DEKRA Testing and Certification, S.A.U.
Parque Tecnológico de Andalucía,
c/ Severo Ochoa nº 2 · 29590 Campanillas · Málaga · España
C.I.F. A29 507 456

ENSAYOS Nº 51/LE147

Test report No:
NIE: 51929REM.012

Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-16 Edition) & ICES-003 Issue 6 (Updated 04-2017)

(*) Identification of item tested	Head unit with radio and Bluetooth
(*) Trademark	Panasonic
(*) Model and /or type reference tested	MIB3E_MQB37w_BTWIFI
Other identification of the product	PN: 5E3.035.869 S/N: PM6-00108.01.19413F0111 HW Version: X85 SW Version: X495 FCC ID: WUQ-MIB3VBTWIFI IC: 216R- MIB3VBTWIFI
(*) 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 CFR 47, Part 15, Subpart B (10-1-16 Edition) & ICES-003 (Updated 04-2017)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Rafael López EMC Consumer & RF Lab. Manager RAFAEL LÓPEZ MARTÍN 2019.08.08 16:37:01 +02'00'
Date of issue	2019-07-26
Report template No	FDT08_22 (*) "Data provided by the client"

Index

Competences and guarantees 3
General conditions 3
Uncertainty 3
Data provided by the client 4
Usage of samples 4
Test sample description 5
Identification of the client 6
Testing period and place 6
Document history 6
Environmental conditions 7
Remarks and comments 8
Testing verdicts 8
Summary 8
Appendix A: Test results 9

Competences and guarantees

DEKRA Testing and Certification is a testing laboratory accredited by the National Accreditation Body (ENAC - Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification is a FCC recognized accredited testing laboratory with appropriate scope of accreditation that include testing performed in this test report, FCC designation number ES0004.

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

DEKRA Testing and Certification 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 Testing and Certification at the time of performance of the test.

DEKRA Testing and Certification 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.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA Testing and Certification.

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.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification and the Accreditation Bodies.

Uncertainty

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

The total uncertainty of the measurement system for the measured conducted disturbance characteristics of EUT from 150kHz to 30 MHz is I = ± 3,9 dB for quasi-peak measurements, I = ± 3,2 dB for average measurements (k = 2)

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1000 MHz is I = ± 4,9 dB for quasi-peak measurements, I = ± 4,6 dB for peak measurements (k = 2)

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 1000 MHz to 26 GHz is I = ± 2,6 dB for peaks and average measurements (k = 2)

Data provided by the client

The sample consists of an automotive head unit to be installed in cars with the following features: Bluetooth, WLAN, FM, AM, DAB, USB.

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

Usage of samples

Samples under test have been selected by: The client.

Sample S/01 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Date of reception
51929B/537	Headunit with radio and Bluetooth	MIB3E_MQB37w_BTWIFI	PM6-00108.01.19413F0111	2019/06/05

Auxiliary elements used with the sample S/01:

Control Nº	Description	Model	Serial Nº	Date of reception
51929B/114	Antenna cable AM/FM	--	--	2018/12/10
51929B/115	Dummy AM/FM	--	--	2018/12/10
51929B/116	Dummy AM/FM	--	--	2018/12/10
51929B/117	USB module	--	--	2018/12/10
51929B/118	Fakra USB module	--	--	2018/12/10
51929B/119	Harness	--	--	2018/12/10

Test sample description

Ports…… :	Port name and description	Cable		
		Specified length [m]	Attached during test	Shielded
	Not provided data		☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐

Supplymentary information to the ports…… :	Not provided data					
Rated power supply ……:	Voltage and Frequency		Reference poles			
			L1	L2	L3	N	PE
	☐	AC:	☐	☐	☐	☐	☐
	☐	AC:	☐	☐	☐	☐	☐
	☒	DC: 12Vdc.					
	☐	DC:					
Rated Power ……:	Not provided data						
Clock frequencies ……:	Not provided data						
Other parameters……:	FCC ID: WUQ-MIB3VBTWIFI IC: 216R- MIB3VBTWIFI						
Software version ……:	X495						
Hardware version……:	X85						
Dimensions in mm (W x H x D)…:	Not provided data						
Mounting position……:	☐	Table top equipment					
	☐	Wall/Ceiling mounted equipment					
	☐	Floor standing equipment					
	☐	Hand-held equipment					
	☒	Other: Vehicular environment equipment					

Modules/parts ……:	Module/parts of test item	Type	Manufacturer
	Not provided data		

Accessories (not part of the test item) .....:	Description	Type	Manufacturer
	Not provided data		
Documents as provided by the applicant.....:	Description	File name	Issue date
	Not provided data		

Identification of the client

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

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2019-07-03
Date (finish)	2019-07-22

Document history

Report number	Date	Description
51929REM.012	2019-07-26	First release

Environmental conditions

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

Temperature	Min. = 15 ºC Max. = 35 ºC
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 ºC Max. = 35 ºC
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 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

Remarks and comments

The test have been performed by the technical personnel: Miguel López & Lorena Oviedo.

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

Testing verdicts

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

Summary

Emission Test		
Requirement – Test case	**Verdict**	**Remark**
Radiated emission. Electromagnetic field measure (30 KHz – 1000 MHz)	P	---
Radiated emission. Electromagnetic field measure (1 GHz – 26 GHz)	P	---
Continuous conducted emission (150 KHz – 30 MHz)	N/A	(1)
Supplymentary information and remarks: (1) Equipment DC powered. Test applicable only in AC port.		

Control Number	Description	Model	Manufacturer	Next Calibration
4523	EMI TEST RECEIVER 20Hz-26.5GHz	ESU26	ROHDE AND SCHWARZ	2020-02-21
4567	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2020-04-03
4570	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2020-04-05
4578	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2020-04-03
4612	HORN ANTENNA 1-18GHz	BBHA 9120 D	SCHWARZBECK MESS-ELEKTRONIK	2021-06-14
5705	PRE-AMPLIFIER G>40dB 1-18 GHz	BLMA 0118-1M	BONN ELEKTRONIK	2020-04-30
4729	PRE-AMPLIFIER G>30dB GHz 17-40GHz	BLMA 1840-1M	BONN ELEKTRONIK	2021-02-11

Appendix A: Test results

APPENDIX A CONTENT

DESCRIPTION OF THE OPERATION MODES.....11
RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE.....12

DESCRIPTION OF THE OPERATION MODES

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. WiFi communication not established. Bluetooth communication not established. Power supply: 12Vdc.

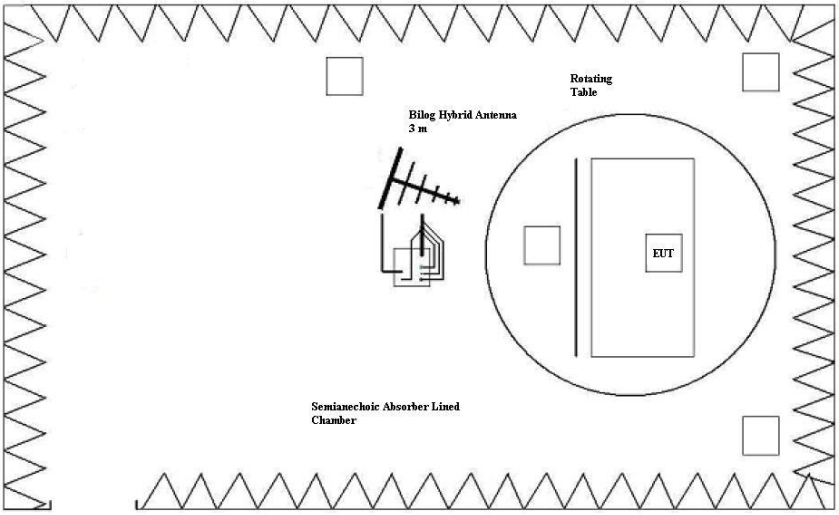
RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE

LIMITS:	Product standard:	FCC CFR 47, Part 15, Subpart B (10-1-16 Edition) & ICES-003 (Updated 04-2017)
	Test standard:	FCC CFR 47, Part 15, Subpart B (10-1-16 Edition) & ICES-003 (Updated 04-2017)

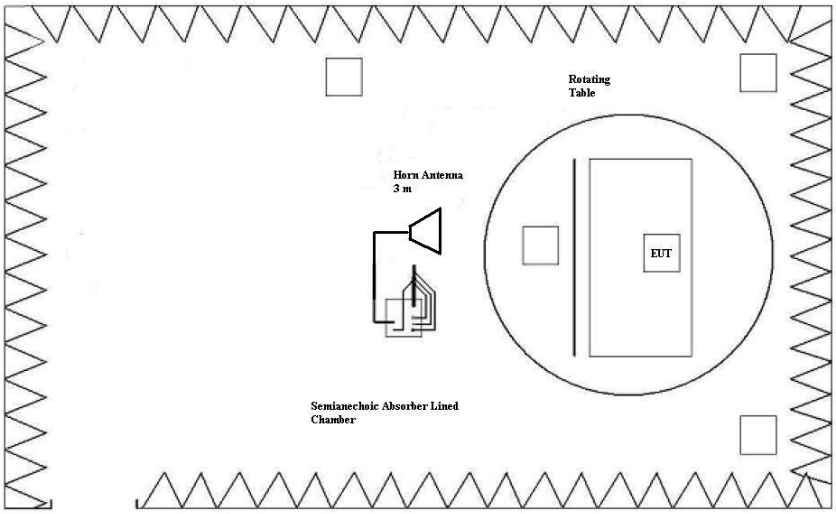
Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-16 Edition), Secs. 15.109 & ICES-003 Issue 6 (Updated 04-2017) in the frequency range 30 MHz to 26 GHz for class B devices.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3



Setup for measurements < 1GHz.



Setup for measurements > 1GHz.

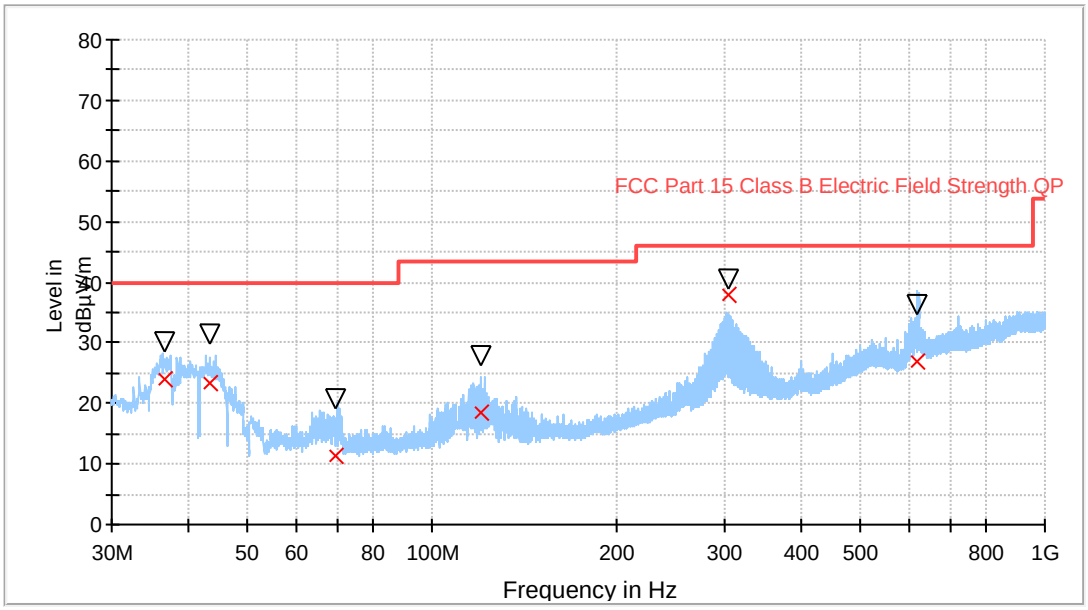
TESTED SAMPLE:	S/01
TESTED OPERATION MODES:	OM#01
TEST RESULTS:	CRmmnnRRPP: CR, Radiated Condition; mm: Sample number; nn: Operation mode; RR: Range; PP: Polarization.

CRmmnnRRPP	Description	Result
CR0101LR	Range: 30 MHz - 1000 MHz.	P
CR0101HR1_H	Range: 1 GHz - 17 GHz. Horizontal polarization.	P
CR0101HR1_V	Range: 1 GHz - 17 GHz. Vertical polarization.	P
CR0101HR2_H	Range: 17 GHz - 26 GHz. Horizontal polarization.	P
CR0101HR2_V	Range: 17 GHz - 26 GHz. Vertical polarization.	P

Radiated Emission. CR0101LR

Project:	51929BREM012
Company:	PANASONIC AUTOMOTIVE & INDUSTRIAL SYSTEMS EUROPE GMBH
Sample:	S/01
Operation mode:	OM#01
Description:	EUT ON. WiFi communication not established. Bluetooth communication not established. Power supply 12 Vdc.

Full Spectrum



Peak Preview
Quasi Peak
FCC Part 15 Class B Electric Field Strength QP
Max Peak

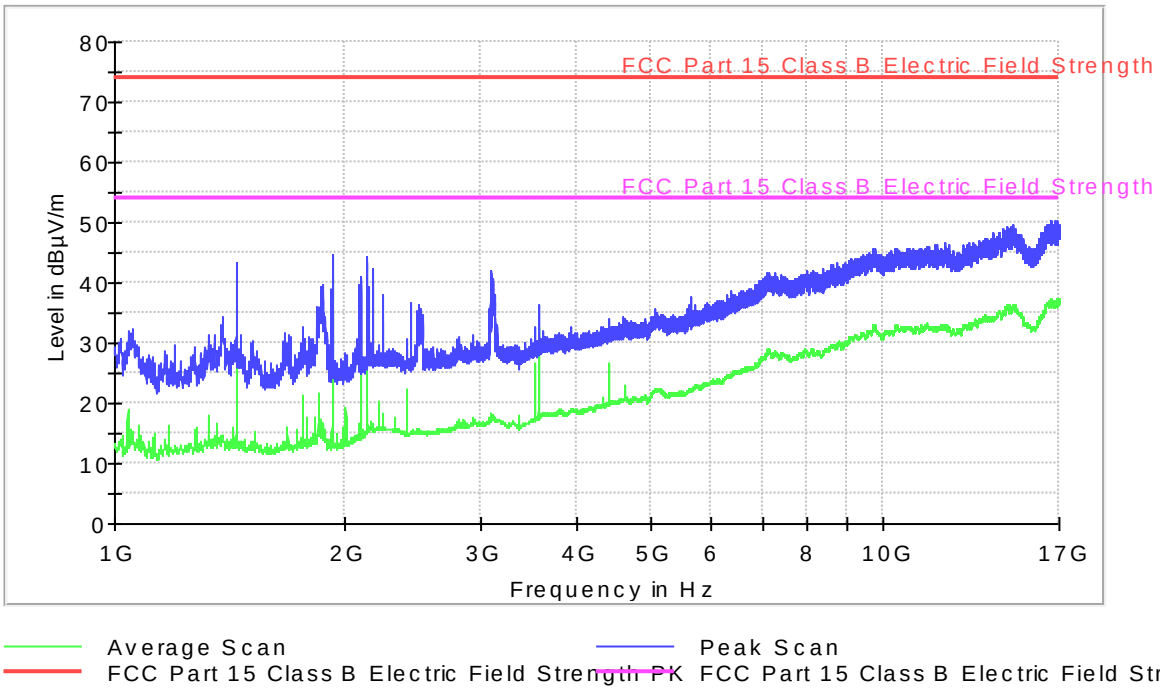
Maximizations

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Height (cm)	Pol	Azimuth (deg)
36.525000	24.03	29.96	100.0	V	51.0
43.431000	23.47	31.29	107.0	V	-108.0
69.823000	11.44	20.73	102.0	V	-34.0
120.380000	18.32	27.78	117.0	V	-55.0
303.567000	37.95	40.41	112.0	H	-171.0
617.271000	26.97	36.42	198.0	V	132.0

Radiated Emission. CR0101HR1_H

Project:	51929REM012
Company:	PANASONIC AUTOMOTIVE & INDUSTRIAL SYSTEMS EUROPE GMBH
Sample:	S/01
Operation mode:	OM#01
Description:	EUT ON. WiFi communication not established. Bluetooth communication not established. Power supply 12 Vdc. Horizontal Polarization.

RE FCC Part 15 ClassB 1-17 GHz



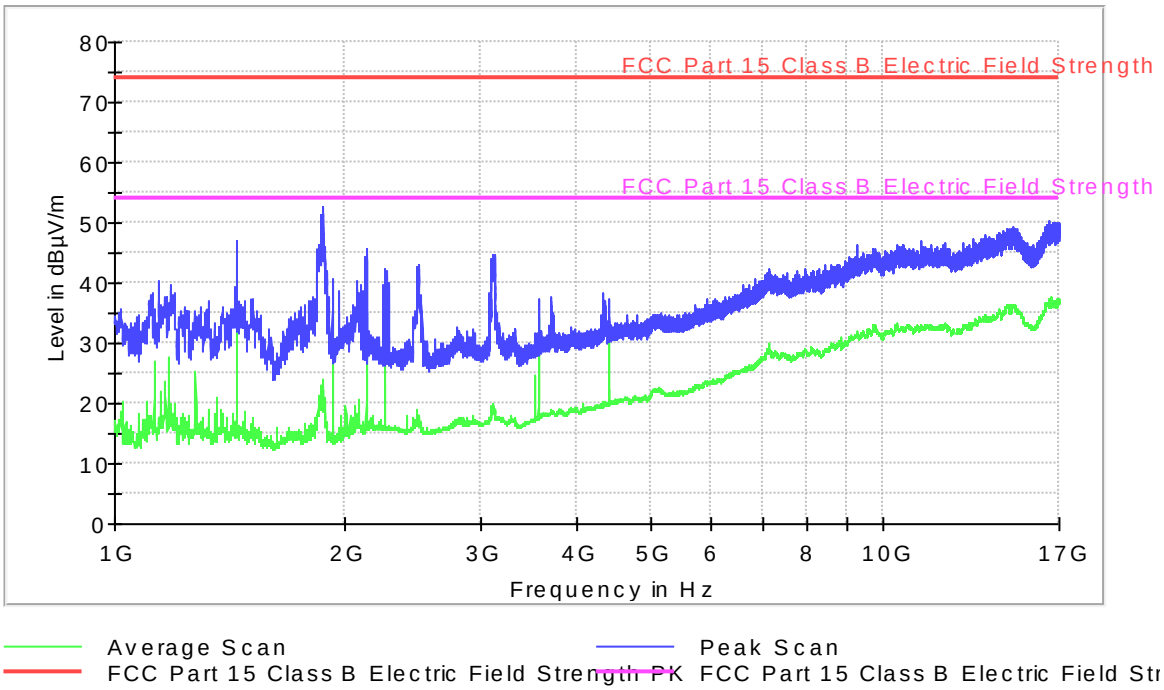
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV/m)	AVG_CLRWR (dBµV/m)
1920.400000	44.8	40.2
3088.000000	42.1	17.8
5618.000000	37.6	22.2
7264.800000	41.7	28.5
8943.600000	43.3	30.0
10446.400000	45.8	33.1
12106.800000	46.6	32.9
13614.400000	47.5	34.3
14766.000000	49.7	36.0
16780.400000	50.4	36.3

Radiated Emission. CR0101HR1_V

Project:	51929REM012
Company:	PANASONIC AUTOMOTIVE & INDUSTRIAL SYSTEMS EUROPE GMBH
Sample:	S/01
Operation mode:	OM#01
Description:	EUT ON. WiFi communication not established. Bluetooth communication not established. Power supply 12Vdc. Vertical Polarization.

RE FCC Part 15 ClassB 1-17 GHz



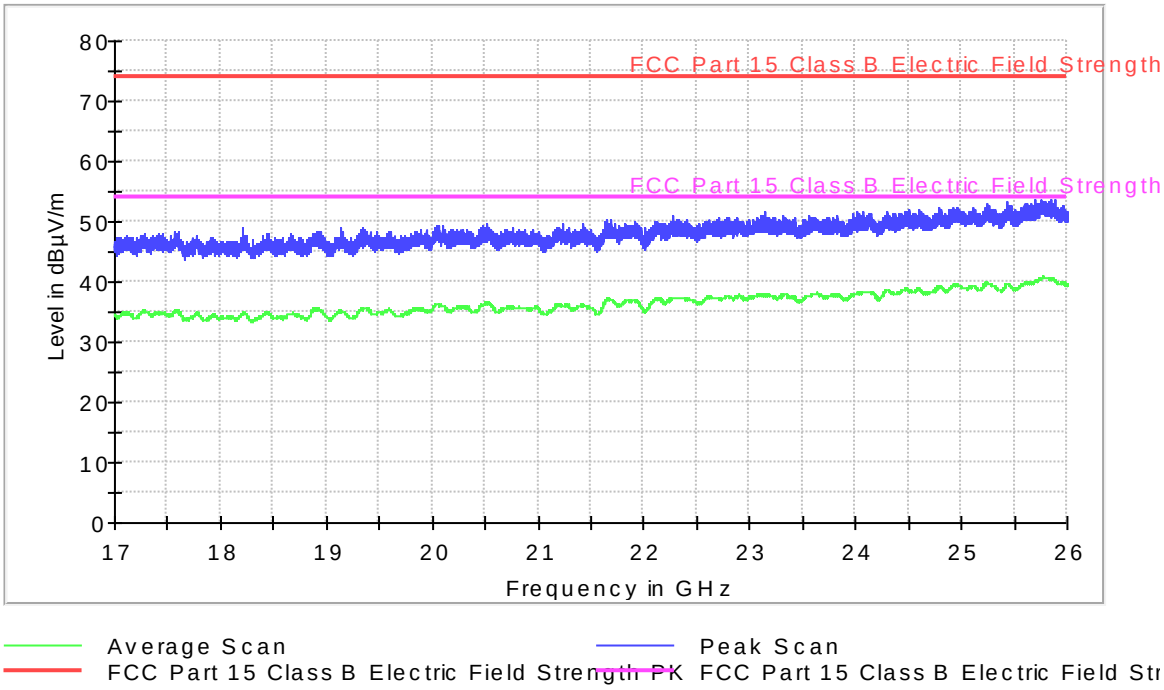
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV/m)	AVG_CLRWR (dBµV/m)
1864.400000	52.7	22.2
3108.400000	44.7	18.7
4323.200000	38.4	20.1
7129.600000	42.2	28.5
8922.400000	43.6	30.1
9270.400000	46.3	31.4
11257.600000	47.1	32.9
13610.000000	48.0	34.4
14804.400000	49.3	36.0
16536.800000	50.2	36.9

Radiated Emission. CR0101HR2_H

Project:	51929REM012
Company:	PANASONIC AUTOMOTIVE & INDUSTRIAL SYSTEMS EUROPE GMBH
Sample:	S/01
Operation mode:	OM#01
Description:	EUT ON. WiFi communication not established. Bluetooth communication not established. Power supply 12 Vdc. Horizontal Polarization.

RE FCC Part 15 ClassB 17-26GHz



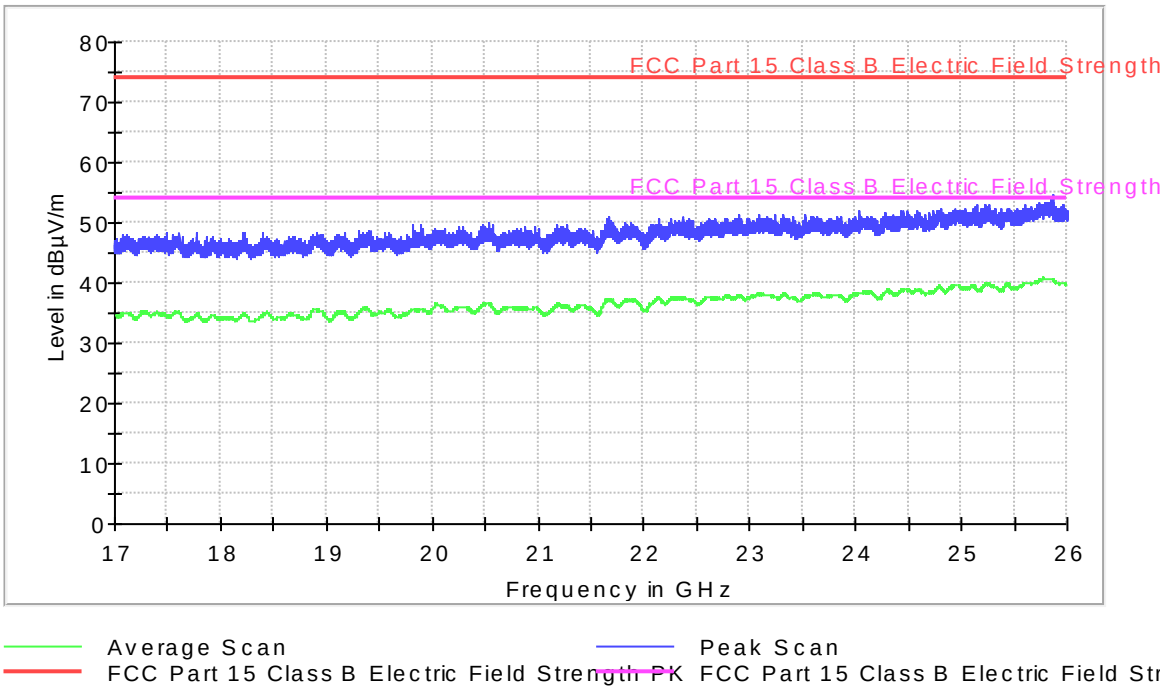
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV/m)	AVG_CLRWR (dBµV/m)
17600.800000	48.3	35.1
18202.800000	48.9	34.6
19134.000000	49.0	35.2
20518.400000	49.7	36.5
21238.000000	49.6	36.0
22266.800000	51.1	37.4
23139.600000	51.6	37.8
24008.400000	51.7	37.9
24959.600000	52.5	39.5
25690.800000	53.7	40.0

Radiated Emission. CR0101HR2_V

Project:	51929REM012
Company:	PANASONIC AUTOMOTIVE & INDUSTRIAL SYSTEMS EUROPE GMBH
Sample:	S/01
Operation mode:	OM#01
Description:	EUT ON. WiFi communication not established. Bluetooth communication not established. Power supply 12 Vdc. Vertical Polarization.

RE FCC Part 15 ClassB 17-26GHz



Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV/m)	AVG_CLRWR (dBµV/m)
17614.400000	48.3	35.0
18400.800000	48.3	34.7
19409.200000	48.7	35.3
20538.800000	49.8	36.6
21277.200000	49.7	36.1
22360.400000	51.0	37.5
23081.200000	51.3	38.2
24025.600000	52.1	38.2
25028.000000	52.3	39.1
25862.400000	54.6	40.6