TEST REPORT

Dt&C Co., Ltd.
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Tel : 031-321-2664, Fax : 031-321-1664

1. Report No : DRTFCC2407-0089
2. Customer
   - Name (FCC) : KYUNGWOO SYSTECH INC.
   - Address (FCC) : #401, Daeryung Post Tower 5, 68, Digital-ro 9, Geumcheon-gu, Seoul, South Korea 08512
3. Use of Report : FCC Original Grant
4. Product Name / Model Name : Intelligent Proximity Alert System / PAS2-VT
   FCC ID : ZE8-KWO-PAS2-VT
5. FCC Regulation(s): Part 15.250
   Test Method used: ANSI C63.10-2013
6. Date of Test : 2024.05.10 ~ 2024.06.18
7. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing
8. Testing Environment : See appended test report.
9. Test Result : Refer to the attached test result.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test report is not related to KOLAS accreditation.

Affirmation	Tested by Name : SeungMin Gil (Signature)	Technical Manager Name : JaeJin Lee (Signature)

2024 . 07 . 29 .

Dt&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

Test Report Version

Test Report No.	Date	Description	Revised by	Reviewed by
DRTFCC2407-0089	Jul, 29. 2024	Initial issue	SeungMin Gil	JaeJin Lee

Table of Contents

1. General Information

1.1. Description of EUT

Equipment Class	Wideband Transmitter(WBT)
Product Name	Intelligent Proximity Alert System
Model Name	PAS2-VT
Add Model Name	-
Firmware Version Identification Number	v6.0.0.1
EUT Serial Number	No Specified
Power Supply	DC 12 V, 48 V
Frequency Range	6.489 6 GHz
Max. RF Output Power	-13.83 dBm (Peak) / 40 MHz
Modulation Technique	BPM-BPSK
Antenna Specification	Antenna Type: PCB Pattern antenna Peak Gain: 3.66 dBi

1.2. Test Support Equipment

Equipment	Model Name	Serial NO.	Manufacturer	Note
IPAS 2.0 Indicator Plus	PAS2-INDP	No specified	KYUNGWOO SYSTECH	Controller

Note: The above equipment was supported by manufacturer.

1.3. Testing Laboratory

Dt&C Co., Ltd.		
The 3 m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042. The site is constructed in conformance with the requirements. **- FCC & IC MRA Designation No. : KR0034** **- ISED #: 5740A**		
www.dtnc.net		
Telephone	:	+ 82-31-321-2664
FAX	:	+ 82-31-321-1664

1.4. Testing Environment

Ambient Condition	
▪ Temperature	+21 ℃ ~ +23 ℃
▪ Relative Humidity	+41 % ~ +45 %

1.5. Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with requirements of ANSI C63.4-2014 and ANSI C63.10-2013. All measurement uncertainty values are shown with a coverage factor of *k* = 2 to indicate a 95 % level of confidence.

Parameter	Measurement uncertainty
Antenna-port conducted emission	1.0 dB (The confidence level is about 95 %, k = 2)
AC power-line conducted emission	3.4 dB (The confidence level is about 95 %, k = 2)
Radiated emission (1 GHz Below)	5.0 dB (The confidence level is about 95 %, k = 2)
Radiated emission (1 GHz ~ 18 GHz)	4.8 dB (The confidence level is about 95 %, k = 2)
Radiated emission (18 GHz Above)	5.7 dB (The confidence level is about 95 %, k = 2)

1.6. Test Equipment List

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Rohde Schwarz	FSW85	23/12/15	24/12/15	101530
Spectrum Analyzer	Agilent Technologies	N9020A	23/12/15	24/12/15	MY48010133
Spectrum Analyzer	Agilent Technologies	N9020A	23/06/23	24/06/23	US47360812
Spectrum Analyzer	Agilent Technologies	N9020A	23/06/23	24/06/23	MY46471622
Multimeter	FLUKE	17B+	23/12/15	24/12/15	36390701WS
DC Power Supply	Agilent Technologies	66332A	23/06/23	24/06/23	US37474125
DC Power Supply	SM techno	SDP30-5D	23/06/23	24/06/23	305DMG288
Signal Generator	Rohde Schwarz	SMBV100A	23/12/15	24/12/15	255571
Signal Generator	ANRITSU	MG3695C	23/12/15	24/12/15	173501
Thermohygrometer	BODYCOM	BJ5478	23/12/15	24/12/15	120612-1
Thermohygrometer	BODYCOM	BJ5478	23/12/15	24/12/15	120612-2
Thermohygrometer	BODYCOM	BJ5478	23/06/23	24/06/23	N/A
Loop Antenna	ETS-Lindgren	6502	23/11/09	24/11/09	00060496
Hybrid Antenna	Schwarzbeck	VULB 9160	23/12/15	24/12/15	3362
Horn Antenna	ETS-Lindgren	3117	23/06/23	24/06/23	00143278
Horn Antenna	ETS-Lindgren	3117	23/12/15	24/12/15	00140394
Horn Antenna	A.H.Systems Inc.	SAS-574	23/06/23	24/06/23	155
PreAmplifier	tsj	MLA-0118-B01-40	23/12/15	24/12/15	1852267
PreAmplifier	tsj	MLA-1840-J02-45	23/06/23	24/06/23	16966-10728
PreAmplifier	H.P	8447D	23/12/15	24/12/15	2944A07774
PreAmplifier	Agilent Technologies	8449B	23/12/15	24/12/15	3008A02108
High Pass Filter	Wainwright Instruments	WHKX12-935-1000-15000-40SS	23/06/23	24/06/23	8
High Pass Filter	Wainwright Instruments	WHKX10-2838-3300-18000-60SS	23/06/23	24/06/23	1
High Pass Filter	Wainwright Instruments	WHNX8.0/26.5-6SS	23/06/23	24/06/23	3
High Pass Filter	Wainwright Instruments	WHKX10-2838-3300-18000-60SS	23/12/15	24/12/15	2
EMI Test Receiver	ROHDE&SCHWARZ	ESCI7	24/01/29	25/01/29	100910
PULSE LIMITER	ROHDE&SCHWARZ	ESH3-Z2	23/08/21	24/08/21	101333
LISN	SCHWARZBECK	NSLK 8128 RC	23/10/26	24/10/26	8128 RC-387
Digital Thermo Hygrometer	CAS	TE-303N	24/02/07	25/02/07	220502531
Cable	Dt&C	Cable	24/01/03	25/01/03	G-2
Cable	HUBER+SUHNER	SUCOFLEX 100	24/01/03	25/01/03	G-3
Cable	Dt&C	Cable	24/01/03	25/01/03	G-4
Cable	OMT	YSS21S	24/01/03	25/01/03	G-5
Cable	HUBER+SUHNER	SUCOFLEX100	24/01/03	25/01/03	M-01
Cable	HUBER+SUHNER	SUCOFLEX100	24/01/03	25/01/03	M-02
Cable	JUNFLON	MWX241/B	24/01/03	25/01/03	M-03
Cable	Junkosha	MWX221	24/01/03	25/01/03	M-04
Cable	Junkosha	MWX211	24/01/03	25/01/03	M-05
Cable	JUNFLON	J12J101757-00	24/01/03	25/01/03	M-07
Cable	HUBER+SUHNER	SUCOFLEX104	24/01/03	25/01/03	M-08
Cable	HUBER+SUHNER	SUCOFLEX106	24/01/03	25/01/03	M-09
Cable	Junkosha	MWX315	24/01/03	25/01/03	M-10
Cable	Junkosha	MWX342	24/01/03	25/01/03	mmW-2
Cable	Junkosha	MWX241	24/01/03	25/01/03	mmW-4
Cable	Dt&C	Cable	24/01/03	25/01/03	RFC-69
Cable	RADIALL	TESTPRO 3	24/01/03	25/01/03	RFC-70
Test Software (AC Line Conducted)	tsj	EMI Measurement	NA	NA	Version 2.00.0190
Test Software (Radiated)	tsj	EMI Measurement	NA	NA	Version 2.00.0185

Note1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017.
Note2: The cable is not a regular calibration item, so it has been calibrated by Dt&C itself.

2. Test Methodology

The measurement procedures described in the ANSI C63.10-2013 was used in measurement of the EUT.

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The EUT was operated in the test mode to fix the TX frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the FCC rules.

2.3. General Test Procedures

Conducted Emissions

According to requirements in Section 6.2 of ANSI C63.10-2013, the EUT is placed on the wooden table, which is 0.8 m above ground plane and the conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-peak and Average detector.

Radiated Emissions

The EUT is placed on a non-conductive table. For emission measurements at or below 960 MHz, the table height is 80 cm. For emission measurements above 960 MHz, the table height is 1.5 m. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

2.4. Instrument Calibration

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.5. Description of Test Modes

The EUT has been tested with the operating condition for maximizing the emission characteristics.

EUT Operation test setup

- The internal firmware was used for staying in continuous transmitting mode.
- Power setting**:** default

Tested Frequency (MHz)
6 489.6

*This device supports single channel.(CH.5: 6 489.6 MHz)

3. Antenna Requirements

Part 15.203

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

The antenna is permanently attached on the device.
Therefore this E.U.T complies with the requirement of Part 15.203

4. Summary of Test Result

FCC part section(s)	Test Description	Limit	Test Condition	Status Note 1
15.250(a) 15.250(b)	-10 dB Bandwidth	-10 dB bandwidth ≥ 50 MHz Within the 5 925 – 7 250 MHz	Conducted	C
15.250(d)(3)	EIRP(Equivalent Isotropically Radiated Power)	Peak eirp < 20 log (RBW/50) dBm	Radiated	C Note2
15.250(d) 15.250(e) 15.209	Radiated Emissions (at or below 960 MHz)	Part 15.209 (Refer to section 5.3)		C Note2
15.250(d)	Radiated Emissions (above 960 MHz)	Part 15.250(d)(1), (2) (Refer to section 5.3)		C Note2
15.207	AC Power-Line Conducted Emissions	Part 15.207 (Refer to Section 5.4)	AC Line Conducted	C Note3
15.203	Antenna Requirements	Part 15.203 (Refer to Section 3)	-	C

Note 1: **C**=Comply **NC**=Not Comply **NT**=Not Tested **NA**=Not Applicable
Note 2: This test item was performed in three orthogonal EUT positions and the worst case data was reported.
Note 3: The EUT is DC powered device and is powered by an external power source. AC power line conducted emissions measurement was performed with the AC adapter.

5. Test Result

5.1. -10 dB Bandwidth

▣ Test Requirements and limit

Part 15.250(a)

The −10 dB bandwidth of a device operating under the provisions of this section must be contained within the 5925-7250 MHz band under all conditions of operation including the effects from stepped frequency, frequency hopping or other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage.

Part 15.250(b)

The −10 dB bandwidth of the fundamental emission shall be at least 50 MHz.

▣ Test Configuration

Refer to the APPENDIX I.

▣ Test Procedure

ANSI C63.10-2013 Section 10.1

The frequency at which the maximum power level is measured with the peak detector is designated f_M. 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 f_M, where the peak power falls by 10 dB relative to the level at f_M, are designated as f_H and f_L, respectively:

a) For the lowest frequency bound f_L, the emission is searched from a frequency lower than f_M that has, by inspection, a peak power much lower than 10 dB less than the power at f_M and increased toward f_M until the peak power indicates 10 dB less than the power at f_M. The frequency of that segment is recorded.
b) This process is repeated for the highest frequency bound f_H, beginning at a frequency higher than f_M that has, by inspection, a peak power much lower than 10 dB below the power at f_M. The frequency of that segment is recorded.
c) The two recorded frequencies represent the highest f_H and lowest f_L bounds of the UWB transmission, and the −10 dB bandwidth (B − 10) is defined as (f_H − f_L). The center frequency (f_C) is mathematically determined from (f_H − f_L) / 2.
d) The fractional bandwidth is defined as 2(f_H − f_L) / (f_H + f_L).
e) Determine whether the −10 dB bandwidth (f_H − f_L) is ≥500 MHz, or whether the fractional bandwidth 2(f_H − f_L) / (f_H + f_L) is ≥0.2.

▣ **Test Results:** **Comply**

Tested Frequency (MHz)	f_M (MHz)	f_L (MHz)	f_H (MHz)	-10dB Bandwidth(MHz)
6 489.6	6 486.6	6 257.6	6 769.6	512.0

-10dB Bandwidth **Tested Frequency(MHz):** 6 489.6

5.2. EIRP (Equivalent Isotropicilly Radiated Power)

▣ Test Requirements and limit

Part 15.250(d)

(3) There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs and this 50 MHz bandwidth must be contained within the 5925-7250 MHz band. The peak EIRP limit is 20 log (RBW/50) dBm where RBW is the resolution bandwidth in megahertz that is employed by the measurement instrument. RBW shall not be lower than 1 MHz or greater than 50 MHz. The video bandwidth of the measurement instrument shall not be less than RBW. If RBW is greater than 3 MHz, the application for certification filed with the Commission shall contain a detailed description of the test procedure, calibration of the test setup, and the instrumentation employed in the testing.

▣ Test Configuration

Refer to the APPENDIX I.

▣ Test Procedure:

ANSI C63.10-2013 Section 6.6 & 10.1

1) These measurements were performed at 3 m test site.
2) The equipment under test is placed on a non-conductive table 1.5-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna.
3) For measurements above 1GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections.
4) The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
5) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.

Instrument setting

For peak eirp measurement
1. Set the RBW ≥ 1 ~ 50 MHz (Actual: 40 MHz)
2. Set VBW ≥ RBW
3. Detector = peak
4. Trace mode = max hold
5. Allow trace to fully stabilize

▣ Test Results: Comply

- Test Notes

1. Sample Calculation

   EIRP (dBm) = E (dBμV/m) + 20log(D) − 104.7; where D is the measurement distance in m.

   E(dBuV/m) = Measured level (dBuV) + TF(dB/m)

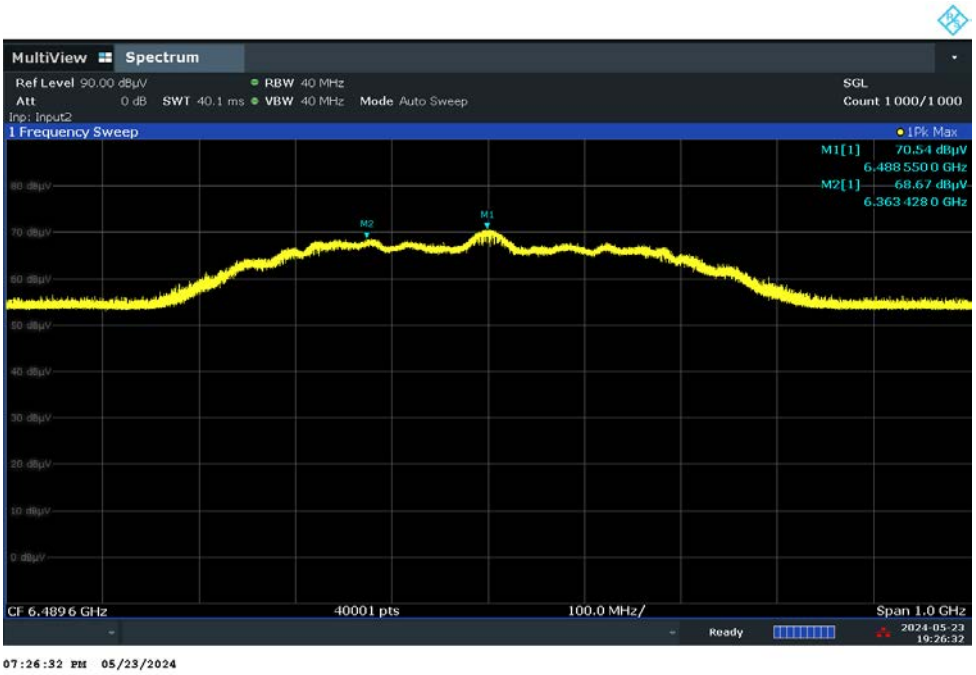
   where, E = field strength, TF = Total Factor, TF = Antenna Factor(dB/m) + Cable Loss(dB) – Amplifier Gain(dB)

3. Peak eirp limit = 20 x log (RBW/50) = -1.94 dBm
4. The highest radiated emission is within the UWB bandwidth.
5. DC 12 V and 48 V power configuration were investigated and the worst-case data(DC 12 V) was reported.

Peak eirp

Tested frequency (MHz)	Frequency (MHz)	ANT Pol	Measured Level(dBuV)	TF (dB/m)	E (dBuV/m)	EIRP (dBm)	Limit (dBm)	Margin (dB)
6 489.6	6 488.55	H	70.54	10.79	81.33	-13.83	-1.94	11.89

Worst case-Plot(Measured Level) **6 489.6 MHz & Y axis & Hor**



5.3. Radiated Emissions

5.3.1. Radiated Emissions(Below 960 MHz)

▣ **Test Requirements and limit**

Part 15.250(d)

(4) Radiated emissions at or below 960 MHz shall not exceed the emission levels in § 15.209.

(5) Emissions from digital circuitry used to enable the operation of the transmitter may comply with the limits in § 15.209 provided it can be clearly demonstrated that those emissions are due solely to emissions from digital circuitry contained within the transmitter and the emissions are not intended to be radiated from the transmitter's antenna. Emissions from associated digital devices, as defined in § 15.3(k), e.g., emissions from digital circuitry used to control additional functions or capabilities other than the operation of the transmitter, are subject to the limits contained in subpart B of this part. Emissisons from these digital circuits shall not be employed in determining the −10 dB bandwidth of the fundamental emission or the frequency at which the highest emission level occurs.

Part 15.250(e)

(1) All emissions at and below 960 MHz are based on measurements employing a CISPR quasi-peak detector. Unless otherwise specified, all RMS average emission levels specified in this section are to be measured utilizing a 1 MHz resolution bandwidth with a one millisecond dwell over each 1 MHz segment. The frequency span of the analyzer should equal the number of sampling bins times 1 MHz and the sweep rate of the analyzer should equal the number of sampling bins times one millisecond. The provision in § 15.35(c) that allows emissions to be averaged over a 100 millisecond period does not apply to devices operating under this section. The video bandwidth of the measurement instrument shall not be less than the resolution bandwidth and trace averaging shall not be employed. The RMS average emission measurement is to be repeated over multiple sweeps with the analyzer set for maximum hold until the amplitude stabilizes.

Part 15.209

Part 15.209(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	FCC Limit (uV/m)	Measurement Distance (m)
0.009 - 0.490	2 400 / F (kHz)	300
0.490 - 1.705	24 000 / F (kHz)	30
1.705 - 30.0	30	30

Frequency (MHz)	FCC Limit (uV/m)	Measurement Distance (m)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

▣ Test Configuration

Refer to the APPENDIX I.

▣ Test Procedure

ANSI C63.10-2013 Section 6.4 & 6.5

1) These measurements were performed at 3 m test site.
2) The equipment under test is placed on a non-conductive table 0.8 meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna.
3) The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.

Instrument setting:

RBW = As specified in below table, VBW ≥ 3 x RBW, Sweep = Auto, Detector = Peak or quasi-peak
(Note: Measurements were performed using the peak detector. The data measured using the peak detector of a spectrum analyzer or EMI receiver will represent the worst-case results.)
Trace mode = Max Hold until the trace stabilizes.

Frequency	RBW
9 - 150 kHz	200 – 300 Hz
0.15- 30 MHz	9 – 10 kHz
30 – 1 000 MHz	100 – 120 kHz
> 1000 MHz	1 MHz

▣ Test Results: Comply

- Test Notes

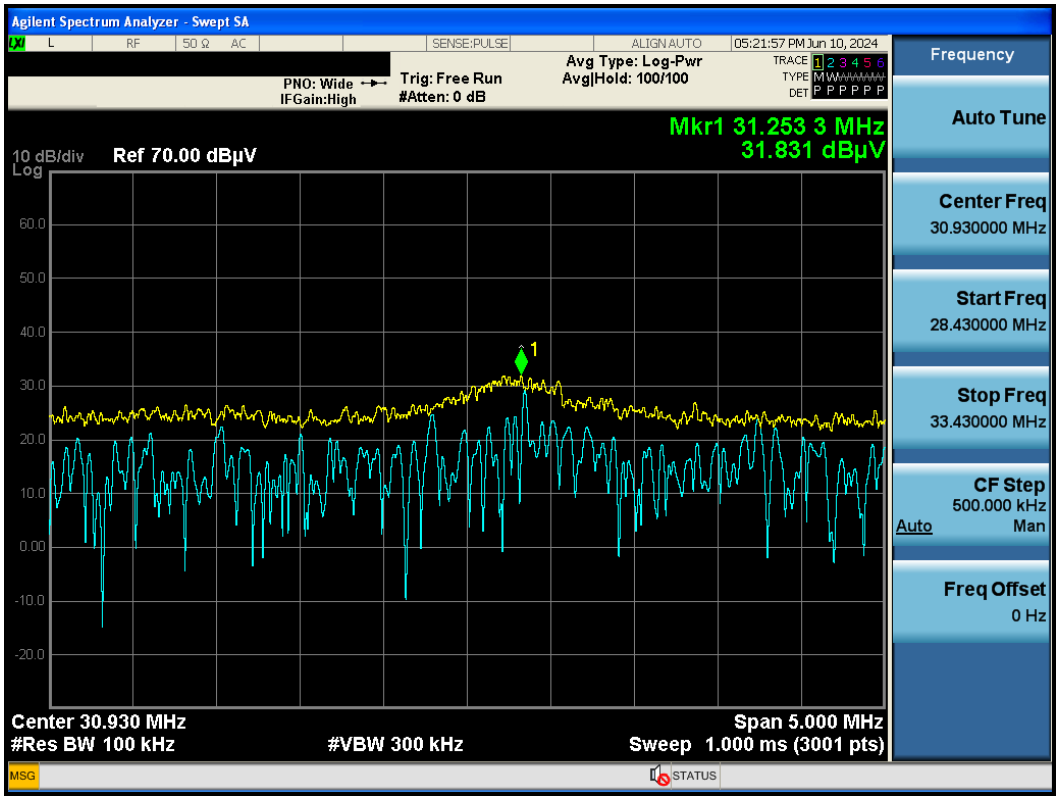
1. The radiated emissions below 960 MHz were investigated 9 kHz to 960 MHz and the worst case data was reported.
2. Information of Distance Correction Factor (DCF)
   For finding emissions, measurements may be performed at a distance closer than that specified in the regulations.
   In this case, the distance factor is applied to the result.
   - Calculation of distance correction factor
   At frequencies below 30 MHz = 40 log (tested distance / specified distance)
   At frequencies at or above 30 MHz = 20 log (tested distance / specified distance)
   When distance factor is “N/A”, the measurements were performed at the specified distance and distance factor is not applied.
3. Sample Calculation.
   Margin = Limit – Result / Result = Reading + TF + DCF / TF = AF + CL – AG
   Where, TF = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain
4. * = Noise floor
5. DC 12 V and 48 V power configuration were investigated and the worst-case data(DC 48 V) was reported.

Tested frequency: 6 489.6 MHz

Frequency (MHz)	EUT Axis	ANT Pol	Detector Mode	Measured Level(dBuV)	TF (dB/m)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
31.25	Y	V	PK	31.83	-9.84	NA	21.99	40.00	18.01
*168.88	Y	H	PK	27.20	-7.01	NA	20.19	43.50	23.31
216.00	Y	H	PK	29.60	-8.80	NA	20.80	43.50	22.70
*939.84	Y	H	PK	26.00	8.08	NA	34.08	46.00	11.92

Worst case plot(Measured level)
Detector Mode : PK

6 489.6 MHz & Y & Ver



5.3.2. Radiated Emissions(Above 960 MHz)

▣ Test Requirements and limit

Part 15.250(d)

(1) The radiated emissions above 960 MHz from a device operating under the provisions of this section shall not exceed the following RMS average limits based on measurements using a 1 MHz resolution bandwidth:

Frequency in MHz	EIRP in dBm
960 – 1 610	−75.3
1 610 – 1 990	−63.3
1 990 – 3 100	−61.3
3 100 – 5 925	−51.3
5 925 – 7 250	−41.3
7 250 – 10 600	−51.3
Above 10 600	−61.3

(2) In addition to the radiated emission limits specified in the table in paragraph (d)(1) of this section, transmitters operating under the provisions of this section shall not exceed the following RMS average limits when measured using a resolution bandwidth of no less than 1 kHz:

Frequency in MHz	EIRP in dBm
1 164 - 1 240	-85.3
1 559 - 1 610	-85.3

Part 15.250(d)

(5) Emissions from digital circuitry used to enable the operation of the transmitter may comply with the limits in § 15.209 provided it can be clearly demonstrated that those emissions are due solely to emissions from digital circuitry contained within the transmitter and the emissions are not intended to be radiated from the transmitter's antenna. Emissions from associated digital devices, as defined in § 15.3(k), e.g., emissions from digital circuitry used to control additional functions or capabilities other than the operation of the transmitter, are subject to the limits contained in subpart B of this part. Emissions from these digital circuits shall not be employed in determining the −10 dB bandwidth of the fundamental emission or the frequency at which the highest emission level occurs.

▣ Test Configuration

Refer to the APPENDIX I.

▣ Test Procedure

ANSI C63.10-2013 Section 6.6

1) These measurements were performed at 3 m test site.
2) The equipment under test is placed on a non-conductive table 1.5 meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna.
3) For measurements above 1GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections.
4) The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
5) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.

Instrument setting:

1. Set the RBW = 1 MHz
2. Set VBW ≥ 1 MHz (a VBW of 3MHz is desirable)
3. Detector = RMS (power averaging)
4. Sweet time ≤ Sweep point x 1 ms
5. Trace mode = max hold
6. Allow trace to fully stabilize

Unwanted emissions in 1 164 - 1 240MHz and 1 559 - 1 610MHz

1. Set the RBW = 1 kHz (Actual: 5.1 kHz)
2. Set VBW ≥ 3 kHz
3. Detector = RMS (power averaging)
4. Sweet time ≤ Sweep point x 1 ms
5. Trace mode = max hold
6. Allow trace to fully stabilize

▣ Test Results: Comply

- Test Notes

1. The unwanted emissions investigated up to 40 GHz. And no other spurious and harmonic emissions were found below listed frequencies.
2. Sample Calculation

   EIRP (dBm) = E (dBμV/m) + 20log(D) − 104.7; where D is the measurement distance in m.

   E(dBuV/m) = Measured level (dBuV) + TF(dB/m)

   where, E = field strength, TF = Total Factor, TF = Antenna Factor(dB/m) + Cable Loss(dB) – Amplifier Gain(dB)
3. # = Fundamental, * = Noise floor

Tested frequency: 6 489.6 MHz

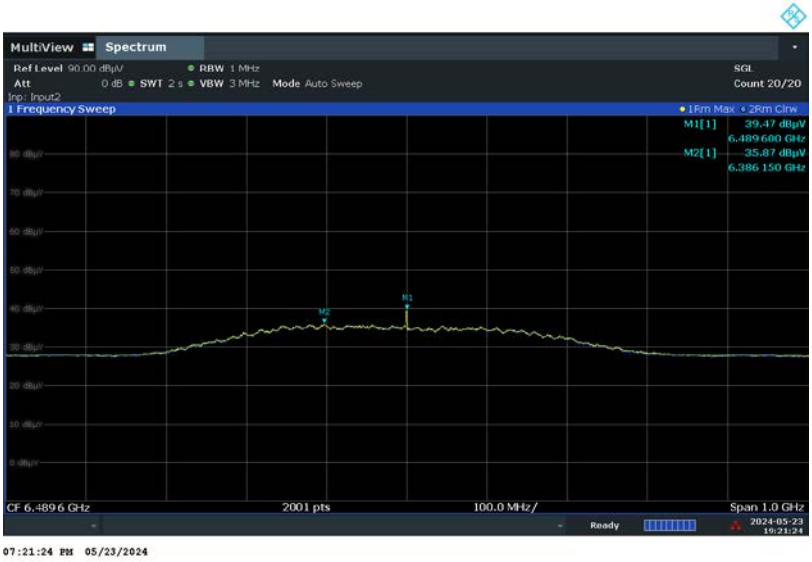
Measurement Distance(m)	Frequency (MHz)	ANT Pol	Measured Level(dBuV)	TF (dB/m)	E (dBuV/m)	Result (dBm)	FCC Limit(dBm)	FCC Margin(dB)
0.5	*1 016.10	H	40.58	-9.80	30.78	-79.94	-75.30	4.64
0.5	*1 730.60	H	40.17	-9.03	31.14	-79.58	-63.30	16.28
0.5	*3 087.60	H	38.76	-4.00	34.76	-75.96	-61.30	14.66
3	#6 489.60	H	39.47	10.78	50.25	-44.91	-41.30	3.61
0.5	*10 570.00	H	33.44	8.59	42.03	-68.69	-51.30	17.39
0.5	*17 962.00	H	37.84	6.48	44.32	-66.40	-61.30	5.10
0.5	*39 813.77	H	38.87	4.66	43.53	-67.19	-61.30	5.89

Unwanted emissions in 1 164 – 1 240MHz and 1 559 - 1 610MHz (RBW = 5.1 kHz)

Measurement Distance(m)	Frequency (MHz)	ANT Pol	Measured Level(dBuV)	TF (dB/m)	E (dBuV/m)	Result (dBm)	FCC Limit(dBm)	FCC Margin(dB)
0.5	1 188.00	H	27.86	-9.36	18.50	-92.22	-85.30	6.92
0.5	1 574.40	H	24.29	-10.22	14.07	-96.65	-85.30	11.35

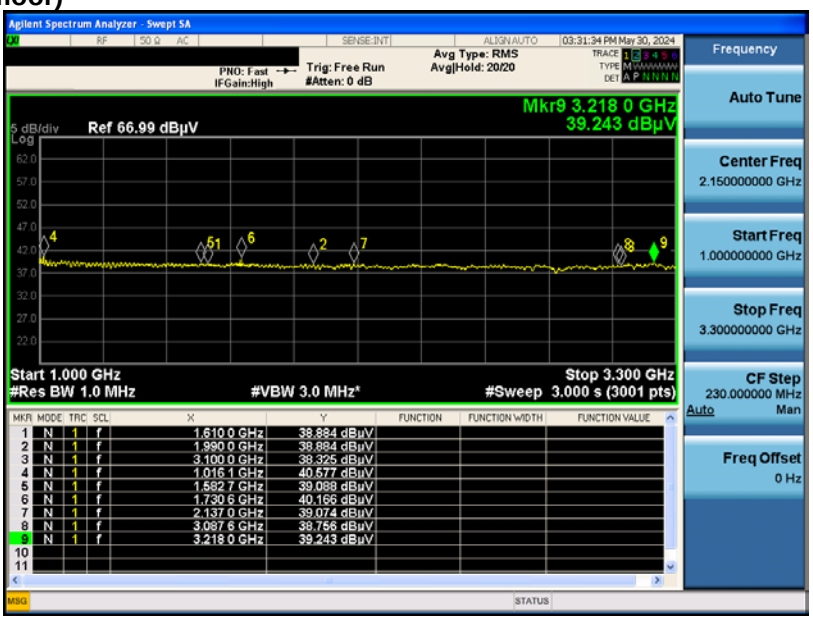
Worst case plot(Fundamental emissions)
Measured Level

6.489 6 MHz & Y axis & Hor



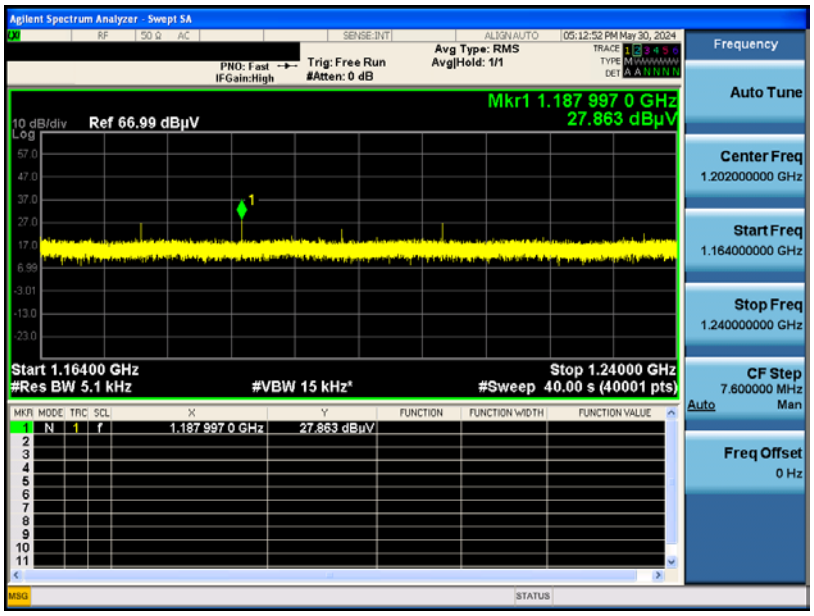
Worst case plot(Unwanted emission)
Measured Level(Noise floor)

6.489 6 MHz & Y axis & Hor



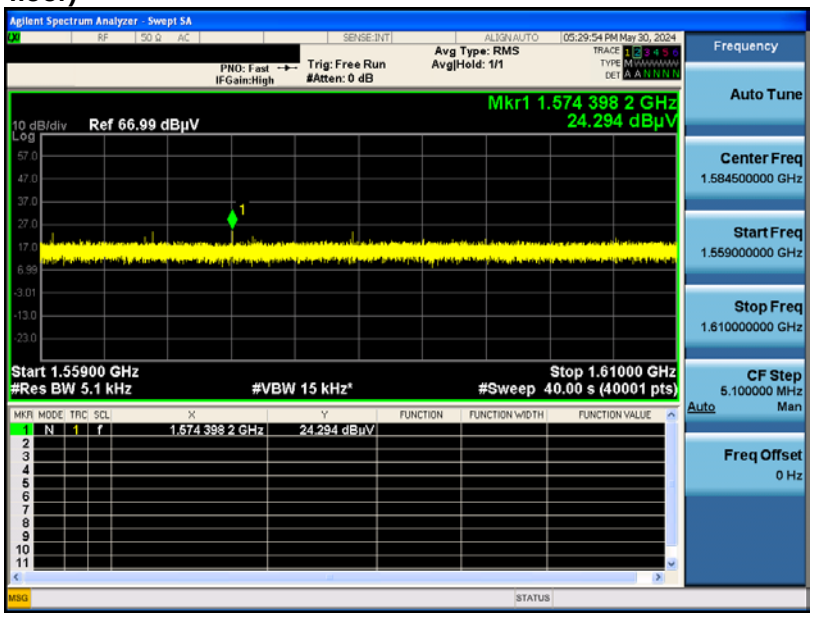
Unwanted emissions in 1 164 – 1 240MHz
Measured Level

6.489 6 MHz & X axis & Hor



Unwanted emissions in 1 559 – 1 610 MHz
Measured Level(Noise floor)

6.489 6 MHz & X axis & Hor



5.4. AC Power-Line Conducted Emissions

▣ Test Requirements and limit, Part 15.207

An intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network (LISN).
Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5.0	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

▣ Test Configuration

See test photographs for the actual connections between EUT and support equipment.

▣ Test Procedures

Conducted emissions from the EUT were measured according to the ANSI C63.10-2013.

1. The test procedure is performed in a 6.5 m × 3.5 m × 3.5 m (L × W × H) shielded room. The EUT along with its peripherals were placed on a 1.0 m (W) × 1.5 m (L) and 0.8 m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
2. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.
3. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.
4. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

▣ Test Results

Refer to the next page. (The worst case data was reported.)

AC Power-Line Conducted Emissions (Graph)

Results of Conducted Emission

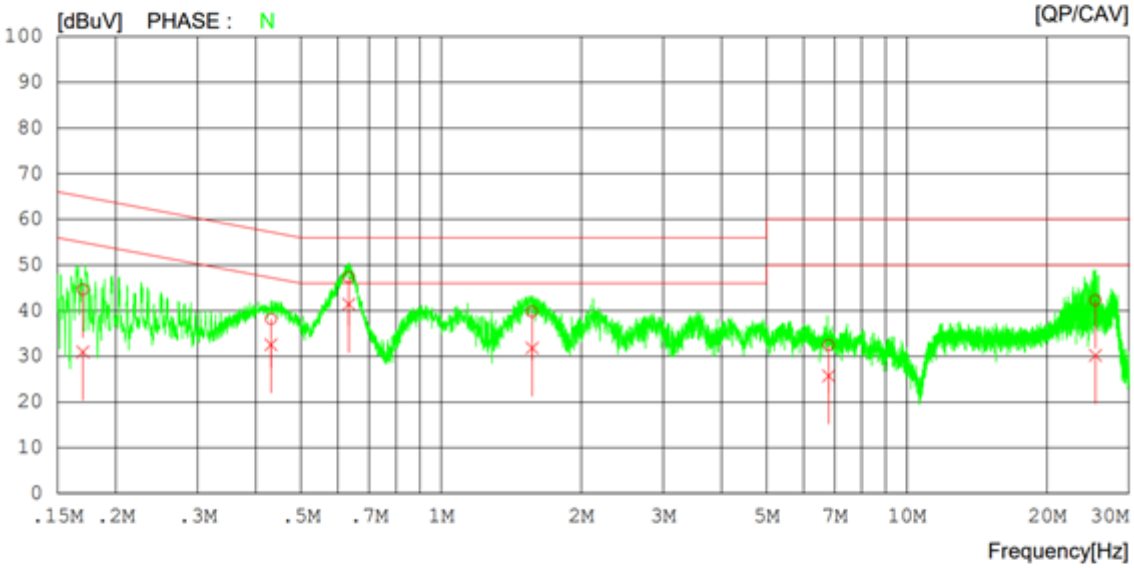
Date 2024-05-10

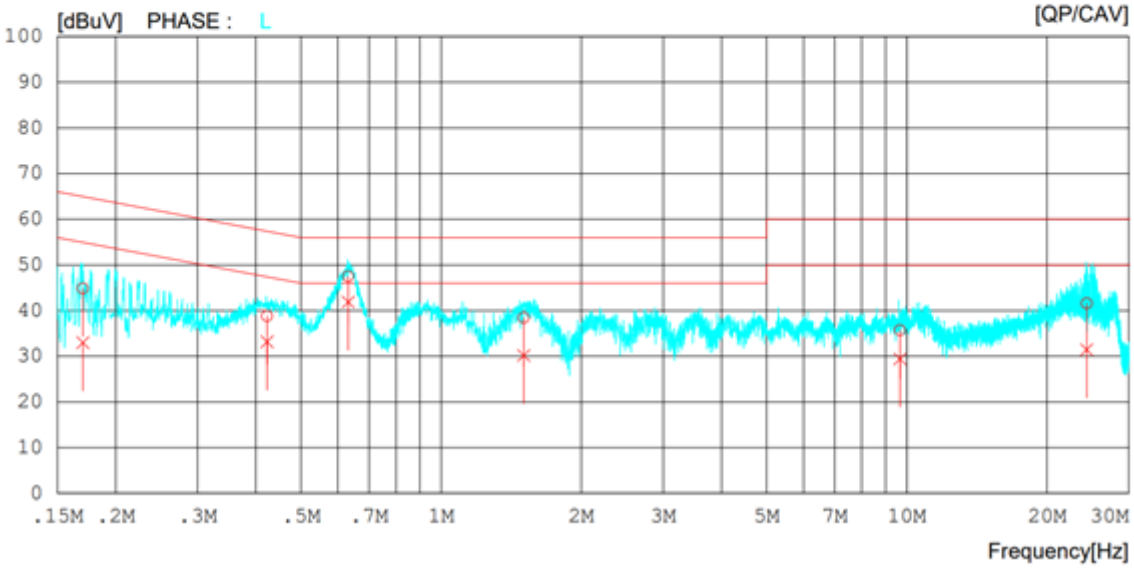
Order No.
Model Name PAS2-VT
Temp/Humi/Atm 21 °C / 45%
Test Condition 150 kHz - 30 MHz

Memo UWB_5CH

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor
1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26
Cable Loss
1. C1_LISN TO RECIVER_2023-12-11
Pulse Limitter
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21





AC Power-Line Conducted Emissions (List)

Results of Conducted Emission

Date 2024-05-10

Order No.
Model Name PAS2-VT
Temp/Humi/Atm 21 ℃ / 45%
Test Condition 150 kHz - 30 MHz

Memo UWB_5CH

LIMIT : FCC P15.207 AV
FCC P15.207 QP

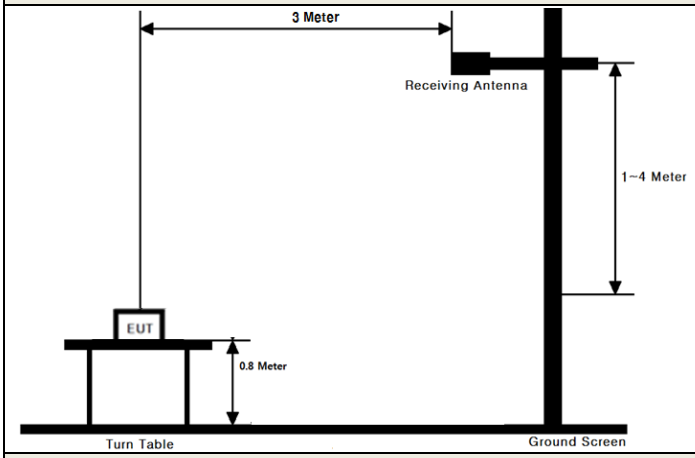
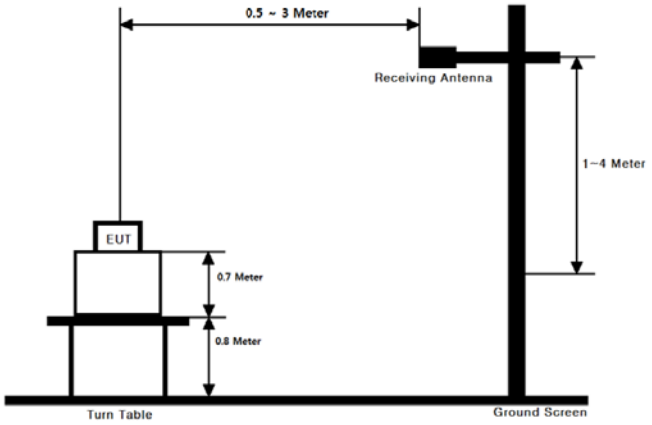
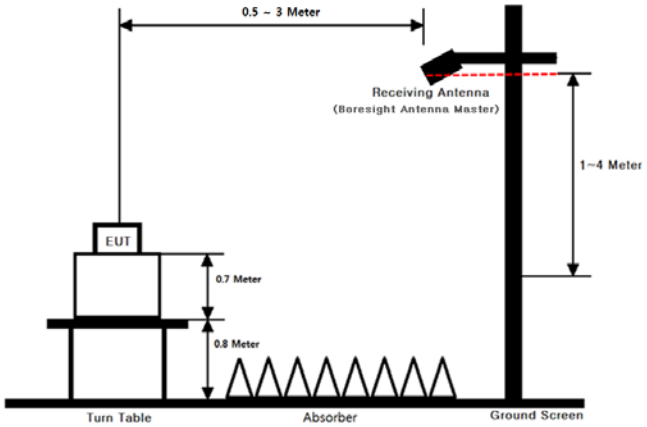
Lisn Factor
1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26
Cable Loss
1. C1_LISN TO RECIVER_2023-12-11
Pulse Lmitter
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21

NO	FREQ	READING		C.FACTOR	RESULT		LIMIT		MARGIN		PHASE
		QP	CAV		QP	CAV	QP	CAV	QP	CAV	
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.17008	34.65	20.95	9.99	44.64	30.94	64.96	54.96	20.32	24.02	N
2	0.43120	28.14	22.55	10.00	38.14	32.55	57.23	47.23	19.09	14.68	N
3	0.63319	37.29	31.41	10.01	47.30	41.42	56.00	46.00	8.70	4.58	N
4	1.56880	29.69	21.77	10.05	39.74	31.82	56.00	46.00	16.26	14.18	N
5	6.79360	22.20	15.48	10.26	32.46	25.74	60.00	50.00	27.54	24.26	N
6	25.41380	31.71	19.58	10.59	42.30	30.17	60.00	50.00	17.70	19.83	N
7	0.17004	34.91	22.99	9.99	44.90	32.98	64.96	54.96	20.06	21.98	L
8	0.42275	28.82	23.20	10.00	38.82	33.20	57.39	47.39	18.57	14.19	L
9	0.63123	37.43	31.77	10.11	47.54	41.88	56.00	46.00	8.46	4.12	L
10	1.50460	28.26	20.03	10.15	38.41	30.18	56.00	46.00	17.59	15.82	L
11	9.66660	25.28	19.00	10.43	35.71	29.43	60.00	50.00	24.29	20.57	L
12	24.34740	30.97	20.82	10.63	41.60	31.45	60.00	50.00	18.40	18.55	L

APPENDIX I

Test set up diagrams

- **Radiated Measurement**

Below 960 MHz	960 ~ 1 000 MHz
	
Above 1 000 MHz	**-**
	-

- **Conducted Measurement**