TEST REPORT

Report Number: R14311589-E3

Applicant	:	Sony Corporation 1-7-1 Konan Minato-ku Tokyo, 108-0075, Japan
FCC ID	:	PY7-17565F
EUT Description	:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C

Date Of Issue:

2022-08-17

Prepared by:
UL LLC
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ACCREDITED
CERT #0751.06

REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2022-08-05	Initial Issue	Charles Moody
V2	2022-08-17	Revised statement in Section 7.2	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 Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC

SERIAL NUMBER: QV7700EBD8

SAMPLE RECEIPT DATE: 2022-06-27

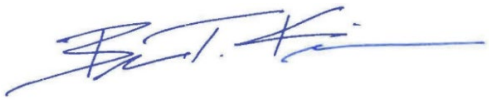
DATE TESTED: 2022-07-27

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Refer to Section 2

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. This report must not be used by the client to claim product certification, approval, or endorsement by a2La, NIST, or any agency of the U.S. government.

Approved & Released For UL LLC By:	Reviewed By:	Prepared By:
		
Mike Antola Staff Engineer Consumer Technology Division UL LLC	Brian Kiewra Project Engineer Consumer Technology Division UL LLC	Charles Moody Electrical Engineer Consumer Technology Division UL LLC

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2. TEST RESULTS SUMMARY

This report contains data provided by the applicant which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer.

FCC Clause	Requirement	Result	Comment
See Comment	Duty Cycle	Not performed	Radiated spot checks performed to justify data reuse.
15.215	20 dB BW		
15.225 (e)	Frequency Stability		
15.207	AC Mains Conducted Emissions		
15.209, 15.205, 15.225 (d)	Radiated Emissions	See Comment	Radiated spot checks performed on worst-case channels only to justify data reuse.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013 and KDB 484596 D01 Referencing Test Data v01.

4. 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	825374
☒	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A		27265	

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	U_{Lab}
All emissions, radiated	6.01 dB

Uncertainty figures are valid to a confidence level of 95%.

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE PHONE with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC.

7. REUSE OF TEST DATA

7.1. INTRODUCTION

According to the manufacturer, FCC ID: PY7-93060R and FCC ID: PY7-17565F unlicensed radios (NFC) are electrically identical. The FCC ID: PY7-93060R test data shall remain representative of FCC ID: PY7-17565F so, FCC ID: PY7-17565F leverages test data from FCC ID: PY7-93060R.

The applicant takes full responsibility that the test data as referenced in this section represents compliance for this FCC ID.

7.2. DEVICES DIFFERENCES

Difference between PY7-93060R and PY7-17565F:

Sony Corporation hereby declares that the hardware NFC is identical among PY7-93060R and PY7-17565F. Therefore, the following report/data of PY7-93060R may represent for PY7-17565F.

7.3. REFERENCE DETAIL

Equipment Class	Reference FCC ID	Report Title/Section
NFC	PY7-93060R	R14311585-E3 v1 FCC NFC REPORT – FINAL/All Sections

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7.4. SPOT CHECK VERIFICATION RESULTS SUMMARY

Spot check verification has been done on device PY7-17565F for radiated spurious emissions. The data from the application has been verified through appropriate spot checks to demonstrate compliance for this device as shown in the summary.

PY7-17565F SPOT CHECK RESULTS									
Technology	Test Item	Channel	Measured Frequency (MHz)	PY7-93060R		PY7-17565F		Delta (dB) <+3dB	
				PK Reading (dBuV/m)	AV Reading (dBuV/m)	PK Reading (dBuV/m)	AV Reading (dBuV/m)	PK	AV
NFC	RSE	13.56MHz	1.194	0.46	-	-3.59	-	-4.05	-
			46.587	25.35	-	26.25	-	0.9	-

8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 1)

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	0.009-30MHz				
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2021-08-19	2022-08-19
	30-1000 MHz				
AT0066	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB1	2022-03-01	2023-03-01
	Gain-Loss Chains				
C1-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2022-05-05	2023-05-05
C1-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2022-05-05	2023-05-05
	Receiver & Software				
197954	Spectrum Analyzer	Rohde & Schwarz	ESW44	2022-04-14	2023-04-14
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
210922	Environmental Meter	Fisher Scientific	181474341	2021-09-27	2022-09-27

9. SPOT CHECK DATA

LIMITS

FCC §15.205, §15.209, and §15.225 (d)

§ 15.225 Operation within the band 13.110-14.010 MHz.

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

(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

(e) The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of −20 degrees to + 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

(f) In the case of radio frequency powered tags designed to operate with a device authorized under this section, the tag may be approved with the device or be considered as a separate device subject to its own authorization. Powered tags approved with a device under a single application shall be labeled with the same identification number as the device.

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurements below 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

The EUT was investigated in one orientation, X. This was found to be the worst-case orientation of the electrically identical radio referred to previously in section 7.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

ANSI C63.10, 2013

The EUT is an intentional radiator that incorporates a digital device, the highest fundamental frequency generated or used in the device is 13.56 MHz; therefore, the frequency range was investigated from 0.15 MHz to the 10^{th} harmonic of the highest fundamental frequency, or 1000 MHz, whichever is greater.

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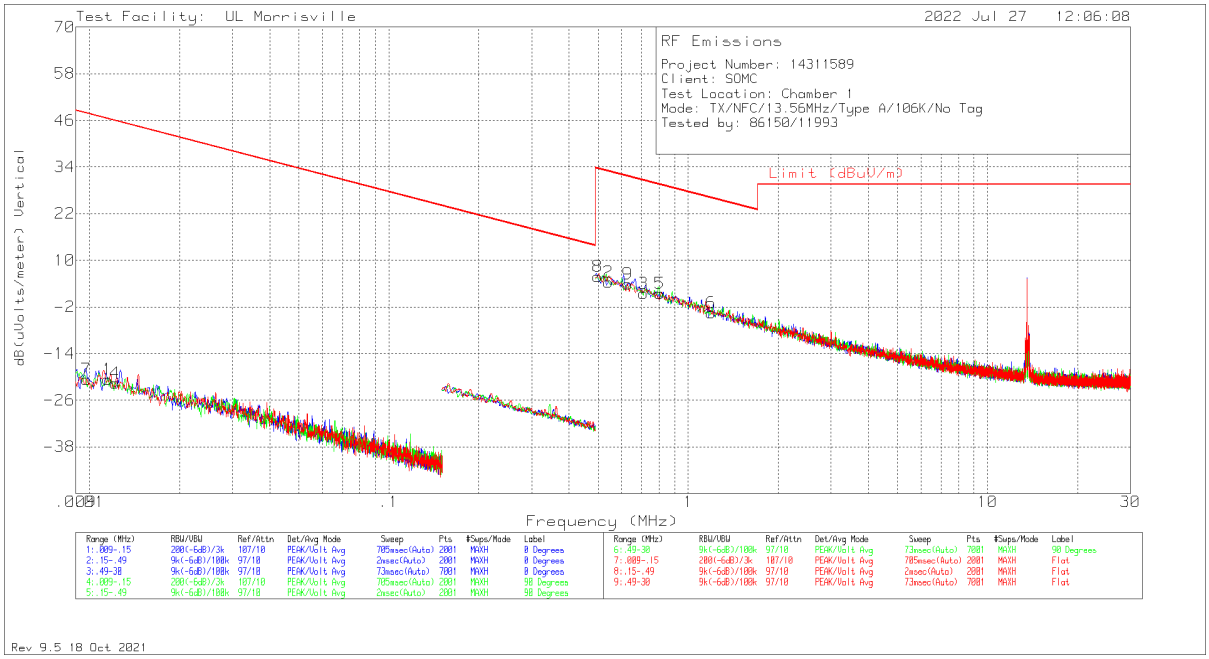
9.1. NFC

Note: All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz – 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance with the requirement that the level of any spurious emissions be below the level of the intentionally transmitted signal. The extrapolation factor for the limits were 40*Log (test distance / specification distance).

HARMONICS AND SPURIOUS EMISSIONS – NO TAG, TYPE A, 106 Kbps

0.009 to 30MHz

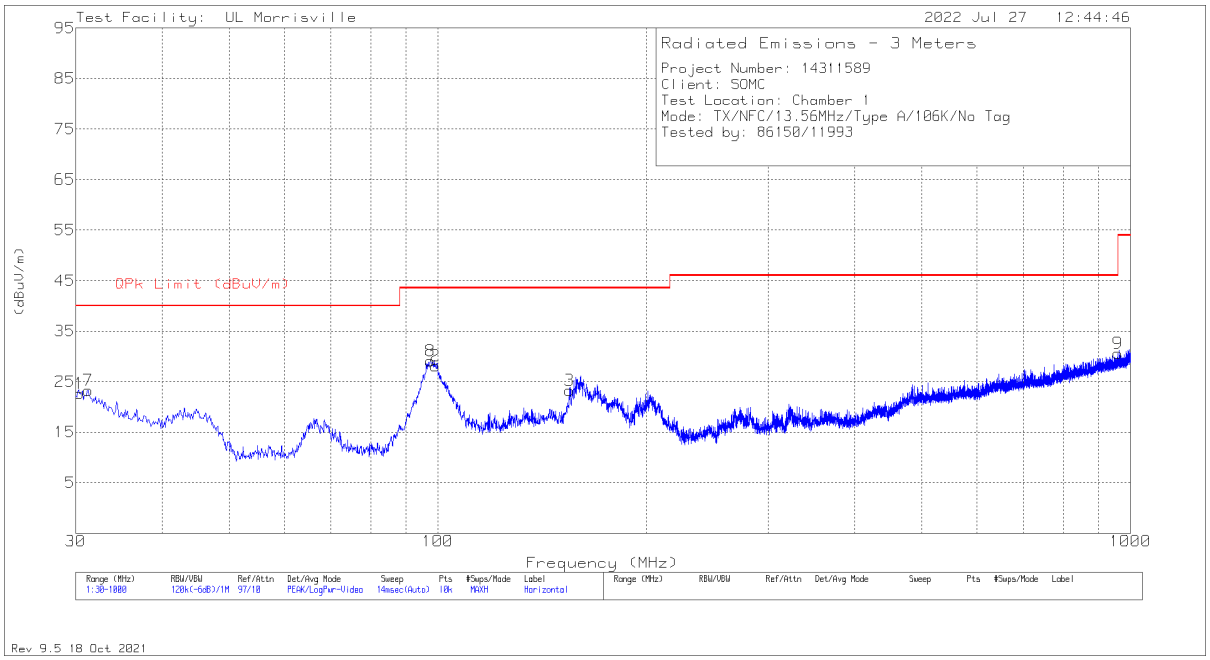


RADIATED EMISSIONS

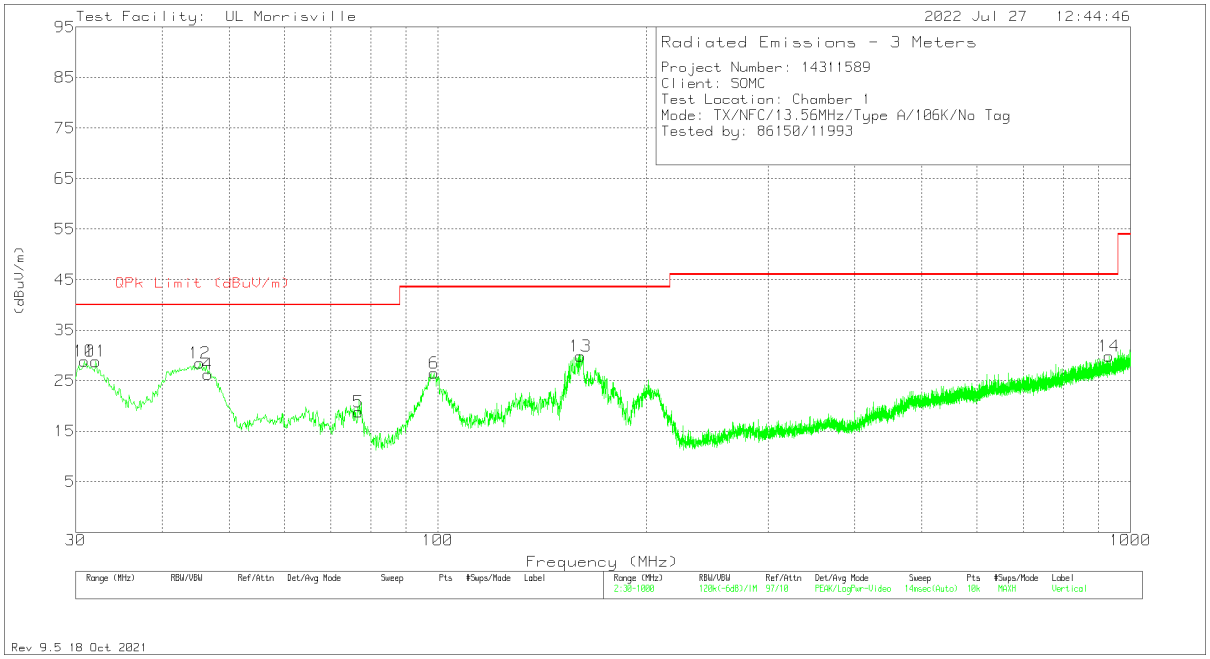
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0079 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	QP/AV Limit (dBuV/m)	PK Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
7	.00978	40.64	Pk	18.6	.1	-80	-20.66	47.8	67.8	-68.46	0-360	Flat
1	.01149	41.49	Pk	17.8	.1	-80	-20.61	46.4	66.4	-67.01	0-360	0 degs
4	.0122	40.82	Pk	17.5	.1	-80	-21.58	45.88	65.88	-67.46	0-360	90 degs
8	.49843	34.5	Pk	11.2	.2	-40	5.9	33.65	-	-27.75	0-360	Flat
2	.54059	33.03	Pk	11.2	.2	-40	4.43	32.95	-	-28.52	0-360	0 degs
9	.62913	32.33	Pk	11.3	.2	-40	3.83	31.63	-	-27.8	0-360	Flat
3	.70923	29.93	Pk	11.3	.2	-40	1.43	30.59	-	-29.16	0-360	0 degs
5	.80198	29.91	Pk	11.3	.2	-40	1.41	29.52	-	-28.11	0-360	90 degs
6	1.19407	24.91	Pk	11.3	.2	-40	-3.59	26.06	-	-29.65	0-360	90 degs

Pk - Peak detector

30 to 1000MHz



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0066 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.388	27.29	Pk	26.7	-31.3	22.69	40	-17.31	0-360	299	H
2	99.258	42.53	Pk	16.1	-30.5	28.13	43.52	-15.39	0-360	199	H
3	154.936	34.99	Pk	18.2	-29.9	23.29	43.52	-20.23	0-360	299	H
4	46.587	42.35	Pk	15.2	-31.3	26.25	40	-13.75	0-360	100	V
5	76.754	35.75	Pk	13.8	-30.8	18.75	40	-21.25	0-360	100	V
6	98.676	41.18	Pk	15.9	-30.6	26.48	43.52	-17.04	0-360	100	V
7	31.261	28.11	Pk	26.4	-31.2	23.31	40	-16.69	0-360	99	H
8	97.512	44.07	Pk	15.6	-30.6	29.07	43.52	-14.45	0-360	299	H
9	958.872	26.02	Pk	28.7	-24.1	30.62	46.02	-15.4	0-360	199	H
10	30.873	33.47	Pk	26.6	-31.2	28.87	40	-11.13	0-360	100	V
11	32.037	34.4	Pk	25.7	-31.3	28.8	40	-11.2	0-360	100	V
12	45.326	43.82	Pk	16	-31.3	28.52	40	-11.48	0-360	100	V
13	160.659	41.78	Pk	17.9	-29.8	29.88	43.52	-13.64	0-360	100	V
14	931.906	25.78	Pk	28.5	-24.4	29.88	46.02	-16.14	0-360	100	V

Pk - Peak detector

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10. SETUP PHOTOS

Refer to R14311589-EP3 setup photos.

END OF REPORT