

Johnson Health Tech. Co., Ltd.

TEST REPORT

Model:

JHT7161

REPORT NUMBER

250900145THC-001

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Radio Spectrum TEST REPORT

Applicant:	Johnson Health Tech. Co., Ltd. No.999, Sec. 2, Dongda Rd., Daya Dist Taichung City 428, Taiwan
Product:	Module
Model No.:	JHT7161
FCC ID:	TN7JHT7161
Test Method/ Standard:	47 CFR FCC Part 15.225
Test By:	Intertek Testing Services Taiwan Ltd., Hsinchu Laboratory No. 17, Ln. 246, Niupu S. Rd., Xiangshan Dist, Hsinchu City 300075, Taiwan



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Revision History

Report No.	Issue Date	Revision Summary
250900145THC-001	Nov. 10, 2025	Original report

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Summary of Test Data

Test Requirement	Applicable Rule (Section 15.225)	Result
Fundamental emission	15.225 (a)	Pass
Frequency Satiability	15.225 (e)	Pass
Out of band Radiated Emissions	15.225(d)	Pass
AC Power Line Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass

Note: Please note that the test results with statement of conformity, the decision rules which are based on: Safety Testing: the specification, standard or IEC Guide 115.

Other Testing: the specification, standard and not taking into account the measurement uncertainty.

1. General Information

1.1 Identification of the EUT

Product:	Module
Model No.:	JHT7161
Operating Frequency:	13.56 MHz
Rating:	DC 5V
Power Cord:	N/A
Sample receiving date:	2025/09/15
Sample condition:	Workable
Test Date(s):	2025/09/19 ~ 2025/09/22

1.2 Antenna description

Antenna Type:	PCB Antenna
Connector Type:	I-PEX
Remark:	Antenna information provided by the client.

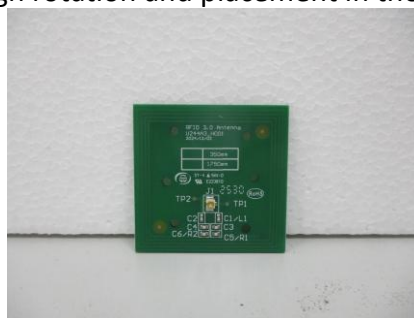
1.3 Operation mode

EUT Power on.

The signal is maximized through rotation and placement in the three orthogonal axes.



X axis



Y axis



Z axis

After verifying three axes, we found the maximum electromagnetic field was occurred at Z axis. The final test data was executed under this configuration.

1.4 Peripherals equipment

Peripherals name	Brand	Model No.	Serial No.
DC Power Supply	GW Instek	PSS-3203	N/A

2. Fundamental emission

2.1 Operating environment

Temperature:	25	°C
Relative Humidity:	75	%
Requirement & Test method	15.225 (a)	

2.2 Limit for Fundamental emission

The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 uV/m(83.99 dBuV/m) at 30 meters.

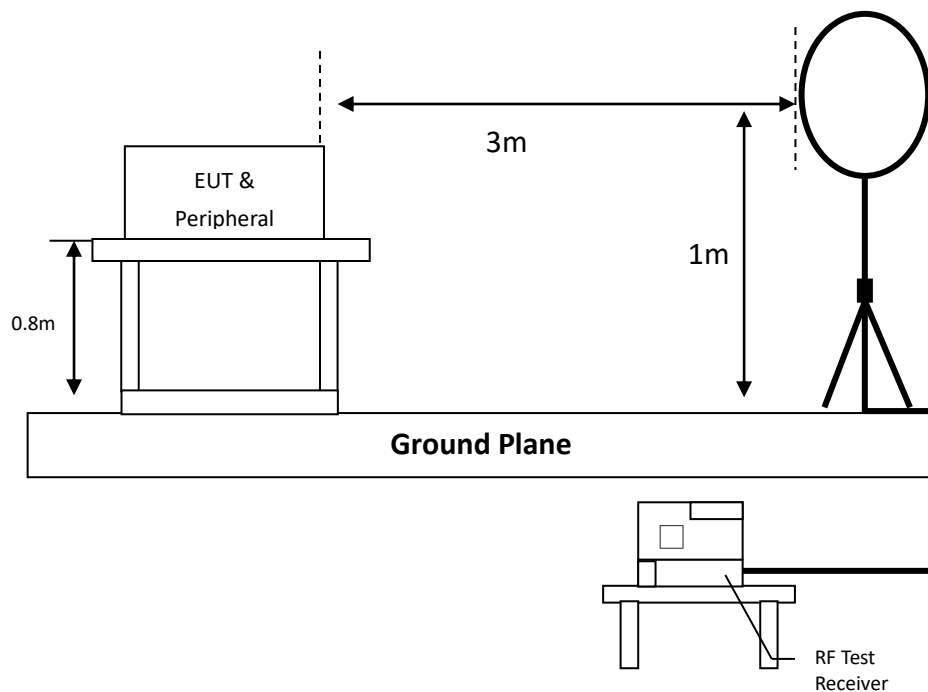
2.3 Measuring instrument setting

Spectrum analyzer settings	
Spectrum Analyzer function	Setting
Detector	QP
RBW	10 kHz
Sweep	Auto couple
Trace	Max hold
Span	900 kHz
Attenuation	Auto

2.4 Test procedure

1. Configure the EUT according to ANSI C63.10: 2020. The EUT was placed on the top of the turntable 0.8 meter above ground. The center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the companion devices. The turntable was rotated by 360 degree to find the position of the maximum emission level.
3. Set the test-receiver system to peak or CISPR quasi-peak detector with specified bandwidth under maximum hold mode.

2.5 Test diagram



2.6 Test result

Polarization	Frequency (MHz)	Spectrum Analyzer Detector	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
Perpendicular	13.56	PK	19.78	47.87	67.65	124.00	-56.35
Parallel	13.56	PK	19.78	49.04	68.82	124.00	-55.18
Ground-parallel	13.56	PK	19.78	31.85	51.63	124.00	-72.37

Remark: Corr. Factor = Antenna Factor + Cable Loss

Limit= 15848(uV/m)@30m=84 dBuV +40 dBuV (decade) = 124 dBuV/m@3m

3. Frequency Satiability

3.1 Operating environment

Temperature:	-20~50	°C
Relative Humidity:	52	%
Requirement & Test method	15.225(e)	

3.2 Limit for Frequency Satiability

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ 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.

3.3 Measuring instrument setting

Spectrum analyzer settings	
Spectrum Analyzer function	Setting
Detector	Peak
RBW	1kHz
VBW	1kHz
Sweep	Auto couple
Trace	Allow the trace to stabilize.
Span	Sufficient to see the complete emission BW
Attenuation	Auto

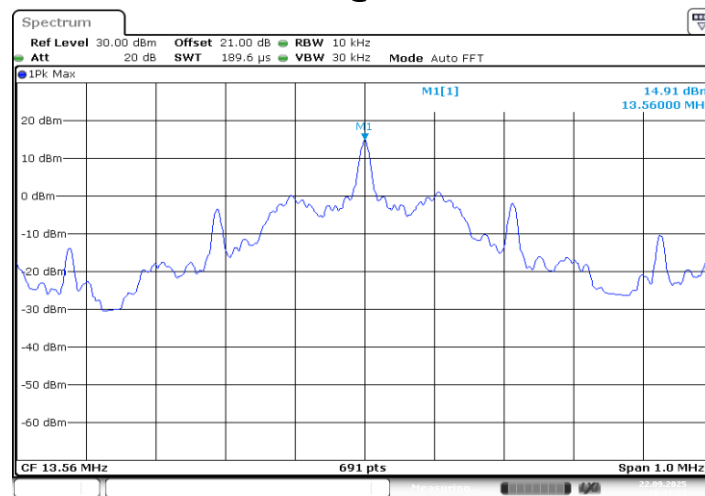
3.4 Test procedure

Turn the EUT on, and couple its output to a frequency counter or other frequency-measuring device of sufficient accuracy, considering the frequency tolerance with which the EUT shall comply.

3.5 Test result

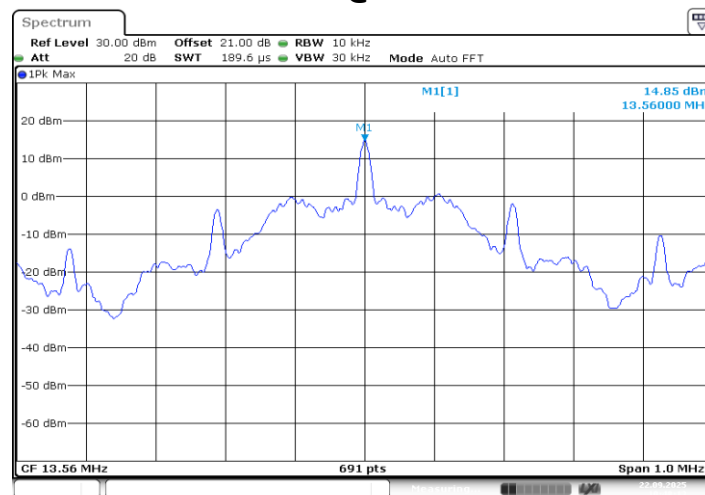
Temperature	Voltage	Freq. (MHz)	Center (MHz)	Deviation (%)	Limit (%)	Result
50°C	5	13.5600	13.5600	0.000	±0.01	Pass
40°C	5	13.5600	13.5600	0.000	±0.01	Pass
30°C	5	13.5600	13.5600	0.000	±0.01	Pass
20°C	4.25	13.5600	13.5600	0.000	±0.01	Pass
	5	13.5600	13.5600	0.000	±0.01	Pass
	5.75	13.5600	13.5600	0.000	±0.01	Pass
10°C	5	13.5600	13.5600	0.000	±0.01	Pass
0°C	5	13.5600	13.5600	0.000	±0.01	Pass
-10°C	5	13.5600	13.5600	0.000	±0.01	Pass
-20°C	5	13.5600	13.5600	0.000	±0.01	Pass

-20°C@DC 5V



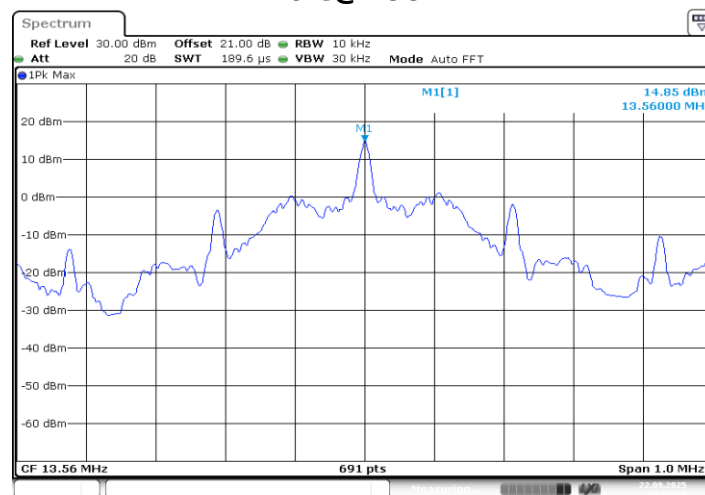
Date: 22 SEP 2025 10:41:22

-10°C@DC 5V



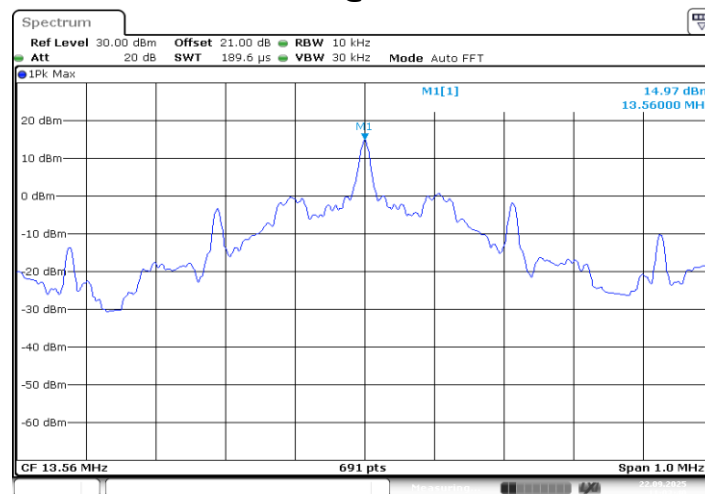
Date: 22 SEP 2025 10:48:13

0°C@DC 5V



Date: 22 SEP 2025 10:57:16

10°C@DC 5V



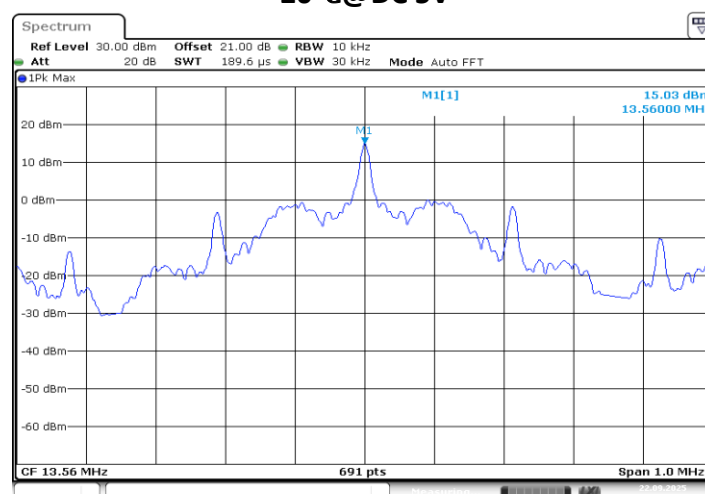
Date: 22 SEP 2025 11:03:40

20°C@DC 4.25V



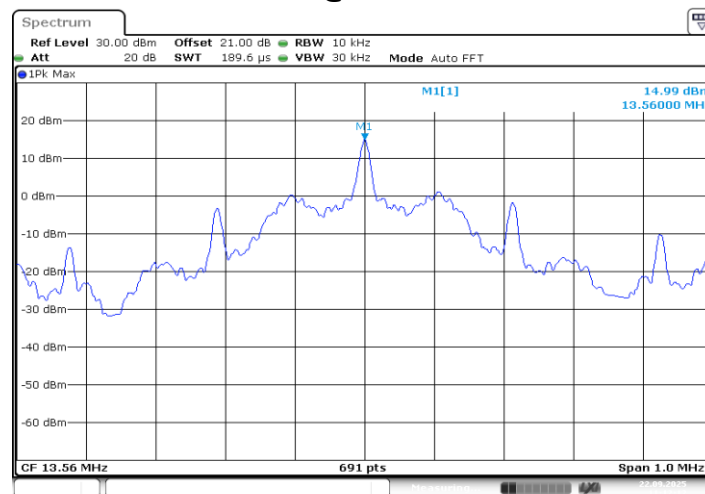
Date: 22 SEP 2025 11:11:21

20°C@DC 5V



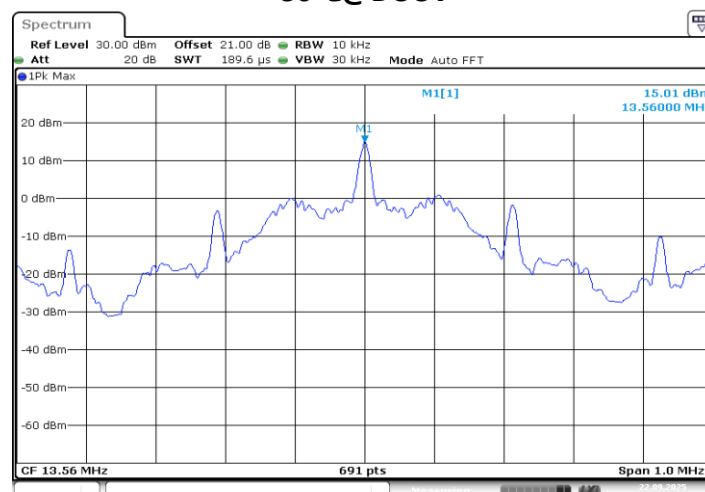
Date: 22 SEP 2025 11:11:54

20°C@DC 5.75V



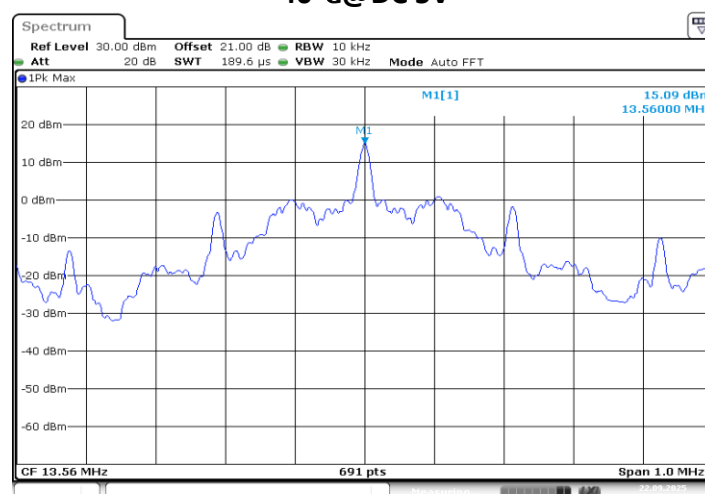
Date: 22 SEP 2025 11:12:13

30°C@DC 5V



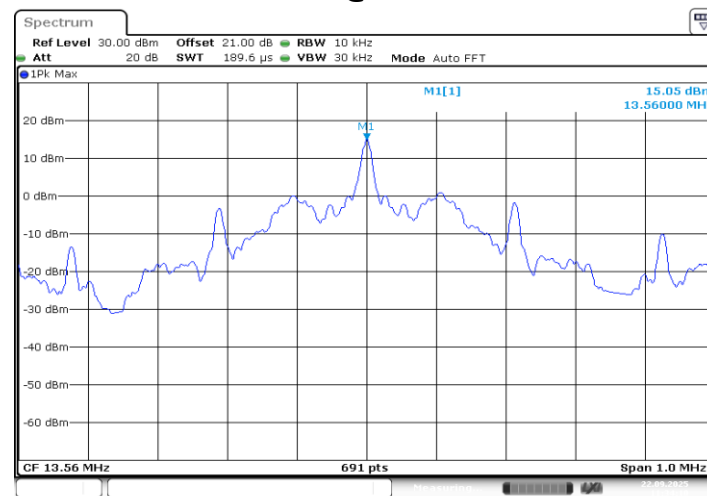
Date: 22 SEP 2025 11:19:31

40°C@DC 5V



Date: 22 SEP 2025 11:26:40

50°C@DC 5V



Date: 22 SEP 2025 11:34:11

4. Out of band Radiated Emissions

4.1 Operating environment

Temperature:	25	°C
Relative Humidity:	75	%
Requirement	15.225(d), 15.205, 15.209	

4.2 Limit for emission in restricted frequency bands (Radiated emission measurement)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	2400/F(kHz)	30
1.705~30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark:

1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

4.3 Measuring instrument setting

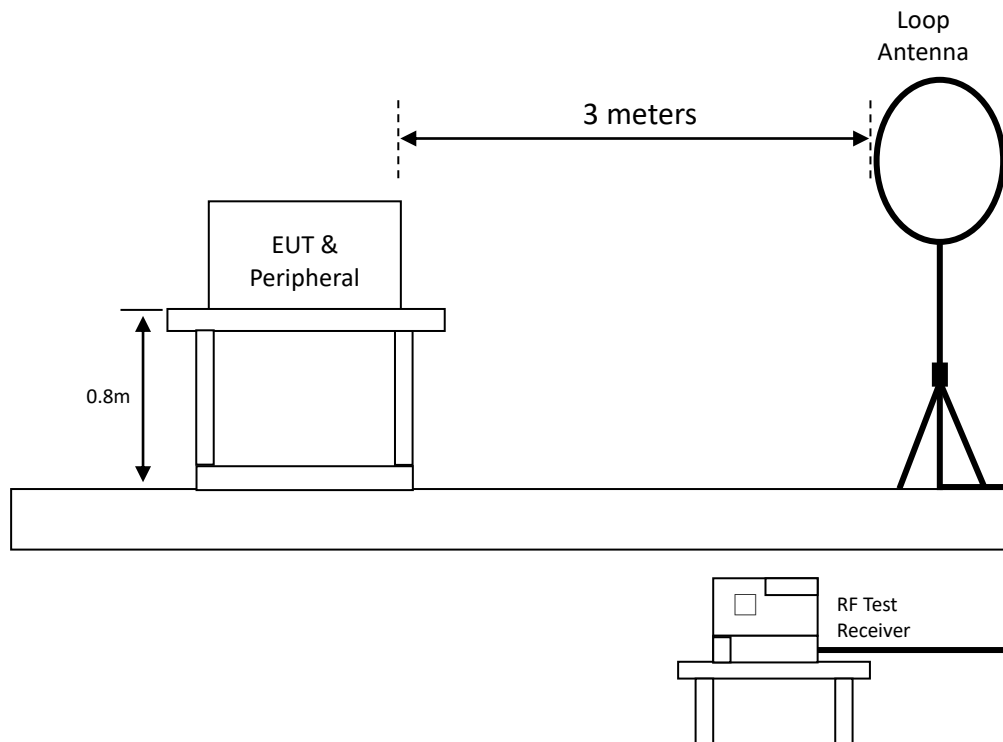
Receiver settings	
Receiver function	Setting
Detector	QP
RBW	9-150 kHz ; 200-300 Hz 0.15-30 MHz; 9-10 kHz 30-1000 MHz; 100-120 kHz
VBW	$\geq 3 \times \text{RBW}$
Sweep	Auto couple
Attenuation	Auto

4.4 Test procedure

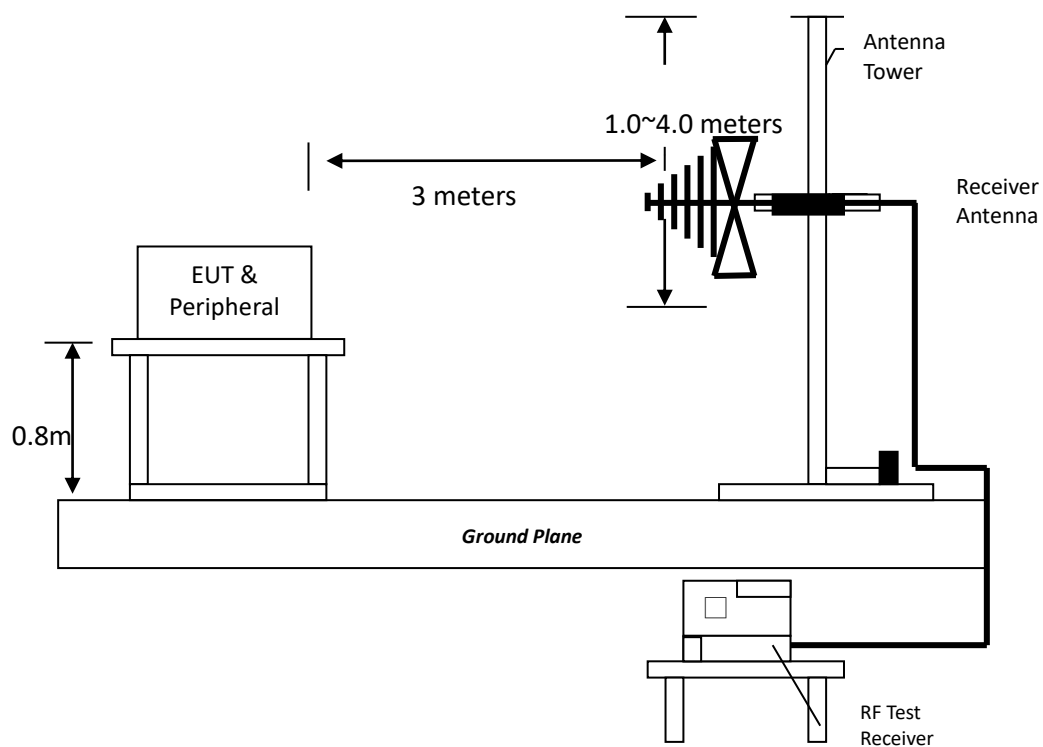
1. Configure the EUT according to ANSI C63.10:2020. The EUT was placed on the top of the turntable 0.8 meter above ground. The center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the companion devices. The turntable was rotated by 360 degree to find the position of the maximum emission level.
3. The height of the receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of the both horizontal and vertical polarization
4. If find the frequencies above the limit or below within 3dB, the antenna tower was scan (from 1m to 4m) and then the turntable was rotated to find the maximum reading.
5. Set the test-receiver system to peak or CISPR quasi-peak detector with specified bandwidth under maximum hold mode.
6. If the emissions level of the EUT in peak mode was 3dB lower than the average limit specified then testing will be stopped and peak values of the EUT will be reported. Otherwise, the emissions which do not have 3dB margin will be measured using the quasi-peak method for below 1GHz.
7. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be quasi-peak measured by receiver.

4.5 Test configuration

4.5.1 Radiated emission from 9kHz to 30MHz uses Loop Antenna:



4.5.2 Radiated emission below 1GHz using Bilog Antenna



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4.6 Test result

4.6.1 Measurement results: frequency range from 9 kHz to 30 MHz

Antenna Polarity	Frequency (MHz)	Detector	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
Perpendicular	0.55	PK	17.35	19.84	37.19	72.81	-35.62
Perpendicular	1.21	PK	17.38	14.99	32.37	65.96	-33.59
Perpendicular	1.87	PK	17.31	13.21	30.52	69.54	-39.02
Perpendicular	2.44	PK	17.39	10.40	27.79	69.54	-41.75
Perpendicular	6.73	PK	19.33	9.83	29.16	69.54	-40.38
Perpendicular	7.81	PK	19.28	9.21	28.49	69.54	-41.05

Antenna Polarity	Frequency (MHz)	Detector	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
Parallel	0.55	PK	17.35	17.52	34.87	72.81	-37.94
Parallel	1.18	PK	17.38	14.83	32.21	66.17	-33.96
Parallel	1.87	PK	17.31	14.26	31.57	69.54	-37.97
Parallel	7.69	PK	19.28	8.78	28.06	69.54	-41.48
Parallel	21.57	PK	20.57	8.91	29.48	69.54	-40.06
Parallel	27.12	PK	21.11	13.21	34.32	69.54	-35.22

Antenna Polarity	Frequency (MHz)	Detector	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
Ground-parallel	0.31	PK	17.01	18.59	35.60	97.81	-62.21
Ground-parallel	0.55	PK	17.35	17.79	35.14	72.81	-37.67
Ground-parallel	1.21	PK	17.38	15.42	32.80	65.96	-33.16
Ground-parallel	1.84	PK	17.32	13.44	30.76	69.54	-38.78
Ground-parallel	3.25	PK	17.60	9.91	27.51	69.54	-42.03
Ground-parallel	4.51	PK	18.05	10.94	28.99	69.54	-40.55

Remark: Corr. Factor = Antenna Factor + Cable Loss

4.6.2 Measurement results: frequencies below 1 GHz

Antenna Polarity	Frequency (MHz)	Spectrum Analyzer Detector	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
Horizontal	67.83	PK	18.85	14.04	32.89	40.00	-7.11
Horizontal	94.92	QP	14.79	17.00	31.79	43.50	-11.71
Horizontal	252.13	PK	19.92	16.17	36.09	46.00	-9.91
Horizontal	335.55	PK	22.04	15.42	37.46	46.00	-8.54
Horizontal	359.80	PK	22.28	18.25	40.53	46.00	-5.47
Horizontal	384.05	PK	23.20	16.63	39.83	46.00	-6.17

Antenna Polarity	Frequency (MHz)	Spectrum Analyzer Detector	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
Vertical	40.68	QP	19.58	17.67	37.25	40.00	-2.75
Vertical	67.83	PK	18.85	12.80	31.65	40.00	-8.35
Vertical	94.99	PK	14.79	23.17	37.96	43.50	-5.54
Vertical	180.35	PK	19.01	9.60	28.61	43.50	-14.89
Vertical	335.55	PK	22.04	7.76	29.80	46.00	-16.20
Vertical	384.05	PK	23.20	7.95	31.15	46.00	-14.85

Remark: Corr. Factor = Antenna Factor + Cable Loss

5. AC Power Line Conducted Emission

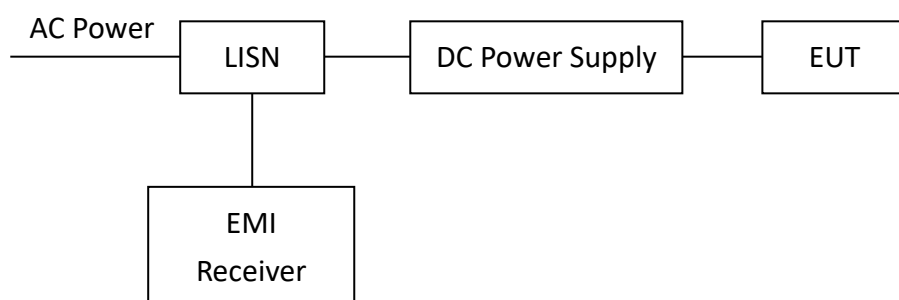
5.1 Measuring instrument setting

Receiver Function	Setting
Detector	QP
Start frequency	0.15MHz
Stop frequency	30MHz
IF bandwidth	9 kHz
Attenuation	10dB

5.2 Test Procedure

Step 1	Configure the EUT according to ANSI C63.10:2020. The EUT or host of EHT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
Step 2	Connect EUT or host of EUT to the power mains through a line impedance stabilization network.
Step 3	All the companion devices are connected to the other LISN. The LISN should provide 50Uh/50ohms coupling impedance.
Step 4	The frequency range from 150 kHz to 30MHz was searched.
Step 5	Set the test-receiver system to peak detector and specified bandwidth with maximum hold mode.
Step 6	The measurement has to be done between each power line and ground at the power terminal.

5.3 Test Diagram

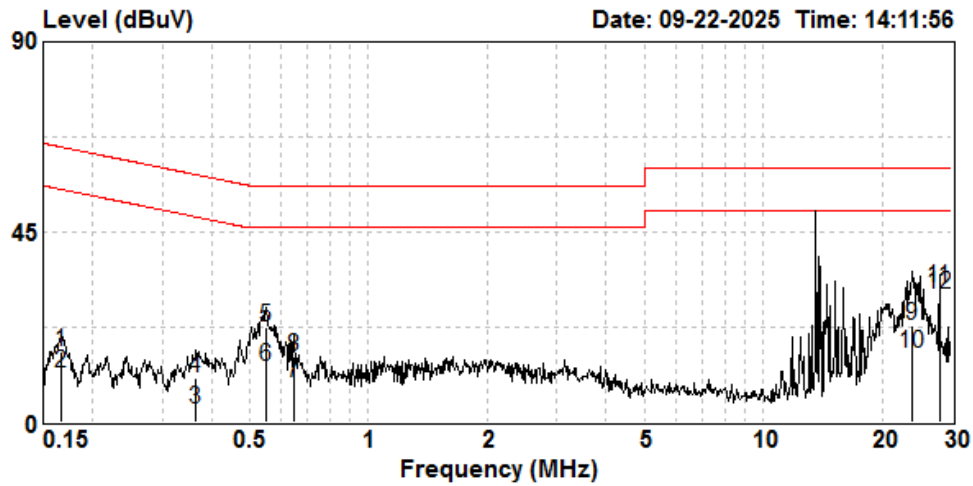


5.4 Limit

Frequency (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56	56 – 46
0.50~5.00	56	46
5.00~30.0	60	50

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5.5 Test Results



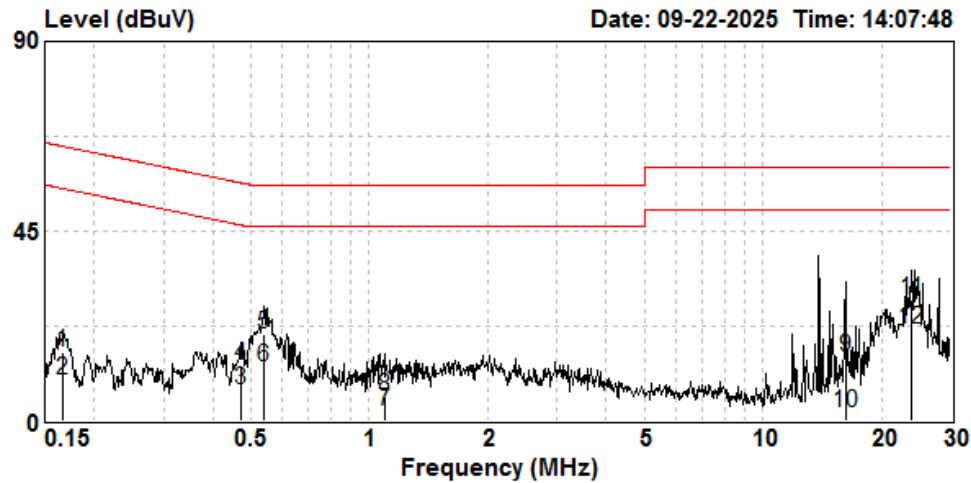
Test voltage :DC 5V
 Temp \ Relative Humidity:23 °C \ 78 %RH
 Atmospheric pressure :1003 hPa

Phase	Frequency (MHz)	Corr. Factor (dB)	Reading	Level	Limit	Reading	Level	Limit	Margin	
			QP (dBuV)	QP (dBuV)	QP (dBuV)	AV (dBuV)	AV (dBuV)	AV (dBuV)	QP	AV
LINE	0.167	0.16	16.36	16.53	65.12	11.34	11.50	55.12	-48.59	-43.62
LINE	0.365	0.18	10.16	10.34	58.61	2.82	3.00	48.61	-48.27	-45.61
LINE	0.549	0.19	22.48	22.67	56.00	12.95	13.14	46.00	-33.33	-32.86
LINE	0.647	0.21	15.23	15.43	56.00	9.18	9.39	46.00	-40.57	-36.61
LINE	23.762	1.56	21.49	23.05	60.00	14.86	16.42	50.00	-36.95	-33.58
LINE	28.003	1.67	30.15	31.82	60.00	28.75	30.42	50.00	-28.18	-19.58

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)

TEST REPORT



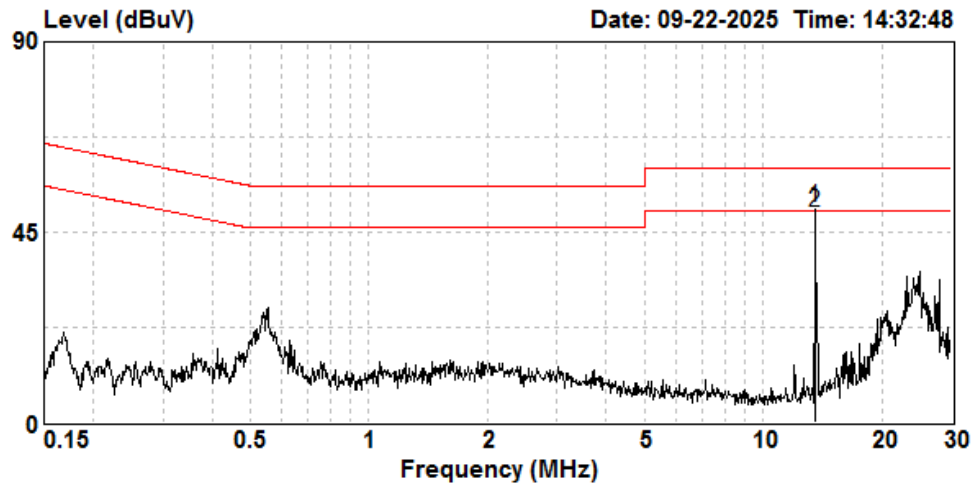
Test voltage :DC 5V
 Temp \ Relative Humidity:23 °C \ 78 %RH
 Atmospheric pressure :1003 hPa

Phase	Frequency (MHz)	Corr. Factor (dB)	Reading	Level	Limit	Reading	Level	Limit	Margin (dB)	
			QP (dBuV)	QP (dBuV)	QP (dBuV)	AV (dBuV)	AV (dBuV)	AV (dBuV)	QP	AV
NEUTRAL	0.167	0.18	15.97	16.15	65.12	9.61	9.79	55.12	-48.97	-45.33
NEUTRAL	0.471	0.17	13.15	13.33	56.49	7.12	7.29	46.49	-43.17	-39.20
NEUTRAL	0.541	0.18	20.28	20.46	56.00	12.60	12.77	46.00	-35.54	-33.23
NEUTRAL	1.094	0.24	5.67	5.91	56.00	1.93	2.17	46.00	-50.09	-43.83
NEUTRAL	16.226	0.98	14.07	15.05	60.00	0.82	1.80	50.00	-44.95	-48.20
NEUTRAL	23.888	1.16	27.60	28.76	60.00	20.42	21.58	50.00	-31.24	-28.42

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)

Antenna Terminal



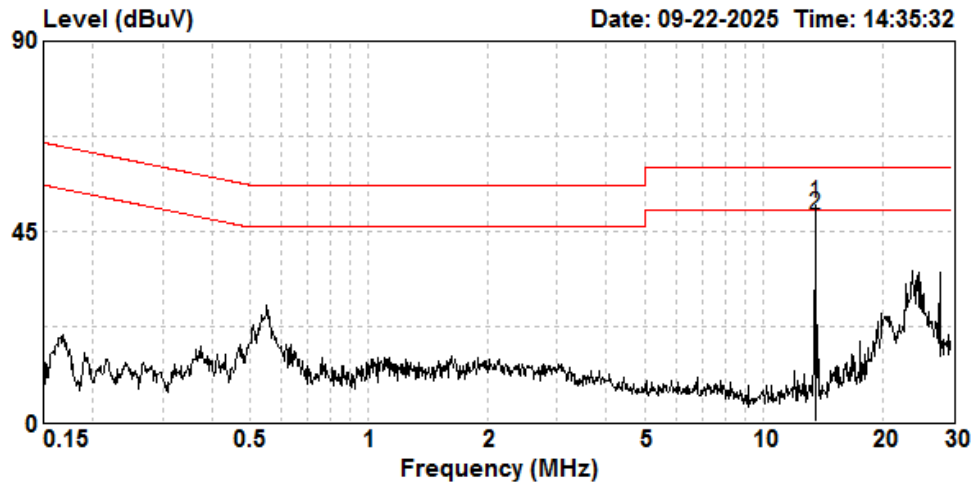
Test voltage :DC 5V
 Temp \ Relative Humidity:23 °C \ 78 %RH
 Atmospheric pressure :1003 hPa

Phase	Frequency (MHz)	Corr. Factor (dB)	Reading QP (dBuV)	Level QP (dBuV)	Limit QP (dBuV)	Reading AV (dBuV)	Level AV (dBuV)	Limit AV (dBuV)	Margin (dB)	
									QP	AV
LINE	13.560	1.00	49.87	50.86	60.00	48.50	49.50	50.00	-9.14	-0.50

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)

TEST REPORT



Test voltage :DC 5V
Temp \ Relative Humidity:23 °C \ 78 %RH
Atmospheric pressure :1003 hPa

Phase	Frequency (MHz)	Corr. Factor (dB)	Reading	Level	Limit	Reading	Level	Limit	Margin	
			QP (dBuV)	QP (dBuV)	QP (dBuV)	AV (dBuV)	AV (dBuV)	AV (dBuV)	QP	AV
NEUTRAL	13.560	0.80	50.85	51.65	60.00	48.24	49.04	50.00	-8.35	-0.96

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)

Appendix A: Test equipment list

Test Equipment	Brand	Model No.	Serial No.	Calibration Date	Next Calibration Date
EMI Test Receiver	KEYSIGHT	N9038B	MY63060107	2025/02/08	2026/02/07
Active Loop Antenna	SCHWARZBECK	FMZB1519	1519-067	2024/12/11	2025/12/10
Broadband Antenna	SCHWARZBECK	VULB 9168	9168-172	2024/12/30	2025/12/29
Cable	SUHNER	SUCOFLEX 104	295105/4	2025/02/27	2026/02/26
Cable	SUHNER	SUCOFLEX 104P	CB0005	2025/02/27	2026/02/26
20dB Attenuator	PE	PE7001-20	N/A	2025/05/22	2026/05/21
Temperature&Humidity Test Chamber	TERCHY	MHU-225LRU (SA)	950838	2025/06/20	2026/06/19
966-2_3m Semi-Anechoic Chamber	CHANCE MOST	CEM-966_2	N/A	2025/07/29	2026/07/28
Test software	Audix	e3	V9	NCR	NCR
EMI Test Receiver	R&S	ESCI	100059	2025/09/03	2026/09/02
LISN	R&S	ESH3-Z5	825562/003	2025/05/28	2026/05/27
Cable	SUHNER	SUCOFLEX 106	27222 /6	2025/01/09	2026/01/08
Test software	Audix	e3	V4.20040112L	NCR	NCR
Test site	Intertek	Con-1	N/A	NCR	NCR

Note: No Calibration Required (NCR).

Appendix B: Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2.0$.

Item	Uncertainty
Frequency stability	0.06 ppm
Radiated disturbances from 9kHz~30MHz in a semi-anechoic chamber at a distance of 3m	2.73 dB
Vertically polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	3.91 dB
Horizontally polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	3.49 dB
Conducted Measurement	0.69 dB
AC Conducted Emission	1.31 dB