



FCC LISTED, REGISTRATION
NUMBER: 2764.01

ISED LISTED REGISTRATION
NUMBER: 23595-1

Test report No:
2271ERM.008A1

Test report

**FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-17 Edition)
&
ICES-003 ISSUE 6 – Update April (2017)**

| | |
|---|---|
| Identification of item tested | Head unit with radio and Bluetooth |
| Trademark | Panasonic |
| Model and /or type reference | MIB3E_MQB_BTWIFI |
| Other identification of the product | FCC ID: WUQ-MIB3HBTWIFI IC: 216R-MIB3HBTWIFI PN: 654.035.869.B HW Version: X31 SW Version: X450 |
| Features | Bluetooth, WLAN, FM, AM, DAB, USB. |
| Manufacturer | PANASONIC AUTOMOTIVE SYSTEMS EUROPE GMBH Robert Bosch Str. 27-29-63225 Langen- Germany |
| Test method requested, standard | FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-17 Edition) ICES-003 ISSUE 6 – Update April (2017) |
| Summary | IN COMPLIANCE |
| Approved by (name / position & signature) | Domingo Galvez EMC&RF Lab Manager |
| Date of issue | 01-24-2019 |
| Report template No | FDT08_21 |

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Competences and guarantees

DEKRA Certification Inc. is a testing laboratory accredited by A2LA (The American Association for Laboratory Accreditation), to perform the tests indicated in the Certificate 2764.01

DEKRA Certification Inc. is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Certification Inc. has a calibration and maintenance program for its measurement equipment.

DEKRA Certification Inc. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Certification at the time of performance of the test.

DEKRA Certification Inc. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
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4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Certification Inc. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the DEKRA Certification internal document PODT000.

| Frequency (MHz) | U(k=2) | Units |
|-----------------|--------|-------|
| 30-180 | 3.82 | dB |
| 180-1000 | 2.61 | dB |
| 1000-18000 | 2.92 | dB |
| 18000-40000 | 2.15 | dB |

Data provided by the client

Automotive head unit to be installed in cars with the following features: Bluetooth, WLAN, FM, AM, DAB, USB

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples undergoing test have been selected by: The client.

Sample S/01 is composed of the following elements:

| Control N° | Description | Model | Serial N° | Date of reception |
|------------|-------------------------|------------------|---------------------------------|-------------------|
| 2271.051 | Car Radio | MIB3E_MQB_BTWIFI | 04S PM6- 00124.08.18413E0073 | 12/21/2018 |
| 2271.019 | Antenna | - | 380 | 10/02/2018 |
| 2271.038 | Power Cable | - | - | 12/21/2018 |
| 2271.052 | BNC to FAKRA RF cable | - | - | 12/28/2018 |
| 2271.053 | SMA to FAKRA RF cable | - | - | 12/28/2018 |
| 2271.054 | BNC to FAKRA RF cable | - | - | 12/28/2018 |
| 2271.055 | BNC 1 to 2-way splitter | - | - | 12/28/2018 |

1. Sample S/01 used for Radiated Emission tests indicated in appendix A.

Test sample description

| | | | | | | | |
|---|-------------------------------------|--------------------------------|--------------------------|--------------------------|-----------------------------------|--------------------------|--------------------------|
| Ports..... : | Port name and description | Cable | | | | | |
| | | Specified max length [m] | Attached during test | Shielded | Coupled to patient ⁽³⁾ | | |
| | <i>No Data provided</i> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| Supplementary information to the ports..... : | | | | | | | |
| Rated power supply | Voltage and Frequency | | Reference poles | | | | |
| | | | L1 | L2 | L3 | N | PE |
| | <input type="checkbox"/> | AC: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | <input type="checkbox"/> | AC: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | <input type="checkbox"/> | DC: | | | | | |
| <input checked="" type="checkbox"/> | DC: 12 Vdc | | | | | | |
| Rated Power | <i>No Data provided</i> | | | | | | |
| Clock frequencies | <i>No Data provided</i> | | | | | | |
| Other parameters..... : | <i>No Data provided</i> | | | | | | |
| Software version | X450 | | | | | | |
| Hardware version..... : | X31 | | | | | | |
| Dimensions in cm (W x H x D).... : | <i>Data not provided</i> | | | | | | |
| Mounting position..... : | <input type="checkbox"/> | Table top equipment | | | | | |
| | <input type="checkbox"/> | Wall/Ceiling mounted equipment | | | | | |
| | <input type="checkbox"/> | Floor standing equipment | | | | | |
| | <input type="checkbox"/> | Hand-held equipment | | | | | |
| | <input checked="" type="checkbox"/> | Other: Car Equipment | | | | | |
| Modules/parts | Module/parts of test item | | Type | Manufacturer | | | |
| | <i>No Data provided</i> | | | | | | |
| | | | | | | | |

| | | | |
|---|--|-----------|--------------|
| Accessories (not part of the test item) | Description | Type | Manufacturer |
| | Not Provided Data | | |
| Documents as provided by the applicant..... | Description | File name | Issue date |
| | FDT30_14 Data Declaration Equipment Data | | |

Copy of marking plate:



Identification of the client

PANASONIC AUTOMOTIVE SYSTEMS EUROPE GMBH
Robert Bosch Str. 27-29-63225 Langen- Germany.

Testing period and place

| | |
|----------------------|--------------------------|
| Test Location | DEKRA Certification Inc. |
| Date (start) | 01-15-2019 |
| Date (finish) | 01-18-2019 |

Document history

| Report number | Date | Description |
|---------------|------------|---------------|
| 2271ERM.008 | 01-24-2019 | First release |
| 2271ERM.008A1 | 02-22-2019 | Revision 1 |

Modifications to the reference test report

It was introduced the following modifications in respect to the test report number 2271ERM.008 related with the same samples, in the next clauses and sub-clauses:

| Clauses/ Sub-Clauses | Modification | Justification |
|---|--|---------------------------|
| Page 11/ Description Of The Operation Modes | Operation mode Elaborated with details | Requested by the reviewer |

This modification in test report cancels and replaces the test report 2271ERM.008.

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

| | |
|--------------------------|-------------------------------------|
| Temperature | Min. = 15 °C Max. = 35 °C |
| Relative humidity | Min. = 30 % Max. = 75 % |
| Air pressure | Min. = 860 mbar Max. = 1060 mbar |

In the semianechoic chamber, the following limits were not exceeded during the test.

| | |
|--------------------------|-------------------------------------|
| Temperature | Min. = 15 °C Max. = 35 °C |
| Relative humidity | Min. = 30 % Max. = 75 % |
| Air pressure | Min. = 860 mbar Max. = 1060 mbar |

In the chamber for conducted measurements, the following limits were not exceeded during the test:

| | |
|--------------------------|-------------------------------------|
| Temperature | Min. = 15 °C Max. = 35 °C |
| Relative humidity | Min. = 30 % Max. = 60 % |
| Air pressure | Min. = 860 mbar Max. = 1060 mbar |

Remarks and comments

The tests have been performed by the technical personnel: Koji Nishimoto & Poojita Bhattu

Testing verdicts

| | |
|------------------|-----|
| Not applicable : | N/A |
| Pass : | P |
| Fail : | F |
| Not measured : | N/M |

Summary

| Emission Test | | | |
|--|---|---------|---------|
| Report Section | Requirement – Test case | Verdict | Remark |
| A.1 | Radiated emission test (30 MHz – 1000 MHz) | P | N/A |
| A.1 | Radiated emission test (1 GHz – 18 GHz) | P | Refer 1 |
| A.1 | Radiated emission test (18 GHz – 40 GHz) | P | Refer 1 |
| - | Conducted emission test (150 KHz to 30 MHz) | N/A | Refer 2 |
| <u>Supplementary information and remarks:</u> <ol style="list-style-type: none"> As per standard 47 CFR 15.33 due to the highest frequency generated or used in the device is above 1000MHz the upper frequency of measurement range is up to 5th harmonic of the highest frequency or 40GHz, whichever is lower. The test is not applicable, not required by the standard. | | | |

List of equipment used during the test

| CONTROL NUMBER | DESCRIPTION | MANUFACTURER | MODEL | LAST CALIBRATION | NEXT CALIBRATION |
|----------------|--------------------------------------|-----------------|---------------|------------------|------------------|
| 1014 | Signal Analyzer | ROHDE & SCHWARZ | FSV40 | 2017/03 | 2019/03 |
| 1012 | EMI Test Receiver | ROHDE & SCHWARZ | ESR26 | 2018/09 | 2020/09 |
| 1058 | Double Ridged Waveguide Horn Antenna | ETS LINDGREN | 3115 | 2017/03 | 2020/03 |
| 1055 | Double Ridged Waveguide Horn Antenna | ETS LINDGREN | 3116C | 2016/12 | 2019/12 |
| 1065 | Biconilog Antenna | ETS LINDGREN | 3142E | 2017/03 | 2020/03 |
| 0981 | Preamplifier | BONN ELEKTRONIK | BLMA 0118-2A | 2017/05 | 2019/05 |
| 0980 | Preamplifier | BONN ELEKTRONIK | BLNA 0360-01N | 2017/05 | 2019/05 |
| 0982 | Preamplifier | BONN ELEKTRONIK | BLMA1840-1M | 2017/05 | 2019/05 |
| 1017 | EMC measurement software | ROHDE & SCHWARZ | EMC32 V9.01 | --- | --- |

Appendix A: Test results

Appendix A Content

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DESCRIPTION OF THE OPERATION MODES

The operation modes described in this paragraph constitute a functionality of the sample under test for itself.

The operation modes used by the samples to which the present report refers, are shown in the following table:

| OPERATION MODE | DESCRIPTION |
|----------------|---|
| OM#01* | EUT ON. Power Supply 12Vdc. <ul style="list-style-type: none">- AM Radio Receiver mode- FM Radio in Receiver mode- DAB in Receiver mode- Blue tooth in Idle mode- WLAN in Idle mode |

* Worst case detected

A.1 RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE

| | | |
|----------------|-------------------|--|
| LIMITS: | Product standard: | FCC CFR 47, Part 15, Subpart B (10-1-17 Edition), Secs. 15.109 & ICES-003 Issue 6 – Update April (2017) |
| | Test standard: | FCC CFR 47, Part 15, Subpart B (10-1-17 Edition), Secs. 15.109 & ICES-003 Issue 6 – Update April (2017); ANSI C63.4 (2014) |

Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-01-17 Edition), Secs. 15.109 & ICES-003 Issue 6 – Update April (2017) in the frequency range 30 MHz to 40 GHz for class B equipment.

| Frequency range (MHz) | QP Limit for 3 m | |
|--------------------------|------------------|----------------|
| | (μ V/m) | (dB μ V/m) |
| 30 to 88 | 100 | 40 |
| 88 to 216 | 150 | 43.5 |
| 216 to 960 | 200 | 46 |
| Above 960 | 500 | 54 |

| Frequency range (MHz) | AVG Limit for 3 m | | PK Limit for 3 m ⁽¹⁾ |
|--------------------------|-------------------|----------------|---------------------------------|
| | (μ V/m) | (dB μ V/m) | (dB μ V/m) |
| Above 1000 | 500 | 54 | 74 |

(1) Frequencies above 1 GHz, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test, as per §15.35(b)

TEST SETUP:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m for the frequency range 30-1000 MHz (Bilog antenna) and at a distance of 1m for the frequency range 1-40 GHz (1 GHz-18 GHz and 18 GHz-40 GHz Double ridge horn antennas).

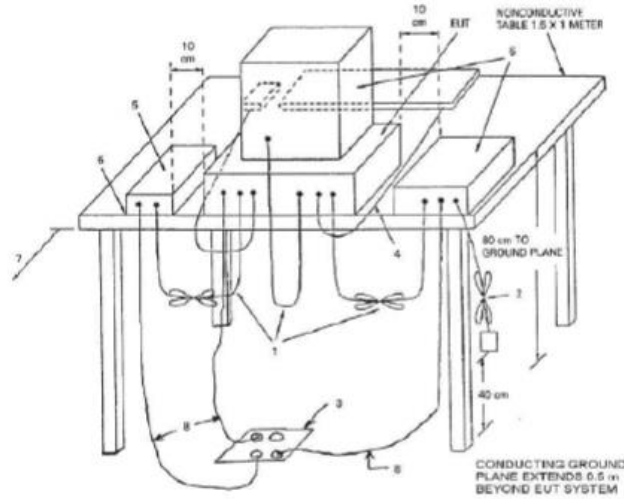
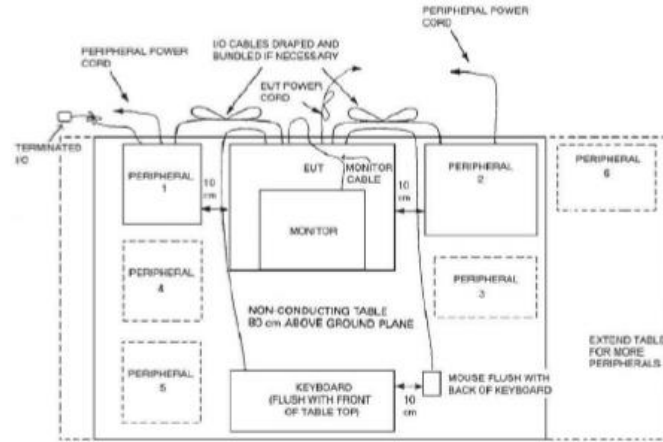
For radiated emissions in the range 1-40 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain

TEST SETUP (cont).

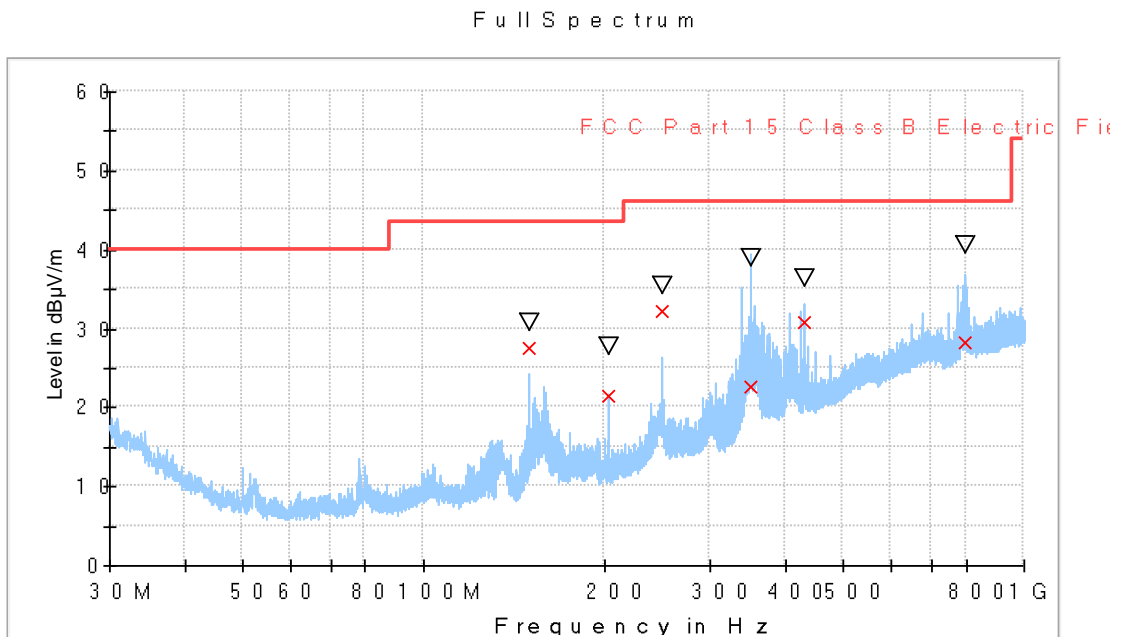


| | |
|--------------------------------|---|
| TESTED SAMPLES: | S/01 |
| TESTED OPERATION MODES: | OM#01 |
| TEST RESULTS: | CRmmnxx: CR, Radiation Condition; mm: Sample number; nn: Operation mode. xx: Range, |

| CRmmnxx | Description | Result |
|-----------|--|--------|
| CR0101LR | Range 30 - 1000 MHz. Horizontal & Vertical Polarization. | P |
| CR0101HR1 | Range 1 GHz - 18 GHz. Horizontal & Vertical Polarization. | P |
| CR0101HR2 | Range 18 GHz - 40 GHz. Horizontal & Vertical Polarization. | P |

Radiated Emission. CR0101LR

Project: 02271ERM008A1
 Company: Panasonic EU
 Sample: S/01
 Operation mode: OM#01
 Description: EUT ON. IDLE. Power Supply 12Vdc. Both polarizations.



— Preview Result 1 -PK +
 — FCC Part 15 Class B Electric Field Strength QP + AV
 x Final Result QPK
 ▽ Final Result PK +

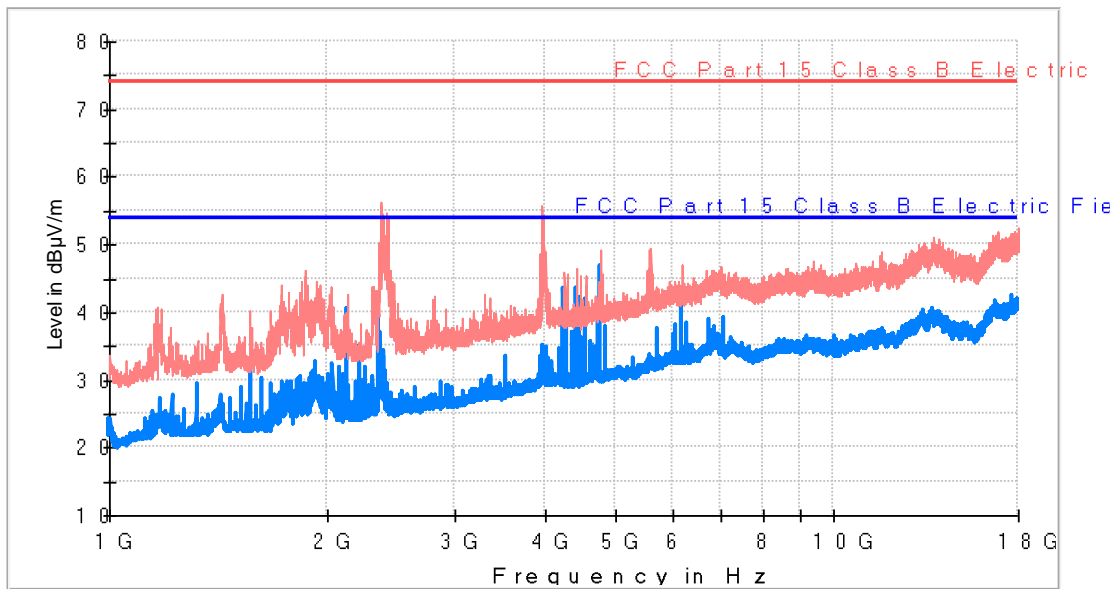
Final_Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | MaxPeak (dBµV/m) | Height (cm) | Pol | Azimuth (deg) |
|-----------------|--------------------|------------------|-------------|-----|---------------|
| 150.010000 | 27.60 | 30.79 | 100.0 | V | 172.0 |
| 203.180000 | 21.39 | 27.76 | 125.0 | H | 110.0 |
| 250.030000 | 32.26 | 35.55 | 134.0 | H | 180.0 |
| 349.890000 | 22.74 | 38.90 | 149.0 | V | 9.0 |
| 430.060000 | 30.93 | 36.38 | 162.0 | H | -16.0 |
| 794.580000 | 28.13 | 40.57 | 142.0 | V | 42.0 |

Radiated Emission. CR0101HR1

Project: 02271ERM008A1
 Company: Panasonic EU
 Sample: S/01
 Operation mode: OM#01
 Description: EUT ON. IDLE. Power Supply 12Vdc. Both polarizations.

R E F C C P a r t 1 5 C l a s s B 1 - 1 8 G H z



— AVG_MAXH
 — PK+_MAXH
 — FCC Part 15 Class B Electric Field Strength PK
 — FCC Part 15 Class B Electric Field Strength QP+AV

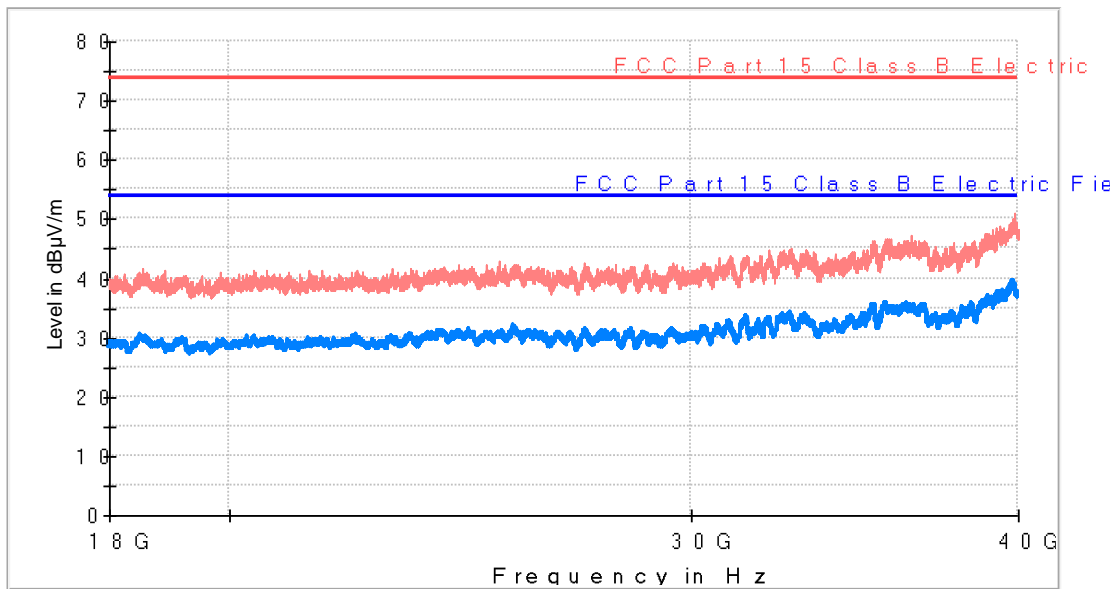
Maximizations

| Frequency (MHz) | PK+_MAXH (dBµV/m) | AVG_MAXH (dBµV/m) | Pol | Azimuth (deg) |
|-----------------|-------------------|-------------------|-----|---------------|
| 2135.281250 | 42.81 | 40.38 | V | 28.0 |
| 2374.875000 | 56.22 | 31.77 | V | 50.0 |
| 3960.656250 | 55.71 | 33.11 | V | 28.0 |
| 4410.093750 | 43.76 | 38.48 | V | 28.0 |
| 4779.312500 | 49.12 | 46.82 | V | 10.0 |
| 6172.250000 | 46.92 | 41.74 | V | 10.0 |

Radiated Emission. CR0101HR2

Project: 02271ERM008
 Company: Panasonic EU
 Sample: S/01
 Operation mode: OM#01
 Description: EUT ON. IDLE. Power Supply 12Vdc. Both polarizations.

R E F C C P a r t 1 5 C l a s s B 1 8 - 4 0 G H z



- AVG _ M A X H
- P K + _ M A X H
- F C C P a r t 1 5 C l a s s B E l e c t r i c F i e l d S t r e n g t h P K
- F C C P a r t 1 5 C l a s s B E l e c t r i c F i e l d S t r e n g t h Q P + A V

No spurious observed in 18GHz to 40GHZ Range