

RADIO PERFORMANCE TEST REPORT

Test Report No. : OT-264-RWD-077
Reception No. : 2509002935
Applicant : MPIA CO., LTD.
Address : 203-701, 388 Songnae-daero, Wonmi-gu, Bucheon-si, Gyeonggi-do, South Korea
Manufacturer : MPIA CO., LTD.
Address : 203-701, 388 Songnae-daero, Wonmi-gu, Bucheon-si, Gyeonggi-do, South Korea
Type of Equipment : Temperature Detection Sensor
FCC ID. : 2BTDM-MWSF-100
Model Name : MWSF-100
Multiple Model Name : N/A
Serial number : N/A
Total page of Report : 21 pages (including this page)
Date of Incoming : March 29, 2026
Date of issue : April 29, 2026

SUMMARY

The equipment complies with the regulation; **FCC PART 15 SUBPART C Section 15.247**

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

This test report is not associated with the accreditation granted by the Korean Laboratory Accreditation Scheme (KOLAS).





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※ Please refer to the Annex section for All test plots

Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-264-RWD-077	April 29, 2026	Initial Release	All

1. VERIFICATION OF COMPLIANCE

Applicant : MPIA CO., LTD.
 Address : 203-701, 388 Songnae-daero, Wonmi-gu, Bucheon-si, Gyeonggi-do, South Korea
 Contact Person : Jang chanson / Principal research engineer
 Telephone No. : +82-32-666-8191
 FCC ID : 2BTDM-MWSF-100
 Model Name : MWSF-100
 Brand Name : -
 Serial Number : N/A
 Date : April 29, 2026

EQUIPMENT CLASS	DTS – DIGITAL TRNSMISSION SYSTEM
E.U.T. DESCRIPTION	Temperature Detection Sensor
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2020
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART C Section 15.247 KDB 558074 D01 15.247 Meas Guidance v05r02
Modifications on the Equipment to Achieve Compliance	None
Final Test was Conducted On	3 m, Semi Anechoic Chamber

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

2. TEST SUMMARY

2.1 Test items and results

SECTION	TEST ITEMS	RESULTS
15.247 (a) (2)	Minimum 6 dB Bandwidth	Met the Limit / PASS
15.247 (b) (3)	Maximum Conducted(average) Output Power	Met the Limit / PASS
15.247 (d)	100 kHz Bandwidth Outside the Frequency Band	Met the Limit / PASS
15.247 (d)	Radiated Emission which fall in the Restricted Band	Met the Limit / PASS
15.247 (e)	Average Power Spectral Density	Met the Limit / PASS
15.209	Radiated Emission Limits	Met the Limit / PASS
15.207	Conducted Limits	N/A (See Note)
15.203	Antenna Requirement	Met requirement / PASS

Note: This test is not performed because the EUT is operated by DC Power.

2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.3 Related Submittal(s) / Grant(s)

Original submittal only

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in FCC PART 15 SUBPART C Section 15.247.

2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10: 2020. Radiated testing was performed at a distance of 3 m from EUT to the antenna.

2.6 Test Facility

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025.

The Electromagnetic compatibility measurement facilities are located at 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea.

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-20122/ C-14617/ G-10666/ T-11842

ISED (Innovation, Science and Economic Development Canada) – Registration No. Site# 3736A-3

KOLAS (Korea Laboratory Accreditation Scheme) - Accreditation NO. KT085

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

3. GENERAL INFORMATION

3.1 Product Description

The MPIA CO., LTD., Model MWSF-100 (referred to as the EUT in this report) is a Temperature Detection Sensor. The product specification described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	Temperature Detection Sensor
Temperature Range	-20 °C ~ +60 °C
OPERATING FREQUENCY	920.7 MHz
MODULATION TYPE	GFSK
RF OUTPUT POWER	-2.01 dBm
ANTENNA TYPE	Wire Antenna
ANTENNA GAIN	-7.238 dBi
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	26 MHz

3.2 Alternative type(s)/model(s); also covered by this test report.

-. None

4. EUT MODIFICATIONS

-. None

5. SYSTEM TEST CONFIGURATION

5.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
Main Board	MPIA CO., LTD.	-	N/A

5.2 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

Model	Manufacturer	Description	Connected to
MWSF-100	MPIA CO., LTD.	Temperature Detection Sensor (EUT)	-
GP-4303D	LG Precision Co.,Ltd	DC Power Supply	EUT

5.3 Mode of operation during the test

For the testing, software used to control the EUT for staying in continuous transmitting is programmed.

For final testing, the EUT was set at 920.7 MHz to get a maximum emission levels from the EUT. The EUT was moved throughout the XY, XZ, and YZ planes and the worst case is “XZ” axis, but the worst data was recorded in this report.

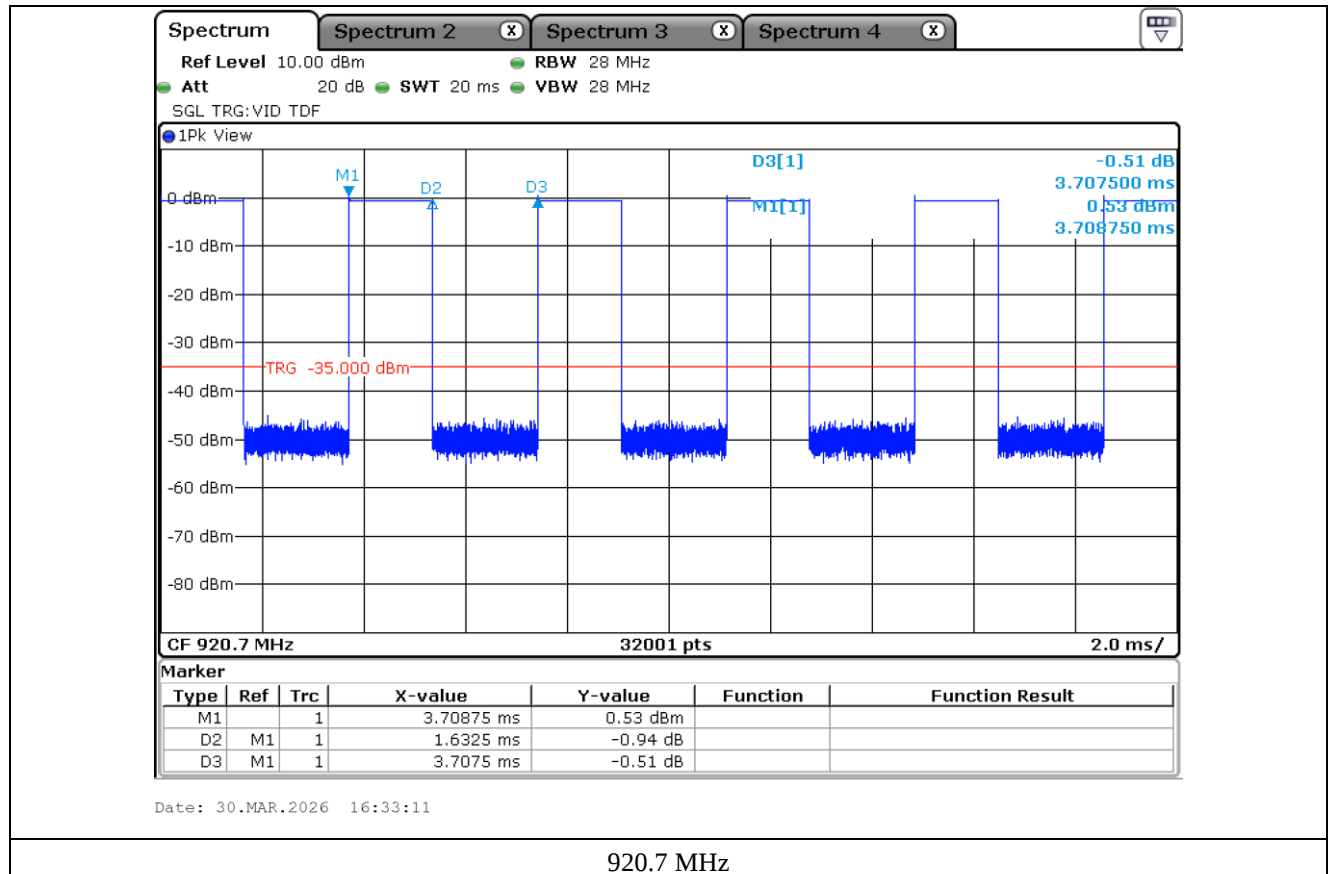
-. Duty Cycle

Mode	Tx On Time [ms]	Tx Off Time [ms]	Duty Cycle [%]	Correction Factor [dB]
900 MHz	1.6325	3.7075	44.03	3.56

Note – Duty Cycle : (Tx On Time / (Tx On Time + Tx Off Time)) * 100

Correction Factor : 10 * Log(1 / (Duty Cycle / 100))

-. Test Plot



-. Channel List

Channel	Frequency [MHz]
1	920.7

5.4 Configuration of Test System

Line Conducted Test: It is not need to test this requirement, because the EUT shall be operated by DC Power.

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2020 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meter Semi Anechoic Chamber.

The turntable was rotated through 360 degrees and the EUT was tested by positioned three orthogonal planes to obtain the highest reading on the field strength meter. Once maximum reading was determined, the search antenna was raised and lowered in both vertical and horizontal polarization.

5.5 Antenna Requirement

For intentional device, according to section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Construction:

The antenna of the EUT is Wire Antenna on the main board in the EUT, so no consideration of replacement by the user.

6. PRELIMINARY TEST

6.1 AC Power line Conducted Emissions Tests

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
It is not need to test this requirement, because the power of the EUT is supplied by DC Power.	

6.2 General Radiated Emissions Tests

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
Transmitting Mode	X

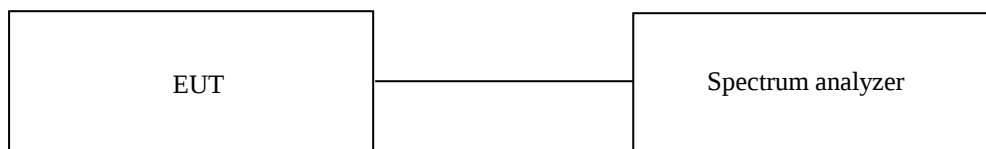
7. MINIMUM 6 dB BANDWIDTH

7.1 Operating environment

Temperature : 24 °C
Relative humidity : 53 % R.H.

7.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, and peak detection was used. The 6 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 6 dB.



7.3 Test date

March 29, 2026 ~ April 10, 2026

7.4 Test data

-. Test Result : Pass

CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)	LIMIT (MHz)	Margin (MHz)
-	920.7	0.602	0.50	0.10

Remark. Margin = Measured Value - Limit

8. MAXIMUM CONDUCTED (AVERAGE) OUTPUT POWER

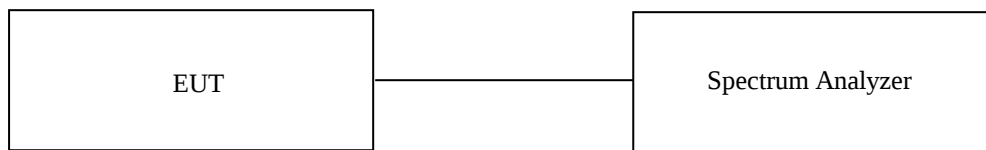
8.1 Operating environment

Temperature : 24 °C
Relative humidity : 53 % R.H.

8.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer.

The resolution bandwidth is set to $\geq$ DTS Bandwidth, the video bandwidth is set to 3 times the resolution bandwidth.



8.3 Test date

March 29, 2026 ~ April 10, 2026

8.4 Test data

-. Test Result : Pass
-. Duty Cycle : 44.03 %

CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Duty Factor(dB)	Total Value (dBm)	LIMIT (dBm)	MARGIN (dB)
-	920.7	-5.57	3.56	-2.01	30.00	32.01

Remark : Margin = Limit – Total Value (=Measured Value + Cable Loss + Correction Factor) + Duty Factor)

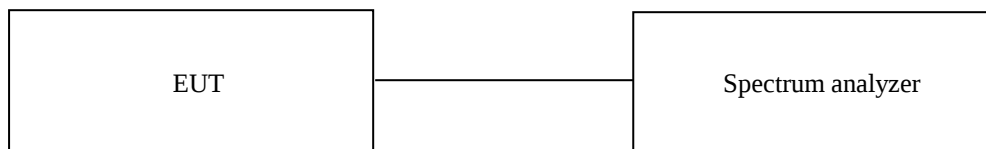
9. 100 kHz BANDWIDTH OUTSIDE THE FREQUENCY BAND

9.1 Operating environment

Temperature : 24 °C
Relative humidity : 53 % R.H.

9.2 Test set-up for conducted measurement

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, the video bandwidth is set to 3 times the resolution bandwidth and peak detection was used.



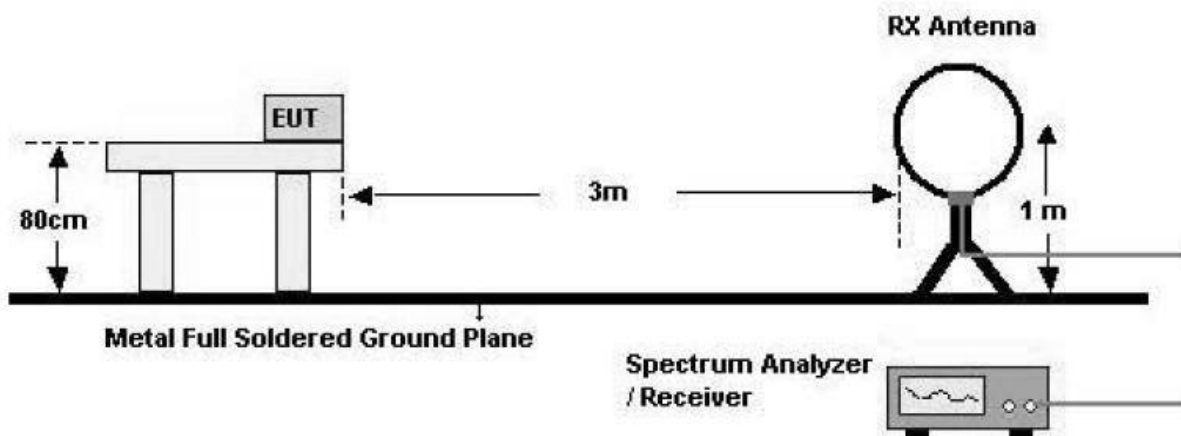
9.3 Test set-up for radiated measurement

The radiated emissions measurements were performed on the 3 m semi anechoic chamber. The EUT was placed on turntable approximately 1.5 m above the ground plane.

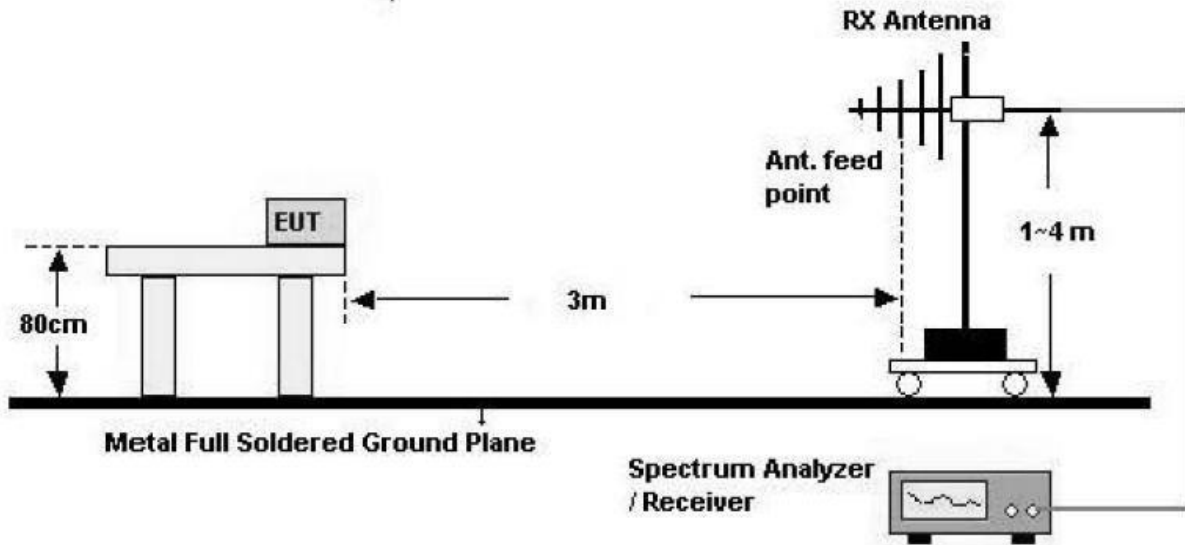
The frequency spectrum from 30 MHz to 10 GHz was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.

- Test Configuration

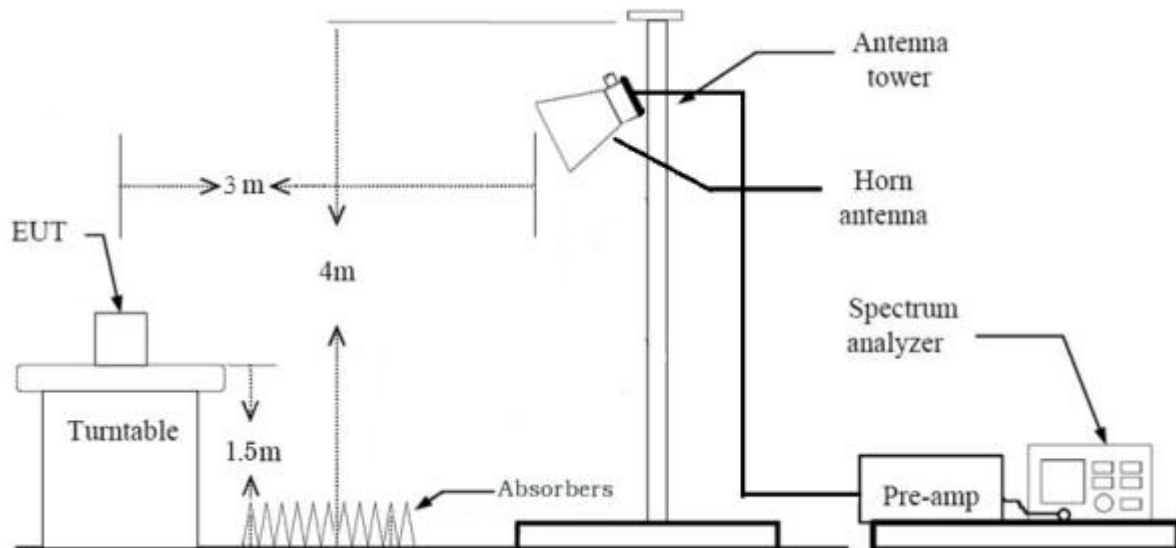
1. Below 30 MHz



2. 30 MHz - 1 GHz



3. Above 1 GHz



9.4 Test Date

March 29, 2026 ~ April 10, 2026

9.5 Test data

For Test data for Annex. Section

9.6 Test data for radiated emission

9.6.1 Spurious & Harmonic Radiated Emission

- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- Video bandwidth : 3 MHz for Peak and Average Mode
- Measurement distance : 3 m
- Duty Cycle : 44.03 %
- Result : PASSED

Channel	Frequency (MHz)	Reading (dBuV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP Gain (dB)	Duty (dB)	Total (dBuV/m)	Limits (dBuV/m)	Margin (dB)
-	1 841.400	53.45	Peak	H	25.45	6.78	42.88	-	42.80	74.00	31.20
		42.46	Average	H	25.45	6.78	42.88	3.56	35.37	54.00	18.63
		50.23	Peak	V	25.45	6.78	42.88	-	39.58	74.00	34.42
		40.66	Average	V	25.45	6.78	42.88	3.56	33.57	54.00	20.43
	2 762.100	50.42	Peak	H	28.15	8.07	42.68	-	43.96	74.00	30.04
		40.98	Average	H	28.15	8.07	42.68	3.56	38.08	54.00	15.92
		50.02	Peak	V	28.15	8.07	42.68	-	43.56	74.00	30.44
		40.29	Average	V	28.15	8.07	42.68	3.56	37.39	54.00	16.61
	3 682.800	49.44	Peak	H	29.50	9.87	42.38	-	46.43	74.00	27.57
		39.33	Average	H	29.50	9.87	42.38	3.56	39.88	54.00	14.12
		48.72	Peak	V	29.50	9.87	42.38	-	45.71	74.00	28.29
		39.17	Average	V	29.50	9.87	42.38	3.56	39.72	54.00	14.28

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dBuV/m) - Total Level (dBuV/m)

Total Level = Reading + Antenna Factor + Cable Loss - Amp Gain + Duty Factor

10. AVERAGE POWER SPECTRAL DENSITY

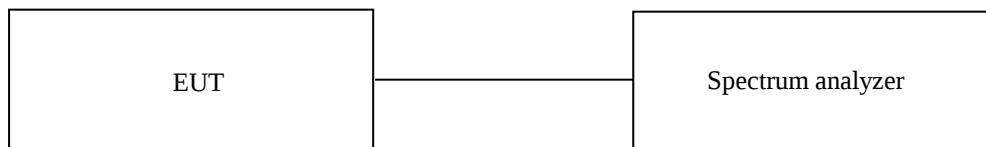
10.1 Operating environment

Temperature : 24 °C
Relative humidity : 53 % R.H.

10.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer.

The resolution bandwidth is set to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$, the video bandwidth is set to 3 times the resolution bandwidth.



10.3 Test date

March 29, 2026 ~ April 10, 2026

10.4 Test data

-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm/3kHz)	Duty Factor(dB)	Total Value (dBm/3kHz)	LIMIT (dBm/3kHz)	MARGIN (dB)
-	920.7	-14.02	3.56	-10.46	8.00	18.46

Remark : Margin = Limit – Total Value (= (Measured Value + Cable Loss + Correction Factor) + Duty Factor)

11. RADIATED EMISSION TEST

11.1 Operating environment

Temperature : 24 °C
Relative humidity : 53 % R.H.

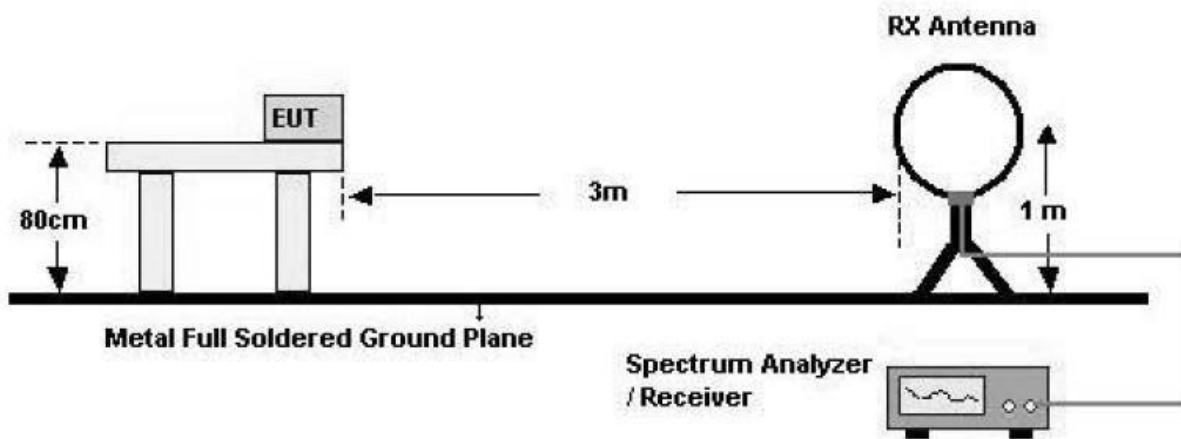
11.2 Test set-up

The radiated emissions measurements were on the 3 m semi anechoic chamber. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.

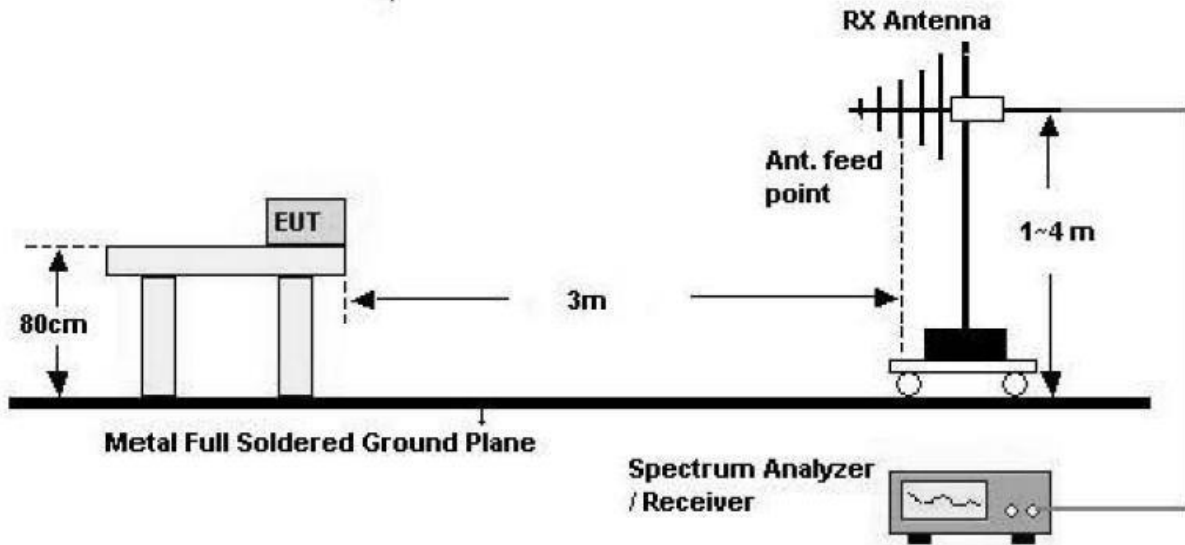
The frequency spectrum from 30 MHz to 10 GHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

- Test Configuration

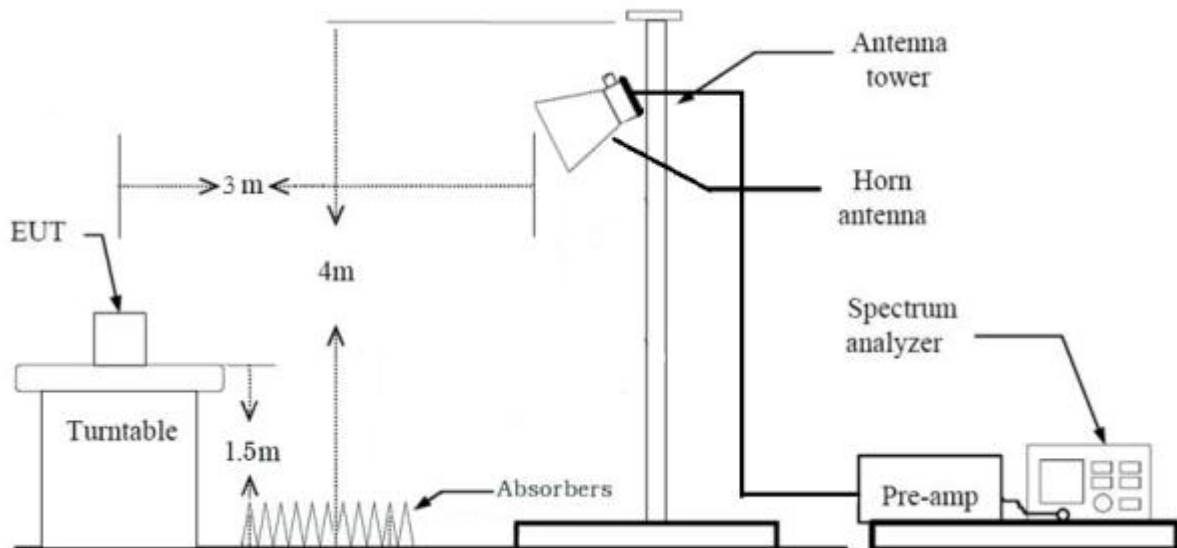
1. Below 30 MHz



2. 30 MHz - 1 GHz



3. Above 1 GHz



11.3 Test Date

March 29, 2026 ~ April 10, 2026

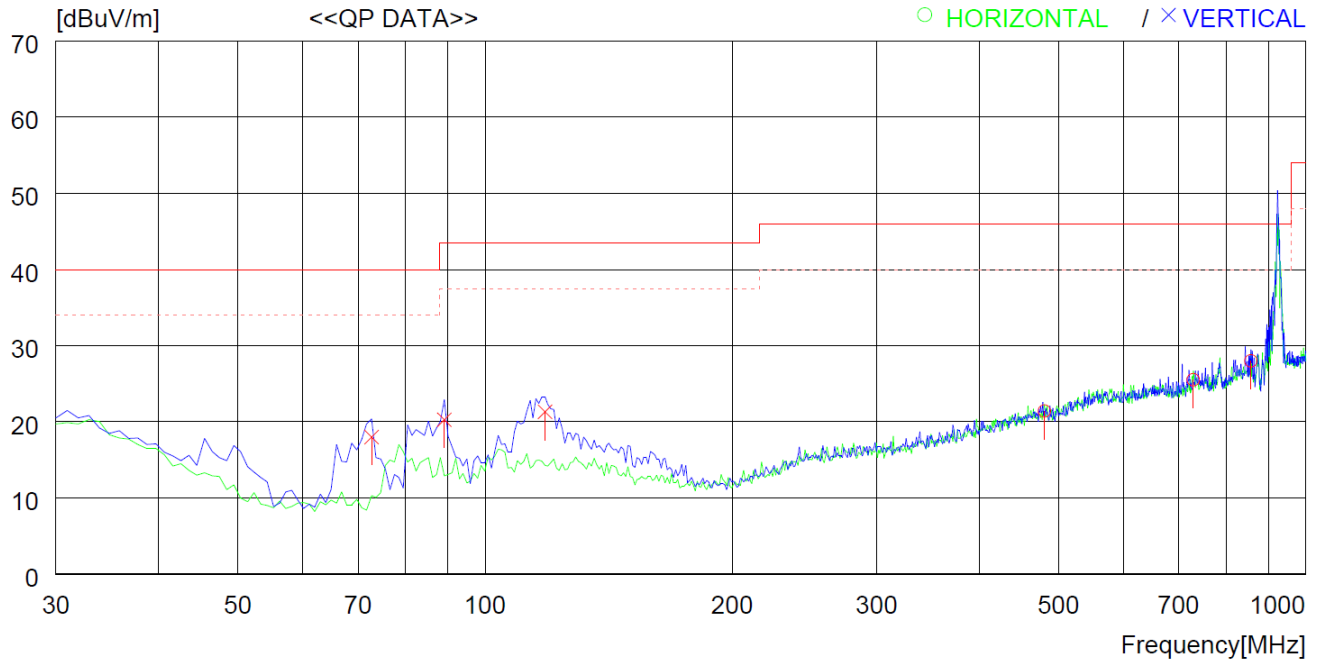
11.4 Test data for 30 MHz ~ 1 000 MHz

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Temperature Detection Sensor

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	QP	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	480.081	26.0	23.1	4.7	32.4	21.4	46.0	24.6	200	0
2	729.364	26.6	25.4	5.8	32.3	25.5	46.0	20.5	400	0
3	857.400	27.3	26.3	6.3	31.9	28.0	46.0	18.0	100	359
----- Vertical -----										
4	72.680	36.2	12.5	1.8	32.5	18.0	40.0	22.0	200	359
5	89.170	36.4	14.4	2.0	32.5	20.3	43.5	23.2	100	0
6	118.270	33.5	17.9	2.3	32.4	21.3	43.5	22.2	100	0

11.5 Test data for Below 30 MHz

- . Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- . Frequency range : 9 kHz ~ 30 MHz
- . Measurement distance : 3 m
- . Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
Emission from the EUT more than 20 dB below the limit in each frequency range.									

11.6 Test data for above 1 GHz

- . Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- . Video bandwidth : 3 MHz for Peak and Average Mode
- . Frequency range : 1 GHz ~ 10 GHz
- . Measurement distance : 3 m
- . Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
Emission from the EUT more than 20 dB below the limit in each frequency range.									

12. LIST OF TEST EQUIPMENT

Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
FSV40-N	Rohde & Schwarz	SPECTRUM ANALYZER	101457	Jan. 13, 2026 (1Y)
ESR	Rohde & Schwarz	EMI TEST RECEIVER	101470	Mar. 11, 2026 (1Y)
GP-4303D	LG Precision CO.,Ltd	DC Power Supply	5071069	Jan. 04, 2026 (1Y)
310N	Sonoma Instrument	Pre-Amplifier	312544	Mar. 11, 2026 (1Y)
SCU18	Rohde & Schwarz	Pre-Amplifier	102266	Jul. 02, 2025 (1Y)
WRCT 890/960-5/40-8SSK	Wainwright Instruments GmbH	Tunable Band Reject Filter	7	Jul. 03, 2025 (1Y)
QFA1802-26-6-S	Qualwave	6 dB Attenuator	225342	Jan. 13, 2026 (1Y)
DT3000	Innco System	Turn Table	DT3000/093	N/A
MA4000-EP	Innco System	Antenna Master	MA4000/332/27030611/L	N/A
CO3000	Innco System	Controller	CO3000/904/37211215/L	N/A
HLP-2008	TDK RF Solutions	Hybrid Antenna	131314	Mar. 21, 2025 (2Y)
FMZB 1513	Schwarzbeck	Loop Antenna	1513-235	Mar. 18, 2026 (2Y)
BBHA9120D	Schwarzbeck	Horn Antenna	9120D-1349	Jun. 27, 2025 (1Y)