

FCC Part 1 Subpart I FCC Part 2 Subpart J

**TEST REPORT** 

FOR

GSM/WCDMA/LTE/5G Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC

FCC ID: PY7-76732V

REPORT NUMBER: R14777340-E9

**ISSUE DATE: 2023-06-30** 

Prepared for SONY CORPORATION 1-7-1 KONAN MINATO-KU TOKYO, 108-0075, JAPAN

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# **REVISION HISTORY**

Rev.	lssue Date	Revisions	Revised By
V1	2023-06-30	Initial Issue	Brian Kiewra

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### **1. ATTESTATION OF TEST RESULTS**

COMPANY NAME:	Sony Corporation 1-7-1 Konan Minato-ku Tokyo, 108-0075, Japan
EUT DESCRIPTION:	GSM/WCDMA/LTE/5G Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC
SERIAL NUMBER:	QV770028HJ (Source), QV770005HJ (Load), QV770066HJ (Load), QV77000RHJ (Load)
SAMPLE RECEIPT DATE:	2023-05-26
DATE TESTED:	2023-06-06 to 2023-06-09

APPLICABLE STANDARDS				
STANDARD	TEST RESULTS			
FCC PART 1 SUBPART I & PART 2 SUBPART J	Complies			

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document.

Approved & Released For UL LLC By:

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Prepared By:

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Brian Kiewra Project Engineer Consumer, Medical and IT Segment UL LLC

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# 2. TEST METHODOLOGY

All testing / calculations were made in accordance with FCC KDB 447498 D01, KDB 447498 D03, KDB 680106 D01 v03r01.

# 3. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, certification # 0751.06, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration	
	Building: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	005074	
$\boxtimes$	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A	030007	27265	825374	

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# 4. DECISION RULES AND MEASUREMENT UNCERTAINTY

# 4.1. METROLOGICAL TRACEABILITY

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

# 4.2. DECISION RULES

For all tests where the applicable  $U_{LAB} \le U_{MAX}$  the Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2, where  $U_{MAX} = 30\%$  (0.3) for RF Exposure evaluations. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

For all tests where the applicable  $U_{LAB} > U_{MAX}$  the Decision Rule is based on Guarded Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.3.2, with a guard band equal to  $(U_{LAB} - U_{MAX})$ , where  $U_{MAX} = 30\%$  (0.3) for RF Exposure evaluations. (Test results are adjusted by the value of the guard band to determine conformity with a specified requirement.)

### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U <sub>Lab</sub>
Magnetic Field using Exposure Level Meter	± 0.80 dB
Electric Field using Exposure Level Meter	± 0.91 dB
Time	3.39%

Uncertainty figures are valid to a confidence level of 95%, k = 2.

# 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE/5G Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC. This test report covers WPT testing. The device can function as a WPT charger operating from 111-148kHz.

While WPT is functioning, the device is limited to mobile use conditions and was evaluated for desktop applications.

### 5.2. DESCRIPTION OF TEST SETUP

#### SUPPORT EQUIPMENT

Support Equipment List						
Description	Manufacturer	Model	Serial Number	FCC ID		
Power Supply	Sony	XQZ-UC11	1821W34209742	NA		
USB-C	Sony	XQZ-UB1	NA	NA		

#### I/O CABLES

	I/O Cable List							
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks		
1	USB	1	USB-C	Non- Shielded	<3m	Connected to power supply		

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#### TEST SETUP

The following five configurations are tested:

Configuration	Mode	Descriptions
1	Standby (Power Detecting)	EUT Alone powered by AC/DC adapter (worst-case over battery)
2	Operating with server (source) and client (load) aligned (With EUT charging) Note: Measurements were made when the battery level of the client was at a state of <10%, 50%, and 100%. Spot check worst- case battery level with 5 mm air gap.	EUT powered by AC/DC adapter
3	Operating with server (source) and client (load) aligned, with 90° rotation between them. (With EUT charging) Note: Measurements were made when the battery level of the client was at a state of <10%, 50%, and 100%.	EUT powered by AC/DC adapter
4	Same as configuration 2, with a worst case misalignment between the server and client.	EUT powered by AC/DC adapter
5	Same as configuration 3, with a worst case misalignment between the server and client.	EUT powered by AC/DC adapter

#### SETUP DIAGRAMS

Please refer to R14777340-EP4 for setup diagrams.

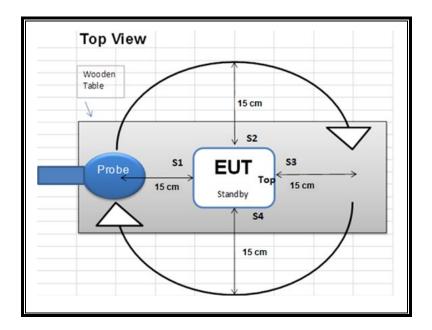
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#### **MEASUREMENT SETUP**

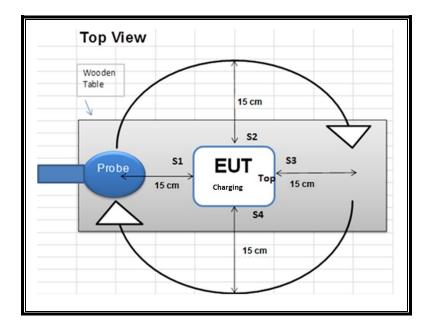
The measurement was taken using a probe placed 15cm surrounding the device and 20cm above the top surface of the EUT.

Measurements were taken from the top and all sides of the EUT per KDB 680106 D01 v03r01.

#### **CONFIGURATION 1**



#### **CONFIGURATIONS 2-5**



Note: This diagram is meant to represent load stacked on EUT.

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# 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment were used for the tests documented in this report:

Test Equipment List								
Description     Manufacturer     Model     Equip. ID     Cal Date     Cal								
Electric and Magnetic Field Probe	Narda	EHP-200AC	FA0001	2022-07-20	2023-07-20			
Spectrum Analyzer	Keysight	N9030A	SA0026	2022-08-02	2023-08-02			

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# 7. DUTY CYCLE

### LIMITS

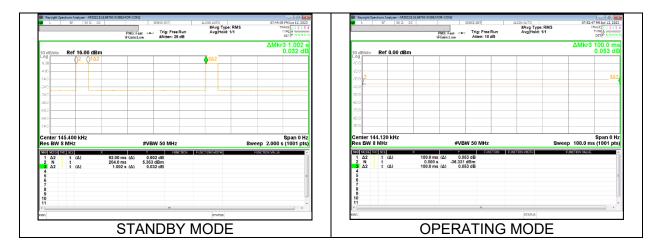
None; for reporting purposes only.

#### PROCEDURE

Zero-Span Spectrum Analyzer Method.

### ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time	Period	Duty Cycle	Duty
	В		x	Cycle
	(msec)	(msec)	(linear)	(%)
Standby (Config 1)	92.00	1002.00	0.0918	9.18%
Operating(Config 2+3)	100.00	100.00	1.00	100.00%



Tested By: 84740/44389

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### 8. MAXIMUM PERMISSIBLE RF EXPOSURE TEST RESULTS

#### **FCC LIMITS** 8.1.

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm²)	Averaging time (minutes)				
(A) Limits for Occupational/Controlled Exposures								
0.3–3.0 3.0–30 30–300 300–1500 1500–100,000	614 1842/f 61.4	1.63 4 <i>.89/</i> f 0.163	*(100) *(900/f²) 1.0 f/300 5	6 6 6 6 6				
(B) Limits	for General Populati	on/Uncontrolled Exp	posure					
0.3–1.34	614 824 <i>1</i> f	1.63 2.19/f	*(100) *(180/f <sup>2</sup> )	30 30				

#### TABLE 1-LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm²)	Averaging time (minutes)		
30–300 300–1500 1500–100.000	27.5	0.073	0.2 f/1500 1.0	30 30 30		

f = frequency in MHz

\* = Plane-wave equivalent power density
NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure.

exposure or can not exercise control over their exposure.

Note: The limit at 300 kHz was used for devices operating between 100-300 kHz.

### 8.2. SUMMARY OF TEST RESULTS

#### RESULTS

ID:	84740/21193	Date:	2023-06-06 to 2023-06-09

Note: Both magnetic and electric field strengths have been investigated from 9 kHz to 30 MHz at 15cm surrounding the device and 20cm above the top surface of the EUT operation frequency at 111-148 kHz.

The inductive wireless power transfer device meets all of the following requirements:

Power transfer frequency is less than 1 MHz

Output power from each primary coil is less than or equal to 15 watts.

 $\boxtimes$  The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.

Client device is placed directly in contact with the transmitter.

Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).

 $\boxtimes$  The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

#### FCC RF EXPOSURE SUMMARY OF RESULTS

	Electric Field		Magnetic Field			
FCC Limit (V/m)	Maximum Average Reading (V/m)	Percentage (%)	FCC Limit (A/m)	Maximum Average Reading (A/m)	Percentage (%)	
614	4.182	0.68%	1.63	0.147	9.02%	

**Note:** since the E and H field are lower than the limit by more than 50% of the limit then a PAG is not required.

### 8.3. DETAILED TEST RESULTS

#### E- FIELD AND H- FIELD MEASUREMENTS

Note: Peak measurements were performed. RMS values were calculated from the peak measurement. Please refer to the formula for calculating the RMS values: [Field Strength x  $\sqrt{Duty Cycle}$ ].

			E field Limit	Electric Field Reading				Magnetic Field Limit Magnetic Field Readi			ing			
Config	Config Test Mode Meas Dist			) (V/m)				(A/m)	(A/m)					
		(cm)	FCC	Location	Peak	Duty Cycle %	FCC Average	FCC	Location	Peak	Duty Cycle %	FCC Average		
				S1	0.420	9.18	0.127		S1	0.076		0.023		
				S2	0.385		0.117		S2	0.048		0.014		
1	Standby			S3	0.423		0.128			0.063	9.18	0.019		
				S4	0.486		0.147		S4	0.034		0.010		
				Тор	0.341		0.103		Тор	0.331		0.100		
				Max	0.486		0.147		Max	0.331		0.100		
	<b>A</b>			\$1	0.690	•	0.690		\$1	0.042	4 -	0.042		
	Operating			\$2	0.606		0.606		\$2	0.015		0.015		
	Power			S3	0.621	100.00	0.621		\$3	0.033	100.00	0.033		
	<10%			S4	0.571	4	0.571	-		0.013		0.013		
	Charging			Тор	0.616		0.616		Тор	0.012		0.012		
				Max	0.690		0.690	-	Max	0.042		0.042		
				S1	0.696		0.696	-	S1	0.038	100.00	0.038		
	Operating			S2	0.601	-	0.601	-	S2	0.014		0.014		
	Power 50%			\$3 \$4	0.645	100.00	0.645		S3	0.032		0.032		
	Charging	15 cm surrounding the device (S1 - S4) and					0.565		S4			0.013		
				Тор	0.766		0.766		Тор	0.012		0.012		
2	Operating Power 100 % Charged			Max S1	0.901		0.766		Max S1	0.038	100.00	0.038		
				\$1 \$2	0.901	100.00	0.754	-	51 S2	0.049		0.049		
				52 \$3	0.734		0.816	1.63	52 S3	0.014		0.014		
					0.589		0.589		53 54	0.044		0.014		
				Top	0.721		0.721		Тор	0.014		0.013		
				Max	0.901		0.901		Max	0.013		0.019		
		20 cm above	614	S1	0.819		0.819		S1	0.123		0.123		
	Operating	20 cm above the top		\$1 \$2	0.681		0.681	1	\$1 \$2	0.018		0.018		
	Power 100	surface of		S3	0.697	1	0.697		S3	0.134		0.134		
	% Charged	the EUT		 \$4	0.608	100.00	0.608			0.020		0.020		
	with 5 mm air gap			Тор	0.707		0.707		Тор	0.023		0.023		
				Max	0.819		0.819		Max	0.134		0.134		
				S1	3.340		3.340		S1	0.032		0.032		
	Operating			S2	0.658	1	0.658		S2	0.014		0.014		
	Power	wer 10%				S3	2.264	100.00	2.264	1	 \$3	0.022		0.022
	<10%			S4	0.552	100.00	0.552	1	S4	0.014	100.00	0.014		
	Charging			Тор	1.138	]	1.138	]	Тор	0.011	] [	0.011		
				Max	3.340	1 1	3.340	1	Max	0.032	1 İ	0.032		
				S1	4.182		4.182	]	S1	0.032		0.032		
	Operation			S2	0.775	]	0.775	]	S2	0.014	ļ	0.014		
3	Operating	1%		S3	2.623	100.00	2.623	]	S3	0.020	100.00	0.020		
3	Power 50%			S4	0.560	100.00	0.560		S4	0.013	100.00	0.013		
	Charging			Тор	1.924		1.924		Тор	0.012		0.012		
				Max	4.182		4.182		Max	0.032		0.032		
				S1	3.988	1 1	3.988		S1	0.020	]	0.020		
	Operating			S2	0.686		0.686		S2	0.014		0.014		
	Power 100			S3	3.627	100.00	3.627	l	S3	0.019	100.00	0.019		
	Power 100 % Charged			S4	0.675	100.00	0.675		S4	0.013	100.00	0.013		
	, contanged			Тор	0.709		0.709		Тор	0.012		0.012		
				Max	3.988		3.988		Max	0.020		0.020		

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		Meas Dist (cm)	E field Limit	Electric Field Reading				Magnetic Field Limit		Magnetic Field Reading			
Config	Test Mode		(V/m)			(V/m)		(A/m)		1	(A/m)		
		(CIII)	FCC	Location	Peak	Duty Cycle %	FCC Average	FCC	Location	Peak	Duty Cycle %	FCC Average	
				S1	0.387		0.387		S1	0.067		0.067	
	Operating Power			S2	0.377	100.00	0.377		S2	0.051		0.051	
				S3	0.410		0.410		S3	0.065	100.00	0.065	
	<10%			S4	0.427		0.427		S4	0.032		0.032	
	Charging			Тор	0.405		0.405		Тор	0.015		0.015	
				Max	0.427		0.427		Max	0.067		0.067	
				S1	0.514		0.514		S1	0.050		0.050	
	Operating			S2	0.442		0.442		S2	0.053		0.053	
4	Operating Power 50%			S3	0.493	100.00	0.493		S3	0.147	100.00	0.147	
4				S4	0.529	100.00	0.529		S4	0.070		0.070	
	Charging			Тор	0.481		0.481		Тор	0.014		0.014	
		15 cm surrounding the device (S1 - S4) and		Max	0.529		0.529		Max	0.147		0.147	
	Operating Power 100 % Charged			S1	0.513		0.513		S1	0.045	100.00	0.045	
				S2	0.481		0.481		S2	0.035		0.035	
				S3	0.530		0.530		S3	0.099		0.099	
				S4 0.540	100.00	0.540		S4	0.040	100.00	0.040		
				Тор	0.430		0.430	1.62	Тор	0.019		0.019	
			614	Max	0.540		0.540		Max	0.099		0.099	
		20 cm above	614	S1	0.681		0.681	1.63	S1	0.031	100.00	0.031	
	Operating	perating Charging		S2	0.454	100.00	0.454		S2	0.025		0.025	
				S3	0.571		0.571		S3	0.037		0.037	
				S4	0.483	100.00	0.483		S4	0.024	100.00	0.024	
	Charging			Тор	0.447		0.447		Тор	0.017		0.017	
				Max	0.681		0.681		Max	0.037		0.037	
				S1	0.936		0.936		S1	0.055		0.055	
	<b>.</b>			S2	0.381		0.381		S2	0.032		0.032	
5	1 0			S3	0.672	100.00	0.672		S3	0.019	100.00	0.019	
5				S4	0.467	100.00	0.467		S4	0.026	100.00	0.026	
	Charging			Тор	0.776		0.776		Тор	0.016		0.016	
				Max	0.936		0.936		Max	0.055		0.055	
				\$1	0.476		0.476		S1	0.026		0.026	
	Onentia			S2	0.361		0.361		S2	0.027		0.027	
	Operating			S3	0.425	100.00	0.425		S3	0.054	100.00	0.054	
	Power 100			S4	0.392	100.00	0.392		S4	0.029	100.00	0.029	
	% Charged			Тор	0.477		0.477		Тор	0.014		0.014	
				Max	0.477		0.477		Max	0.054		0.054	

Note: QV770005HJ used for 0% state. QV770066HJ used for 50% state. QV77000RHJ used for 100% state

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# 9. SETUP PHOTO

Please refer to R14777340-EP4 for setup photos.

# END OF REPORT

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