

	FCC LISTED, REGISTRATION NUMBER: 2764.01Test report No:SED LISTED REGISTRATION NUMBER: 23595-14052ERM.002
Tes USA FCC Part 1 CANADA RS	t report 5.225 and Part 15.209 SS-210, RSS-Gen
(*) Identification of item tested	Qi 1.3 Wireless Charger with NFC
(*) Trademark	Panasonic
(*) Model and /or type reference	WCPM2
(*) Other identification of the product	Hw: PP2 Sw: v6.2 FCC: ACJ932A-WCPM2 ISED: 216A-WCPM2
(*) Features	Qi 1.3 and NFC
Manufacturer	PANASONIC AUTOMOTIVE 776 Hwy 74 South Peachtree City, GA 30269 USA
Test method requested, standard	USA FCC Part 15.225 (10–1–21 Edition): Operation within the band 13.110 -14.010 USA FCC Part 15.209 (10–1–21 Edition).: Radiated emission limits, general requirements. CANADA RSS-210 Issue 10 (Dec 2019). CANADA RSS-Gen Issue 5 (March 2019). ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager
Date of issue	08-10-2023
Report template No	FDT08_23 (*) "Data provided by the client"



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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.
- 3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Certification Inc.
- 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.

Test case	Frequency (MHz)	U(k=2)	Units
Radiated Spurious Emission	0,009 - 30	2.69	dB
	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

The following data has been provided by the client:

- 1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").
- 2. The sample consists of Qi 1.3 Wireless Charger with NFC.

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 used for test have been selected by: The client.

Sample S/01 is composed of the following elements:

ld	Control N⁰	Description	Model	Serial Nº	Date of reception	Application
S/01	4052/07	Wireless Charger with NFC	Panasonic / WCPM2	101577	5/26/2023	Element Under Test
S/01	4052/10	4mm Spacer	Panasonic	-	5/26/2023	Accessory
S/01	4052/12	Smart Card	NXP/MIFARE, DESFire/EV2-J	-	5/26/2023	Accessory
S/01	4052/13	Laptop	Dell/Latitude 7490	GL85MQ2	5/26/2023	Accessory
S/01	4052/14	Computer power supply	-	-	5/26/2023	Accessory
S/01	4052/17	Harness	Panasonic	-	5/26/2023	Accessory
S/01	4052/18	Vehicle Network Interfaces with OBDII, DB9, DB25 and USB Type A interface cable to the PC	Intrepid Control Systems / ValueCAN 4-2EL	-	5/26/2023	Accessory
S/01	4052/19	Resistance box	Panasonic	-	6/15/2023	Accessory

Sample S/01 was used for the following test(s): All conducted and radiated tests indicated in appendix A.



Test sample description

Ports:	Port name and description		Cable					
			Speci length	ified n [m]	Attache during te	ed est	Shielded	
	1 - BATT+		3m					
	2 - CA	NFD+	3m					
	3 - CA	NFD-	3n	۱				
	4 - LIN	١	3n	۱				
	5 - NC	;	-					
	6 - GN	ID	3n	٦	\boxtimes			
Supplementary information to the ports:	Setting for CANFD and LIN are already set by included test software.							
Rated power supply:	Voltar	a and Frequency		Re	eference po	oles		
	Vonaç	le and i requency	L1	L2	L3	N	PE	
		AC:						
		AC:						
		DC: 13.5Vdc nom.; 9Vdc min,		16Vdc max				
Rated Power:	15W							
Clock frequencies:	MCU	crystal - 20MHz; NFC crystal - 27	7.12MHz					
Other parameters:	-							
Software version:	v6.2							
Hardware version:	PP2							
Dimensions in cm (L x W x D):	9.8 x 9	9.2 x 4.9						
Mounting position:		Table top equipment						
		Wall/Ceiling mounted equipme	nt					
		Floor standing equipment						
		Hand-held equipment						
		Other: Automotive centre cons	ole					
Modules/parts:	Module/parts of test item		Туре		Manufacturer			
	68516749AC		DUT		Pa	nasonic		
						<u> </u>		
	Deser	intion	Turco			Mon	ifacturar	
Accessories (not part of the test item)	Description		туре			want	liacturer	
	NA							



Documents as provided by the	Description	File name	Issue date
applicant:	Declaration Equipment Data	FDT30_18 Declaration Equipment Data_PASA_20230705	07/05/2023
	WCPM2 Compliance Testing Setup.docx	setup	06/14/2023
	WCPM2 Compliance Testing Operation.docx	operation	06/14/2023
	Copy of marking plate:		
ASSOIS Part No. Ref. No. Serial No. Serial No. MADE IN N Panasonic	68516749AC CA-QC7CNOGX 101577 R6.2 MEXICO Automotive Systems Co., Ltd.		

Identification of the client

PANASONIC AUTOMOTIVE 776 Hwy 74 South, Peachtree City GA, 30269 USA

Testing period and place

Test Location	DEKRA Certification Inc.
Date (start)	06-19-2023
Date (finish)	06-20-2023

Document history

Report number	Date	Description
4052ERM.002	08-10-2023	First release



Environmental conditions

In the	control chamber, the following limits were	not exceeded during the test:				
	TemperatureMin. = 15 °CMax. = 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, th	ne 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: Sravani Gollamudi, Qi Zhang, and Koji Nishimoto.



Testing verdicts

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

Summary

FCC PART 15 PARAGRAPH / RSS-210							
Report Section	Report 15.225 Spec RSS Spec Clause Test Description Section Clause Test Description		Verdict	Remark			
A.1		RSS-Gen 6.7	99% Occupied Bandwidth	Р	N/A		
A.2	§ 15.225 (a)	RSS-210 Clause B.6 (a).	Field Strength of emissions within the band 13.553 MHz – 13.567 MHz	Р	N/A		
A.3	§ 15.225 (b)	RSS-210 Clause B.6 (b).	Field Strength of emissions within the band 13.410 MHz – 13.553 MHz and 13.567 – 13.710 MHz	Р	N/A		
A.4	§ 15.225 (c)	RSS-210 Clause B.6 (c).	Field Strength of emissions within the band 13.110 MHz – 13.410 MHz and 13.710 – 14.010 MHz	Р	N/A		
A.5	§ 15.225 (d)	RSS-210 Clause B.6 (d).	Field Strength of emissions outside of the band 13.110 MHz – 13.410 MHz	Р	N/A		
A.6	§ 15.225 (e)	RSS-210 Clause B.6	Frequency Tolerance of the carrier signal.	Р	N/A		

List of equipment used during the test

Conducted Measurements

Control Number	Description	Manufacturer	Serial	Model	Next Calibration
1107	Ethernet SNMP Thermometer	Hw Group	60038026952	HWg-STE Plain	2024/10
1391	Signal analyzer	Rohde & Schwarz	101281	FSW50	2024/01
1386	Power supply 0-30V, 0-3A (x2)	Gwinstek	GEV875131	GPS3030D	N/A
1488	Climatic Chamber T10-F40-C	TPS	-	T10-F40-C	2023/12



Radiated Measurements

Control Num	Equipment	Manufacturer	Serial	Model	Next calibration
878	DC Power supply	Ametek Prog	1707A01783	PROG-DC-PS	N/A
1012	ESR26 EMI Test Receiver	Rohde & Schwarz	101478	ESR26	2025/01
1014	FSV40 Signal Analyzer 40GHz	Rhode & Schwarz	101626	FSV40	2024/08
1062	Active loop Antenna	Ets Lindgren	208517	6502	2023/07
1065	3142E Biconilog Antenna	Ets Lindgren	208587	3142E	2023/08
1108	Ethernet SNMP Thermometer- CR Room	Hw Group	60038026954	HWg-STE Plain	2024/10
1111	Ethernet SNMP Thermometer- SAC	Hw Group	60038026577	HWg-STE Plain	2024/10
1179	Semi-Anechoic Chamber	Frankonia	F169021	SAC 3plus 'L'	N/A
1314	Wireless Measurement Software R&S EMC32	Rohde & Schwarz	1040- OT102236	-	N/A



Appendix A: Test results



Appendix A Content

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PRODUCT INFORMATION

The following information is provided by the client:

Information	Description
Operating Frequency Band or Bands	13.56 MHz
Operating Frequency or Frequencies	13.56 MHz
Channel Bandwidth	
Extreme operating conditions	
- Temperature range	-20 °C to +50 °C
Nominal Voltage	
- Supply Voltage	13.5V DC
- Voltage range	9Vdc to 16Vdc

Test modes available:

- Nominal Operating Frequency: 13.56 MHz



DESCRIPTION OF TEST CONDITIONS

TEST CONDITIONS	DESCRIPTION
TC#01	Power supply (V): $V_{nom} = 13.5 V$ $V_{min} = 11.5 V$ $V_{max} = 15.5 V$ Temperature (°C): Temperature range: -20°C to +50 °C The subscript nom indicates normal test conditions. The subscripts min and max indicate extreme test conditions (minimum and maximum respectively).
	Test Frequencies for Conducted and Radiated tests: 13.56 MHz



TEST A.1: 99% OCCUPIED BANDWIDTH						
	Product stand	ard:		RSS-G	en	
LIMITS:	Test standar	d:		RSS-Ger	ı 6.7	
<u>LIMITS</u> The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs						
TEST S	TEST SETUP					
Spectrum Analyzer EUT Non-Conducted Table Ground Reference Plane						
TESTED S	AMPLES:			S/01		
TESTED CONDI	TIONS MODES:			TC#01		
TEST RE	SULTS:			PASS		
NFC Operating Frequency: 13.56MHz						
99% bandv		dwidth (KHz))	620.2		







TEST A.2: FIELD STRENGTH OF EMISSIONS WITHIN THE BAND 13.553 MHZ – 13.567 MHZ

	Product standard:	Part 15 Subpart C §15.225 and RSS-210
LIMITS:	Test standard:	Part 15 Subpart C §15.225(a) and RSS-210 clause B.6 (a)

<u>LIMITS</u>

The field strength of any emissions within the band 13.553 - 13.567 MHz shall not exceed 15,848 microvolts/meter (84 dBµV/m) at 30 meters.

TEST SETUP

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Loop antenna for the range between 9 kHz to 30 MHz) is situated at a distance of 3 m.

For radiated emissions in the range 9 kHz to 30 MHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 40 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° to find the maximum radiated emission.

Three different orientations (X, Y, and Z) of receiving loop antenna orientation were tested to determine the worst case shown in the following test results.

Radiated measurements setup 9 kHz to 30 MHz.









MHZ AND 13.567 -	STRENGTH OF EMIS - 13.710 MHZ	SSIONS WITHIN THE BAND 13	3.410 MHZ – 13.553
	Product standard:	Part 15 Subpart C §1	5.225 and RSS-210
LIMITS:	Test standard:	Part 15 Subpart C §15.225(b)	and RSS-210 clause B.6 (b)
<u>LIMITS</u> The field strength of an (50.47 dBµV/m at 30 m	y emissions within the ba leters.	nd 13.553 – 13.567 MHz shall not exc	eed 334 microvolts/meter
TEST S	ETUP		
All radiated tests were range between 9 kHz to	performed in a semi-ane o 30 MHz) is situated at a	choic chamber. The measurement an distance of 3 m.	itenna (Loop antenna for the
For radiated emissions distance, an inverse p determining compliance	s in the range 9 kHz to 3 proportionality factor of 4 e.	30 MHz that is performed at a distan 40 dB per decade is used to norma	ce closer than the specified alize the measured data for
The equipment under to orientation was varied radiated emission.	est was set up on a non- to find the maximum ra	-conductive platform above the ground adiated emission. It was also rotated	d plane and the situation and d 360° to find the maximum
Three different orientat case shown in the follo	ions (X, Y, and Z) of reco wing test results.	eiving loop antenna orientation were to	ested to determine the worst
Radiated measuremen	ts setup 9 kHz to 30 MHz		
80	EUT (Turntable) Ground Plane	- 3 m Antenna 100 cm Test Receiver	
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TESTED SAMPLES:	S/02
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS:	PASS

Band 13.410 MHz – 13.553 MHz



PK+_MAXH

TX limits to Spurious Emission FCC15.225 - Mask (13.11M Hz to 14.01MHz)

Frequency (MHz)	PK+_MAXH (dBµV/m)	Pol	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
13.552650	54.5	Н	36.0	90.5

Limit and Margin





Limit and Margin

Frequency	PK+_MAXH	Pol	Margin - PK+	Limit - PK+
(MHz)	(dBµV/m)		(dB)	(dBµV/m)
13.552650	55.2	Н	35.3	90.5



TEST A.4: FIELD STRENGTH OF EMISSIONS WITHIN THE BAND 13.110 MHZ – 13.410 MHZ AND 13.710 - 14.010 MHZ Product standard: Part 15 Subpart C §15.225 and RSS-210 LIMITS: Test standard: Part 15 Subpart C §15.225(c) and RSS-210 clause B.6 (c) LIMITS The field strength of any emissions within the band 13.553 - 13.567 MHz shall not exceed 106 microvolts/meter (40.51 dBµV/m) at 30 meters. **TEST SETUP** All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Loop antenna for the range between 9 kHz to 30 MHz) is situated at a distance of 3 m. For radiated emissions in the range 9 kHz to 30 MHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 40 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° to find the maximum radiated emission. Three different orientations (X, Y, and Z) of receiving loop antenna orientation were tested to determine the worst case shown in the following test results. Radiated measurements setup 9 kHz to 30 MHz. 3 m Antennna EUT ¥ ₹ 100 cm 80, cm (Turntable) Ground Plane **Test Receiver**





Frequency	PK+_MAXH	Pol	Margin - PK+	Limit - PK+
(MHz)	(dBµV/m)		(dB)	(dBµV/m)
13.348675	37.8	Н	42.7	80.5







TEST A.5: FIELD STRENGTH OF EMISSIONS OUTSIDE OF THE BAND 13.110 MHZ - 13.410 MHZ

	Product standard:	Part 15 Subpart C §15.225 and RSS-210
LIMITS:	Test standard:	Part 15 Subpart C §15.225(d) and RSS-210 clause B.6 (d)

LIMITS

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705 - 30.0	30	29.54	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

TEST SETUP

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Loop antenna for the range between 9 kHz to 30 MHz and Bilog antenna for the range between 30 MHz to 1 GHz) is situated at a distance of 3 m.

For radiated emissions in the range 9 kHz to 30 MHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 40 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 in the range between 30 MHz and 200 MHz the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

In the range between 9 kHz and 30 MHz three different orientations (X, Y, and Z) of receiving loop antenna were tested to determine the worst case shown in the following test results.













74.064000

115.943500

172.375000

30.9

28.8

30.5

V

V

Н

21.8 17.1

18.9

18.2

26.4

24.6

40.0

43.5

43.5



TEST A.6: FREQ	UENCY TOLE	RANCE OF	THE CARRI	ER SIGI	NAL			
	Product standard:		Pa	art 15 Sub	part C §15.225	and RSS-210		
LIMITS:	Test standard:		Part 15 Subpart C §15.225(e) and RSS-210 clause B.6					
The frequency tolerar temperature variation supply voltage from 8 battery powered equi specified by the manual	nce of the carrier of –20 degrees t 5% to 115% of th ipment, reduce ifacturer.	signal shall be to +50 degree he rated supp primary suppl	e maintained with s C at normal su ly voltage at a te y voltage to the	hin +/- 0.0 upply volta emperatur e battery	1% of the opera age, and for a va e of 20 degrees operating end	ating frequency over a ariation in the primary & C. For hand carried, point which shall be		
TEST	SETUP							
Spectrum Analyzer EUT Non-Conducted Table Ground Reference Plane								
TESTED SAMPLES:			S/01					
TESTED CONDITIONS MODES:		:	TC#01					
TEST RESULTS:			PASS					
Nominal Operating Fi	requency: 13.56 I	MHz						
Frequency stability over temperature variations.								
	Temperature (°C)		Frequency Error (kHz)		ncy Error (%)			
	+50		-0.3		0.0021			
	+40		-0.2		0.0018			
	+20		0.0		0.0001			
	+10		-0.2		0.0017			
	0		-0.2		0.0018			
-10			-0.3		0.0021			
-20			0.2 0.0015					
Frequency stability ov	ver voltage variat	ions.						
		Voltage (V)	Frequency Error (kHz)		Frequency Error (%)			
AC S	upply voltage			-1.0		-0.0072		
AC S	Vmin	11.5	-1.0		-0.0072			
	Vmin Vmax	11.5 15.5	-1.0 0.1		-0.0072 0.0007			