/4                | 2020/07/07            | 12                           |
| RE        | SHA-03                         | 145501  | Horn Antenna                  | Schwarzbeck Mess - Elektronik               | BBHA9120D                            | 9120D-739               | 2020/06/15            | 12                           |
| RE        | SHA-04                         | 145512  | Horn Antenna                  | ETS LINDGREN                                | 3160-09                              | 00094868                | 2020/06/15            | 12                           |
| RE        | SHA-06                         | 145514  | Horn Antenna                  | ETS LINDGREN                                | 3160-10                              | 00092383                | 2020/07/16            | 12                           |
| RE        | SHA-10                         | 194685  | Horn Antenna                  | Schwarzbeck Mess - Elektronik               | BBHA 9120 C                          | 711                     | 2020/02/17            | 12                           |

## EMI test equipment

| Test Name | Local ID | LIMS ID | Description         | Manufacturer                  | Model      | Serial     | Last Calibration Date | Calibration Interval (Month) |
|-----------|----------|---------|---------------------|-------------------------------|------------|------------|-----------------------|------------------------------|
| RE        | SLA-07   | 145529  | Logperiodic Antenna | Schwarzbeck Mess - Elektronik | VUSLP9111B | 196        | 2020/05/17            | 12                           |
| RE        | SOS-23   | 191840  | Humidity Indicator  | CUSTOM. Inc                   | CTH-201    | -          | 2019/12/12            | 12                           |
| RE        | SSA-02   | 145800  | Spectrum Analyzer   | Keysight Technologies Inc     | E4448A     | MY48250106 | 2020/04/16            | 12                           |
| RE        | STR-08   | 150463  | Test Receiver       | Rohde & Schwarz               | ESW44      | 101581     | 2019/11/22            | 12                           |
| RE        | STS-03   | 146210  | Digital Hitester    | Hioki                         | 3805-50    | 80997823   | 2019/10/01            | 12                           |

\*Hyphens for Last Calibration Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.

The expiration date of the calibration is the end of the expired month.

As for some calibrations performed after the tested dates , those test equipment have been controlled by means of an unbroken chains of calibrations.

All equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards

Test Item:

RE: Radiated emission,

AT: Antenna terminal disturbance voltage