*Audix Technology Corp.*
*No. 491, Zhongfu Rd., Linkou Dist.,*
*New Taipei City244,Taiwan*

*Tel: +886 2 26099301*
*Fax: +886 2 26099303*

# FCC 15.247 & RSS-247
# 2.4GHz Test Report

## for

## Tonly Technology Co., Ltd.

## Section 37, Zhongkai High-tech Development Zone, Huizhou City, Guangdong Province, P.R. China

| | | |
|---|---|---|
| **Product Name** | **:** | **WIRELESS SPEAKER** |
| **Model Name** | **:** | **YY7870E** |
| **Brand** | **:** | **SONY** |
| **FCC ID** | **:** | **ZVAYY7870E** |
| **IC** | **:** | **9976A-YY7870E** |
| **Prepared by:** | **:** | **AUDIX Technology Corporation, EMC Department** |

The test report is based on a single evaluation of one sample of the above-mentioned products. It does notimply an assessment of the whole production and does not permit the use of the test lab logo.



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*Tel: +886 2 26099301*
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# TEST REPORT

| | | |
|---|---|---|
| Applicant | : | Tonly Technology Co., Ltd. |
| Manufacturer | : | Sony Group Corporation |
| EUT Description | | |
| (1) Product | : | WIRELESS SPEAKER |
| (2) Model | : | YY7870E |
| (3) Brand | : | SONY |
| (4) Power Supply | : | AC 120V, 60Hz |

Applicable Standards:

Title 47 CFR FCC Part 15 Subpart C
RSS-Gen (Issue 5)+A2, February 2021
RSS-247 (Issue 4), July 2025

***Audix Technology Corp.*** tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.
***Audix Technology Corp.*** does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens and samples.

Date of Report: 2026. 03. 17

Reviewed by: Sunnie Huang (Sunnie Huang/Administrator)

Approved by: Johnny Hsueh (Johnny Hsueh/Deputy Manager)


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# 1. REVISION RECORD OF TEST REPORT

| Edition No | Issued Date | Revision Summary | Report Number |
|---|---|---|---|
| 0 | 2026. 03. 17 | Original Report | EM-F260110 |



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# 2. SUMMARY OF TEST RESULTS

| Rule | | Description | Results |
|---|---|---|---|
| FCC | IC | | |
| 15.207 | RSS-Gen §8.8 | Conducted Emission | **PASS** |
| 15.247(d)/ 15.205 | RSS-Gen §8.9 RSS-247 §5.5 | Radiated Band Edge and Radiated Spurious Emission | **PASS** |
| 15.247(a)(2) | RSS-247 §5.2(1) | DTS/Occupied Bandwidth | **PASS** |
| 15.247(b)(3) | RSS-247 §5.4(4) | Maximum Peak Output Power | **PASS** |
| 15.247(d) | RSS-247 §5.5 | Conducted Band Edges and Conducted Spurious Emission | **PASS** |
| 15.247 (e) | RSS-247 §5.2(2) | Peak Power Spectral Density | **PASS** |
| 15.203 | --- | Antenna Requirement | **Compliance** |
| Note: The uncertainties value is not used in determining the result. | | | |


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# 3. GENERAL INFORMATION

The EUT's information described in this section are all provided by the applicant.

## 3.1. Description of Application

| | |
|---|---|
| Applicant | Tonly Technology Co., Ltd.<br>Section 37, Zhongkai High-tech Development Zone, Huizhou City, Guangdong Province, P.R. China |
| Manufacturer | Sony Group Corporation<br>1-7-1 Konan Minato-ku Tokyo,108-0075 Japan |
| Product | WIRELESS SPEAKER |
| Model | YY7870E |
| Brand | SONY |


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## 3.2. Description of EUT

| | |
|---|---|
| PMN | WIRELESS SPEAKER |
| HVIN | YY7870E |
| Test Model | YY7870E |
| Serial Number | N/A |
| Power Rating | AC 120V, 60Hz ;<br>DC 7.2V by Lithium Battery |
| Software Version | V4400 |
| RF Features | Bluetooth: BT and BLE |
| Transmit Type | 1T1R |
| Sample Status | Trial sample |
| Test Sample | Sample No. / Test Item / Firmware<br>01 / AC Conduction, RSE / N/A<br>02 / RF Conducted / N/A<br>03 / RSE / N/A |
| Date of Receipt | 2026. 02. 12 |
| Date of Test | 2026. 03. 06 ~ 12 |
| Interface Ports of EUT | • USB-C Port x 1 (FOR PC/PHONE)<br>• USB-A Port x 1 (FOR USB DRIVE)<br>• MIC Port x 1<br>• LINE 1 (L/R) Ports x 2<br>• LINE 2 Port x 1<br>• LINE OUT Port x 1<br>• AC Power Port x 1 |
| Accessories Supplied | • AC Power Cord (2C) |

Note: Pursuant ISO 17025:2017 section 7.8.2, Audix Technology Corp. does not assume responsibility for all EUT's information including RF features, transmit type, antenna information…etc are provided by customer.

## 3.3. Reference Test Guidance

ANSI C63.10-2020 &ANSI C63.10-2020 + Cor.1-2023

## 3.4. Antenna Information

| **Antenna System** | |
|---|---|
| Type of Antenna | PCB antenna |
| Antenna Peak Gain | 2.73dBi |


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## 3.5. EUT Specifications Assessed in Current Report

| Mode | Fundamental Range (MHz) | Channel Number | Modulation | Data Rate |
|---|---|---|---|---|
| BLE | 2402-2480 | 40 | GFSK | 1Mbps |
| | 2404-2478 | 37 | GFSK | 2Mbps |

| Channel List | | | | | | | |
|---|---|---|---|---|---|---|---|
| BLE | | | | | | | |
| Channel Number | Frequency (MHz) | Channel Number | Frequency (MHz) | Channel Number | Frequency (MHz) | Channel Number | Frequency (MHz) |
| 0 | 2402 | 10 | 2422 | 20 | 2442 | 30 | 2462 |
| 1 | 2404 | 11 | 2424 | 21 | 2444 | 31 | 2464 |
| 2 | 2406 | 12 | 2426 | 22 | 2446 | 32 | 2466 |
| 3 | 2408 | 13 | 2428 | 23 | 2448 | 33 | 2468 |
| 4 | 2410 | 14 | 2430 | 24 | 2450 | 34 | 2470 |
| 5 | 2412 | 15 | 2432 | 25 | 2452 | 35 | 2472 |
| 6 | 2414 | 16 | 2434 | 26 | 2454 | 36 | 2474 |
| 7 | 2416 | 17 | 2436 | 27 | 2456 | 37 | 2476 |
| 8 | 2418 | 18 | 2438 | 28 | 2458 | 38 | 2478 |
| 9 | 2420 | 19 | 2440 | 29 | 2460 | 39 | 2480 |


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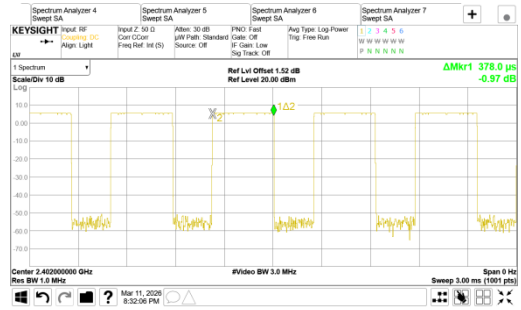
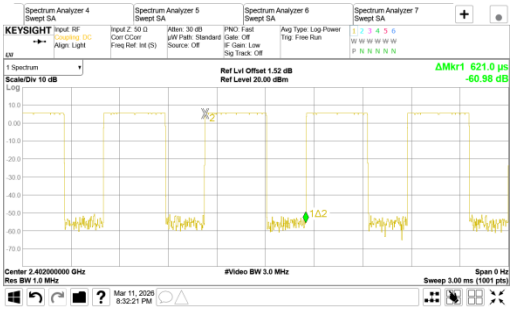
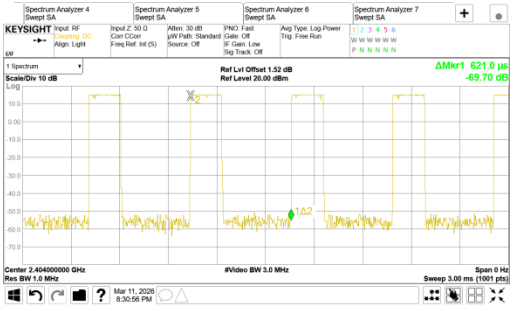
## 3.6. Description of Key Components

| Item | Applicant | Model No. | Spec |
|---|---|---|---|
| Bluetooth Module | Sunitec Technology Co., Limited | BMS003P | --- |
| Battery | EVE Energy Co., Ltd. | B0868 | DC 7.2V |

## 3.7. Test Configuration

| Mode | $TX_{on}$ (ms) | $TX_{on+off}$(ms) | Duty Cycle (x) | Duty Cycle Factor [10log(1/x)] (dB) |
|---|---|---|---|---|
| BLE (1Mbps) | 0.378 | 0.621 | 0.609 | 2.154 |
| BLE (2Mbps) | 0.192 | 0.621 | 0.309 | 5.100 |

Note: When duty cycle is less than 98% (0.98) that duty cycle factor 10log(1/x) is needed to add in conducted test items measured in average detector.

| Mode | $TX_{on}$ (ms) | $T_{on}+T_{off}$(ms) |
|---|---|---|
| BLE (1Mbps) |  |  |
| BLE (2Mbps) | |  |



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| Item | Mode |
|---|---|
| AC Conduction Test Case | Normal Operation Mode |

| Item | | Mode |
|---|---|---|
| Radiated Test Case | Radiated Spurious Emission (30MHz~1GHz)[Note 1,2] | Normal Operation Mode |

| Item | | Mode | Data Rate | Test Channel |
|---|---|---|---|---|
| Radiated Test Case | Radiated Spurious Emission (30MHz~1GHz)[Note 1,2] | BLE | 1Mbps | 39 |
| | | BLE | 2Mbps | 38 |
| | Radiated Band Edge[Note1] | BLE | 1Mbps | 0/39 |
| | | BLE | 2Mbps | 1/38 |
| | Radiated Spurious Emission [Note1& 2] | BLE | 1Mbps | 0/19/39 |
| | | BLE | 2Mbps | 1/19/38 |

| Item | | Mode | Data Rate | Test Channel |
|---|---|---|---|---|
| Conducted Test Case | DTS/Occupied Bandwidth | BLE | 1Mbps | 0/19/39 |
| | | BLE | 2Mbps | 1/19/38 |
| | Peak Output Power | BLE | 1Mbps | 0/19/39 |
| | | BLE | 2Mbps | 1/19/38 |
| | Band Edge | BLE | 1Mbps | 0/39 |
| | | BLE | 2Mbps | 1/38 |
| | Spurious Emission | BLE | 1Mbps | 0/19/39 |
| | | BLE | 2Mbps | 1/19/38 |
| | Peak Power Spectral Density | BLE | 1Mbps | 0/19/39 |
| | | BLE | 2Mbps | 1/19/38 |

Note 1: ☐Mobile Device ☑Portable Device and 2 axis were assessed.
The worst scenario for Radiated Spurious Emission as follow: ☐Side ☑Stand

Note 2: Low, mid, and high channels were measured, only the worst channel of each modulation was presented in this report.



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## 3.8. Output Power Setting

| Mode | | | |
|---|---|---|---|
| BLE | | | |
| Centre Frequency (MHz) | 1Mbps Power Setting | Centre Frequency (MHz) | 2Mbps Power Setting |
| 2402 | 41.00 | 2404 | 61.00 |
| 2440 | 41.00 | 2440 | 61.00 |
| 2480 | 41.00 | 2478 | 61.00 |

## 3.9. Tested Supporting System List

### 3.9.1. Support Peripheral Unit

| No. | Product | Brand | Model No. | Serial No. | Approval |
|---|---|---|---|---|---|
| 1. | Notebook PC | Dynabook | Dynabook CS40L-HB | 51144079H | N/A |
| 2. | DVD | SONY | BDP-S780 | 3201088 | N/A |
| 3. | Mobile Phone | APPLE | iPhone 16 Pro | N/A | N/A |
| 4. | MIC | Philips | D094 | N/A | N/A |
| 5. | JIG | N/A | N/A | N/A | N/A |
| 6. | USB Storage | Sandisk | extreme pro | N/A | N/A |
| 7. | Wireless XLR audio transmission system | Positive Grid | Spark LINK XLR | N/A | N/A |

### 3.9.2. Cable Lists

| No. | Cable Description Of The Above Support Units |
|---|---|
| 1. | USB A to C Cable: Unshielded, Detachable, 1.0 m<br>AC Power Cord: Unshielded, Detachable, 1.8m |
| 2. | AUX Cable: Shielded, Detachable, 1.5m<br>AC Power Cord: Unshielded, Detachable, 1.8m |
| 3. | USB-C Cable: Unshielded, Detachable, 1.2 m |
| 4. | Audio Cable: Unshielded, Undetachable, 1.0 m |


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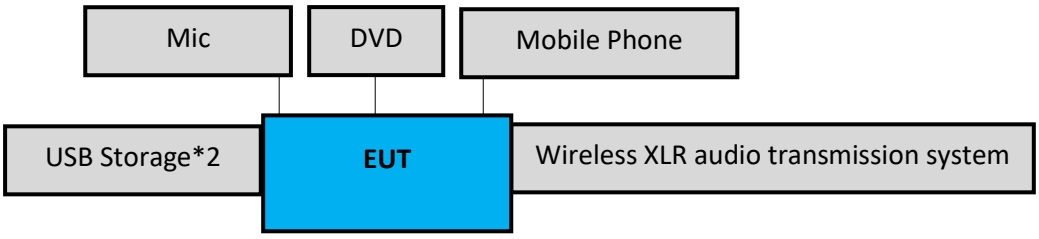
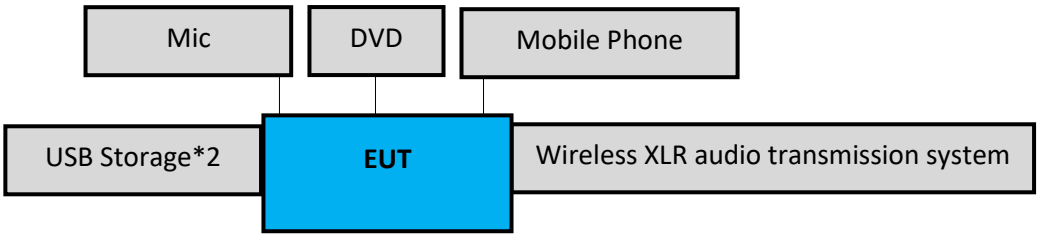
## 3.10.Setup Configuration

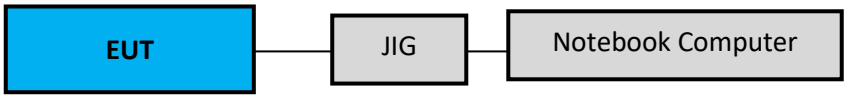
### 3.10.1. EUT Configuration for Power Line




### 3.10.2. EUT Configuration for Radiated Emission




### 3.10.3. EUT Configuration for RF Conducted Test Items




## 3.11.Operating Condition of EUT

Test program “Airoha.Tool.kit.exe_v3.0.35.1” is used for enabling EUT BT function under continues transmitting and choosing data rate/ channel.



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## 3.12.Description of Test Facility

| | |
|---|---|
| Name of Test Firm | Audix Technology Corporation / EMC Department<br>No. 491, Zhongfu Rd., Linkou Dist., New Taipei City 244, Taiwan<br>Tel: +886-2-26092133<br>Fax: +886-2-26099303<br>Website : www.audixtech.com<br>Contact e-mail: attemc_report@audixtech.com |
| Accreditations | The laboratory is accredited by following organizations under ISO/IEC 17025:2017<br>(1) NVLAP(USA)<br>NVLAP Lab Code 200077-0<br>(2) TAF(Taiwan)<br>No. 1724 |
| Test Facilities | FCC OET Designation Number under APEC MRA by NCC is : TW1724<br>ISED CAB Identifier Number under APEC TEL MRA by NCC is TW1724<br>(1) No.8 Shielded Room<br>(2) No.1 3m Semi Anechoic Chamber |


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## 3.13.Measurement Uncertainty

The measurement uncertainty levels have been estimated as specified in ETSI TR 100 028-2001

| Test Items/Facilities | | | Frequency Range | Uncertainty |
|---|---|---|---|---|
| Conduction Test | ☐ | No. 7 Shielded Room | 9kHz-150kHz | ±3.7dB |
| | | | 150kHz-30MHz | ±3.4dB |
| | ☑ | No. 8 Shielded Room | 9kHz-150kHz | ±3.7dB |
| | | | 150kHz-30MHz | ±3.4dB |
| Radiation Test | ☑ | No.1 3m Semi Anechoic Chamber | 30MHz-200MHz, 3m, Horizontal | ±4.0dB |
| | | | 200MHz-1000MHz, 3m, Horizontal | ±4.0dB |
| | | | 30MHz-200MHz, 3m, Vertical | ±4.8dB |
| | | | 200MHz-1000MHz, 3m, Vertical | ±4.5dB |
| | | | 1GHz-6GHz, 3m | ±4.2dB |
| | | | 6GHz-18GHz, 3m | ±4.0dB |
| | ☐ | No.3 3m Semi Anechoic Chamber | 30MHz-200MHz, 3m, Horizontal | ±4.3dB |
| | | | 200MHz-1000MHz, 3m, Horizontal | ±4.0dB |
| | | | 30MHz-200MHz, 3m, Vertical | ±4.7dB |
| | | | 200MHz-1000MHz, 3m, Vertical | ±4.5dB |
| | | | 1GHz-6GHz, 3m | ±4.7dB |
| | | | 6GHz-18GHz, 3m | ±4.4dB |
| | ☐ | No.4 3m Semi Anechoic Chamber | 30MHz-200MHz, 3m, Horizontal | ±3.9dB |
| | | | 200MHz-1000MHz, 3m, Horizontal | ±3.9dB |
| | | | 30MHz-200MHz, 3m, Vertical | ±4.6dB |
| | | | 200MHz-1000MHz, 3m, Vertical | ±4.3dB |
| | | | 1GHz-6GHz, 3m | ±4.6dB |
| | | | 6GHz-18GHz, 3m | ±4.1dB |
| | ☐ | No.5 3m Semi Anechoic Chamber | 30MHz-200MHz, 3m, Horizontal | ±4.4dB |
| | | | 200MHz-1000MHz, 3m, Horizontal | ±4.2dB |
| | | | 30MHz-200MHz, 3m, Vertical | ±4.9dB |
| | | | 200MHz-1000MHz, 3m, Vertical | ±5.1dB |
| | | | 1GHz-6GHz, 3m | ±4.4dB |
| | | | 6GHz-18GHz, 3m | ±4.0dB |
| | Radiated emissions (18GHz-40GHz) | | 18GHz-40GHz, 3m | ±3.6dB |

Remark：Uncertainty = $ku_c(y)$

| Test Item | Uncertainty |
|---|---|
| Bandwidth | ±0.48% |
| Maximum peak output power | ± 0.8dB |
| Power spectral density | ±0.5dB |
| Conducted Emission Limitations | ±1.24 dB |



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# 4. MEASUREMENT EQUIPMENTLIST

## 4.1. Conducted Emission Measurement

| Item | Type | Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Test Receiver | R&S | ESR3 | 101774 | 2025.12.30 | 1 Year |
| 2. | A.M.N. | R&S | ENV432 | 101567 | 2025.06.04 | 1 Year |
| 3. | L.I.S.N. | Kyoritsu | KNW-407 | 8-1370-9 | 2026.01.29 | 1 Year |
| 4. | Pulse Limiter | R&S | ESH3-Z2 | 100354 | 2025.12.04 | 1 Year |
| 5. | Digital Thermo-Hygro Meter | iMax | HTC-1 | No.8 S/R | 2025.04.09 | 1 Year |
| 6. | Signal Cable | Yeida | RG/58AU | CE-08 | 2025.09.03 | 1 Year |
| 7. | Test Software | Audix | e3 | V9 18621a | N.C.R. | N.C.R. |

## 4.2. Radiated Emission Measurement

| Item | Type | Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Spectrum Analyzer | Agilent | N9010A-526 | MY53400071 | 2025.08.07 | 1 Year |
| 2. | Test Receiver | R&S | ESR3 | 101774 | 2025.12.30 | 1 Year |
| 3. | Amplifier | HP | 8447D | 2944A06305 | 2025.12.11 | 1 Year |
| 4. | Microwave Preamplifier | HP | 8449B | 3008A01284 | 2025.07.07 | 1 Year |
| 5. | Microwave Amplifier | Keysight | 83051A | MY56480113 | 2025.09.05 | 1 Year |
| 6. | Loop antenna | TESEQ | HLA 6121 | 60478 | 2025.06.05 | 1 Year |
| 7. | Bilog Antenna | TESEQ | CBL6112D | 33821 | 2026.02.06 | 1 Year |
| 8. | Horn Antenna | COM-POWER | AH-840 | 101092 | 2026.01.08 | 1 Year |
| 9. | Horn Antenna | EMCO | 3115 | 9112-3775 | 2025.05.06 | 1 Year |
| 10. | Notch Filter | K&L Microwave | 7NSL10-2441.5/E13 0.5-O/O | 1 | 2025.04.10 | 1 Year |
| 11. | High-Pass Filter | Microwave | H3G018G1 | 484796 | 2025.04.10 | 1 Year |
| 12. | Coaxial Cable | MIYAZAKI | 5D2W | RE-11 | 2026.01.02 | 1 Year |
| 13. | Coaxial Cable | HUBER+SUHNER | SUCOFLEX 106 | RE-14 | 2025.12.17 | 1 Year |
| 14. | Coaxial Cable | HUBER+SUHNER | SUCOFLEX 102 | RE-30 | 2025.08.19 | 1 Year |
| 15. | Digital Thermo-Hygro Meter | iMax | HTC-1 | No.1 3m A/C | 2025.04.09 | 1 Year |
| 16. | Test Software | Audix | e3 | V9 18621a | N.C.R. | N.C.R. |

## 4.3. RF Conducted Measurement

| Item | Type | Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Spectrum Analyzer | Keysight | N9010B | MY59071380 | 2025.03.28 | 1 Year |
| 2. | Power Meter | Anritsu | ML2495A | 2127005 | 2025.11.12 | 1 Year |
| 3. | Power Sensor | Anritsu | MA2411B | 1911360 | 2025.11.18 | 1 Year |
| 4. | Digital Thermo-Hygro Meter | iMax | HTC-1 | RF-03 | 2025.04.09 | 1 Year |


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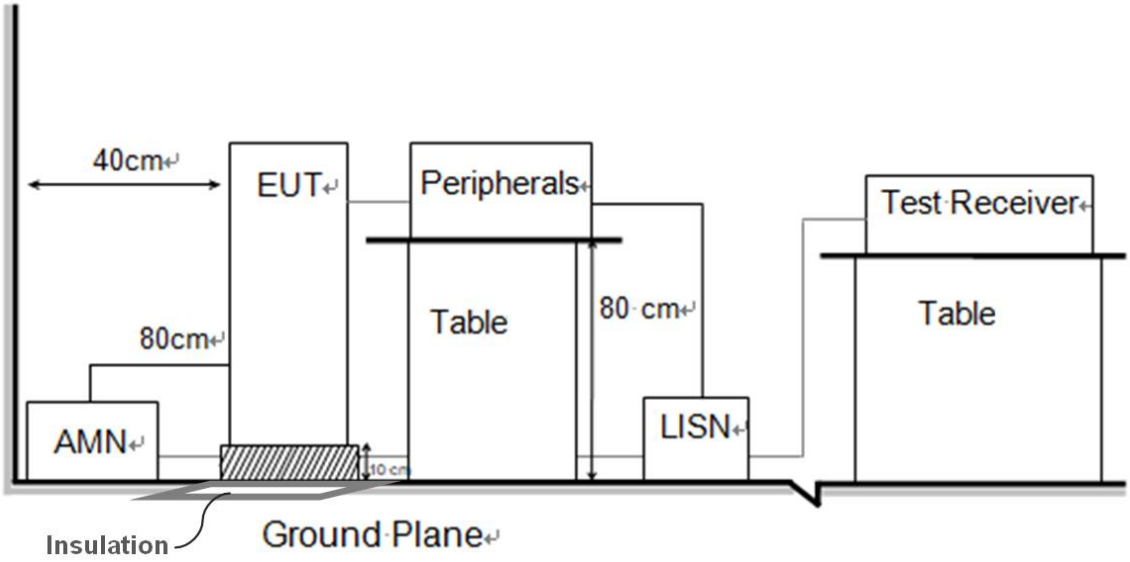
# 5. CONDUCTED EMISSION

## 5.1. Block Diagram of Test Setup

5.1.1. Block Diagram of EUT

Indicated as section 3.10

5.1.2. Shielded Room Setup Diagram




## 5.2. Conducted Emission Limit

| Frequency | Conducted Limit | |
|---|---|---|
| | Quasi-Peak Level | Average Level |
| 150kHz ~ 500kHz | 66 ~ 56 dBμV | 56 ~ 46 dBμV |
| 500kHz ~ 5MHz | 56 dBμV | 46 dBμV |
| 5MHz ~ 30MHz | 60 dBμV | 50 dBμV |

Remark1.: If the average limit is met when using a Quasi-Peak detector, the measurement using the average detector is not required.

2.: The lower limit applies to the band edges.



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## 5.3. Test Procedure

5.3.1. To set up the EUT as indicated in ANSI C63.10. The EUT was placed on the table which has 10 cm height to the ground and 40 cm distance to the conducting wall.

5.3.2. Power supplier of the EUT was connected to the AC mains through an Artificial Mains Network (A.M.N.).

5.3.3. The AC power supplies to all peripheral devices must be provided through line impedance stabilization network (L.I.S.N.)

5.3.4. Checking frequency range from 150kHz to 30 MHz and record the emission which does not have 20 dB below limit.

## 5.4. Test Results

Please refer to Appendix A.



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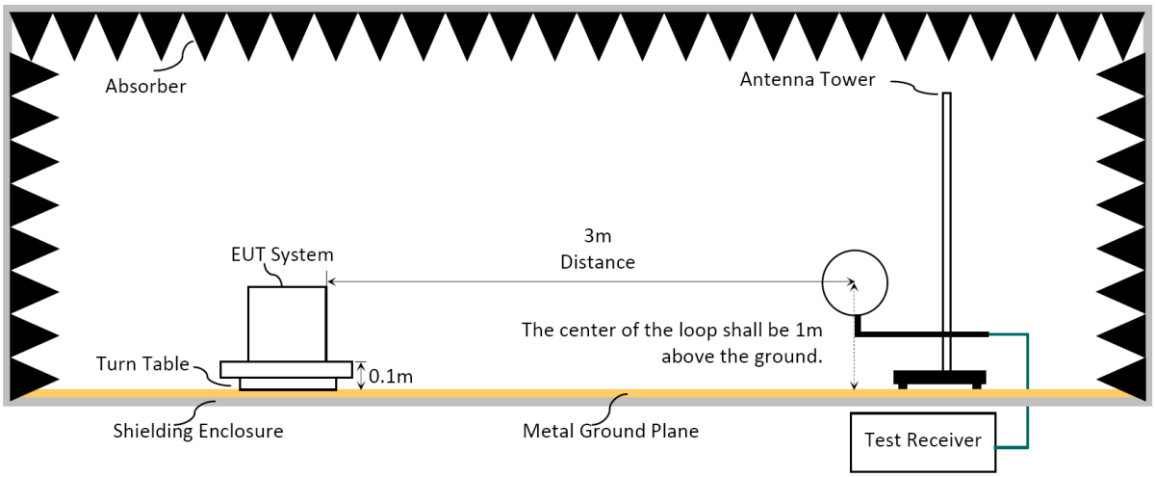
# 6. RADIATED EMISSION

## 6.1. Block Diagram of Test Setup

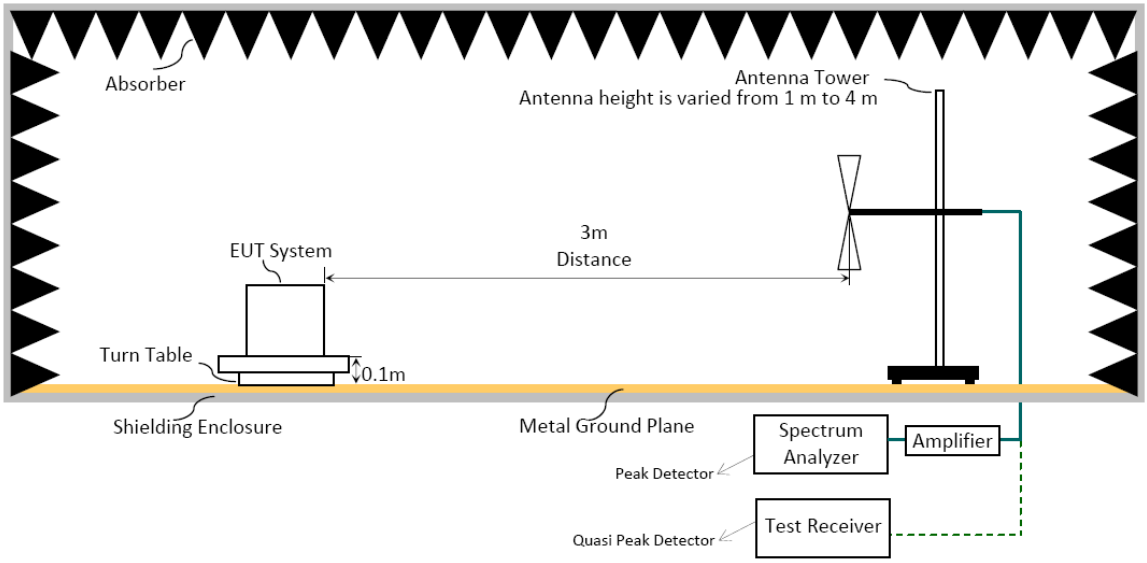
### 6.1.1. Block Diagram of EUT

Indicated as section 3.10

### 6.1.2. Setup Diagram for 9kHz-30MHz




### 6.1.3. Setup Diagram for 30-1000MHz





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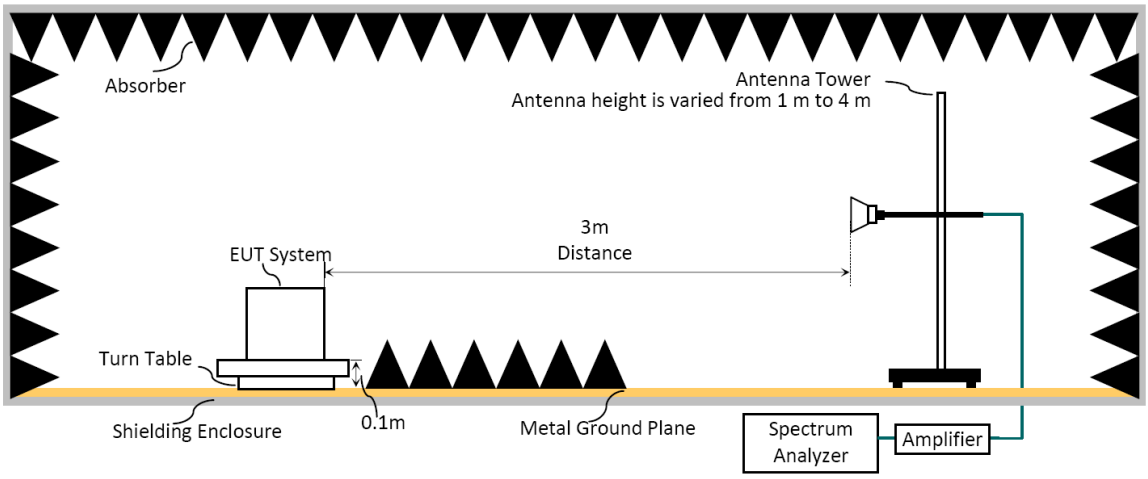
6.1.4. Setup Diagram for above 1GHz




## 6.2. Radiated Emission Limits

In any 100kHz bandwidth outside the frequency band, the radio frequency power produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205/RSS-Gen Section 8.10 table 6, must also comply with the radiated emission limits specified as below.

| Frequency (MHz) | Distance(m) | Limits | |
|---|---|---|---|
| | | dBμV/m | μV/m |
| 0.009 - 0.490 | 300 | 67.6-20 log f(kHz) | 2400/f kHz |
| 0.490 - 1.705 | 30 | 87.6-20 log f(kHz) | 24000/f kHz |
| 1.705 - 30 | 30 | 29.5 | 30 |
| 30 - 88 | 3 | 40.0 | 100 |
| 88- 216 | 3 | 43.5 | 150 |
| 216- 960 | 3 | 46.0 | 200 |
| Above 960 | 3 | 54.0 | 500 |
| Above 1000 | 3 | 74.0 dBμV/m (Peak)<br>54.0 dBμV/m (Average) | |

Remark：(1) dBμV/m = 20 log (μV/m)
(2) The tighter limit applies to the edge between two frequency bands.
(3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
(4) Fundamental and emission fall within operation band are exempted from this section.
(5) Pursuant to ANSI C63.10: 6.6.4.3, if the maximized peak measured value complies with the average limit, then it is unnecessary to perform an average measurement.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## 6.3. Test Procedure

**Frequency Range 9kHz~30MHz:**
The EUT setup on the turntable which has 0.1m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level.
In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2020 & ANSI C63.10-2020 + Cor.1-2023regulation.

(1) RBW = 9kHz with peak and average detector.

(2) Detector: average and peak (9kHz-490kHz)
Q.P. (490kHz-30MHz)

**Frequency Range 30MHz ~ 25GHz:**
The EUT setup on the turn table which has 0.1m height to the ground. The turn table rotated 360 degrees and antenna varied from 1 m to 4 m to find the maximum emission level. Both horizontal and vertical polarization are required. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2020 & ANSI C63.10-2020 + Cor.1-2023regulation.

**Frequency below 1GHz:**
Spectrum Analyzer is used for pre-testing with following setting:

(1)RBW = 120KHz

(2)VBW ≥ 3 x RBW.

(3)Detector = Peak.

(4)Sweep time = auto.

(5)Trace mode = max hold.

(6)Allow sweeps to continue until the trace stabilizes.

Note 1: When peak-detected value is lower than limit that the measurement using the Q.P. detector is not required, otherwise using Q.P. for final measurement.

Note 2: When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds.

**Frequency above 1GHz to 10th harmonic(up to 25 GHz):**
**Peak Detector:**

(1)RBW = 1MHz

(2)VBW ≥ 3 x RBW.

(3)Detector = Peak.

(4)Sweep time = auto.

(5)Trace mode = max hold.

(6)Allow sweeps to continue until the trace stabilizes.

Note: When peak-detected value is lower than limit that the measurement using the average detector is not required, otherwise using average detector for final measurement.


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**Average Detector:**
☑**Option 1:**
(1)RBW = 1MHz
(2)VBW ≥ 1/ T. (Duty Cycle < 98%, when duty cycle presented in section 3.7)

| Modulation Type | VBW Setting (VBW ≥ 1/ T) |
|---|---|
| BLE (1Mbps) | 2.7kHz |
| BLE (2Mbps) | 5.6kHz |

(3)VBW = 10Hz (Duty Cycle ≥ 98%, when duty cycle presented in section 3.7)
(4)Sweep time = auto.
(5)Trace mode = max hold.
(6)Allow sweeps to continue until the trace stabilizes.

☐**Option 2:**
Average Emission Level= Peak Emission Level+ D.C.C.F.

## 6.4. Measurement Result Explanation

☑Peak Emission Level(dBμV/m)=Antenna Factor(dB/m) + Cable Loss (dB)– Preamp Gain (dB)+ Reading(dBμV).
☑Average Emission Level(dBμV/m)= Antenna Factor(dB/m) + Cable Loss (dB)– Preamp Gain (dB)+ Reading(dBμV).
☐Average Emission Level(dBμV/m)= Peak Emission Level(dBμV/m)+ DCCF(dB)
Duty Cycle Correction Factor (DCCF)(dB)= 20log($TX_{on}/TX_{on+off}$) presented in section 3.7.
☐ERP(dBm)= Peak Emission Level(dBμV/m) -95.2dB-2.14dB

## 6.5. Test Results

Please refer to Appendix A.


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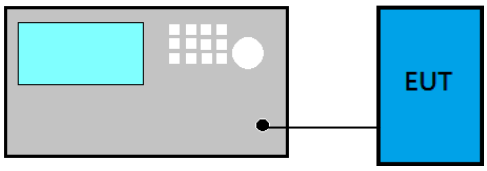
# 7. DTS/OCCUPIED BANDWIDTH

## 7.1. Block Diagram of Test Setup




## 7.2. Specification Limits

The minimum bandwidth shall be at least 500kHz.

## 7.3. Test Procedure

Following measurement procedure is reference to ANSI C63.10-2020 &
ANSI C63.10-2020 + COR.1-2023:

**For DTS Bandwidth**

(1) Set RBW shall be in the range of 1% to 5% of the OBW, but not less than 100kHz.
(2) Set the video bandwidth (VBW) ≥ 3 × RBW.
(3) Detector = Peak.
(4) Trace mode = max hold.
(5) Sweep = auto couple.
(6) Allow the trace to stabilize.
(7) Setting channel bandwidth function x to -6dB power to record the final bandwidth..

**For 99% Occupied Bandwidth**

(1) Set Span range 1.5~5 times the OBW
(2) Set RBW close to1% to 5% of OBW.
(3) Set VBW≥3xRBW.
(4) Detector = Peak.
(5) Trace mode = Max hold
(6) Sweep = Auto couple.
(7) Allow the trace to stabilize.

## 7.4. Test Results

Please refer to Appendix A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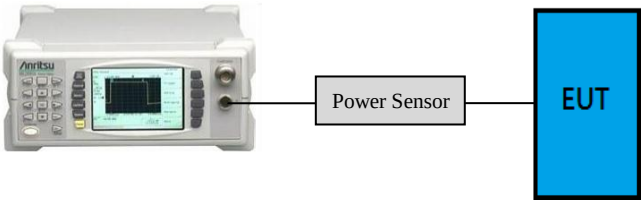
# 8. MAXIMUM PEAK OUTPUT POWER

## 8.1. Block Diagram of Test Setup




## 8.2. Specification Limits

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5MHz is : 1Watt. (30dBm), and E.I.R.P.: 4Watt (36dBm)



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## 8.3. Test Procedure

Following measurement procedure is reference to ANSI C63.10-2020 & ANSI C63.10-2020 + COR.1-2023:

☑ **PKPM1 Peak power meter method:**

EUT is connected to power sensor and record the maximum output power.

☐ **Maximum peak conducted output power method:**

(1) Set the RBW ≥ DTS bandwidth
(2) Set VBW ≥ 3 × RBW
(3) Set span ≥ 3 × RBW.
(4) Sweep time = auto couple
(5) Detector = peak.
(6) Trace mode = max hold.
(7) Allow trace to fully stabilize.
(8) Use peak marker function to determine the peak amplitude level.

☑ **Method AVGPM (Measurement using an RF average power meter):**

EUT is connected to power sensor and record the maximum average output power and duty cycle factor is added when duty cycle presented in section 3.7 is< 98%.

☐ **Method AVGSA-2 (Spectrum channel power)**

(1) Set span to at least 1.5 times the OBW
(2) Set RBW = 1 -5%of OBW
(3) Set the video bandwidth (VBW) ≥ 3 × RBW.
(4) Detector = RMS.
(5) Trace mode = trace average at least 100 traces
(6) Sweep = auto couple.
(7) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges.
(8) Duty cycle factor is added when duty cycle presented in section 3.7 is < 98%.

## 8.4. Test Results

Please refer to Appendix A



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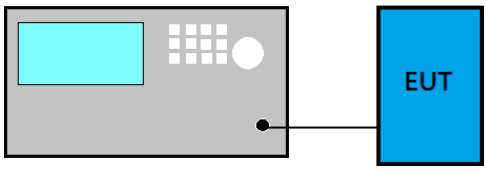
# 9. EMISSION LIMITATIONS

## 9.1. Block Diagram of Test Setup




## 9.2. Specification Limits

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, that the required attenuation shall be 30 dB instead of 20 dB.

Attenuation below the general limits specified in Section 15.209(a)/RSS-Gen Section 8.9 table 4is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a)/RSS-Gen Section 8.10 table 6, must also comply with the radiated emission limits specified in Section 15.209(a)/RSS-Gen Section 8.9 table 4 (See Section 15.205(c)).

## 9.3. Test Procedure

Following measurement procedure is reference to ANSI C63.10-2020 & ANSI C63.10-2020 + Cor.1-2023:

**☑Reference Level**

(1) Set analyzer center frequency to DTS channel center frequency.
(2) Set the span to 1.5 times the DTS bandwidth.
(3) Set the RBW to: 100 kHz.
(4) Set the VBW ≥ 3 × RBW.
(5) Detector = peak.
(6) Sweep time = auto couple.
(7) Trace mode = max hold.
(8) Allow trace to fully stabilize to find the max PSD as reference level.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**☑Emission Level Measurement**

(1) Set analyzer center frequency to DTS channel center frequency.
(2) Set the span to 1.5 times the DTS bandwidth.
(3) Set the RBW to: 100 kHz.
(4) Set the VBW ≥ 3 × RBW.
(5) Detector = peak.
(6) Sweep time = auto couple.
(7) Trace mode = max hold.
(8) Allow trace to fully stabilize to find the max level.

## 9.4. Test Results

Please refer to Appendix A


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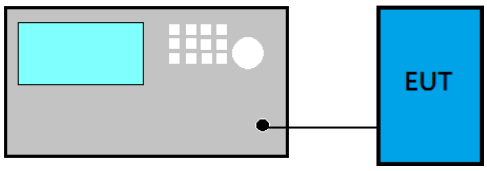
# 10. POWER SPECTRAL DENSITY

## 10.1. Block Diagram of Test Setup




## 10.2. Specification Limits

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band.

## 10.3. Test Procedure

Following measurement procedure is reference to ANSI C63.10-2020 & ANSI C63.10-2020 + Cor.1-2023:

**☑Method PKPSD (peak PSD)**

(1) Set analyzer center frequency to DTS channel center frequency.
(2) Set the span to 1.5 times the DTS bandwidth.
(3) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
(4) Set the VBW ≥ 3 × RBW.
(5) Detector = peak.
(6) Sweep time = auto couple.
(7) Trace mode = max hold.
(8) Allow trace to fully stabilize.
(9) Use the peak marker function to determine the maximum amplitude level.
(10) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

**☐Method AVGPSD-2**

(1) Using peak PSD procedure step 1 to step 4.
(2) Detector= RMS detector
(3) Sweep time = auto couple
(4) Trace mode = trace averaging over a minimum of 100 traces
(5) Use the peak marker function to determine the maximum amplitude level.
(6) Duty cycle factor is added when duty cycle presented in section 3.7< 98%.
(7) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

## 10.4. Test Results

Please refer to Appendix A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# 11. DEVIATION TO TEST SPECIFICATIONS

【NONE】



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# APPENDIX A

## TEST DATA AND PLOTS

(Model: YY7870E)



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# APPENDIX B

## TEST PHOTOGRAPHS

(Model: YY7870E)



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