RADIO PERFORMANCE TEST REPORT

Test Report No. : **OT-249-RWD-022**

Reception No. : **2407002559**

Applicant : **GRITCIC Inc.**

Address : **#A501, 150, Yeongdeungpo-ro, Yeongdeungpo-gu, Seoul, South Korea**

Manufacturer : **GRITCIC Inc.**

Address : **#A501, 150, Yeongdeungpo-ro, Yeongdeungpo-gu, Seoul, South Korea**

Type of Equipment : **UWB Radar Sensor**

FCC ID. : **2BKPS-IUDMA00**

Model Name : **IU-D-MA-0.0**

Multiple Model Name : **N/A**

Serial number : **N/A**

Total page of Report : **22 pages (including this page)**

Date of Incoming : **August 09, 2024**

Date of issue : **September 06, 2024**

SUMMARY

The equipment complies with the regulation; ***FCC PART 15 SUBPART F Section 15.521 & 15.517***

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 report is not correlated with the "KS Q ISO/IEC 17025 and KOLAS accreditation" of Korean Laboratory Accreditation Scheme.

Tested by	Reviewed by	Approved by
Si-eon Lee / Senior Project Engineer	Tae-Ho, Kim / Chief Engineer	Jae-Ho, Lee / Chief Engineer
ONETECH Corp.	ONETECH Corp.	ONETECH Corp.

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

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※ Please refer to the Annex section for All test plots

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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-249-RWD-022	September 06, 2024	Initial Release	All

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1. VERIFICATION OF COMPLIANCE

Applicant : GRITCIC Inc.

Address : #A501, 150, Yeongdeungpo-ro, Yeongdeungpo-gu, Seoul, South Korea

Contact Person : Jungmoo Lee / Senior Engineer

Telephone No. : +82-10-8941-7418

FCC ID : 2BKPS-IUDMA00

Model Name : IU-D-MA-0.0

Brand Name : -

Serial Number : N/A

Date : September 06, 2024

EQUIPMENT CLASS	UWB – ULTRA WIDEBAND TRANSMITTER
E.U.T. DESCRIPTION	UWB Radar Sensor
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2013
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 F Section 15.521 & 15.517.
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.

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2. TEST SUMMARY

2.1 Test items and results

SECTION	TEST ITEMS	RESULTS
15.207 15.505(a)	Conducted Limits	Met the Limit / PASS
15.517(b)	UWB Bandwidth	Met the Limit / PASS
15.209 15.517(c)	Radiated Emissions	Met the Limit / PASS
15.517(d)	Radiated Emissions in GPS Bands	Met the Limit / PASS
15.517(e)	Peak Emissions within a 50MHz Bandwidth	Met the Limit / PASS
15.203	Antenna Requirement	Met requirement / PASS

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 F Section 15.521 & 15.517.

2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10: 2013. Radiated testing was performed at a distance of 1 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

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3. GENERAL INFORMATION

3.1 Product Description

The GRITCIC Inc., Model IU-D-MA-0.0 (referred to as the EUT in this report) is a UWB Radar Sensor. The product specification described herein was obtained from product data sheet or user's manual.

Device Type	UWB Radar Sensor
Temperature Range	-20 °C ~ 80 °C
OPERATING FREQUENCY	7 850 MHz
MODULATION TYPE	BPSK
RF OUTPUT POWER	-43.57 dBm/MHz (Average) -18.29 dBm/50MHz (Peak)
ANTENNA TYPE	Array Antenna
ANTENNA GAIN	5.90 dBi
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	10 MHz

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

-. None

4. EUT MODIFICATIONS

-. None

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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	GRITCIC Inc.	N/A	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
IU-D-MA-0.0	GRITCIC Inc.	UWB Radar Sensor (EUT)	-

5.3 Mode of operation during the test

The EUT was used for making continuous transmitting and receiving mode during the test.

-. Duty Cycle

Frequency [MHz]	Tx On Time [ms]	Tx Off Time [ms]	Duty Cycle [%]	Correction Factor [dB]
7 850	-	-	100.00	-

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

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

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5.4 Configuration of Test System

Line Conducted Test: The EUT was connected to DC power supply and the power of DC power supply was connected to LISN. All supporting equipment were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions.

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2013 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 a Array 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)
Transmitting Mode	X

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

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7. UWB Bandwidth Measurement

7.1 Operating environment

Temperature : 23 °C

Relative humidity : 45 % R.H.

7.2 Test set-up

1. Configure the EUT according to ANSI C63.10:2013 Section 10.1

   The frequency at which the maximum power level is measured with the peak detector is designated fM. The peak power measurements shall be made using a spectrum analyzer or EMI receiver with a 1 MHz resolution bandwidth and a video bandwidth of 1 MHz or greater. The instrument shall be set to peak detection using the maximum-hold trace mode. The outermost 1 MHz segments above and below fM, where the peak power falls by 10 dB relative to the level at fM, are designated as fH and fL, respectively:

2. For the lowest frequency bound fL, the emission is searched from a frequency lower than fM that has, by inspection, a peak power much lower than 10 dB less than the power at fM and increased toward fM until the peak power indicates 10 dB less than the power at fM. The frequency of that segment is recorded.
3. This process is repeated for the highest frequency bound fH, beginning at a frequency higher than fM that has, by inspection, a peak power much lower than 10 dB below the power at fM. The frequency of that segment is recorded.
4. The two recorded frequencies represent the highest fH and lowest fL bounds of the UWB transmission, and the −10 dB bandwidth (B-10) is defined as (fH-fL).82 The center frequency (fc) is mathematically determined from (fH-fL) / 2.
5. The fractional bandwidth is defined as 2(fH-fL) / (fH+fL).
6. Determine whether the -10 dB bandwidth (fH-fL) is ≥500 MHz, or whether the fractional bandwidth 2(fH-fL) / (fH+fL) is ≥0.2.

7.3 Test date

August 20, 2024 ~ August 22, 2024

7.4 Test data

-. Test Result : Pass

Frequency (MHz)	FM (MHz)	FL (MHz)	FH(MHz)	10 dB Bandwidth (MHz)	Limit (MHz)
7 850.00	7 770.10	6 891.00	8 819.00	1 928.00	≥ 500 MHz

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8. Radiated Emissions Measurement

8.1 Operating environment

Temperature : 23 °C

Relative humidity : 45 % R.H.

8.2 Test set-up

1. Configure the EUT according to ANSI C63.10:2013. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable for measured the frequency range below 960 MHz and antenna tower was placed below 1 meters far away from the turntable for measured the frequency range above 960 MHz.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. The measurements made over the frequency range from 9 kHz to 960 MHz were maximized using an EMI receiver with peak detector capabilities. Measurements of the radiated field from 9 kHz to 960 MHz were made with the measurement antenna located a distance of 3 meters from the EUT. If the emissions level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
6. Measurements above 960 MHz were maximized using a spectrum analyzer with RMS detector capabilities. A spectrum analyzer was used for the final measurements utilizing an RMS detector at the frequencies with the largest amplitudes. The prescribed RBW of 1 MHz and VBW of 3 MHz, and a1 msec averaging time were used for these measurements. Measurements of the radiated field at frequencies above 960 MHz were made with the measurement antenna located a distance of below 1 meter from the EUT.
7. The spectrum between 9 kHz and 960 MHz contained no intentional radiation and lies below the limits. The spectrum from 960MHz to18GHz contained intentional UWB signals between 3100 MHz and 10600 MHz and lie below the limits. No other emissions above 10600 MHz were detected. The maximum frequency tested was 40 GHz.
8. Per 47 CFR, Part 15, Subpart F, §15.517© (§15.209) all digital emissions from the transmitter not intended to be radiated from the antenna port meet the 15.209 subpart C limits.
9. Additional measurements in the 960 MHz to 40 GHz range were performed to determine the nature of all unintentional emissions in this span. Conducted antenna port measurement and terminated antenna port measurement were done in the 960 MHz to 8 GHz range show that all noise peaks have the same frequency and polarization and are determined to be emission from the digital circuit and are not radiated from the antenna.

8.3 Test date

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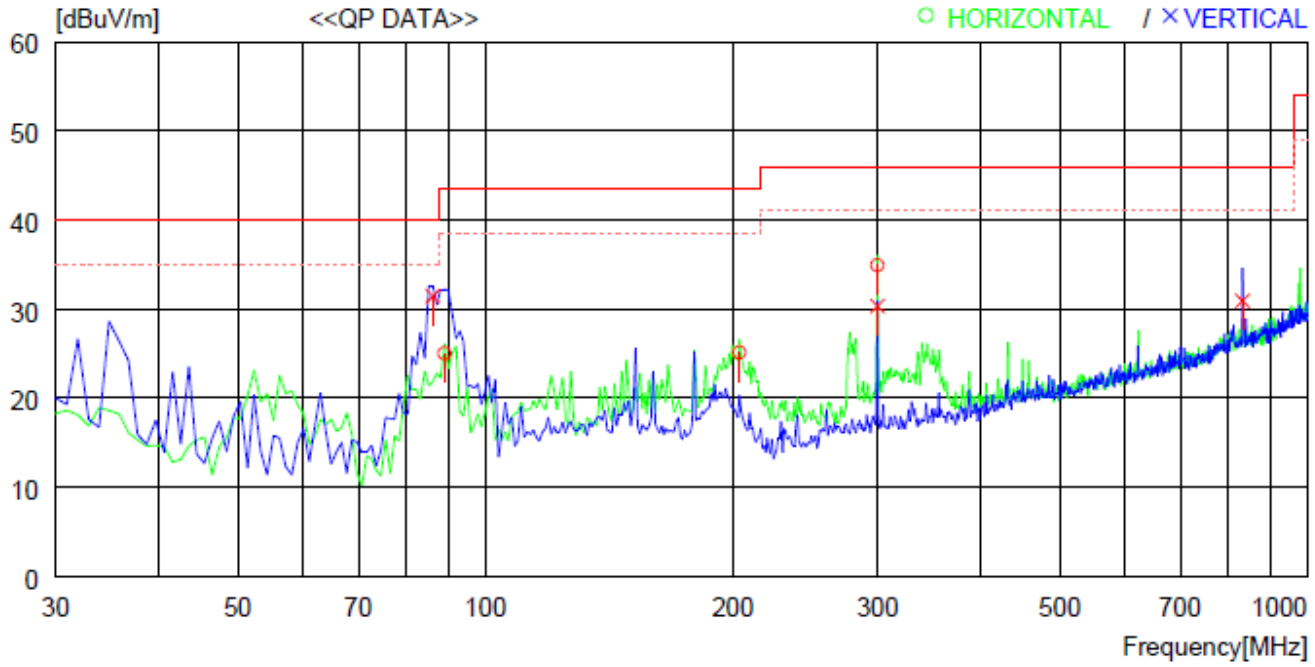
8.4 Test data for 30 MHz ~ 960 MHz

Measurement distance : 3 m

Result : PASSED

EUT : UWB Radar Sensor

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



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	89.170	43.1	13.7	1.2	33.0	25.0	43.5	18.5	300	359
2	203.630	40.7	15.6	1.8	33.0	25.1	43.5	18.4	100	359
3	299.660	46.6	19.1	2.2	33.0	34.9	46.0	11.1	100	359
----- Vertical ------										
4	86.260	49.8	13.4	1.2	33.0	31.4	40.0	8.6	100	0
5	299.660	42.0	19.1	2.2	33.0	30.3	46.0	15.7	100	60
6	833.151	33.1	27.0	3.7	32.9	30.9	46.0	15.1	100	0

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8.5 Test data for 960 MHz ~ 40 GHz

8.5.1 Test data

-. Resolution bandwidth : 1 MHz for Average Mode

-. Video bandwidth : 1 MHz for Average Mode

-. Measurement distance : 1 m

-. Operating Condition : Highest Output Power Transmitting Mode

Frequency (MHz)	Reading (dBuV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP Gain (dB)	Distance	Total (dBuV/m)	Limits (dBuV/m)	Margin (dB)
960 MHz ~ 1 610 MHz										
978.510	54.95	Peak	H	24.80	2.70	42.01	-9.54	30.90	39.90	9.00
983.050	42.08	Average	H	24.80	2.70	42.01	-9.54	18.03	19.90	1.87
1 455.130	51.80	Peak	V	25.70	3.10	41.90	-9.54	29.16	39.90	10.74
1 440.190	41.28	Average	V	25.70	3.10	41.90	-9.54	18.64	19.90	1.26
1 610 MHz ~ 1 990 MHz										
1 912.370	50.12	Peak	H	25.50	3.60	41.80	-9.54	27.88	61.90	34.02
1 671.690	40.39	Average	H	25.00	3.20	41.80	-9.54	17.25	41.90	24.65
1 687.630	54.87	Peak	V	25.00	3.20	41.80	-9.54	31.73	61.90	30.17
1 725.590	40.43	Average	V	25.00	3.30	41.80	-9.54	17.39	41.90	24.51
1 990 MHz ~ 3 100 MHz										
2 485.100	50.09	Peak	H	27.30	4.10	41.73	-9.54	30.22	63.90	33.68
2 403.100	39.75	Average	H	27.30	4.10	41.73	-9.54	19.88	43.90	24.02
2 480.700	51.99	Peak	V	27.30	4.10	41.73	-9.54	32.12	63.90	31.78
1 999.400	39.85	Average	V	26.10	3.60	41.77	-9.54	18.24	43.90	25.66
3 100 MHz ~ 10 600 MHz										
7 779.100	62.60	Peak	H	37.10	7.60	41.56	-9.54	56.20	73.90	17.70
7 779.100	53.06	Average	H	37.10	7.60	41.56	-9.54	46.66	53.90	7.24
7 741.600	65.19	Peak	V	37.10	7.60	41.56	-9.54	58.79	73.90	15.11
7 741.600	55.99	Average	V	37.10	7.60	41.56	-9.54	49.59	53.90	4.31
10 600 MHz ~ 40 000 MHz										
19 571.000	59.70	Peak	H	37.50	12.10	53.30	-9.54	46.46	63.90	17.44
19 571.000	49.10	Average	H	37.50	12.10	53.30	-9.54	35.86	43.90	8.04
19 505.000	59.54	Peak	V	37.50	12.10	53.30	-9.54	46.30	63.90	17.60
19 571.000	48.91	Average	V	37.50	12.10	53.30	-9.54	35.67	43.90	8.23

Remark. -Total = Reading + Antenna Factor + Cable loss - Amp Gain + Dist.Correct

- Dcf = 20 log (1/3) = -9.54 (measurement distance is 1 meter)

8.6 Limit

The radiated emissions at or below 960 MHz from a device shall not exceed the emission levels in section 15.209(a) limit below.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2 400/F(KHz)	300
0.490~1.705	24 000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

The radiated emissions above 960 MHz from a device shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz:

Freq. (MHz)	EIRP (dBm)	Field (dBμV/m) at 3m
960-1610	-75.3	19.90
1 610-1 990	-53.3	41.90
1 990-3 100	-51.3	43.90
3 100-10 600	-41.3	53.90
10 600 above	-51.3	43.90

Note 1: This may be converted to a peak field strength level at 3 meters using E(dBuV/m) = P(dBm EIRP) + 95.2 dB.

From 47 CFR Section 15.517(c): Emissions from digital circuitry used to enable the operation of the UWB transmitter shall comply with the limits in Section 15.209 of this chapter, rather than the limits specified in this subpart, provided it can be clearly demonstrated that those emissions from the UWB device are due solely to emissions from digital circuitry contained within the transmitter and that the emissions are not intended to be radiated from the transmitter's antenna. Emissions from associated digital devices, as defined in Section 15.3(k) of this chapter, e.g., emissions from digital circuitry used to control additional functions or capabilities other than the UWB transmission, are subject to the limits contained in Subpart B of Part 15 of this chapter.

The radiated emissions from a device operating under the provisions of this section shall not exceed the emission levels in Section 15.209.

Freq. (MHz)	E- Field (dBμV/m) at 3m	
	Quasi Peak	
30 ~ 88	40.00	
88 ~ 216	43.50	
216 ~ 960	46.00	
	Peak	Average
Above 960	74.00	54.00

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9. Radiated Emissions in GPS Bands Measurement

9.1 Operating environment

Temperature : 23 °C

Relative humidity : 45 % R.H.

9.2 Test set-up

1. Configure the EUT according to ANSI C63.10:2013. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Measurements frequencies were maximized using a spectrum analyzer with Average detector capabilities. A spectrum analyzer was used for the final measurements utilizing an Average detector at the frequencies with the largest amplitudes. The prescribed RBW of 1 kHz and VBW of 1 kHz, and a 1 msec averaging time were used for these measurements.
6. Per 47 CFR, Part 15, Subpart F, §15.517© (§15.209) all digital emissions from the transmitter not intended to be radiated from the antenna port meet the 15.209 subpart C limits.

9.3 Test date

August 20, 2024 ~ August 22, 2024

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9.4 Test data

-. Resolution bandwidth : 1 kHz for Average Mode

-. Video bandwidth : 1 kHz for Average Mode

-. Measurement distance : 1 m

-. Operating Condition : Highest Output Power Transmitting Mode

Frequency (MHz)	Reading (dBuV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP Gain (dB)	Distance	Total (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1 164 MHz ~ 1 240 MHz										
1 193.952	21.97	Peak	H	25.30	2.80	41.97	-9.54	-1.44	9.90	11.34
1 220.753	10.38	average	H	25.30	2.80	41.97	-9.54	-13.03	9.90	22.93
1 169.277	21.94	Peak	V	25.30	2.80	41.97	-9.54	-1.47	9.90	11.37
1 220.450	10.35	average	V	25.30	2.80	41.97	-9.54	-13.06	9.90	22.96
1 559 MHz ~ 1 610 MHz										
1 596.575	21.72	Peak	H	25.00	3.10	41.90	-9.54	-1.62	9.90	11.52
1 595.607	9.93	average	H	25.00	3.10	41.90	-9.54	-13.41	9.90	23.31
1 594.894	21.71	Peak	V	25.00	3.10	41.90	-9.54	-1.63	9.90	11.53
1 583.685	9.93	average	V	25.00	3.10	41.90	-9.54	-13.41	9.90	23.31

Remark. -Total = Reading + Antenna Factor + Cable loss - Amp Gain + Dist.Correct

- Dcf = 20 log (1/3) = -9.54 (measurement distance is 1 meter)

9.5 Limit

In addition to the radiated emission limits specified in the table in paragraph 4.5.1 of this report, UWB transmitters operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of no less than 1 kHz.

Freq. (MHz)	EIRP (dBm)	E- Field (dBμV/m) at 3 m
1 164 ~ 1 240	-85.3	9.9
1 559 ~ 1 610	-85.3	9.9

Note 1: This may be converted to a peak field strength level at 3 meters using E(dBuV/m) = P(dBm EIRP) + 95.2 dB.

10. Peak Emissions within a 50 MHz Bandwidth Measurement

10.1 Operating environment

Temperature : 23 °C

Relative humidity : 45 % R.H.

10.2 Test set-up

1. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1 meters far away from the turntable.
2. The horn receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
3. For maximum peak emission amplitude, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading and was used to determine the frequency at which the highest radiated emission occurs, fM.
4. The individual UWB bandwidths were measured for each BAND_ID (nb) of the UWB spectrum. Both horizontal and vertical polarizations were taken into account to determine the full UWB BW on the maximized (in azimuth and elevation) signals.
5. A spectrum analyzer was used for the final measurement utilizing a peak detector at the frequency with the largest amplitude. The prescribed resolution bandwidth of 50 MHz was not supported by the spectrum analyzer. However, when a peak measurement is required, The resolution bandwidth for this measurement was set to 10 MHz, and the measurement was centered on the frequency at which the highest radiated emission occurred, fM. The video bandwidth was 10 MHz.

10.3 Test date

August 20, 2024 ~ August 22, 2024

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

10.4 Test data

-. Resolution bandwidth : 10 MHz for Peak Mode

-. Video bandwidth : 10 MHz for Peak Mode

-. Measurement distance : 1 m

-. Operating Condition : Highest Output Power Transmitting Mode

Frequency (MHz)	Reading (dBuV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP Gain (dB)	Distance	RBW (dB)	Duty (dB)	Total (dBuV/m)	EIRP at 3m Limits (dBuV/m)	Margin (dB)
Peak Field Strength of Fundamental												
7 850.00	67.43	Peak	H	37.10	7.60	41.56	-9.54	13.98	-	75.01	95.20	20.19
7 850.00	69.33	Peak	V	37.10	7.60	41.56	-9.54	13.98	-	76.91	95.20	18.29
Average Field Strength of Fundamental												
7 850.00	55.05	RMS	H	37.10	7.60	41.56	-9.54	-	-	48.65	53.90	5.25
7 850.00	58.03	RMS	V	37.10	7.60	41.56	-9.54	-	-	51.63	53.90	2.27

- Measurements were gathered with distance 1M and converted to 3M using the following formula:
  distance 1m→3m = 20log(1m/3m) = -9.54
- Measurements were gathered with a RBW of 10MHz and converted to 50MHz using the following formula:
  EIRP10 MHz = EIRP50 MHz - 20log(10MHz/50MHz) = 0dBm - (-13.98dBm) = 13.98dBm
- **Total = Reading + Ant. Factor + Cable Loss - AMP Gain + Distance + RBW + Duty**
  EIRP at 3m(dBuv/m)=EIRP Limit(dBm/50MHz)+95.2

11. CONDUCTED EMISSION TEST

11.1 Operating environment

Temperature : 23 °C

Relative humidity : 45 % R.H.

11.2 Test set-up

The EUT was placed on a wooden table, 0.8 m height above the floor. Power was fed to the EUT through a 50 Ω / 50 μH + 5 Ω Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

11.3 Measurement uncertainty

The uncertainty for Conducted emission test is ± 1.6 dB

11.4 Test date

August 20, 2024 ~ August 22, 2024

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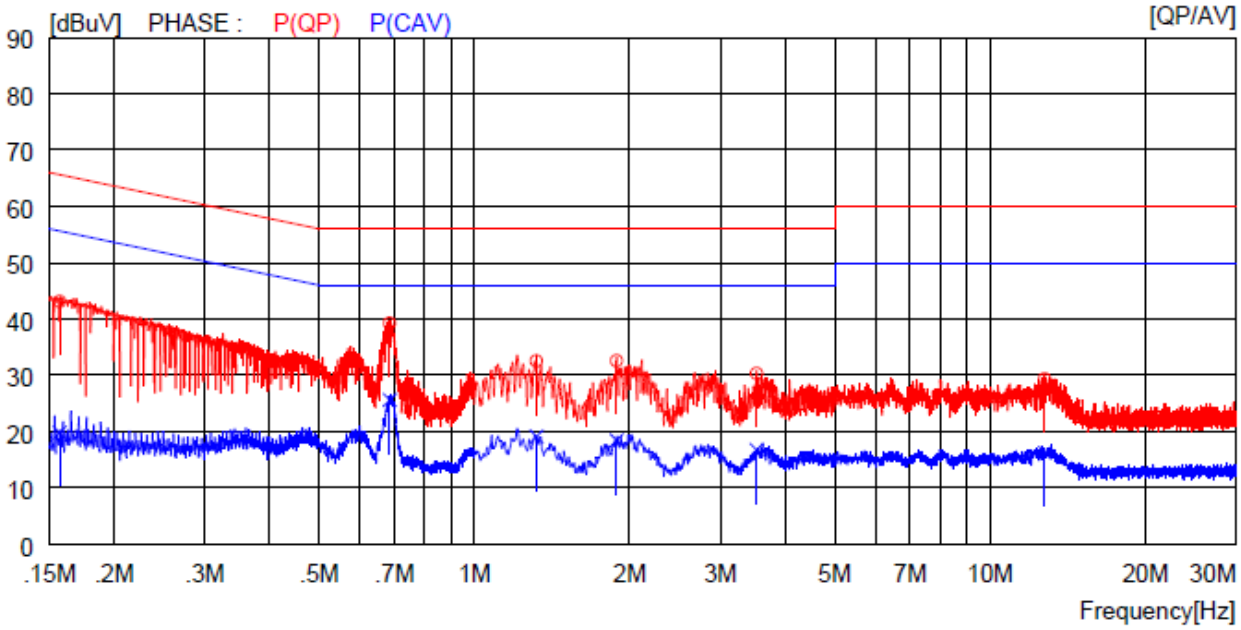
11.5 Test data

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.15700	33.0	----	10.1	43.1	----	65.6	----	22.5	----	P(QP)
2	0.68500	29.1	----	10.1	39.2	----	56.0	----	16.8	----	P(QP)
3	1.32000	22.4	----	10.1	32.5	----	56.0	----	23.5	----	P(QP)
4	1.88800	22.4	----	10.2	32.6	----	56.0	----	23.4	----	P(QP)
5	3.52800	20.1	----	10.2	30.3	----	56.0	----	25.7	----	P(QP)
6	12.78000	18.9	----	10.4	29.3	----	60.0	----	30.7	----	P(QP)
7	0.15700	----	9.7	10.1	----	19.8	----	55.6	----	35.8	P(CAV)
8	0.68500	----	15.5	10.1	----	25.6	----	46.0	----	20.4	P(CAV)
9	1.32000	----	9.0	10.1	----	19.1	----	46.0	----	26.9	P(CAV)
10	1.88800	----	8.2	10.2	----	18.4	----	46.0	----	27.6	P(CAV)
11	3.52800	----	6.5	10.2	----	16.7	----	46.0	----	29.3	P(CAV)
12	12.78000	----	5.8	10.4	----	16.2	----	50.0	----	33.8	P(CAV)

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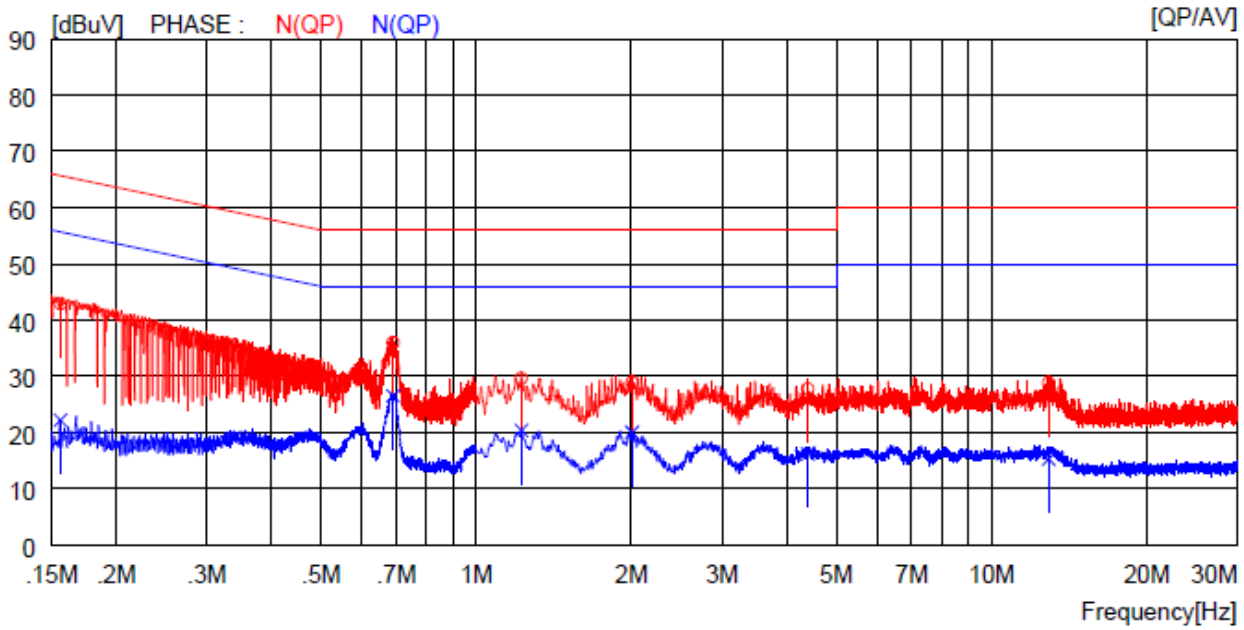
-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.15600	32.8	----	10.1	42.9	----	65.7	----	22.8	----	N(QP)
2	0.69000	25.9	----	10.1	36.0	----	56.0	----	20.0	----	N(QP)
3	1.22400	19.5	----	10.1	29.6	----	56.0	----	26.4	----	N(QP)
4	2.00800	18.7	----	10.2	28.9	----	56.0	----	27.1	----	N(QP)
5	4.40000	17.5	----	10.2	27.7	----	56.0	----	28.3	----	N(QP)
6	12.92000	18.4	----	10.4	28.8	----	60.0	----	31.2	----	N(QP)
7	0.15600	----	12.1	10.1	----	22.2	----	55.7	----	33.5	N(CAV)
8	0.69000	----	16.4	10.1	----	26.5	----	46.0	----	19.5	N(CAV)
9	1.22400	----	10.3	10.1	----	20.4	----	46.0	----	25.6	N(CAV)
10	2.00800	----	9.8	10.2	----	20.0	----	46.0	----	26.0	N(CAV)
11	4.40000	----	6.0	10.2	----	16.2	----	46.0	----	29.8	N(CAV)
12	12.92000	----	4.9	10.4	----	15.3	----	50.0	----	34.7	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

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12. LIST OF TEST EQUIPMENT

Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
FSVA40	Rohde & Schwarz	Signal Analyzer	101598	Jan. 15, 2024 (1Y)
ESCI	Rohde & Schwarz	EMI Test Receiver	101013	Mar. 12, 2024 (1Y)
GP-4303D	LG Precision Co.,Ltd	DC Power Supply	5071069	Jan. 04, 2024 (1Y)
310N	Sonoma Instrument	Pre-Amplifier	312544	Mar. 11, 2024 (1Y)
SCU18	Rohde & Schwarz	Signal Conditioning unit	102266	Jul. 04, 2024 (1Y)
ELNA40	EXYNOD	RF Pre Amplifier	25339-27648	Jan. 23, 2024 (1Y)
FMZB 1513	Schwarzbeck	Loop Antenna	1513-235	Mar. 20, 2024 (2Y)
HLP-2008	TDK	Hybrid Antenna	131313	Apr. 05, 2023 (2Y)
BBHA9120D	Schwarzbeck	Horn Antenna	9120D-1349	Jun. 17, 2024 (1Y)
BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170179	Jan. 23, 2024 (1Y)
ESCI	Rohde & Schwarz	EMI Test Receiver	101012	Sep. 26, 2023 (1Y)
ESH3-Z2	Rohde & Schwarz	Pulse Limiter	100655	Mar. 12, 2024 (1Y)
NSLK8128	Schwarzbeck	V-LISN	8128216	Mar. 12, 2024 (1Y)
DT3000	Innco System	Turn Table	DT3000/093	N/A
MA4000-EP	Innco System	Antenna Master	MA4000/332	N/A
CO3000	Innco System	Controller	CO3000/904	N/A