



FCC RADIO TEST REPORT

FCC ID : A4RGUL82
Equipment : Phone
Model Name : GUL82
Applicant : Google LLC
1600 Amphitheatre Parkway,
Mountain View, CA, 94043 USA
Standard : 47 CFR FCC Part 15.519

The product official sample was received on Dec. 28, 2024, and testing was performed from Dec. 30, 2024 to Mar. 08, 2025. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issue Date
FR4N09180	01	Initial issue of report	Apr. 18, 2025
FR4N09180	02	Revise cover page, Product Feature of Equipment Under Test and The Worst Case Measurement Configuration This report is an updated version, replacing the report issued on Apr. 18, 2025.	May 02, 2025

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1	15.203	Antenna Requirement	PASS	15.203
3.1	15.207	AC Power-line Conducted Emissions	PASS	15.207
3.2	15.503	UWB Bandwidth	PASS	≥ 500MHz
3.3	15.519(a)(1)	Technical requirements for Hand Held UWB systems	PASS	15.519(a)(1)
3.4	15.519(e)	Peak Power Measurement	PASS	≤ 0 dBm/50MHz
3.5	15.519(c) /15.519(d)	Radiated Emissions	PASS	UWB Emissions: 15.519(c) GPS Emissions: 15.519(d) Digital Emissions: 15.209

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: William Chen

Report Producer: Clio Lo

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature
General Specs GSM/WCDMA/LTE/5G NR/NTN, Bluetooth, BLE, BLE channel sounding, Thread, Wi-Fi 802.11be, NFC, WPC Rx, UWB and GNSS Rx.
Antenna Type UWB: <Ranging Antenna>: IFA Antenna <Patch Antenna>: Patch Antenna

Antenna information		
6489.6 MHz	Peak Gain (dBi)	<Ranging Antenna>: 1.19
7987.2 MHz	Peak Gain (dBi)	<Ranging Antenna>: 4.55 <Patch Antenna>: 2.66

Remark: The above EUT's information was declared by manufacturer. Please refer to Disclaimer in report summary.

EUT Information List	
S/N	Performed Test Item
51061FDCQ000D2	Equivalent Isotropic Radiated Power
	Radiated Spurious Emission
	Conducted Emission

1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Type of EUT

Operational Condition	
EUT Power Type	AC mains: AC voltage 120 V
Type of EUT	
☒	Stand-alone
☐	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.: ...
☐	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.: ...
☐	Other:

1.4 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01

Remark: The TAF code is not including all the FCC KDB listed without accreditation.

1.5 Testing Location Information

Test Site	Sporton International Inc. Wensan Laboratory	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	Sporton Site No.	
	CO07-HY	03CH22-HY

Note: The test site complies with ANSI C63.4 2014 requirement.
FCC designation No.: TW1190 and TW3786

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
Conduction	CO07-HY	Louis Chung	20.2~23.4 °C 47.5~51.2 %	Mar. 08, 2025
Radiated	03CH22-HY	Bill Chang, York Huang and Ken Kuo	18.8~22.5 °C 57.7~63.3 %	Dec. 30, 2024~ Mar. 05, 2025

1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

Test Items	Uncertainty	Remark
AC Conduction (150kHz ~ 30MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1000MHz)	6.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 6GHz)	5.2 dB	Confidence levels of 95%
Radiated Emission (6GHz ~ 18GHz)	5.0 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	5.7 dB	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Mode

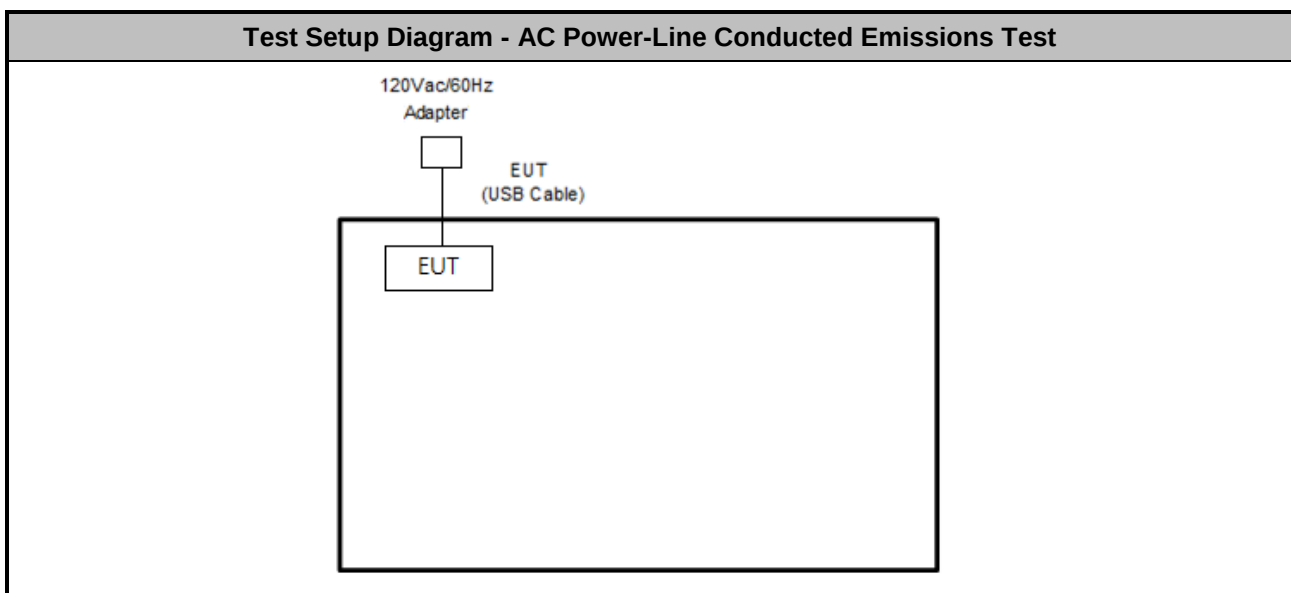
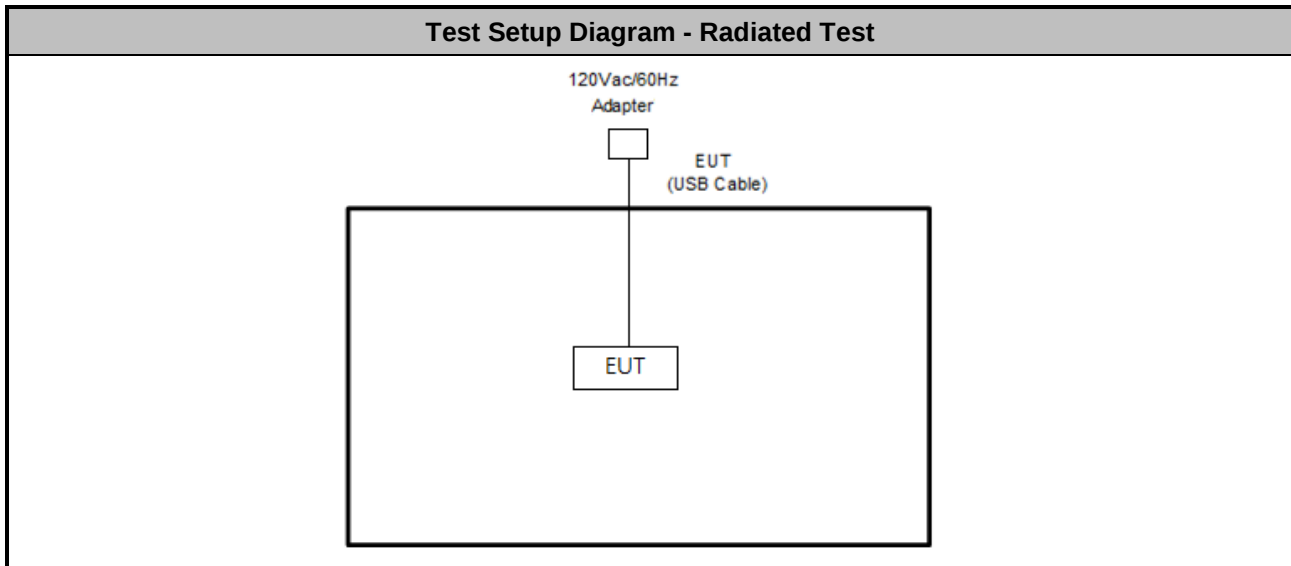
Test Configuration					
Mode	Antenna	Channel	Modulation	Config ID	Payload Length (bytes)
1	Ranging Antenna	5	BPRF	0	125
2	Ranging Antenna	9	BPRF	0	125
3	Patch Antenna	9	BPRF	0	125
4	Ranging Antenna	5	BPRF	1	125
5	Ranging Antenna	9	BPRF	1	125
6	Patch Antenna	9	BPRF	1	125
7	Ranging Antenna	5	BPRF	2	NA
8	Ranging Antenna	9	BPRF	2	NA
9	Patch Antenna	9	BPRF	2	NA
10	Ranging Antenna	5	HPRF	3	150
11	Ranging Antenna	9	HPRF	3	150
12	Patch Antenna	9	HPRF	3	150
13	Ranging Antenna	5	HPRF	4	150
14	Ranging Antenna	9	HPRF	4	150
15	Patch Antenna	9	HPRF	4	150
16	Ranging Antenna	5	HPRF	5	N/A
17	Ranging Antenna	9	HPRF	5	N/A
18	Patch Antenna	9	HPRF	5	N/A
19	Ranging Antenna	5	HPRF	6	N/A
20	Ranging Antenna	9	HPRF	6	N/A
21	Patch Antenna	9	HPRF	6	N/A

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	CTX
1	Adapter Mode
Remark: Please refer to 15.207 which states, "Measurements to demonstrate compliance with the conducted limits are not required for devices employ Battery for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines".	

The Worst Case Mode for Following Conformance Tests			
Tests Item	Radiated Emissions		
Test Condition	Radiated measurement		
Operating Mode	CTX		
9, 17, 19	Adapter Mode		
Patch Antenna CH09 Mode 9 configuration was tested and found to be the worst case and measured during the test.			
Ranging Antenna CH05 Mode 19 configuration was tested and found to be the worst case and measured during the test.			
Ranging Antenna CH09 Mode 17 configuration was tested and found to be the worst case and measured during the test.			
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Ranging Antenna CH05		V	
Ranging Antenna CH09 Patch Antenna CH09			V
Remark: 1. The measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and find as worst plane, and recorded in this report. 2. For UWB Bandwidth Measurement, all modes are performed and only the maximum bandwidth plot per antenna per channel is shown in the test report. 3. For Peak Power Measurement, all modes are performed and only the worst case plot per antenna per channel is shown in the test report. 4. For Radiated Test Cases, the tests were performed with USB Cable 2.			

2.3 Test Setup Diagram



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Adapter	Aohai	G9BR1	N/A	N/A	N/A

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

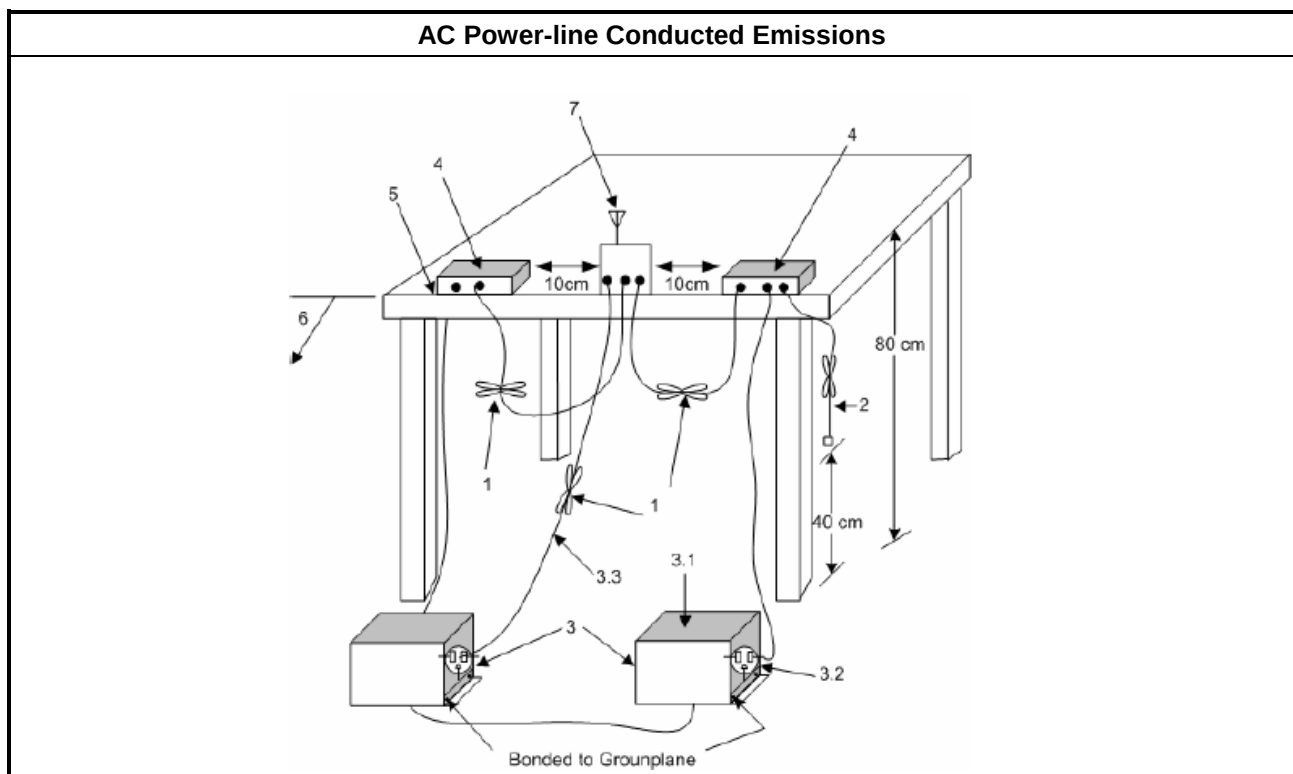
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method
■ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup



3.1.5 Test Result

Please refer to Appendix A.

3.2 UWB bandwidth

3.2.1 UWB bandwidth Limit

UWB bandwidth Limit
UWB bandwidth ≥ 500 MHz or Fractional bandwidth ≥ 0.2 ; Fractional bandwidth = $2(f_H - f_L) / (f_H + f_L)$

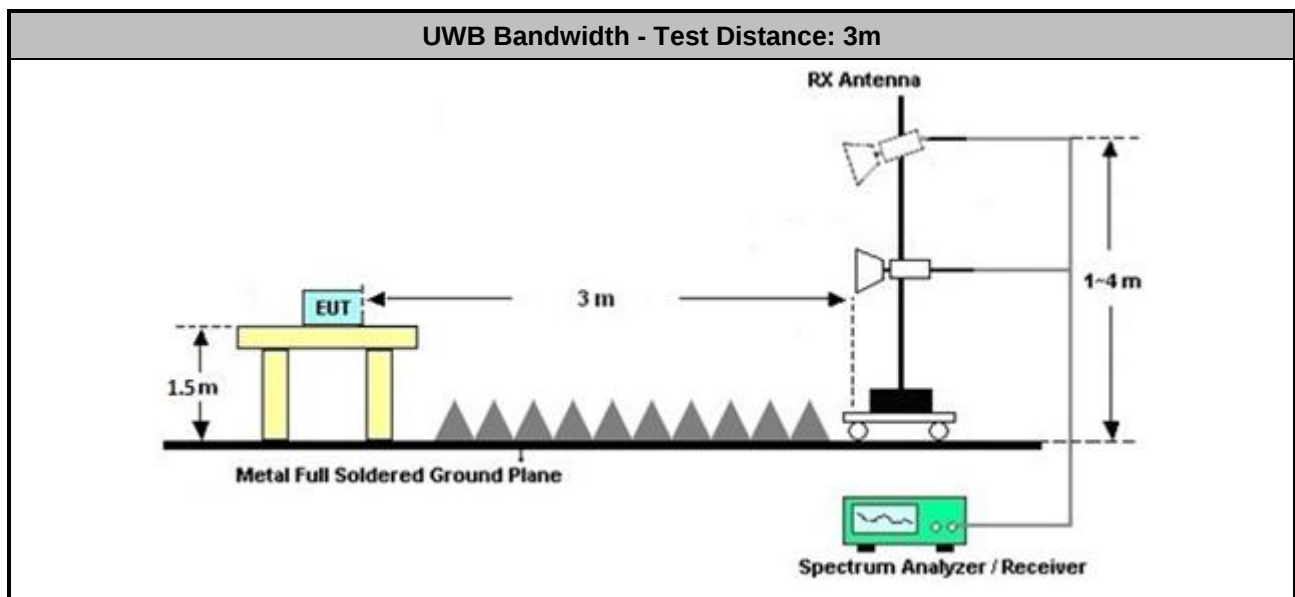
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method
■ For the UWB bandwidth shall be measured using one of the options below:
■ Refer as ANSI C63.10, clause 6.9.2 and clause 10.1 for UWB bandwidth testing.

3.2.4 Test Setup

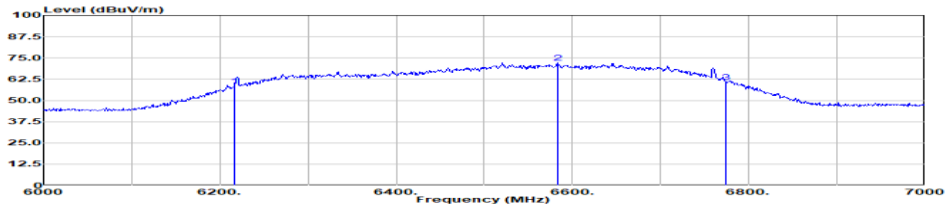


3.2.5 Test Result of UWB Bandwidth

Test mode	F _L (MHz)	F _H (MHz)	UWB Bandwidth (MHz)	Bandwidth limit (MHz)	Result	Pol [H/V]
1	6217	6763	546	≥ 500	Pass	H
2	7714	8261	547	≥ 500	Pass	V
3	7714	8261	547	≥ 500	Pass	H
4	6217	6763	546	≥ 500	Pass	H
5	7714	8261	547	≥ 500	Pass	V
6	7714	8261	547	≥ 500	Pass	H
7	6217	6774	557	≥ 500	Pass	H
8	7714	8269	555	≥ 500	Pass	V
9	7714	8260	546	≥ 500	Pass	H
10	6217	6769	552	≥ 500	Pass	H
11	7714	8261	547	≥ 500	Pass	V
12	7714	8261	547	≥ 500	Pass	H
13	6219	6763	544	≥ 500	Pass	H
14	7714	8261	547	≥ 500	Pass	H
15	7714	8261	547	≥ 500	Pass	H
16	6218	6770	552	≥ 500	Pass	H
17	7714	8261	547	≥ 500	Pass	V
18	7714	8261	547	≥ 500	Pass	H
19	6218	6763	545	≥ 500	Pass	H
20	7714	8260	546	≥ 500	Pass	V
21	7714	8261	547	≥ 500	Pass	H

UWB Bandwidth
Ranging Antenna Channel 5

Mode 7 – Bandwidth 6774MHz – 6217MHz = 557MHz

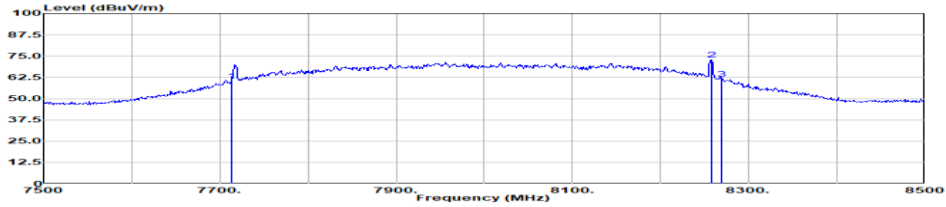


Site : 03CH22-HY
Condition : 3m DRH18_E_LE2C04A18EN_240711 Horizontal
Project : 4N0918
Detector : Peak
Mode : 7
Channel : CH5
Test Case Number : Case 3
Antenna : Ranging Antenna
Modulation : BPRF
Payload Length(bytes) : 20
Sweep point(pts) : 1001

	Freq	Level	Limit	Margin	Read	Ant	Cable	Preamp	Aux	Apos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	Loss	Factor	Factor	cm	deg	
1	6217.00	58.59	-----	-----	44.74	34.90	14.08	35.13	0.00	--	--	Peak
2	6583.00	72.06	-----	-----	56.63	36.27	14.55	35.39	0.00	--	--	Peak
3	6774.00	60.65	-----	-----	45.04	36.55	14.78	35.72	0.00	--	--	Peak

UWB Bandwidth
Ranging Antenna Channel 9

Mode 8 – Bandwidth 8269MHz – 7714MHz = 555MHz

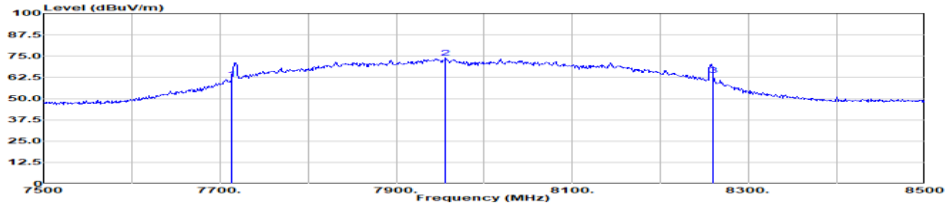


Site : 03CH22-HY
Condition : 3m DRH18_E_LE2C04A18EN_240711 Vertical
Project : 8BW:1000.000kHz VSW:3000.000kHz SWT:3.000sec
Detector : 4N0918
Mode : Peak
Channel : 8
Test Case Number : CH9
Antenna : Case 3
Antenna : Ranging Antenna
Modulation : BPRF
Payload Length(bytes) : 20
Sweep point(pts) : 1001

	Freq	Level	Limit	Margin	Read	Ant	Cable	Preamp	Aux	Apos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	7714.00	60.32	-----	-----	44.54	36.87	15.85	36.94	0.00	--	--	Peak
2	8257.00	72.67	-----	-----	56.35	37.10	16.41	37.19	0.00	--	--	Peak
3	8269.00	61.69	-----	-----	45.37	37.10	16.42	37.20	0.00	--	--	Peak

UWB Bandwidth
Patch Antenna Channel 9

Mode 9 – 8260MHz – 7714MHz = 546MHz



Site : 03CH22-HY
Condition : 3m DRH18_E_LE2C04A18EN_240711 Horizontal
Project : RBW:1000.000kHz VBW:3000.000kHz SWT:3.000sec
Detector : 4N0918
Mode : Peak
Channel : 9
Test Case Number : CH9
Antenna : Case 3
Modulation : Common AoA
Payload Length(bytes) : 8PRF
Sweep point(pts) : 20
Sweep point(pts) : 1001

	Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	Apos	TPos	Remark
	MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m	Loss	Factor	Factor	dB	deg	
1	7714.00	61.44	-----	-----	-----	45.66	36.87	15.85	36.94	0.00	--	--	Peak
2	7956.00	74.12	-----	-----	-----	58.03	37.00	16.09	37.00	0.00	--	--	Peak
3	8260.00	63.60	-----	-----	-----	47.28	37.10	16.41	37.19	0.00	--	--	Peak

3.3 Technical requirements for hand held UWB systems

3.3.1 Technical Requirements for transmission Limit

FCC 15.519(a) (1) A UWB device operating under the provisions of this section shall transmit only when it is sending information to an associated receiver. The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received. An acknowledgment of reception must continue to be received by the UWB intentional radiator at least every 10 seconds or the UWB device must cease transmitting.

3.3.2 Measuring Instruments

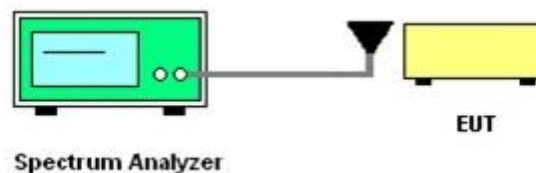
Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedure

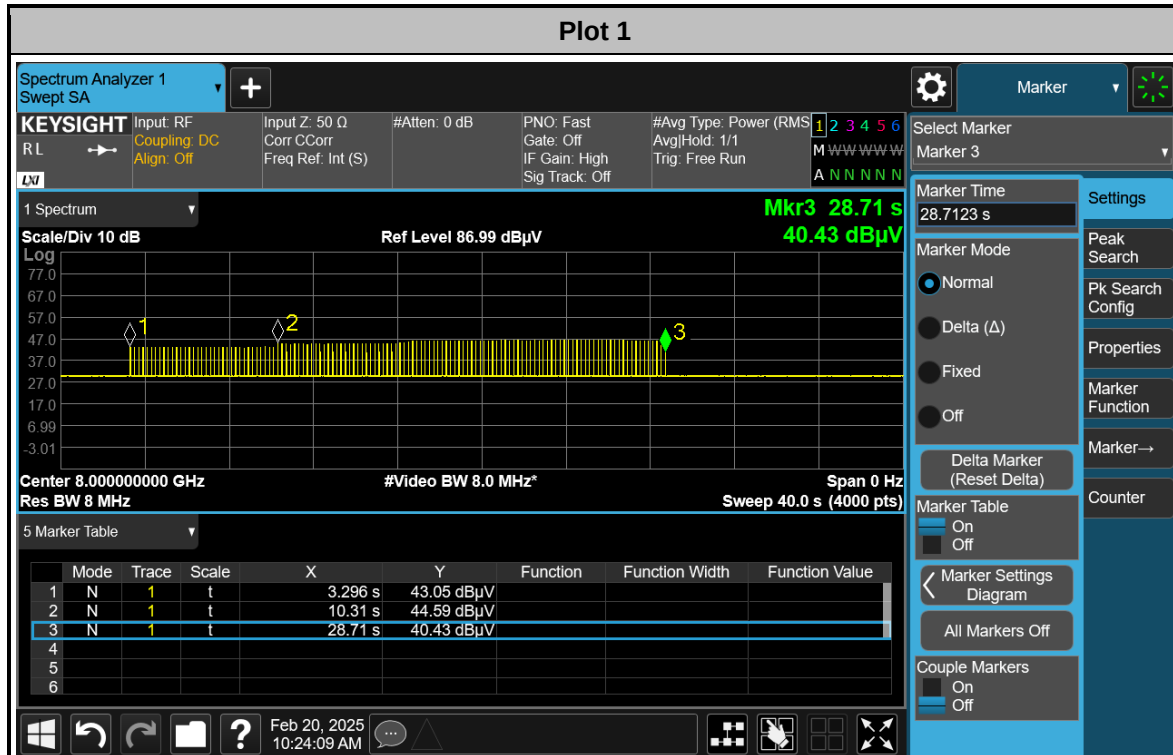
Follow the test step as below:

1. Turn on both EUT and companion receiver.
2. Set the EUT to TX mode, and EUT starts polling.
3. Set the companion receiver to associate EUT and EUT starts to transmit.
4. Disable the RX function of the companion receiver to disassociate the EUT.
5. Check if EUT stop transmitting once step 4 is made.

3.3.4 Test Setup



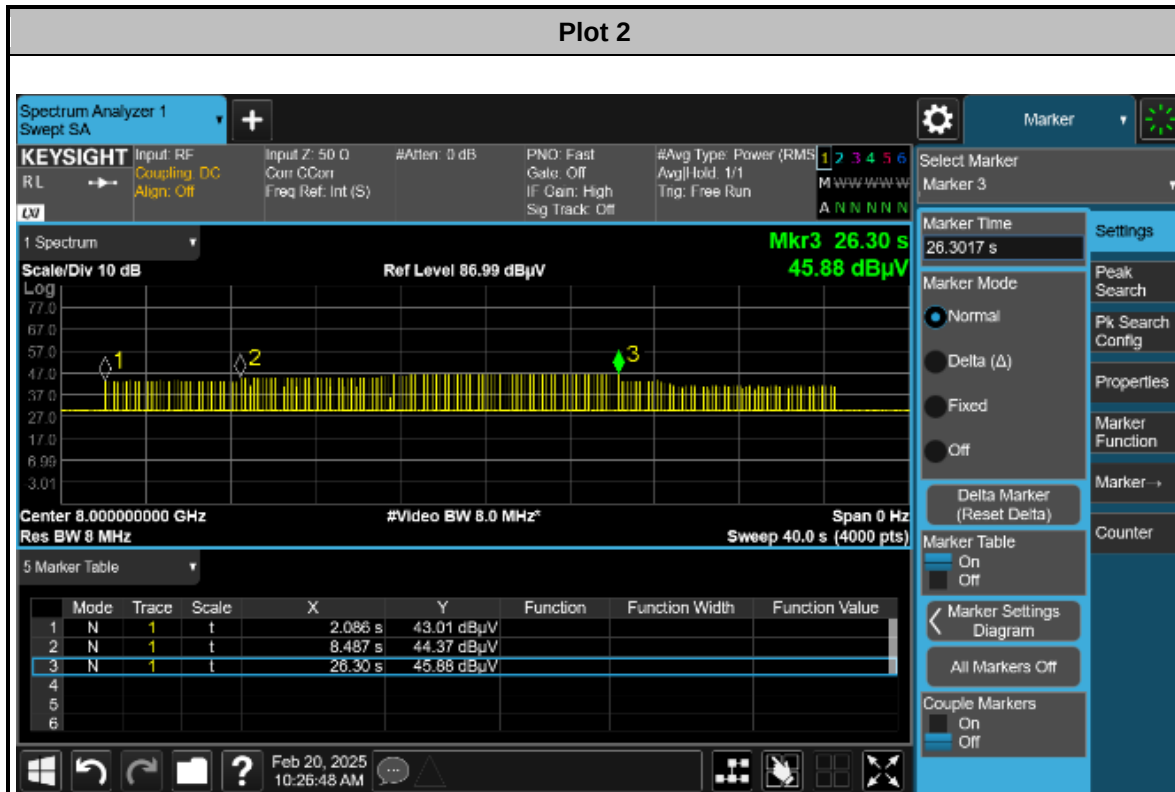
3.3.5 Test Result



M1 to M2: Set the EUT to TX mode, and EUT starts polling.

M2 to M3: Set the companion receiver to associate EUT and EUT starts to transmit.

M3: Disable the TX function of EUT. EUT stops transmitting and polling.



M1 to M2: Set the EUT to TX mode, and EUT starts polling.

M2 to M3: Set the companion receiver to associate EUT and EUT starts to transmit.

M3: RX function of the companion receiver is disabled. EUT disassociates the companion receiver and stops transmitting, but continues polling.



Plot 3 is zoom in plot of M2 to M3 (transmission)

Plot 4 is zoom in plot after M3 (polling only)

3.4 Peak Power Measurement

3.4.1 Peak Power Measurement Limit

Peak Power Measurement Limit
$P_{eip} = 0 \text{ dBm/50MHz}$

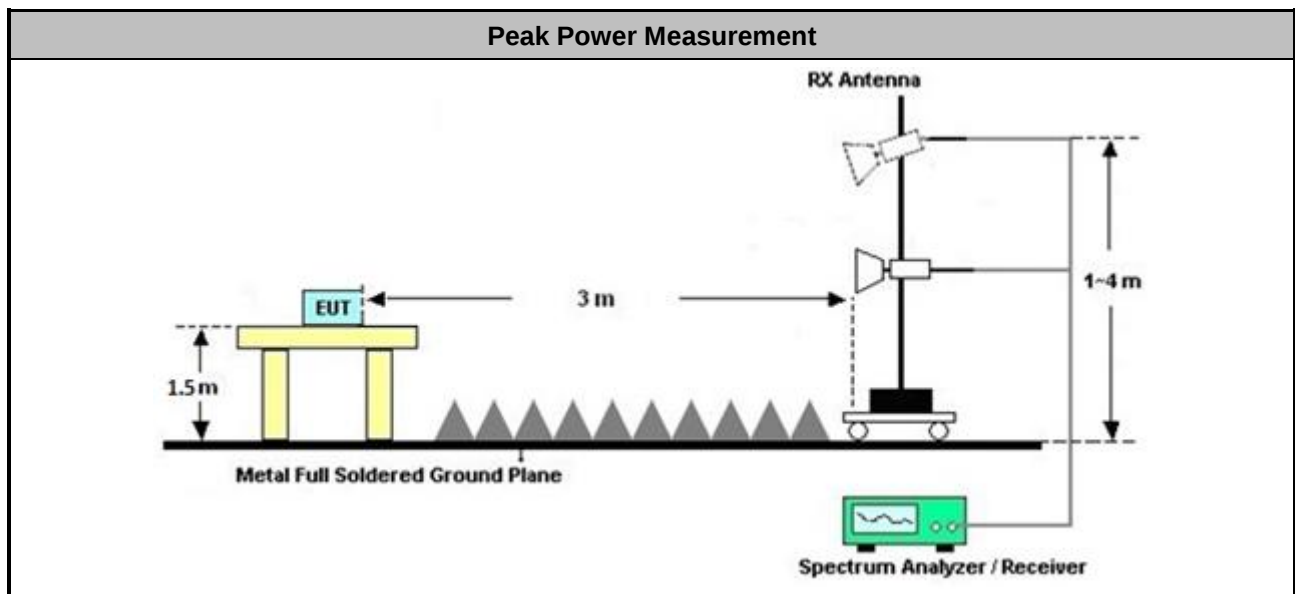
3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method
Peak Power Measurement
- Refer as ANSI C63.10, clause 10.3.1 for radiated measurement procedure testing. - Refer as ANSI C63.10, clause 10.3.2 for measurement distance is 3m. - Refer as ANSI C63.10, clause 10.3.5 for peak detector procedure testing. - Refer as ANSI C63.10, clause 10.3.6 for bandwidth conversion of peak power.
- Frequency of max peak power is pre-located: The span bandwidth is continuously reduced to find the worst frequency. Once the worst frequency is found, the setting of spectrum analyzer is set as below: - Central frequency: Worst frequency point - Span: Zero span - RBW: 50MHz - VBW: 80MHz - Detector: Peak detector - Trace: Max hold

3.4.4 Test Setup



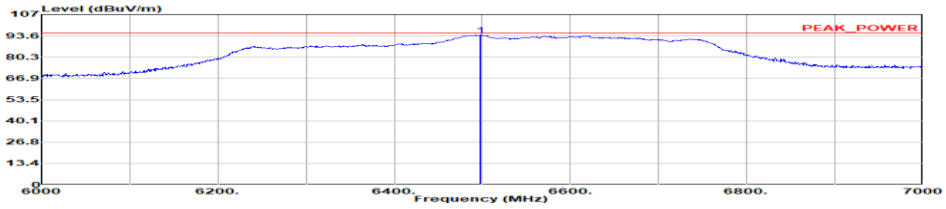
3.4.5 Test Result of Peak Power Measurement

Peak Measurement Result							
Test Mode	Freq. (MHz)	E-Field (dBuV/m)	EIRP _{50MHz} (dBm)	EIRP _{50MHz} Limit (dBm)	Margin (dB)	Result	Pol [H/V]
1	6497.0	94.04	-1.19	0	-1.19	Pass	H
2	7982.0	94.87	-0.36	0	-0.36	Pass	V
3	7981.0	95.13	-0.10	0	-0.10	Pass	H
4	6494.0	93.81	-1.42	0	-1.42	Pass	H
5	7984.0	94.84	-0.39	0	-0.39	Pass	V
6	7990.0	94.68	-0.55	0	-0.55	Pass	H
7	6552.0	89.05	-6.18	0	-6.18	Pass	H
8	7984.0	88.14	-7.09	0	-7.09	Pass	V
9	7917.0	87.09	-8.14	0	-8.14	Pass	H
10	6615.0	86.38	-8.85	0	-8.85	Pass	H
11	7989.0	84.99	-10.24	0	-10.24	Pass	V
12	7980.0	86.09	-9.14	0	-9.14	Pass	H
13	6492.0	86.86	-8.37	0	-8.37	Pass	H
14	7988.0	88.47	-6.76	0	-6.76	Pass	H
15	7986.0	88.99	-6.24	0	-6.24	Pass	H
16	6619.0	82.68	-12.55	0	-12.55	Pass	H
17	7927.0	82.88	-12.35	0	-12.35	Pass	V
18	7985.0	84.05	-11.18	0	-11.18	Pass	H
19	6616.0	87.66	-7.57	0	-7.57	Pass	H
20	7989.0	87.99	-7.24	0	-7.24	Pass	V
21	7987.0	87.80	-7.43	0	-7.43	Pass	H
Note 1: EIRP [dBm] = E-Field [dBuV/m] - 95.23; Note 2: Measurement worst emissions of receive antenna polarization.							



Peak Power Measurement Plots
Ranging Antenna Channel 5

Mode 1 – Peak Power 94.04 – 95.23 = -1.19 dBm/50MHz

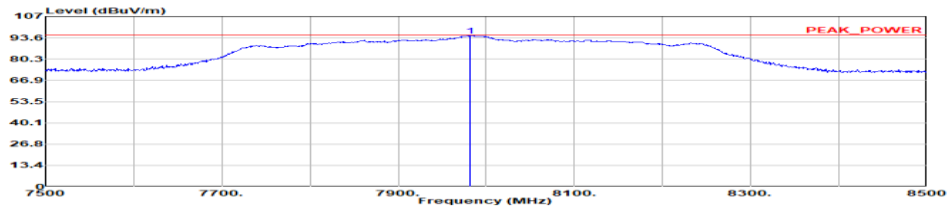


Site : 03CH22-HY
Condition : PEAK_POWER 3m DRH18_E_LE2C04A18EN_240711 Horizontal
Project : RBW:50000.000kHz VBW:80000.000kHz SWT:1.000sec
Detector : 4N0918
Mode : Peak
Channel : 1
Test Case Number : CH5
Antenna : Case 1
Modulation : Ranging Antenna
Payload Length(bytes): BPRF
325

	Freq	Level	Limit	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	6497.00	94.04	95.23	-1.19	78.73	36.09	14.46	35.24	0.00	--	--	Peak

Peak Power Measurement Plots
Ranging Antenna Channel 9

Mode 2 – Peak Power 94.87 – 95.23 = -0.36 dBm/50MHz



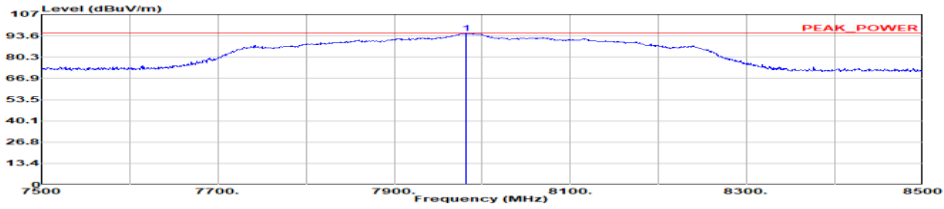
Site : 03CH22-HY
Condition : PEAK_POWER 3m DRH18_E_LE2C04A18EN_240711 Vertical
Project : RDW:50000.000kHz VDW:50000.000kHz SWT:1.000sec
Detector : AN0918
Mode : Peak
Channel : 2
Test Case Number : CH9
Antenna : Case 1
Modulation : Ranging Antenna
Payload Length(bytes) : 125

	Freq	Level	Limit	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	Level	Factor	Loss	Factor	Factor			
1	7982.00	94.87	95.23	-0.36	78.77	37.00	16.11	37.01	0.00	--	--	Peak



Peak Power Measurement Plots
Patch Antenna Channel 9

Mode 3 – Peak Power 95.13 – 95.23 = -0.10 dBm/50MHz



Site : 03CH22-HY
Condition : PEAK_POWER 3m DRH18_E_LE2C04A18EN_240711 Horizontal
Project : RBW:50000.000kHz VBW:80000.000kHz SWT:1.000sec
Detector : 4N0918
Mode : Peak
Channel : 3
Test Case Number : CH9
Antenna : Case 1
Modulation : Common AoA
Payload Length(bytes) : 8PRF
125

Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
MHZ	dBuV/m	dBuV/m		dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	7981.00	95.13	95.23	-0.10	79.03	37.00	16.11	37.01	0.00	--	--	Peak

3.5 Radiated Emissions

3.5.1 Radiated Emissions Limit

Radiated Emissions below 960MHz and Emissions from Digital Circuitry Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Radiated Emissions above 960MHz Limit	
Frequency Range (MHz)	EIRP (dBm), RBW = 1MHz
960-1610	-75.3
1610-1990	-63.3
1990-3100	-61.3
3100-10600	-41.3
Above 10600	-61.3

Note: Distance extrapolation factor = 20 log (test distance [X m]/specific distance [3 m]) (dB)

Radiated Emissions in GPS Bands Limit	
Frequency Range (MHz)	EIRP (dBm), RBW ≥ 1kHz
1164-1240	-85.3
1559-1610	-85.3

Note E (dBuV/m) = EIRP (dBm) + 95.23, example, E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m

3.5.2 Measuring Instruments

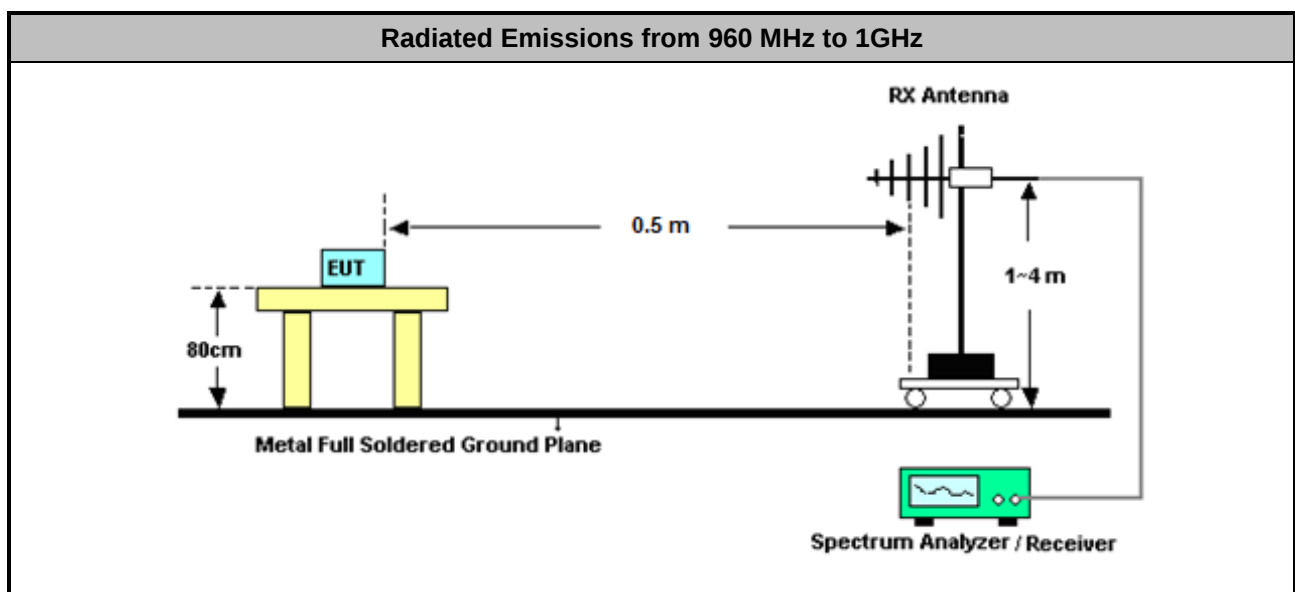
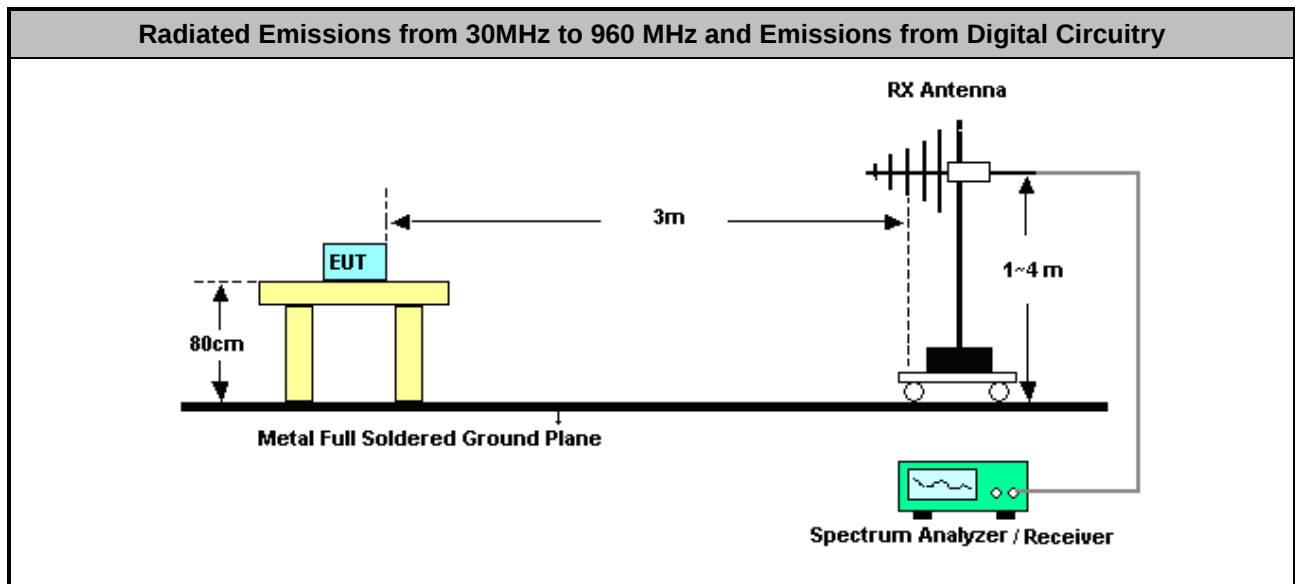
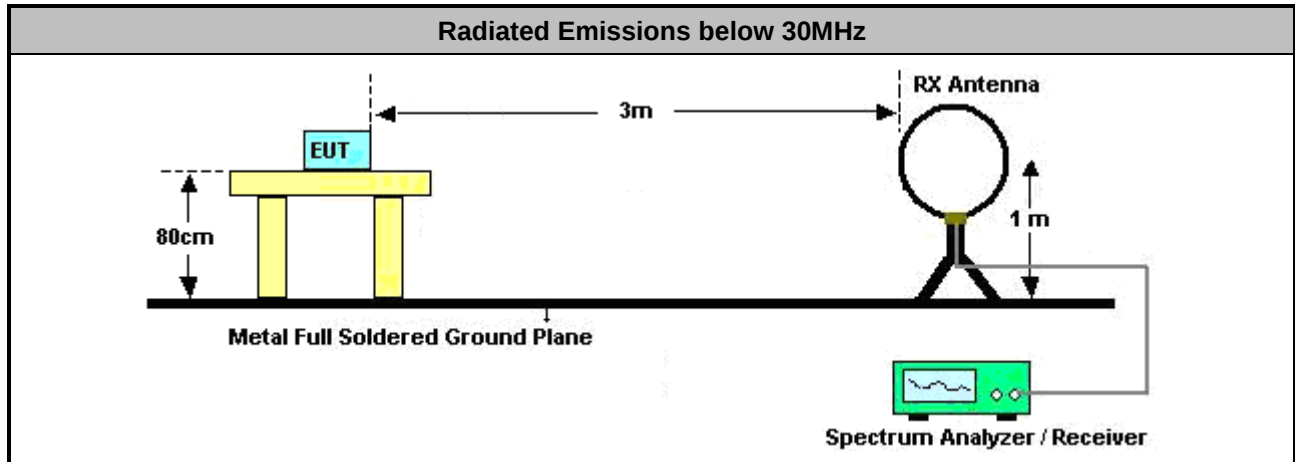
Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

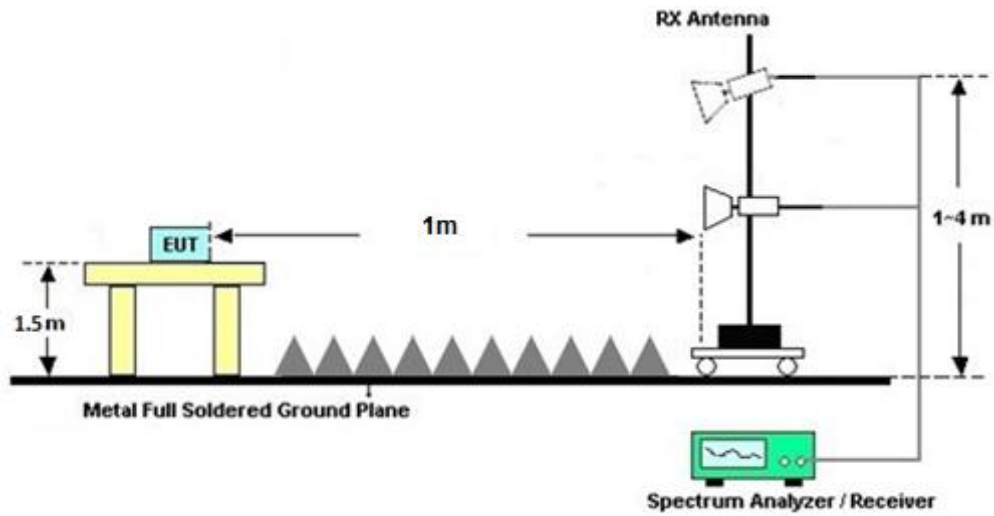
Test Method for Radiated Emissions above 960MHz	
■ Radiated Emissions above 960MHz	
■	Refer as ANSI C63.10, clause 10.3.1 for radiated measurement procedure testing.
■	Refer as ANSI C63.10, clause 10.3.2 for measurement distance is 3m. In some cases, it may be necessary to measure the radiated UWB emissions at a closer distance to obtain enough signal and margin to overcome the measurement system noise floor. Distance extrapolation factor = 20 log (test distance [X m]/specific distance [3 m]) (dB)
■	Refer as ANSI C63.10, clause 10.3.4 for rms detector procedure testing.
■	Refer as ANSI C63.10, clause 10.3.7 for evaluating AVG-PSD (RBW=1MHz).
■	Refer as ANSI C63.10, clause 10.3.10 for evaluating AVG-PSD in GPS Band (RBW≥1kHz).
■ For radiated measurement.	
■	Refer as ANSI C63.10, clause 10.3.8 following eirp can be used radiated test configuration.
■	Refer as ANSI C63.10, clause 10.3.9 following eirp can be directly determined using the field strength.

Test Method for Radiated Emissions below 960MHz and Emissions from Digital Circuitry	
■ Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements) for above 30MHz-960MHz; 40dB/decade for frequency below 30MHz.	
■ For the transmitter unwanted emissions shall be measured using following options below:	
■	Refer as ANSI C63.10, clause 4.1.4 Detector functions and selection of bandwidth
□	Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions. Adjusted by a “duty cycle correction factor”, derived from 20log (dwell time/100 ms). Average emission = peak emission + 20 log (duty cycle).
■	Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
■ For radiated measurement.	
■	Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
■	Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
■	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1 GHz and test distance is 3m.
■	If the noise floor can't meet the limit, the test distance will be shorten and described in the report.
■ Any unwanted emissions level shall not exceed the fundamental emission level.	

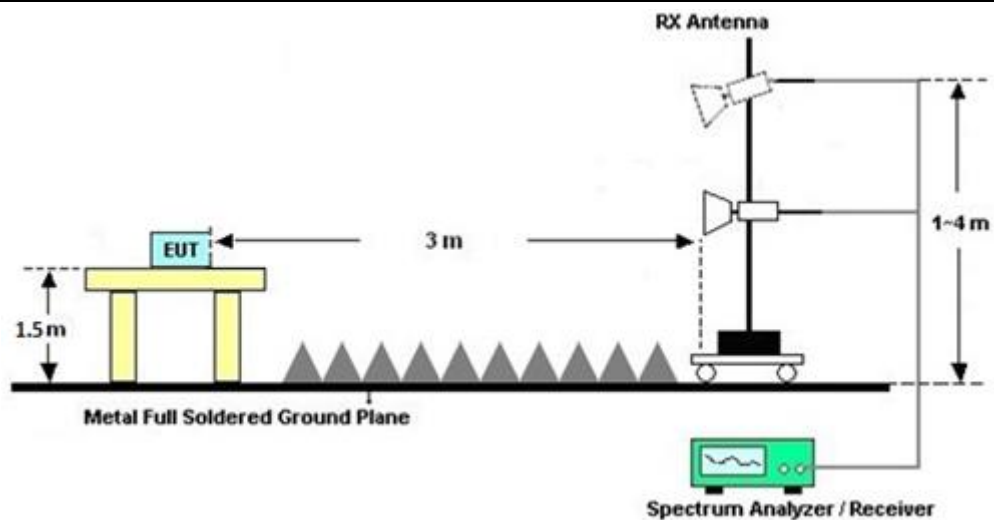
3.5.4 Test Setup

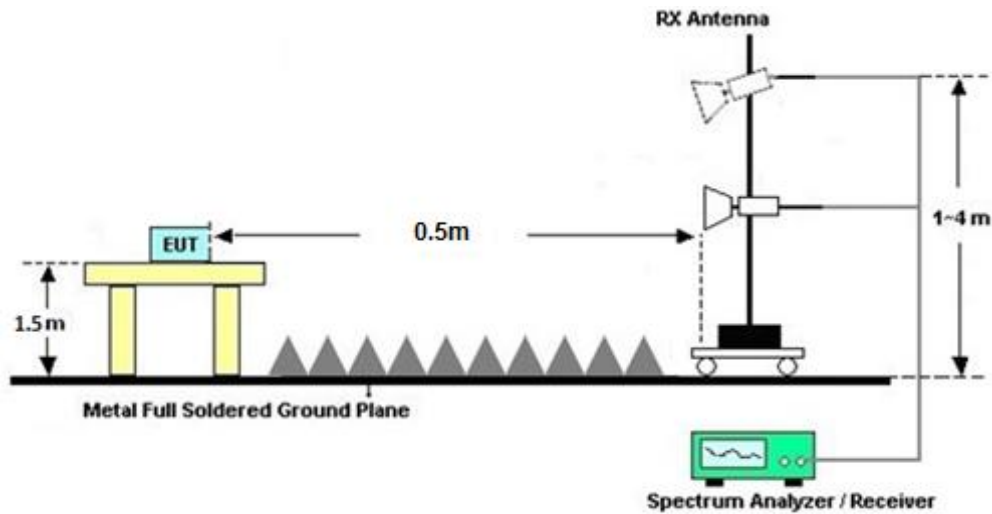
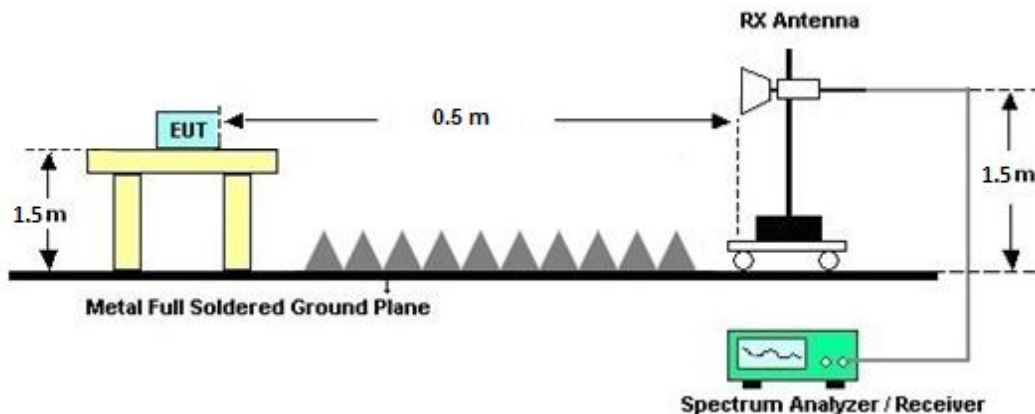


Radiated Emissions from 1GHz to 1.61 GHz



Radiated Emissions from 1.61 GHz to 10.60 GHz



Radiated Emissions from 10.60 GHz to 18GHz

Radiated Emissions above 18GHz


Note 1: Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna and the frequency range of 1 GHz to 40 GHz using a calibrated horn antenna.

Note 2: If test distance other than 3m is used, the used test distance will be recorded in test result.

3.5.5 Radiated Emissions (Below 30MHz)

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

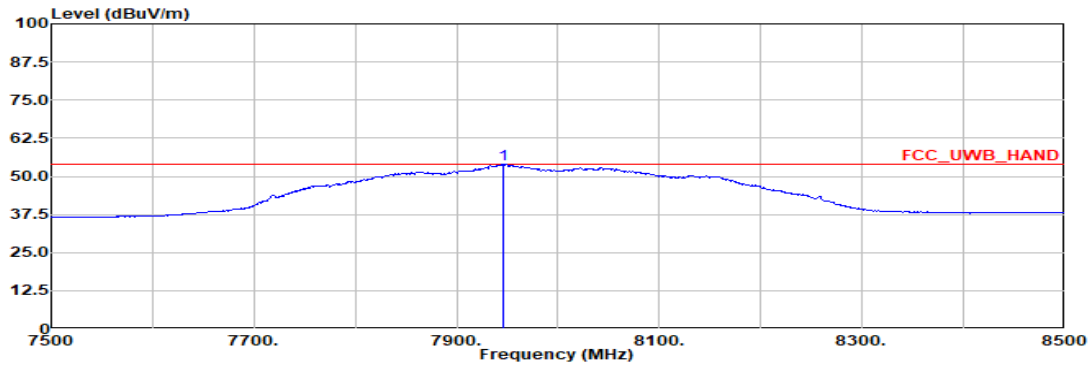
There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.5.6 Average Power Spectral Density

Test mode	Frequency (MHz)	Emission Level (dBuV/m)	Emission Limit (dBm/MHz)	Emission Limit (dBuV/m)	Margin (dB)	Result	Pol [H/V]
1	6614.0	53.78	-41.3	53.93	-0.15	Pass	H
2	7948.0	53.37	-41.3	53.93	-0.56	Pass	V
3	7942.0	52.13	-41.3	53.93	-1.80	Pass	H
4	6577.0	53.74	-41.3	53.93	-0.19	Pass	H
5	7945.0	53.65	-41.3	53.93	-0.28	Pass	V
6	8043.0	53.06	-41.3	53.93	-0.87	Pass	H
7	6573.0	53.83	-41.3	53.93	-0.10	Pass	H
8	7948.0	53.57	-41.3	53.93	-0.36	Pass	V
9	7946.0	53.84	-41.3	53.93	-0.09	Pass	H
10	6573.0	53.82	-41.3	53.93	-0.11	Pass	H
11	7947.0	52.92	-41.3	53.93	-1.01	Pass	V
12	7965.0	53.43	-41.3	53.93	-0.50	Pass	H
13	6614.0	53.53	-41.3	53.93	-0.40	Pass	H
14	7965.0	53.45	-41.3	53.93	-0.48	Pass	H
15	8043.0	53.79	-41.3	53.93	-0.14	Pass	H
16	6566.0	53.04	-41.3	53.93	-0.89	Pass	H
17	7951.0	53.67	-41.3	53.93	-0.26	Pass	V
18	7960.0	53.62	-41.3	53.93	-0.31	Pass	H
19	6595.0	53.87	-41.3	53.93	-0.06	Pass	H
20	7947.0	53.62	-41.3	53.93	-0.31	Pass	V
21	7947.0	53.80	-41.3	53.93	-0.13	Pass	H

Average Power Spectral Density Plots
Patch Antenna Channel 9

Mode 9 – Emission Level 53.93 dBuV/m



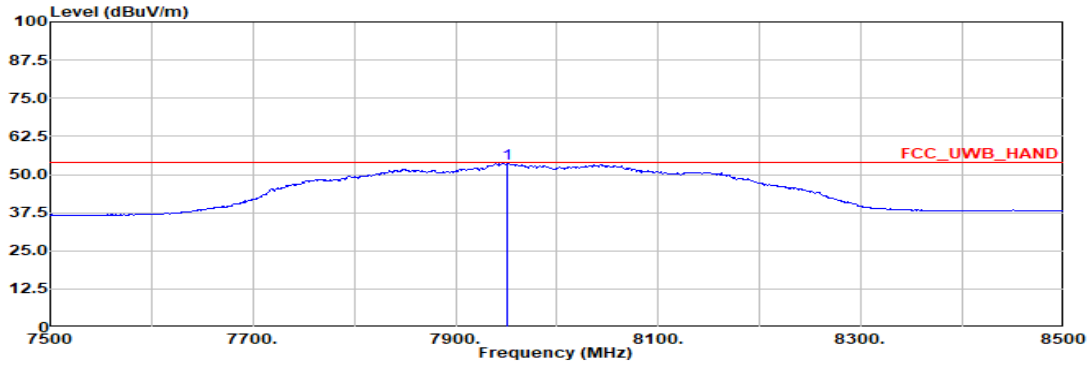
Site : 03CH22-HY
Condition : FCC_UWB_HAND 3m DRH18_E_LE2C04A18EN_240711 Horizontal
Project : 4N0918
Detector : Average
Mode : 9
Channel : CH9
Test Case Number : Case 3
Antenna : Common AoA
Modulation : BPRF
Payload Length(bytes) : 20
Sweep point(pts) : 1001

	Freq	Level	Limit	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	7946.00	53.84	53.93	-0.09	37.76	37.00	16.08	37.00	0.00	--	--	Average



Average Power Spectral Density Plots
Ranging Antenna Channel 9

Mode 17 – Emission Level 53.67 dBuV/m



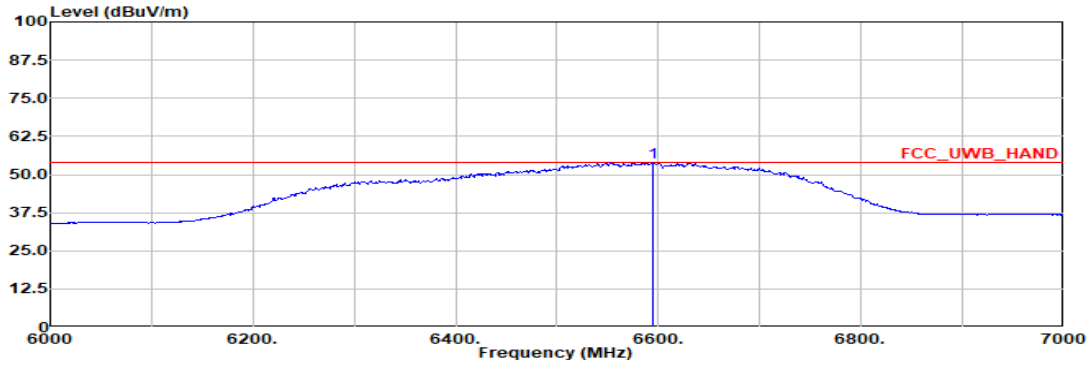
Site : 03CH22-HY
Condition : FCC_UWB_HAND 3m DRH18_E_LE2C04A18EN_240711 Vertical
Project : RBW:1000.000kHz VBW:3000.000kHz SWT:1.000sec
Detector : 4N0918
Mode : Average
Channel : 17
Test Case Number : CH9
Antenna : Case 6
Modulation : Ranging Antenna
Payload Length(bytes): HPRF
Sweep point(pts): 20
Sweep point(pts): 1001

Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1 7951.00	53.67	53.93		-0.26	37.59	37.00	16.08	37.00	0.00	--	--	Average



Average Power Spectral Density Plots
Ranging Antenna Channel 5

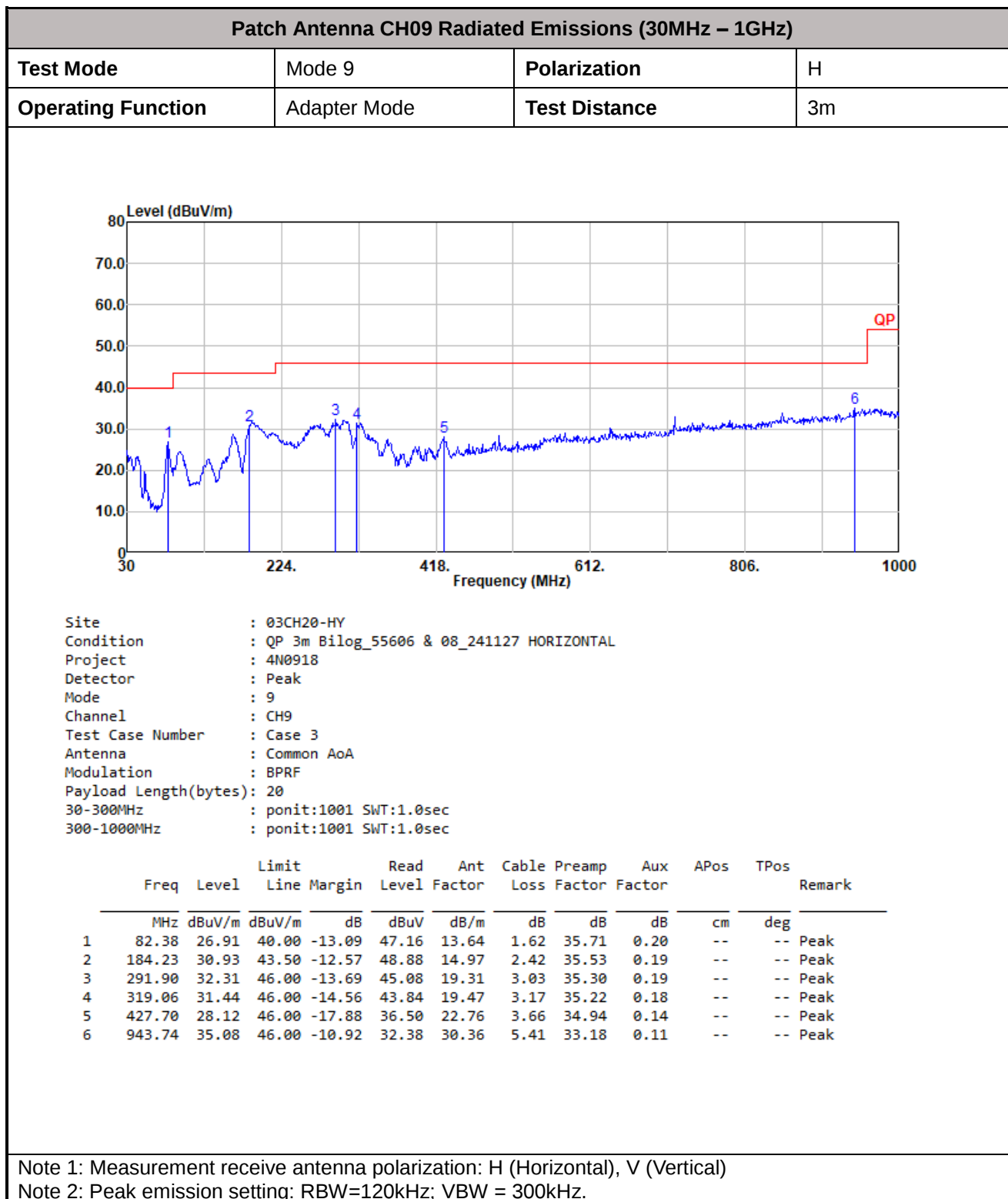
Mode 19 – Emission Level 53.87 dBuV/m



Site : 03CH22-HY
Condition : FCC_UWB_HAND 3m DRH18_E_LE2C04A18EN_240711 Horizontal
Project : 4N0918
Detector : Average
Mode : 19
Channel : CH5
Test Case Number : Case 7
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
Sweep point(pts) : 1001

	Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	6595.00	53.87	53.93		-0.06	38.43	36.29	14.56	35.41	0.00	--	--	Average

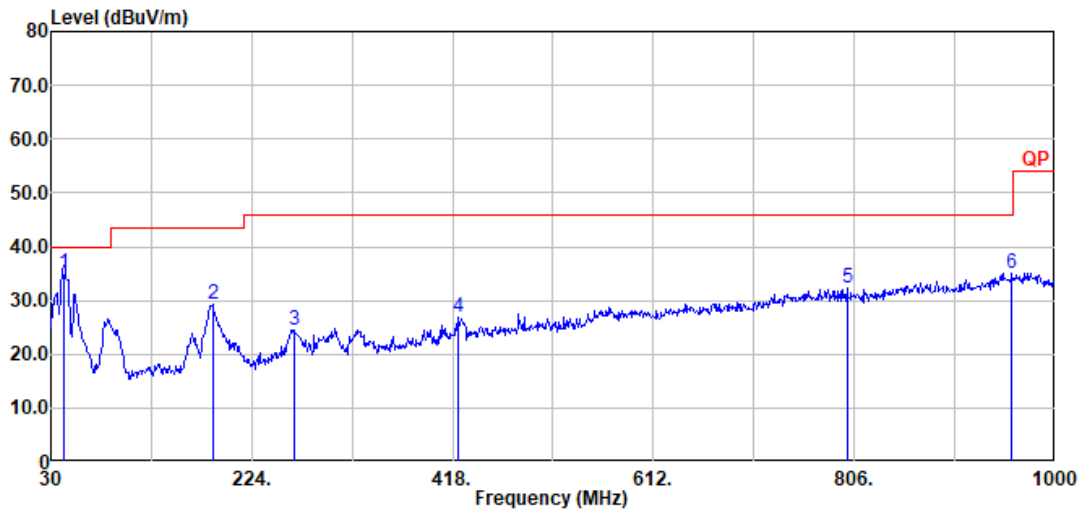
3.5.7 Radiated Emissions (30MHz – 1GHz)





Patch Antenna CH09 Radiated Emissions (30MHz – 1GHz)

Test Mode	Mode 9	Polarization	V
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH20-HY
Condition : QP 3m Bilog_55606 & 08_241127 VERTICAL
Project : 4N0918
Detector : Peak
Mode : 9
Channel : CH9
Test Case Number : Case 3
Antenna : Common AoA
Modulation : BPRF
Payload Length(bytes): 20
30-300MHz : ponit:1001 SWT:1.0sec
300-1000MHz : ponit:1001 SWT:1.0sec

	Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	42.61	34.97	40.00	-5.03	51.28	18.05	1.16	35.75	0.23	100	54	QP	
2	186.17	29.24	43.50	-14.26	47.20	14.95	2.43	35.53	0.19	--	--	Peak	
3	265.71	24.55	46.00	-21.45	36.81	20.02	2.89	35.36	0.19	--	--	Peak	
4	422.85	26.93	46.00	-19.07	35.44	22.65	3.64	34.95	0.15	--	--	Peak	
5	799.21	32.35	46.00	-13.65	32.72	28.18	4.98	33.69	0.16	--	--	Peak	
6	958.29	35.09	46.00	-10.91	31.64	31.03	5.45	33.12	0.09	--	--	Peak	

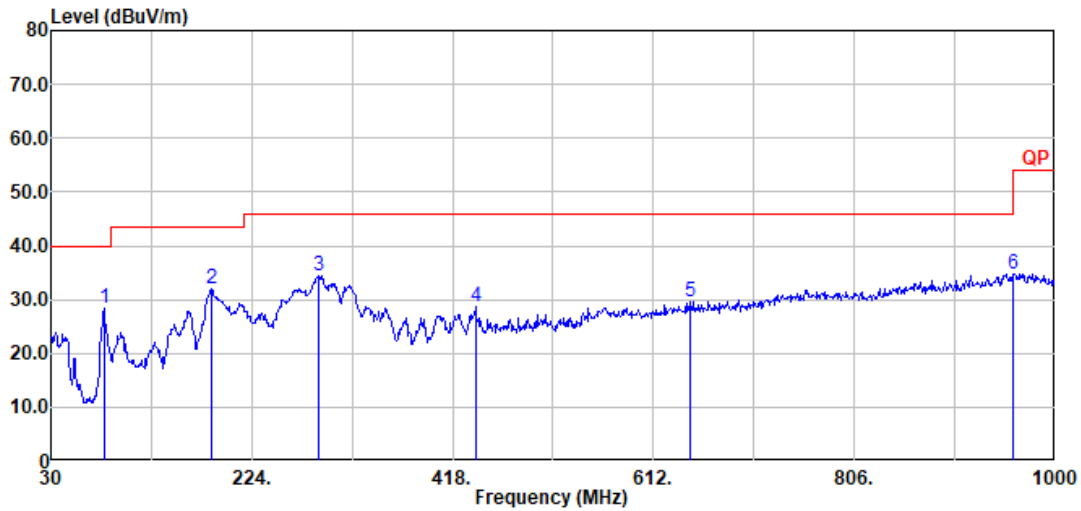
Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Peak emission setting: RBW=120kHz; VBW = 300kHz.



Ranging Antenna CH09 Radiated Emissions (30MHz – 1GHz)

Test Mode	Mode 17	Polarization	H
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH20-HY
Condition : QP 3m Bilog_55606 & 08_241127 HORIZONTAL
: RBW:120.000kHz VBW:300.000kHz SWT:0.500sec
Project : 4N0918
Detector : Peak
Mode : 17
Channel : CH9
Test Case Number : Case 6
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
30-300MHz : ponit:1001 SWT:1.0sec
300-1000MHz : ponit:1001 SWT:1.0sec

	Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	Line	Margin	Level	Factor	Loss	Factor	Factor	cm	deg	
1	81.41	28.34	40.00	-11.66	48.72	13.52	1.61	35.71	0.20	--	--	Peak
2	185.20	31.91	43.50	-11.59	49.88	14.95	2.42	35.53	0.19	--	--	Peak
3	288.02	34.54	46.00	-11.46	47.43	19.22	3.01	35.31	0.19	--	--	Peak
4	440.31	28.75	46.00	-17.25	36.92	22.89	3.72	34.92	0.14	--	--	Peak
5	646.92	29.73	46.00	-16.27	32.86	26.50	4.50	34.28	0.15	--	--	Peak
6	959.26	34.82	46.00	-11.18	31.33	31.07	5.45	33.12	0.09	--	--	Peak

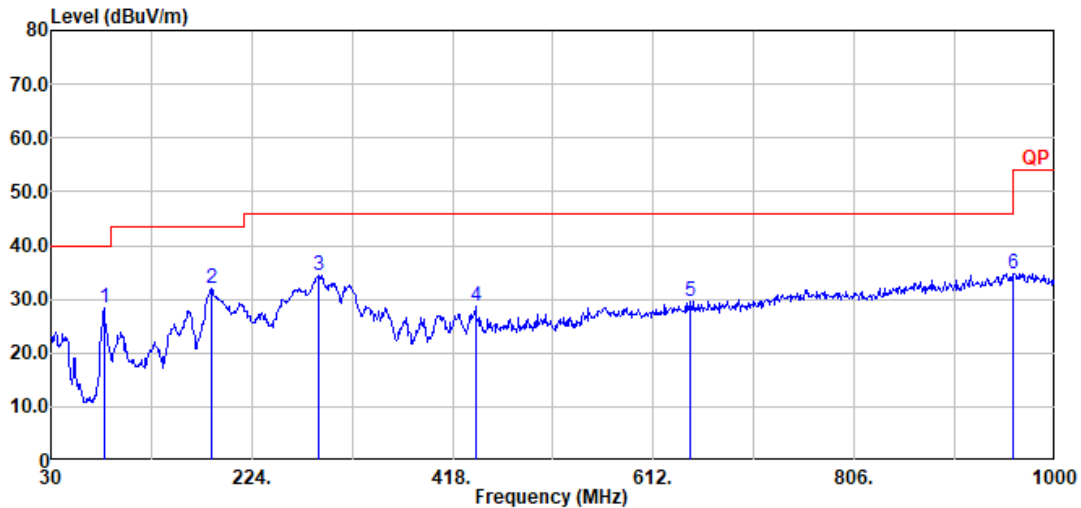
Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Peak emission setting: RBW=120kHz; VBW = 300kHz.



Ranging Antenna CH09 Radiated Emissions (30MHz – 1GHz)

Test Mode	Mode 17	Polarization	V
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH20-HY
Condition : QP 3m Bilog_55606 & 08_241127 HORIZONTAL
Project : 4N0918
Detector : Peak
Mode : 17
Channel : CH9
Test Case Number : Case 6
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
30-300MHz : ponit:1001 SWT:1.0sec
300-1000MHz : ponit:1001 SWT:1.0sec

	Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	81.41	28.34	40.00	-11.66	48.72	13.52	1.61	35.71	0.20	--	--	Peak
2	185.20	31.91	43.50	-11.59	49.88	14.95	2.42	35.53	0.19	--	--	Peak
3	288.02	34.54	46.00	-11.46	47.43	19.22	3.01	35.31	0.19	--	--	Peak
4	440.31	28.75	46.00	-17.25	36.92	22.89	3.72	34.92	0.14	--	--	Peak
5	646.92	29.73	46.00	-16.27	32.86	26.50	4.50	34.28	0.15	--	--	Peak
6	959.26	34.82	46.00	-11.18	31.33	31.07	5.45	33.12	0.09	--	--	Peak

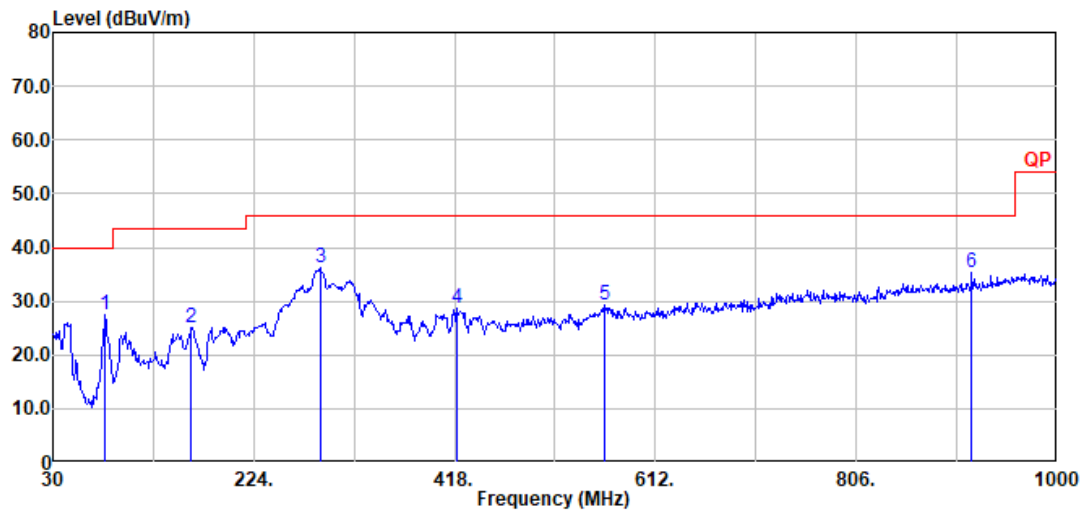
Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Peak emission setting: RBW=120kHz; VBW = 300kHz.



Ranging Antenna CH05 Radiated Emissions (30MHz – 1GHz)

Test Mode	Mode 19	Polarization	H
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH20-HY
Condition : QP 3m Bilog_55606 & 08_241127 HORIZONTAL
Project : 4N0918
Detector : Peak
Mode : 19
Channel : CH5
Test Case Number : Case 7
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
30-300MHz : ponit:1001 SWT:1.0sec
300-1000MHz : ponit:1001 SWT:1.0sec

	Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	80.44	27.39	40.00	-12.61	47.81	13.49	1.60	35.71	0.20	--	--	Peak
2	163.86	25.15	43.50	-18.35	42.12	16.14	2.29	35.58	0.18	--	--	Peak
3	288.02	36.09	46.00	-9.91	48.98	19.22	3.01	35.31	0.19	--	--	Peak
4	420.91	28.62	46.00	-17.38	37.25	22.55	3.63	34.96	0.15	--	--	Peak
5	563.50	29.23	46.00	-16.77	33.17	26.32	4.21	34.58	0.11	--	--	Peak
6	917.55	35.19	46.00	-10.81	33.54	29.43	5.35	33.27	0.14	--	--	Peak

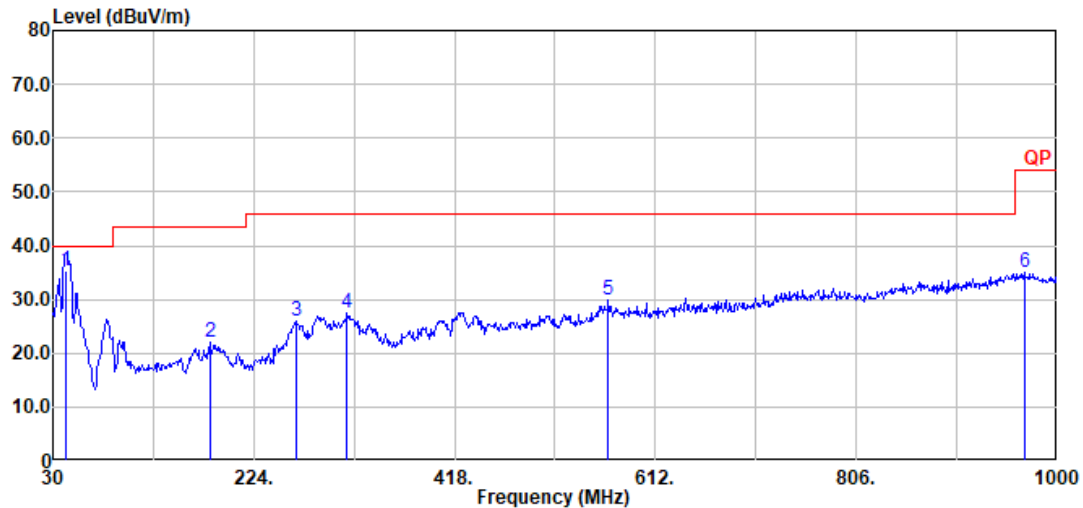
Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Peak emission setting: RBW=120kHz; VBW = 300kHz.



Ranging Antenna CH05 Radiated Emissions (30MHz – 1GHz)

Test Mode	Mode 19	Polarization	V
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH20-HY
Condition : QP 3m Bilog_55606 & 08_241127 VERTICAL
Project : 4N0918
Detector : Peak
Mode : 19
Channel : CH5
Test Case Number : Case 7
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
30-300MHz : ponit:1001 SWT:1.0sec
300-1000MHz : ponit:1001 SWT:1.0sec

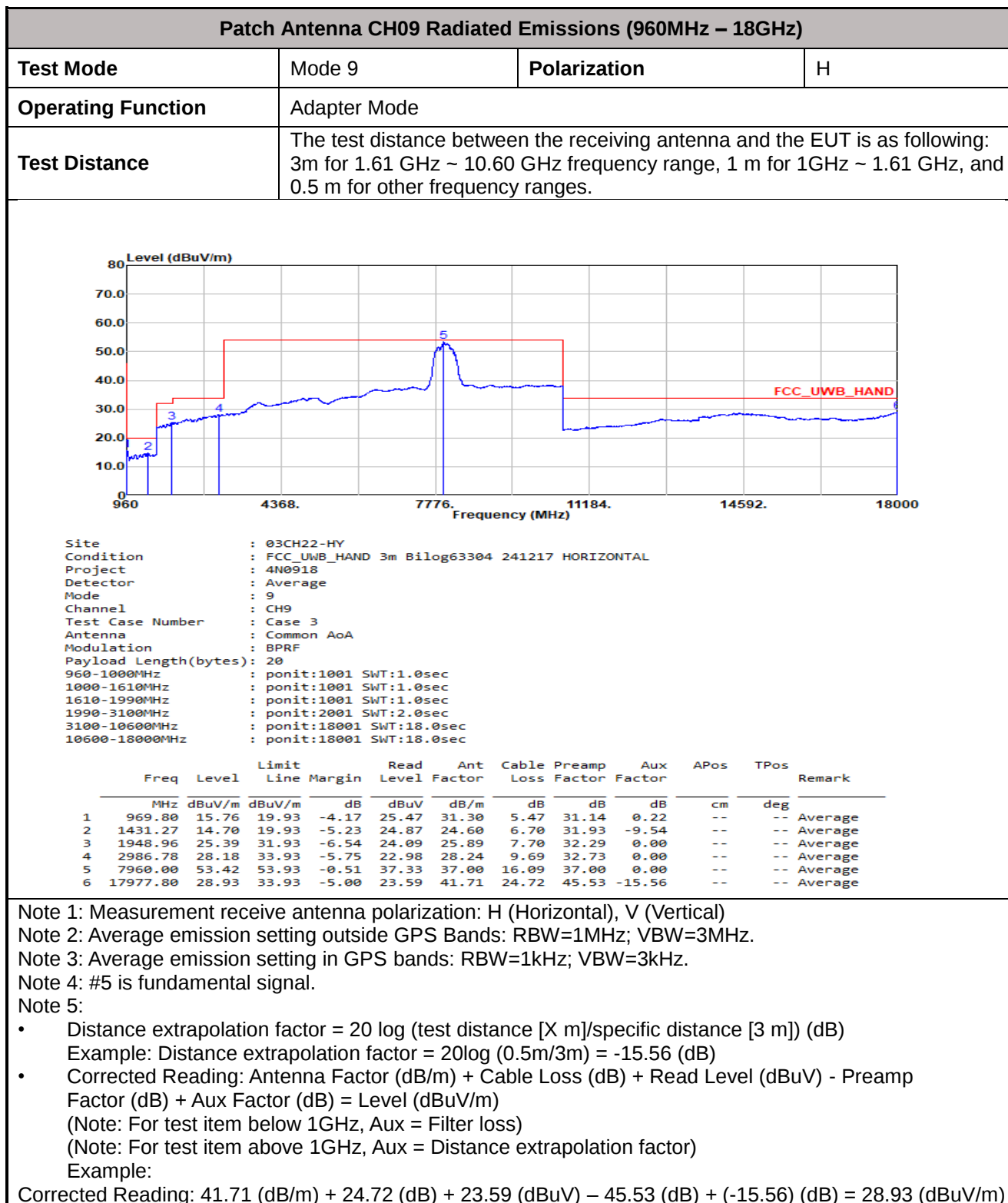
	Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	42.61	35.41	40.00	-4.59	51.72	18.05	1.16	35.75	0.23	100	57	QP
2	181.32	21.97	43.50	-21.53	39.86	15.06	2.40	35.54	0.19	--	--	Peak
3	265.71	25.90	46.00	-20.10	38.16	20.02	2.89	35.36	0.19	--	--	Peak
4	314.21	27.51	46.00	-18.49	40.00	19.42	3.14	35.23	0.18	--	--	Peak
5	566.41	29.78	46.00	-16.22	33.70	26.32	4.22	34.57	0.11	--	--	Peak
6	967.99	35.11	54.00	-18.89	31.50	31.14	5.48	33.08	0.07	--	--	Peak

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Peak emission setting: RBW=120kHz; VBW = 300kHz.



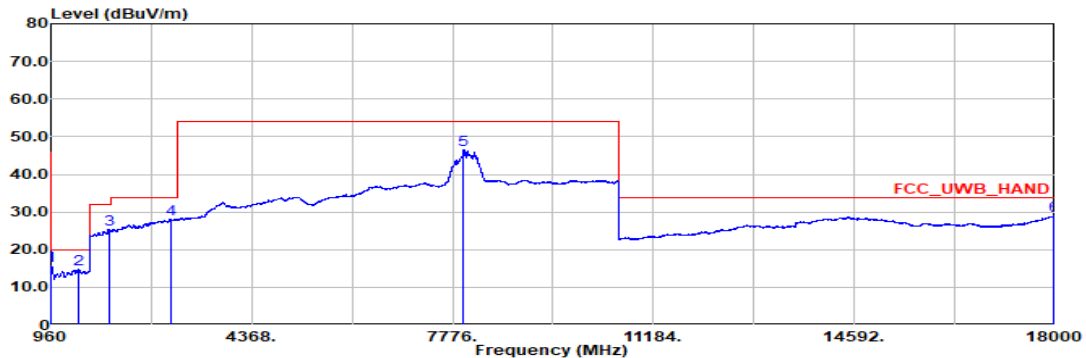
3.5.8 Radiated Emissions (960MHz – 18GHz)





Patch Antenna CH09 Radiated Emissions (960MHz – 18GHz)

Test Mode	Mode 9	Polarization	V
Operating Function	Adapter Mode		
Test Distance	The test distance between the receiving antenna and the EUT is as following: 3m for 1.61 GHz ~ 10.60 GHz frequency range, 1 m for 1GHz ~ 1.61 GHz, and 0.5 m for other frequency ranges.		



Site : 03CH22-HY
 Condition : FCC_UWB_HAND 3m Bilog63304 241217 VERTICAL
 Project : 4N0918
 Detector : Average
 Mode : 9
 Channel : CH9
 Test Case Number : Case 3
 Antenna : Common AoA
 Modulation : BPRF
 Payload Length(bytes) : 20
 960-1000MHz : ponit:1001 SWT:1.0sec
 1000-1610MHz : ponit:1001 SWT:1.0sec
 1610-1990MHz : ponit:1001 SWT:1.0sec
 1990-3100MHz : ponit:2001 SWT:2.0sec
 3100-10600MHz : ponit:18001 SWT:18.0sec
 10600-18000MHz : ponit:18001 SWT:18.0sec

	Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	962.40	15.80	19.93	-4.13		25.46	31.45	5.45	31.21	0.21	--	--	Average
2	1430.66	14.74	19.93	-5.19		24.91	24.60	6.70	31.93	-9.54	--	--	Average
3	1954.28	25.37	31.93	-6.56		24.01	25.94	7.71	32.29	0.00	--	--	Average
4	2994.55	28.15	33.93	-5.78		22.79	28.39	9.70	32.73	0.00	--	--	Average
5	7960.00	46.62	53.93	-7.31		30.53	37.00	16.09	37.00	0.00	--	--	Average
6	17985.20	28.97	33.93	-4.96		23.58	41.74	24.73	45.52	-15.56	--	--	Average

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting outside GPS Bands: RBW=1MHz; VBW=3MHz.

Note 3: Average emission setting in GPS bands: RBW=1kHz; VBW=3kHz.

Note 4: #5 is fundamental signal.

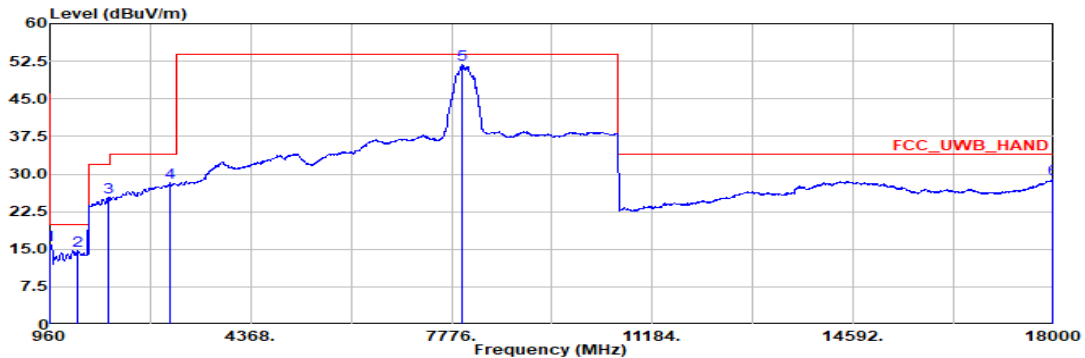
Note 5:

- Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB)
Example: Distance extrapolation factor = $20 \log (0.5\text{m}/3\text{m}) = -15.56$ (dB)
- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)
(Note: For test item below 1GHz, Aux = Filter loss)
(Note: For test item above 1GHz, Aux = Distance extrapolation factor)



Ranging Antenna CH09 Radiated Emissions (960MHz – 18GHz)

Test Mode	Mode 17	Polarization	H
Operating Function	Adapter Mode		
Test Distance	The test distance between the receiving antenna and the EUT is as following: 3m for 1.61 GHz ~ 10.60 GHz frequency range, 1 m for 1GHz ~ 1.61 GHz, and 0.5 m for other frequency ranges.		



Site : 03CH22-HY
 Condition : FCC_UWB_HAND 3m DRH18_E_LE2C04A18EN_240711 Horizontal
 Project : 4N0918
 Detector : Average
 Mode : 17
 Channel : CH9
 Test Case Number : Case 6
 Antenna : Ranging Antenna
 Modulation : HPRF
 Payload Length(bytes): 20
 960-1000MHz : ponit:1001 SWT:1.0sec
 1000-1610MHz : ponit:1001 SWT:1.0sec
 1610-1990MHz : ponit:1001 SWT:1.0sec
 1990-3100MHz : ponit:2001 SWT:2.0sec
 3100-10600MHz : ponit:18001 SWT:18.0sec
 10600-18000MHz : ponit:18001 SWT:18.0sec

	Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	963.84	15.88	19.93	-4.05	25.56	31.42	5.45	31.20	0.21	--	--	--	Average
2	1427.61	14.73	19.93	-5.20	24.91	24.60	6.69	31.93	-9.54	--	--	--	Average
3	1948.58	25.36	31.93	-6.57	24.06	25.89	7.70	32.29	0.00	--	--	--	Average
4	2992.33	28.20	33.93	-5.73	22.88	28.35	9.70	32.73	0.00	--	--	--	Average
5	7952.50	51.85	53.93	-2.08	35.77	37.00	16.08	37.00	0.00	--	--	--	Average
6	17977.80	28.88	33.93	-5.05	23.54	41.71	24.72	45.53	-15.56	--	--	--	Average

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting outside GPS Bands: RBW=1MHz; VBW=3MHz.

Note 3: Average emission setting in GPS bands: RBW=1kHz; VBW=3kHz.

Note 4: #5 is fundamental signal.

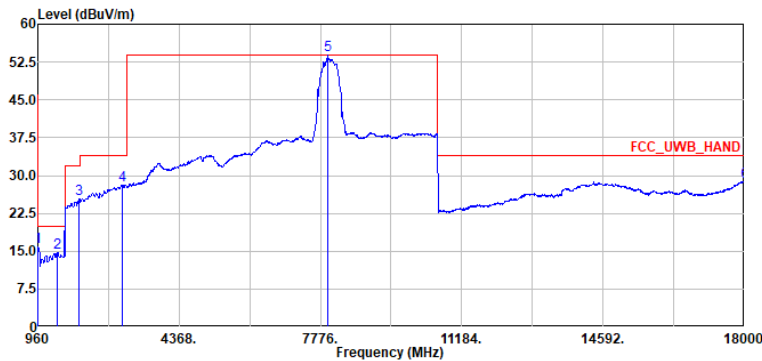
Note 5:

- Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB)
Example: Distance extrapolation factor = $20 \log (0.5\text{m}/3\text{m}) = -15.56$ (dB)
- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)
(Note: For test item below 1GHz, Aux = Filter loss)
(Note: For test item above 1GHz, Aux = Distance extrapolation factor)



Ranging Antenna CH09 Radiated Emissions (960MHz – 18GHz)

Test Mode	Mode 17	Polarization	V
Operating Function	Adapter Mode		
Test Distance	The test distance between the receiving antenna and the EUT is as following: 3m for 1.61 GHz ~ 10.60 GHz frequency range, 1 m for 1GHz ~ 1.61 GHz, and 0.5 m for other frequency ranges.		



Site : 03CH22-HY
 Condition : FCC_UWB_HAND 3m DRH18_E_LE2C04A18EN_240711 Vertical
 Project : 4N0918
 Detector : Average
 Mode : 17
 Channel : CH9
 Test Case Number : Case 6
 Antenna : Ranging Antenna
 Modulation : HPRF
 Payload Length(bytes) : 20
 960-1000MHz : ponit:1001 SWT:1.0sec
 1000-1610MHz : ponit:1001 SWT:1.0sec
 1610-1990MHz : ponit:1001 SWT:1.0sec
 1990-3100MHz : ponit:2001 SWT:2.0sec
 3100-10600MHz : ponit:18001 SWT:18.0sec
 10600-18000MHz : ponit:18001 SWT:18.0sec

	Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m	Loss	Factor	Factor			
1	966.04	15.76	19.93	-4.17	25.44	31.38	5.46	31.18	0.22	--	--	--	Average
2	1430.05	14.70	19.93	-5.23	24.87	24.60	6.70	31.93	-9.54	--	--	--	Average
3	1956.18	25.36	31.93	-6.57	23.98	25.96	7.71	32.29	0.00	--	--	--	Average
4	2993.44	28.15	33.93	-5.78	22.81	28.37	9.70	32.73	0.00	--	--	--	Average
5	7952.50	53.78	53.93	-0.15	37.70	37.00	16.08	37.00	0.00	--	--	--	Average
6	17992.60	28.80	33.93	-5.13	23.36	41.77	24.73	45.50	-15.56	--	--	--	Average

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting outside GPS Bands: RBW=1MHz; VBW=3MHz.

Note 3: Average emission setting in GPS bands: RBW=1kHz; VBW=3kHz.

Note 4: #5 is fundamental signal.

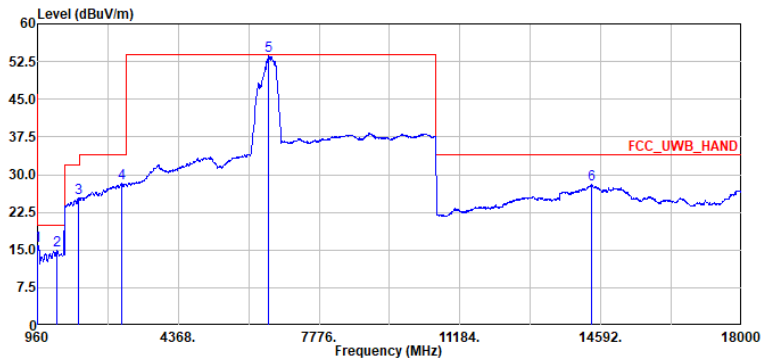
Note 5:

- Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB)
Example: Distance extrapolation factor = $20 \log (0.5\text{m}/3\text{m}) = -15.56$ (dB)
- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBUV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBUV/m)
(Note: For test item below 1GHz, Aux = Filter loss)
(Note: For test item above 1GHz, Aux = Distance extrapolation factor)



Ranging Antenna CH05 Radiated Emissions (960MHz – 18GHz)

Test Mode	Mode 19	Polarization	H
Operating Function	Adapter Mode		
Test Distance	The test distance between the receiving antenna and the EUT is as following: 3m for 1.61 GHz ~ 10.60 GHz frequency range, 1 m for 1GHz ~ 1.61 GHz, and 0.5 m for other frequency ranges.		



Site : 03CH22-HY
Condition : FCC_UWB_HAND 3m DRH18_E_LE2C04A18EN_240711 Horizontal
Project : 4N0918
Detector : Average
Mode : 19
Channel : CH5
Test Case Number : Case 7
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes) : 20
960-1000MHz : ponit:1001 SWT:1.0sec
1000-1610MHz : ponit:1001 SWT:1.0sec
1610-1990MHz : ponit:1001 SWT:1.0sec
1990-3100MHz : ponit:2001 SWT:2.0sec
3100-10600MHz : ponit:18001 SWT:18.0sec
10600-18000MHz : ponit:18001 SWT:18.0sec

	Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB		dBuV	dB/m	dB	dB	dB	cm	deg	
1	970.40	15.94	19.93	-3.99		25.65	31.28	5.48	31.13	0.22	--	--	Average
2	1431.88	14.85	19.93	-5.08		25.02	24.60	6.70	31.93	-9.54	--	--	Average
3	1947.82	25.42	31.93	-6.51		24.13	25.88	7.70	32.29	0.00	--	--	Average
4	2994.55	28.29	33.93	-5.64		22.93	28.39	9.70	32.73	0.00	--	--	Average
5	6557.50	53.64	53.93	-0.29		38.24	36.22	14.52	35.34	0.00	--	--	Average
6	14374.00	28.01	33.93	-5.92		22.68	42.26	21.85	43.22	-15.56	--	--	Average

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting outside GPS Bands: RBW=1MHz; VBW=3MHz.

Note 3: Average emission setting in GPS bands: RBW=1kHz; VBW=3kHz.

Note 4: #5 is fundamental signal.

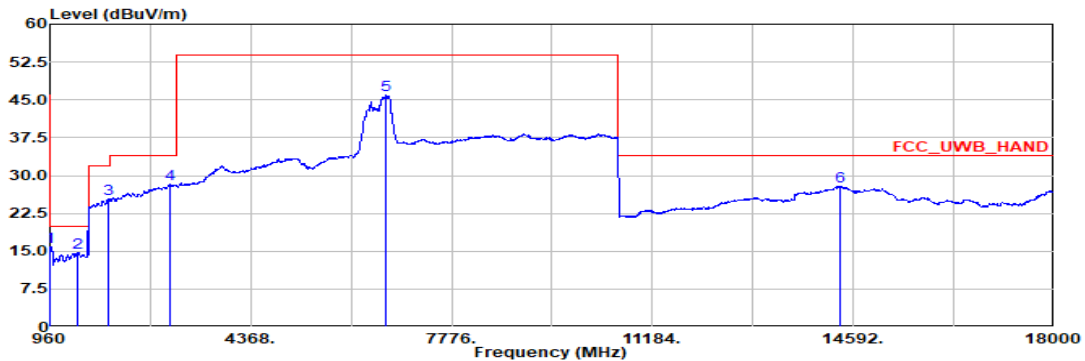
Note 5:

- Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB)
Example: Distance extrapolation factor = $20 \log (0.5\text{m}/3\text{m}) = -15.56$ (dB)
- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)
(Note: For test item below 1GHz, Aux = Filter loss)
(Note: For test item above 1GHz, Aux = Distance extrapolation factor)



Ranging Antenna CH05 Radiated Emissions (960MHz – 18GHz)

Test Mode	Mode 19	Polarization	V
Operating Function	Adapter Mode		
Test Distance	The test distance between the receiving antenna and the EUT is as following: 3m for 1.61 GHz ~ 10.60 GHz frequency range, 1 m for 1GHz ~ 1.61 GHz, and 0.5 m for other frequency ranges.		



Site : 03CH22-HY
 Condition : FCC_UWB_HAND 3m DRH18_E_LE2C04A18EN_240711 Vertical
 Project : 4N0918
 Detector : Average
 Mode : 19
 Channel : CH5
 Test Case Number : Case 7
 Antenna : Ranging Antenna
 Modulation : HPRF
 Payload Length(bytes): 20
 960-1000MHz : ponit:1001 SWT:1.0sec
 1000-1610MHz : ponit:1001 SWT:1.0sec
 1610-1990MHz : ponit:1001 SWT:1.0sec
 1990-3100MHz : ponit:2001 SWT:2.0sec
 3100-10600MHz : ponit:18001 SWT:18.0sec
 10600-18000MHz : ponit:18001 SWT:18.0sec

	Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	965.68	15.85	19.93	-4.08	25.52	31.39	5.46	31.18	0.22	--	--	--	Average
2	1430.05	14.78	19.93	-5.15	24.95	24.60	6.70	31.93	-9.54	--	--	--	Average
3	1955.42	25.41	31.93	-6.52	24.04	25.95	7.71	32.29	0.00	--	--	--	Average
4	2998.99	28.26	33.93	-5.67	22.80	28.48	9.71	32.73	0.00	--	--	--	Average
5	6662.50	45.96	53.93	-7.97	30.52	36.33	14.64	35.53	0.00	--	--	--	Average
6	14366.60	27.95	33.93	-5.98	22.58	42.30	21.84	43.21	-15.56	--	--	--	Average

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting outside GPS Bands: RBW=1MHz; VBW=3MHz.

Note 3: Average emission setting in GPS bands: RBW=1kHz; VBW=3kHz.

Note 4: #5 is fundamental signal.

Note 5:

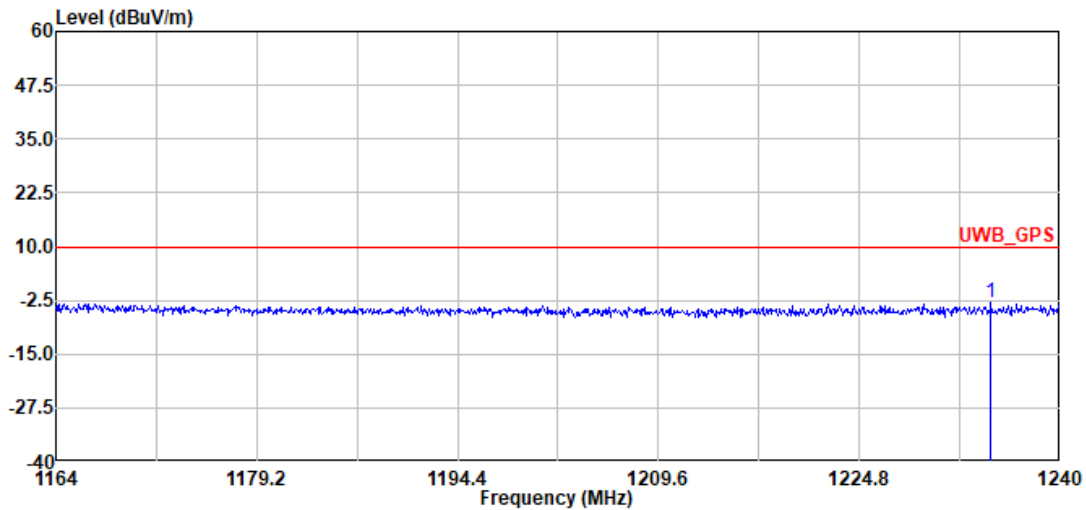
- Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB)
Example: Distance extrapolation factor = $20 \log (0.5\text{m}/3\text{m}) = -15.56$ (dB)
- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)
(Note: For test item below 1GHz, Aux = Filter loss)
(Note: For test item above 1GHz, Aux = Distance extrapolation factor)



3.5.9 Radiated Emissions (1164MHz – 1240MHz)

Patch Antenna CH09 Radiated Emissions (1164MHz – 1240MHz)

Test Mode	Mode 9	Polarization	H
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH22-HY
Condition : UWB_GPS 3m DRH18_E_LE2C04A18EN_240711 Horizontal
Project : 4N0918
Detector : Peak
Mode : 9
Channel : CH9
Test Case Number : Case 3
Antenna : Common AoA
Modulation : BPRF
Payload Length(bytes): 20
Sweep point : 80001

	Freq	Level	Limit	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	1234.76	-3.04	9.93	-12.97	-1.42	24.15	6.17	31.94	0.00	--	--	Peak

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

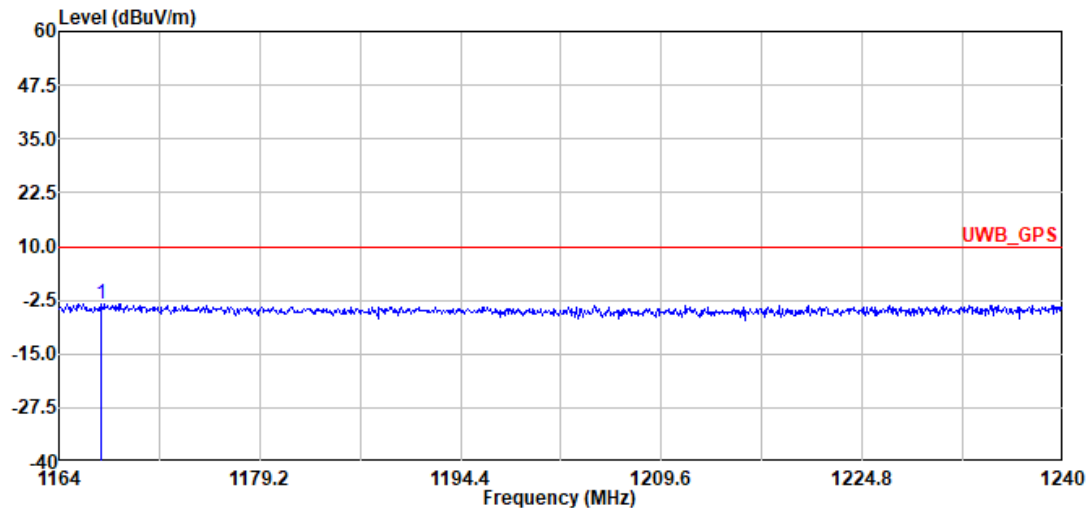
Note 2: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 3: $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$. $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$.



Patch Antenna CH09 Radiated Emissions (1164MHz – 1240MHz)

Test Mode	Mode 9	Polarization	V
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH22-HY
Condition : UWB_GPS 3m DRH18_E_LE2C04A18EN_240711 Vertical
Project : 4N0918
Detector : Peak
Mode : 9
Channel : CH9
Test Case Number : Case 3
Antenna : Common AoA
Modulation : BPRF
Payload Length(bytes): 20
Sweep point : 80001

	Freq	Level	Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg
1	1167.19	-3.28	9.93	-13.21	-1.53	24.20	5.99	31.94	0.00	--	-- Peak

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

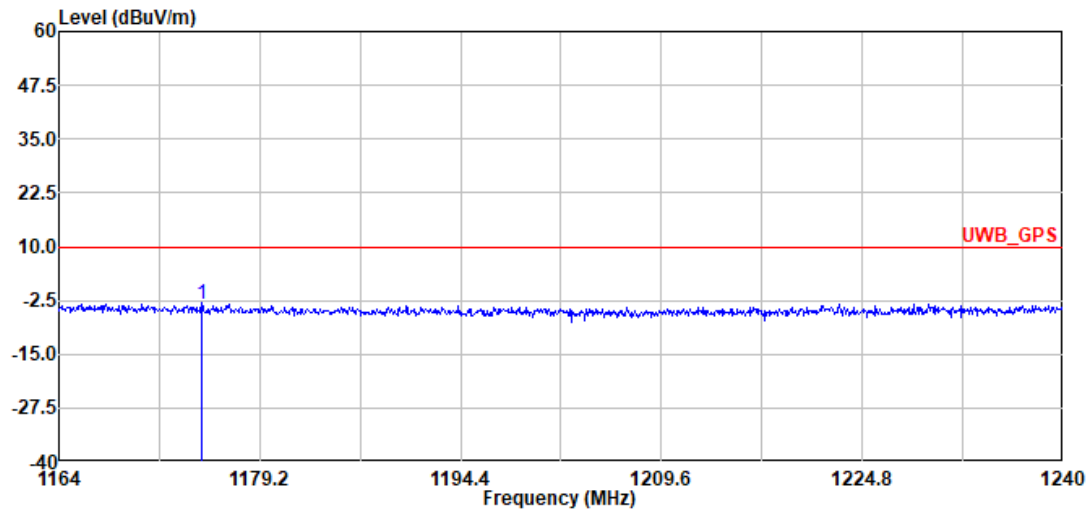
Note 2: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 3: E (dBuV/m) = EIRP Limit (dBm) + 95.23. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.



Ranging Antenna CH09 Radiated Emissions (1164MHz – 1240MHz)

Test Mode	Mode 17	Polarization	H
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH22-HY
Condition : UWB_GPS 3m DRH18_E_LE2C04A18EN_240711 Horizontal
RBW:1.000kHz VBW:3.000kHz SWT:40.000sec
Project : 4N0918
Detector : Peak
Mode : 17
Channel : CH9
Test Case Number : Case 6
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
Sweep point : 80001

	Freq	Level	Limit Line	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	1174.79	-3.21	9.93	-13.14	-1.38	24.10	6.01	31.94	0.00	--	--	Peak

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

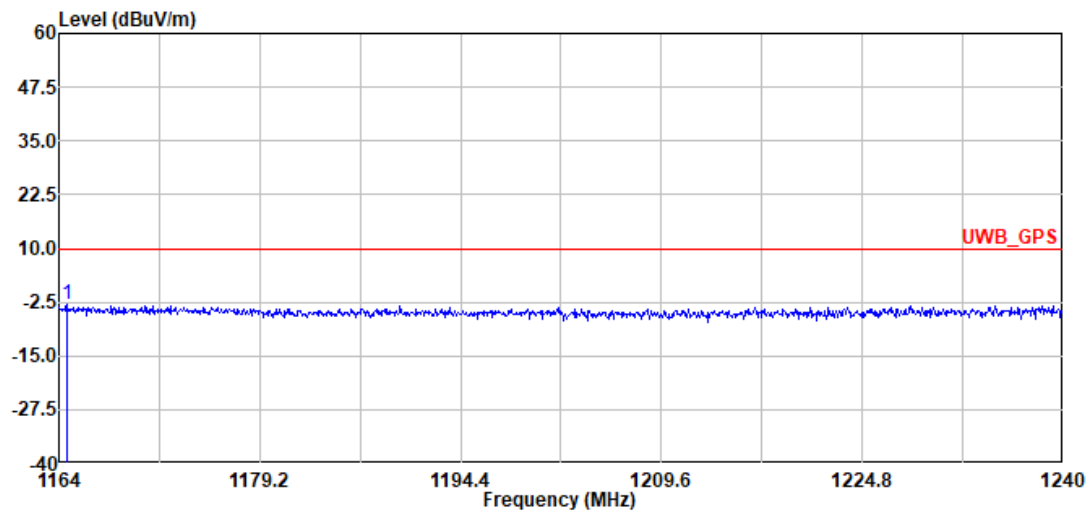
Note 2: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 3: E (dBuV/m) = EIRP Limit (dBm) + 95.23. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.



Ranging Antenna CH09 Radiated Emissions (1164MHz – 1240MHz)

Test Mode	Mode 17	Polarization	V
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH22-HY
Condition : UWB_GPS 3m DRH18_E_LE2C04A18EN_240711 Vertical
Project : 4N0918
Detector : Peak
Mode : 17
Channel : CH9
Test Case Number : Case 6
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
Sweep point : 80001

	Freq	Level	Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg
1	1164.61	-3.12	9.93	-13.05	-1.36	24.20	5.98	31.94	0.00	--	-- Peak

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

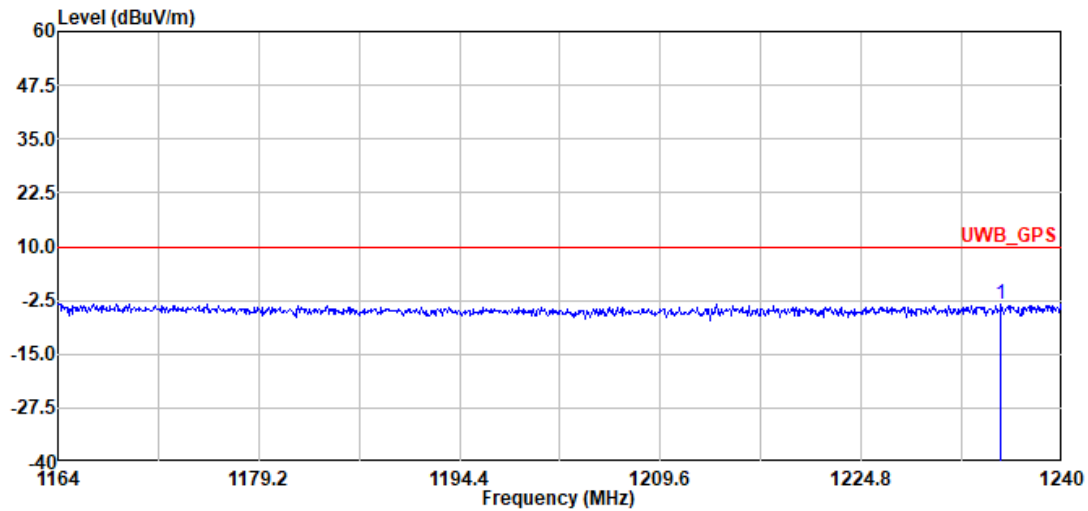
Note 2: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 3: $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$. $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$.



Ranging Antenna CH05 Radiated Emissions (1164MHz – 1240MHz)

Test Mode	Mode 19	Polarization	H
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH22-HY
Condition : UWB_GPS 3m DRH18_E_LE2C04A18EN_240711 Horizontal
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec
Project : 4N0918
Detector : Peak
Mode : 19
Channel : CH5
Test Case Number : Case 7
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
Sweep point : 80001

	Freq	Level	Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	Line Margin	Level	Factor	Loss	Factor	Factor			
			dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	1235.36	-3.30	9.93 -13.23	-1.68	24.15	6.17	31.94	0.00	--	--	Peak

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

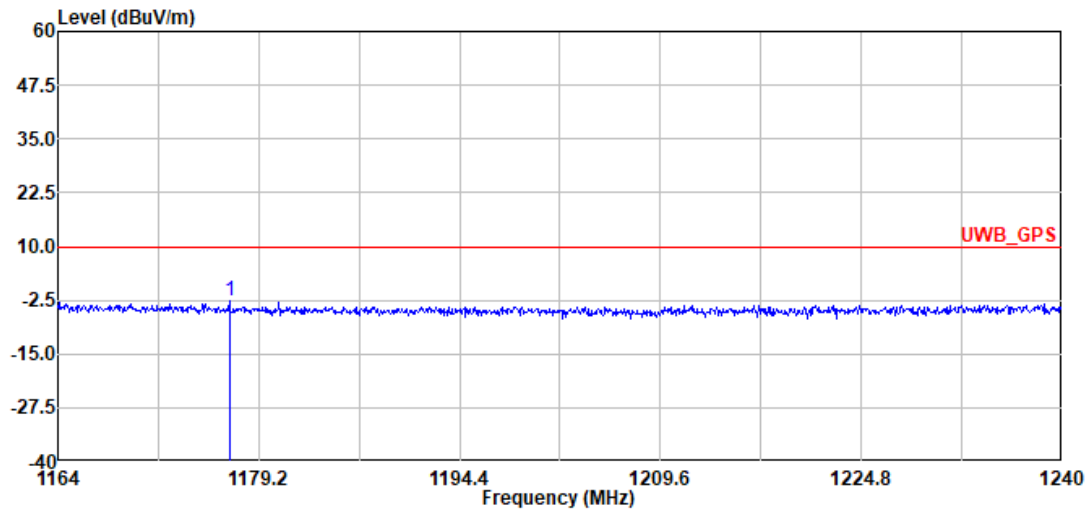
Note 2: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 3: $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$. $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$.



Ranging Antenna CH05 Radiated Emissions (1164MHz – 1240MHz)

Test Mode	Mode 19	Polarization	V
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH22-HY
Condition : UWB_GPS 3m DRH18_E_LE2C04A18EN_240711 Vertical
Project : 4N0918
Detector : Peak
Mode : 19
Channel : CH5
Test Case Number : Case 7
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
Sweep point : 80001

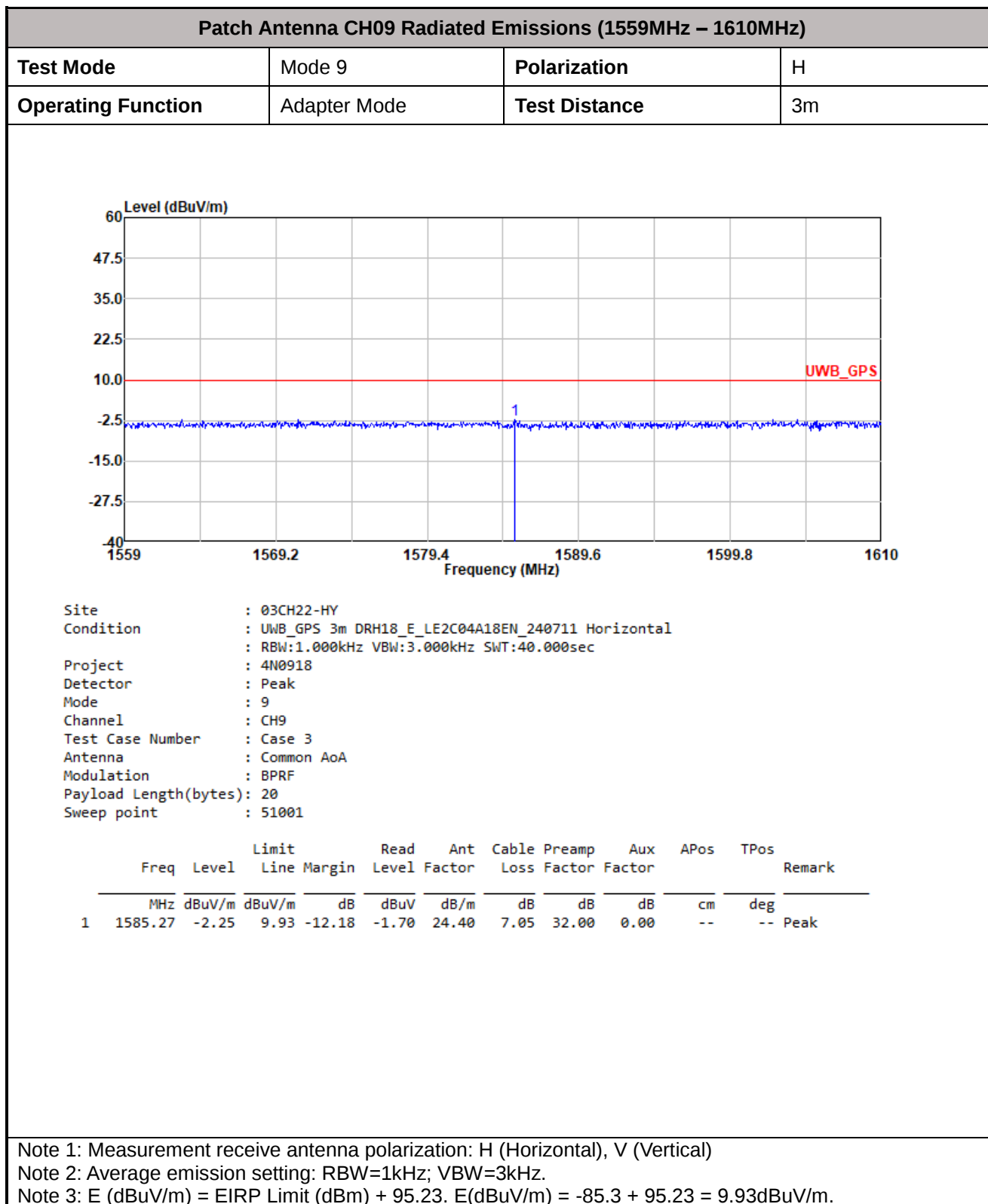
	Freq		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	Loss	Factor	Factor	Factor	cm	deg	
1	1177.00	-2.82	9.93	-12.75	-0.95	24.06	6.01	31.94	0.00	--	--	--	Peak

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting: RBW=1kHz; VBW=3kHz.

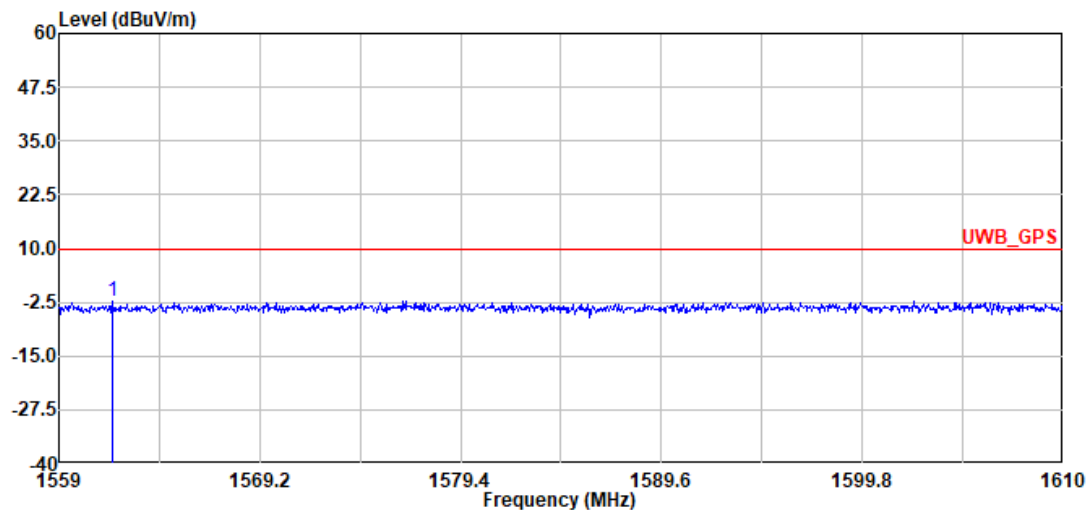
Note 3: E (dBuV/m) = EIRP Limit (dBm) + 95.23. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.

3.5.10 Radiated Emissions (1559MHz – 1610MHz)



Patch Antenna CH09 Radiated Emissions (1559MHz – 1610MHz)

Test Mode	Mode 9	Polarization	V
Operating Function	Adapter Mode	Test Distance	3m



```
Site : 03CH22-HY
Condition : UWB_GPS 3m DRH18_E_LE2C04A18EN_240711 Vertical
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec
Project : 4N0918
Detector : Peak
Mode : 9
Channel : CH9
Test Case Number : Case 3
Antenna : Common AoA
Modulation : BPRF
Payload Length(bytes): 20
Sweep point : 51001
```

	Freq	Level	Limit Line	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	1561.75	-2.28	9.93	-12.21	-1.61	24.32	6.99	31.98	0.00	--	--	Peak

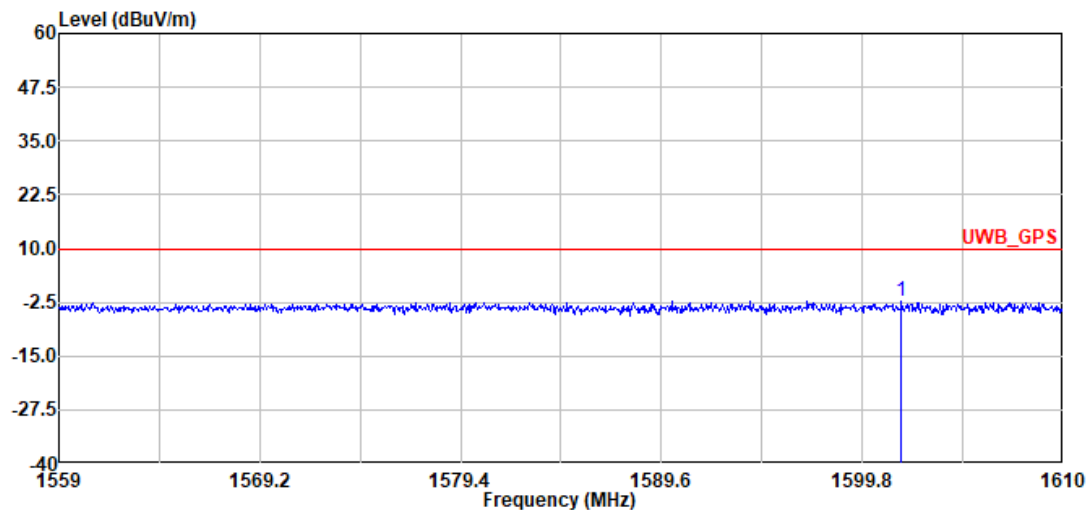
Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 3: $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$. $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$.

Ranging Antenna CH09 Radiated Emissions (1559MHz – 1610MHz)

Test Mode	Mode 17	Polarization	H
Operating Function	Adapter Mode	Test Distance	3m



```
Site : 03CH22-HY
Condition : UWB_GPS 3m DRH18_E_LE2C04A18EN_240711 Horizontal
: RBW:1.000kHz VBW:3.000kHz SwT:40.000sec
Project : 4N0918
Detector : Peak
Mode : 17
Channel : CH9
Test Case Number : Case 6
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
Sweep point : 51001
```

	Freq	Level	Limit Line	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	1601.79	-2.29	9.93	-12.22	-1.86	24.50	7.08	32.01	0.00	--	--	Peak

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

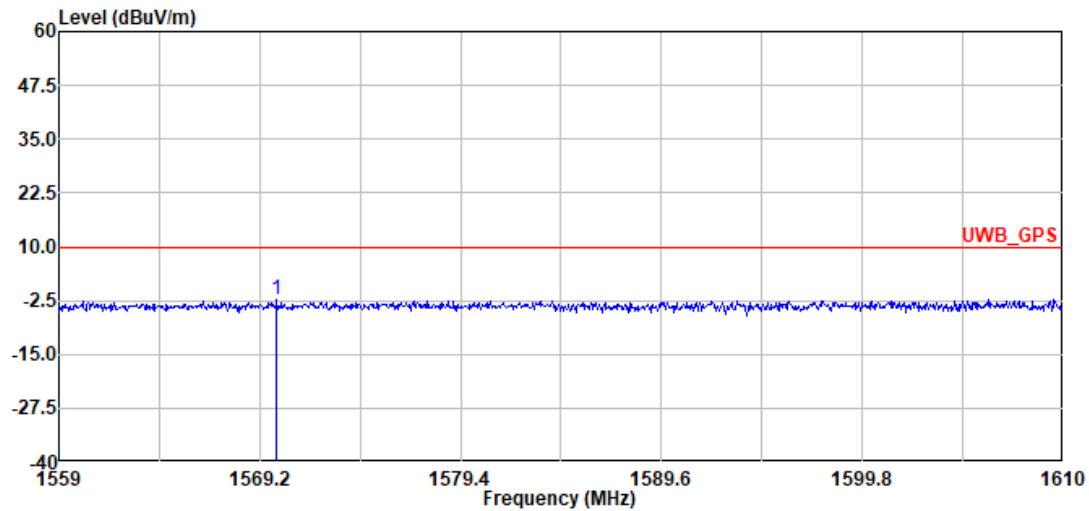
Note 2: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 3: $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$. $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$.



Ranging Antenna CH09 Radiated Emissions (1559MHz – 1610MHz)

Test Mode	Mode 17	Polarization	V
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH22-HY
Condition : UWB_GPS 3m DRH18_E_LE2C04A18EN_240711 Vertical
RBW:1.000kHz VBW:3.000kHz SWT:40.000sec
Project : 4N0918
Detector : Peak
Mode : 17
Channel : CH9
Test Case Number : Case 6
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
Sweep point : 51001

	Freq	Level	Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg
1	1570.07	-2.23	9.93	-12.16	-1.65	24.40	7.01	31.99	0.00	--	-- Peak

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

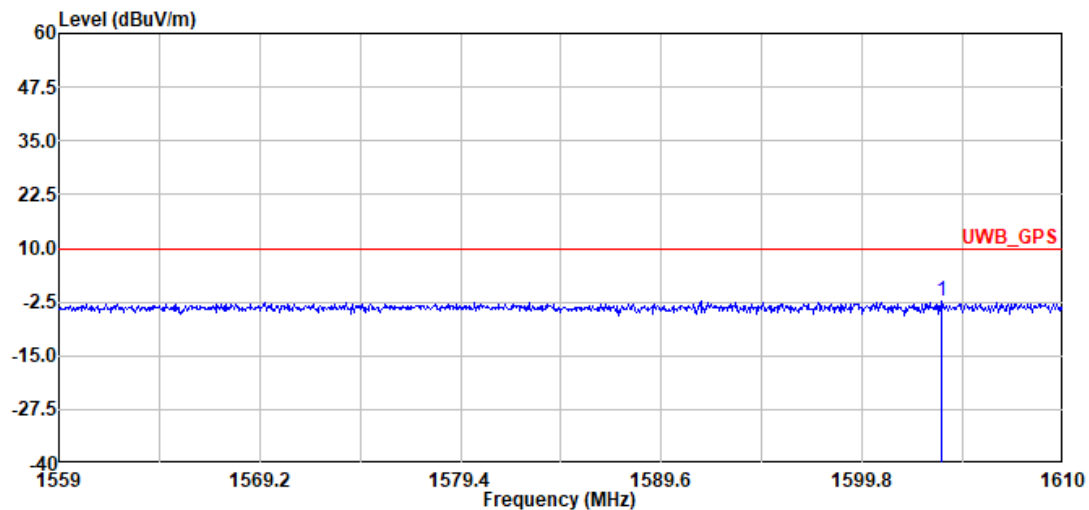
Note 2: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 3: $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$. $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$.



Ranging Antenna CH05 Radiated Emissions (1559MHz – 1610MHz)

Test Mode	Mode 19	Polarization	H
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH22-HY
Condition : UWB_GPS 3m DRH18_E_LE2C04A18EN_240711 Horizontal
Project : 4N0918
Detector : Peak
Mode : 19
Channel : CH5
Test Case Number : Case 7
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
Sweep point : 51001

	Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	1603.83	-2.25	9.93	-12.18	-1.83	24.50	7.09	32.01	0.00	--	--	--	Peak

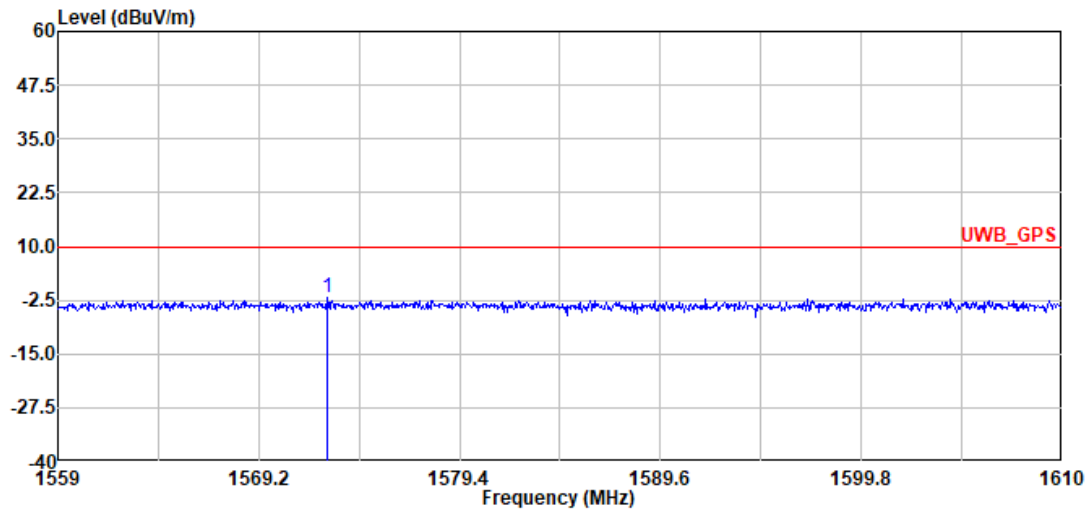
Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 3: E (dBuV/m) = EIRP Limit (dBm) + 95.23. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.

Ranging Antenna CH05 Radiated Emissions (1559MHz – 1610MHz)

Test Mode	Mode 19	Polarization	V
Operating Function	Adapter Mode	Test Distance	3m



Site : 03CH22-HY
 Condition : UWB_GPS 3m DRH18_E_LE2C04A18EN_240711 Vertical
 : RBW:1.000kHz VBW:3.000kHz SWT:40.000sec
 Project : 4N0918
 Detector : Peak
 Mode : 19
 Channel : CH5
 Test Case Number : Case 7
 Antenna : Ranging Antenna
 Modulation : HPRF
 Payload Length(bytes): 20
 Sweep point : 51001

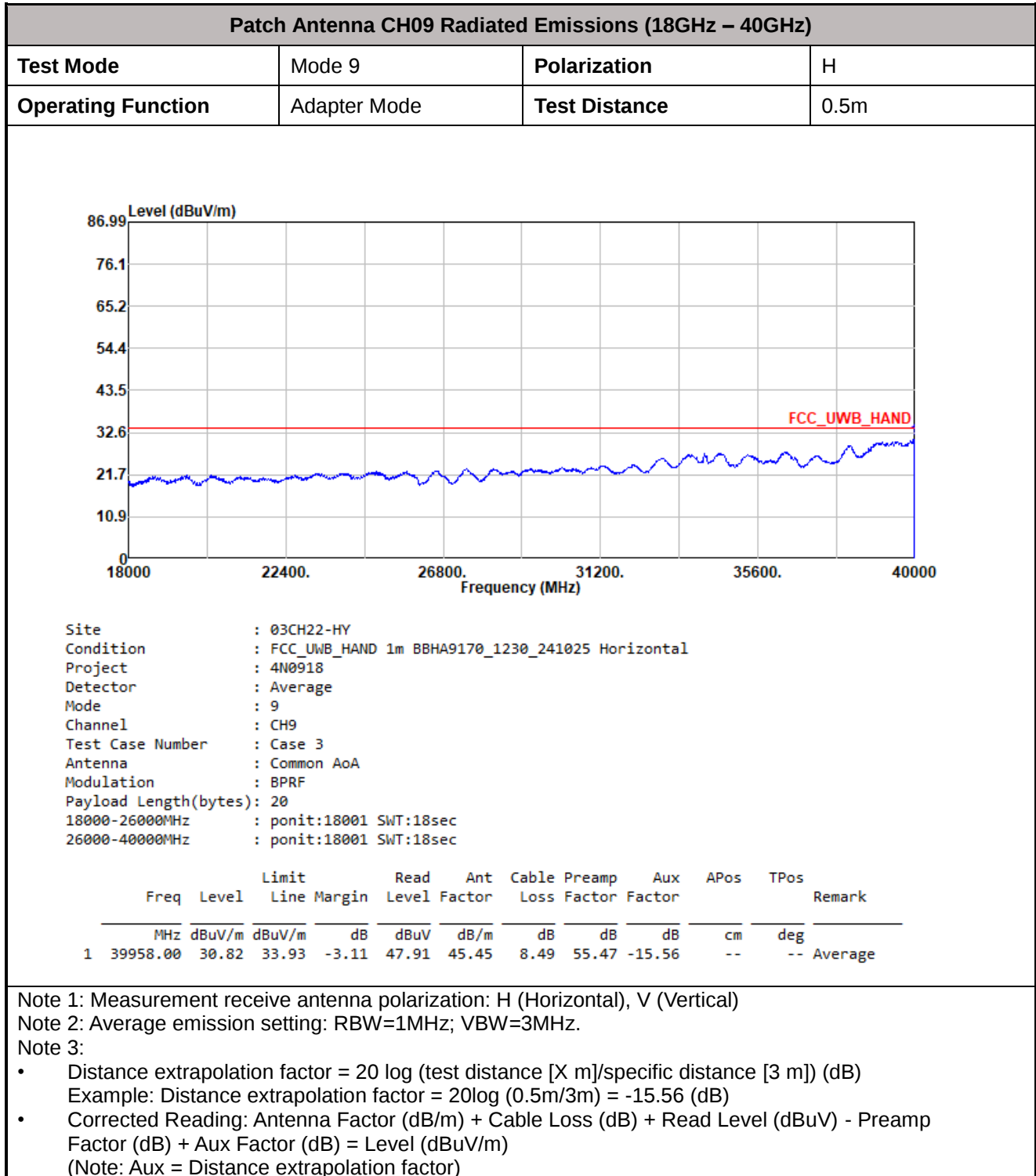
	Freq	Level	Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg
1	1572.67	-1.80	9.93	-11.73	-1.23	24.40	7.02	31.99	0.00	--	-- Peak

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 3: E (dBuV/m) = EIRP Limit (dBm) + 95.23. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.

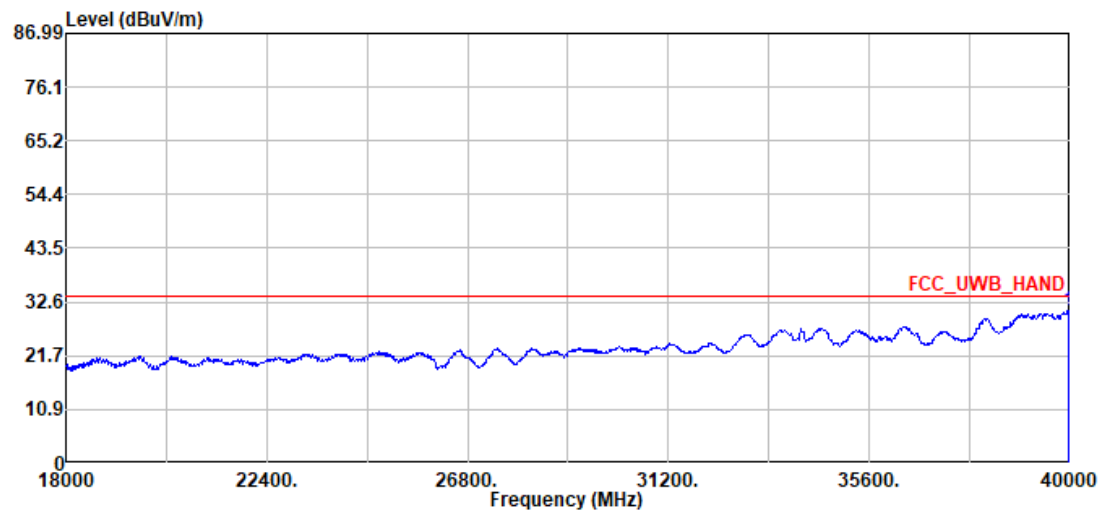
3.5.11 Radiated Emissions (18GHz – 40GHz)





Patch Antenna CH09 Radiated Emissions (18GHz – 40GHz)

Test Mode	Mode 9	Polarization	V
Operating Function	Adapter Mode	Test Distance	0.5m



Site : 03CH22-HY
Condition : FCC_UWB_HAND 1m BBHA9170_1230_241025 Vertical
Project : 4N0918
Detector : Average
Mode : 9
Channel : CH9
Test Case Number : Case 3
Antenna : Common AoA
Modulation : BPRF
Payload Length(bytes): 20
18000-26000MHz : ponit:18001 SWT:18sec
26000-40000MHz : ponit:18001 SWT:18sec

Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1 39958.00	30.87	33.93		-3.06	47.96	45.45	8.49	55.47	-15.56	--	--	Average

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting: RBW=1MHz; VBW=3MHz.

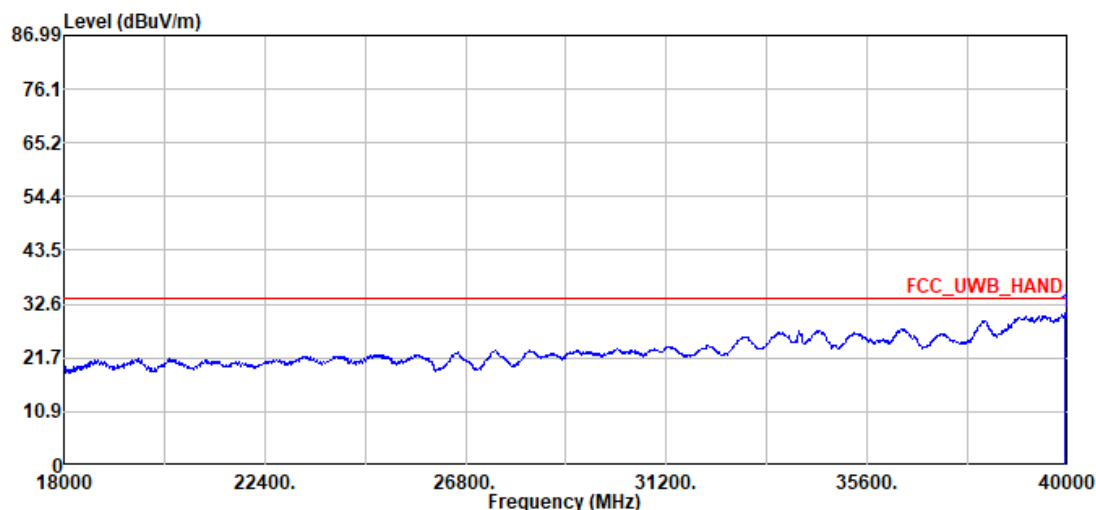
Note 3:

- Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB)
Example: Distance extrapolation factor = $20 \log (0.5\text{m}/3\text{m}) = -15.56$ (dB)
- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)
(Note: Aux = Distance extrapolation factor)



Ranging Antenna CH09 Radiated Emissions (18GHz – 40GHz)

Test Mode	Mode 17	Polarization	H
Operating Function	Adapter Mode	Test Distance	0.5m



Site : 03CH22-HY
Condition : FCC_UWB_HAND 1m BBHA9170_1230_241025 Horizontal
Project : 4N0918
Detector : Average
Mode : 17
Channel : CH9
Test Case Number : Case 6
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
18000-26000MHz : ponit:18001 SWT:18sec
26000-40000MHz : ponit:18001 SWT:18sec

Freq	Level	Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg
1 39944.00	30.83	33.93	-3.10	47.92	45.44	8.52	55.49	-15.56	--	-- Average

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting: RBW=1MHz; VBW=3MHz.

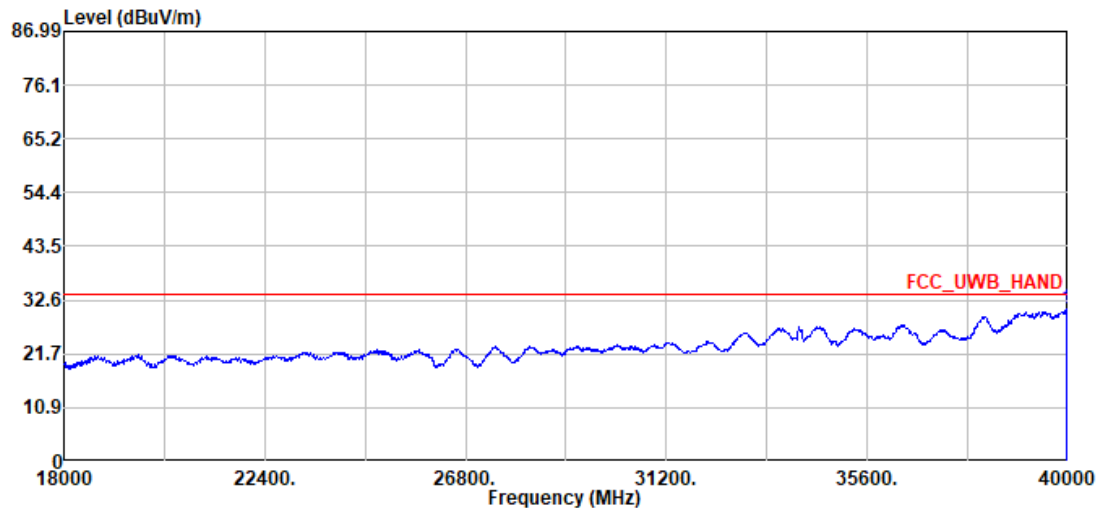
Note 3:

- Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB)
Example: Distance extrapolation factor = $20 \log (0.5\text{m}/3\text{m}) = -15.56$ (dB)
- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)
(Note: Aux = Distance extrapolation factor)



Ranging Antenna CH09 Radiated Emissions (18GHz – 40GHz)

Test Mode	Mode 17	Polarization	V
Operating Function	Adapter Mode	Test Distance	0.5m



Site : 03CH22-HY
Condition : FCC_UWB_HAND 1m BBHA9170_1230_241025 Vertical
Project : 4N0918
Detector : Average
Mode : 17
Channel : CH9
Test Case Number : Case 6
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
18000-26000MHz : ponit:18001 SWT:18sec
26000-40000MHz : ponit:18001 SWT:18sec

Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1 39958.00	30.77	33.93		-3.16	47.86	45.45	8.49	55.47	-15.56	--	--	Average

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting: RBW=1MHz; VBW=3MHz.

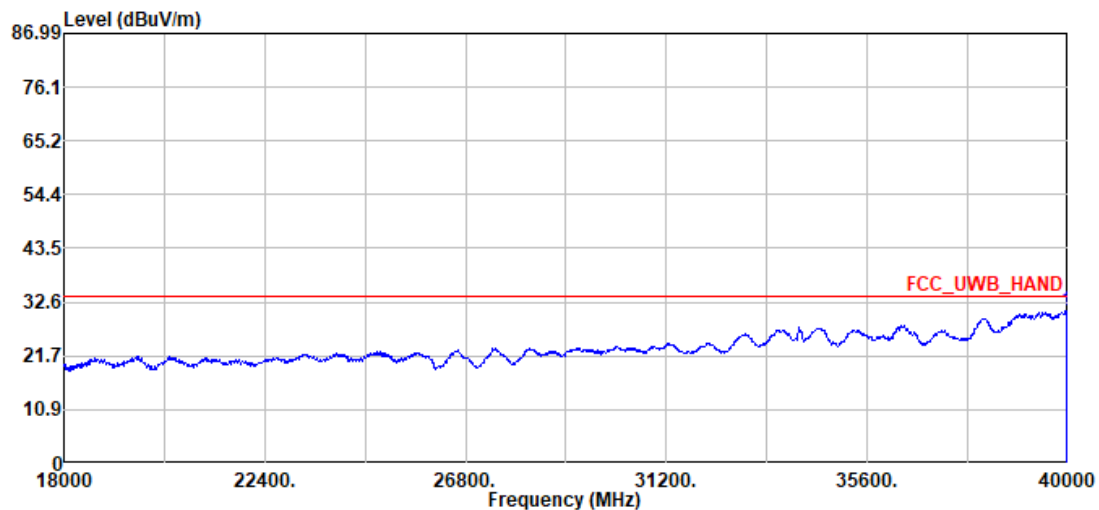
Note 3:

- Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB)
Example: Distance extrapolation factor = $20 \log (0.5\text{m}/3\text{m}) = -15.56$ (dB)
- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)
(Note: Aux = Distance extrapolation factor)



Ranging Antenna CH05 Radiated Emissions (18GHz – 40GHz)

Test Mode	Mode 19	Polarization	H
Operating Function	Adapter Mode	Test Distance	0.5m



Site : 03CH22-HY
Condition : FCC_UWB_HAND 1m BBHA9170_1230_241025 Horizontal
Project : 4N0918
Detector : Average
Mode : 19
Channel : CH5
Test Case Number : Case 7
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
18000-26000MHz : ponit:18001 SWT:18sec
26000-40000MHz : ponit:18001 SWT:18sec

Freq	Level	Limit	Line	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1 39958.00	31.01	33.93		-2.92	48.10	45.45	8.49	55.47	-15.56	--	--	Average

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting: RBW=1MHz; VBW=3MHz.

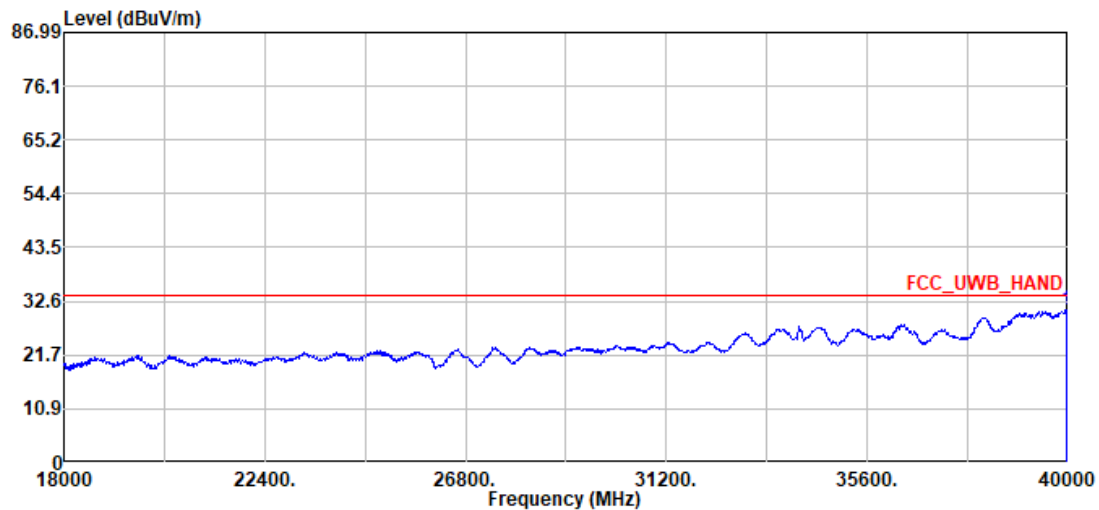
Note 3:

- Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB)
Example: Distance extrapolation factor = $20 \log (0.5\text{m}/3\text{m}) = -15.56$ (dB)
- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)
(Note: Aux = Distance extrapolation factor)



Ranging Antenna CH05 Radiated Emissions (18GHz – 40GHz)

Test Mode	Mode 19	Polarization	V
Operating Function	Adapter Mode	Test Distance	0.5m



Site : 03CH22-HY
Condition : FCC_UWB_HAND 1m BBHA9170_1230_241025 Horizontal
Project : 4N0918
Detector : Average
Mode : 19
Channel : CH5
Test Case Number : Case 7
Antenna : Ranging Antenna
Modulation : HPRF
Payload Length(bytes): 20
18000-26000MHz : ponit:18001 SWT:18sec
26000-40000MHz : ponit:18001 SWT:18sec

Freq	Level	Limit	Margin	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1 39958.00	31.01	33.93	-2.92	48.10	45.45	8.49	55.47	-15.56	--	--	Average

Note 1: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 2: Average emission setting: RBW=1MHz; VBW=3MHz.

Note 3:

- Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB)
Example: Distance extrapolation factor = $20 \log (0.5\text{m}/3\text{m}) = -15.56$ (dB)
- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)
(Note: Aux = Distance extrapolation factor)



4 Test Equipment and Calibration Data

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9kHz~30MHz	Aug. 29, 2024	Dec. 30, 2024~ Mar. 05, 2025	Aug. 28, 2025	Radiation (03CH22-HY)
Bilog Antenna	TESEQ & WOKEN	CBL 6111D & 00802N1D-06	63304 & 002	30MHz~1GHz	Dec. 17, 2024	Dec. 30, 2024~ Mar. 05, 2025	Dec. 16, 2025	Radiation (03CH22-HY)
Amplifier	SONOMA	310N	421581	N/A	Jul. 11, 2024	Dec. 30, 2024~ Mar. 05, 2025	Jul. 10, 2025	Radiation (03CH22-HY)
Double Ridged Guide Horn Antenna	RFSPIN	DRH18-E	LE2C04A18EN	1GHz~18GHz	Jul. 11, 2024	Dec. 30, 2024~ Mar. 05, 2025	Jul. 10, 2025	Radiation (03CH22-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	1230	18GHz~40GHz	Oct. 25, 2024	Dec. 30, 2024~ Mar. 05, 2025	Oct. 24, 2025	Radiation (03CH22-HY)
Amplifier	EMEC	EM01G18GA	060877	N/A	Sep. 27, 2024	Dec. 30, 2024~ Mar. 05, 2025	Sep. 26, 2025	Radiation (03CH22-HY)
Preamplifier	EMEC	EM18G40G	060871	18-40GHz	Aug. 23, 2024	Dec. 30, 2024~ Mar. 05, 2025	Aug. 22, 2025	Radiation (03CH22-HY)
Signal Analyzer	Keysight	N9010B	MY62170278	10Hz~44GHz	Sep. 24, 2024	Dec. 30, 2024~ Mar. 05, 2025	Sep. 23, 2025	Radiation (03CH22-HY)
Hygrometer	TECPEL	DTM-303A	TP201998	N/A	Oct. 24, 2024	Dec. 30, 2024~ Mar. 05, 2025	Oct. 23, 2025	Radiation (03CH22-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Dec. 30, 2024~ Mar. 05, 2025	N/A	Radiation (03CH22-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Dec. 30, 2024~ Mar. 05, 2025	N/A	Radiation (03CH22-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Dec. 30, 2024~ Mar. 05, 2025	N/A	Radiation (03CH22-HY)
Software	Audix	E3 6.09824_2019122	RK-002347	N/A	N/A	Dec. 30, 2024~ Mar. 05, 2025	N/A	Radiation (03CH22-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 06, 2024	Dec. 30, 2024~ Mar. 04, 2025	Mar. 05, 2025	Radiation (03CH22-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 05, 2025	Mar. 05, 2025	Mar. 04, 2026	Radiation (03CH22-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804390/2,8046 11/2,804615/2	N/A	Oct. 23, 2024	Dec. 30, 2024~ Mar. 05, 2025	Oct. 22, 2025	Radiation (03CH22-HY)
Spectrum Analyzer	Rohde & Schwarz	FSW43	101456	RBW 50MHz	Feb.19, 2024	Dec. 30, 2024~ Feb. 17, 2025	Fed. 18, 2025	Radiation (03CH22-HY)
Spectrum Analyzer	Rohde & Schwarz	FSW43	101456	RBW 50MHz	Feb. 20, 2025	Feb. 20, 2025~ Mar. 05, 2025	Fed. 19, 2026	Radiation (03CH22-HY)
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Mar. 08, 2025	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Mar. 08, 2025	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBE CK	VTSD 9561-F N	9561-F N00373	9kHz~200MHz	Oct. 23, 2024	Mar. 08, 2025	Oct. 22, 2025	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 14, 2024	Mar. 08, 2025	Mar. 13, 2025	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Mar. 10, 2024	Mar. 08, 2025	Mar. 09, 2025	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 23, 2024	Mar. 08, 2025	Sep. 22, 2025	Conduction (CO07-HY)

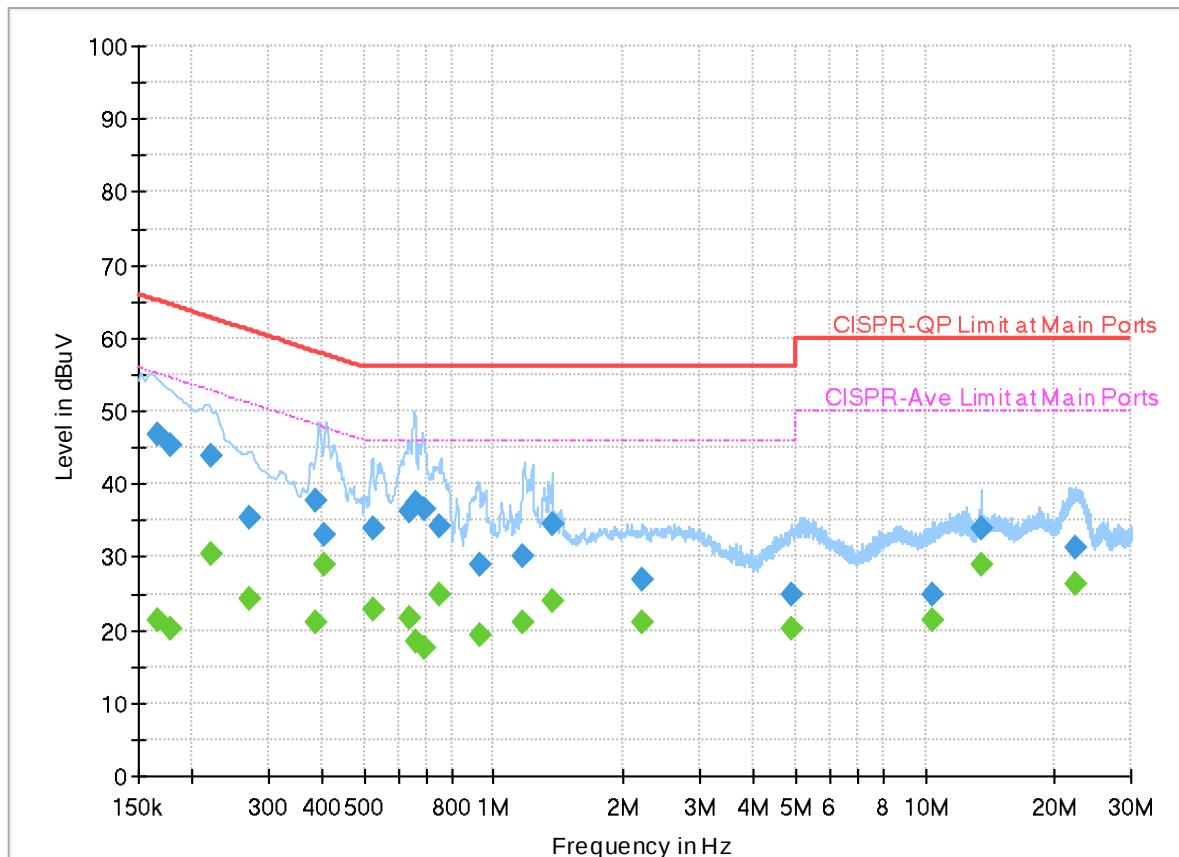


Appendix A. AC Conducted Emission Test Results

EUT Information

Report NO : 4N0918
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



Final_Result

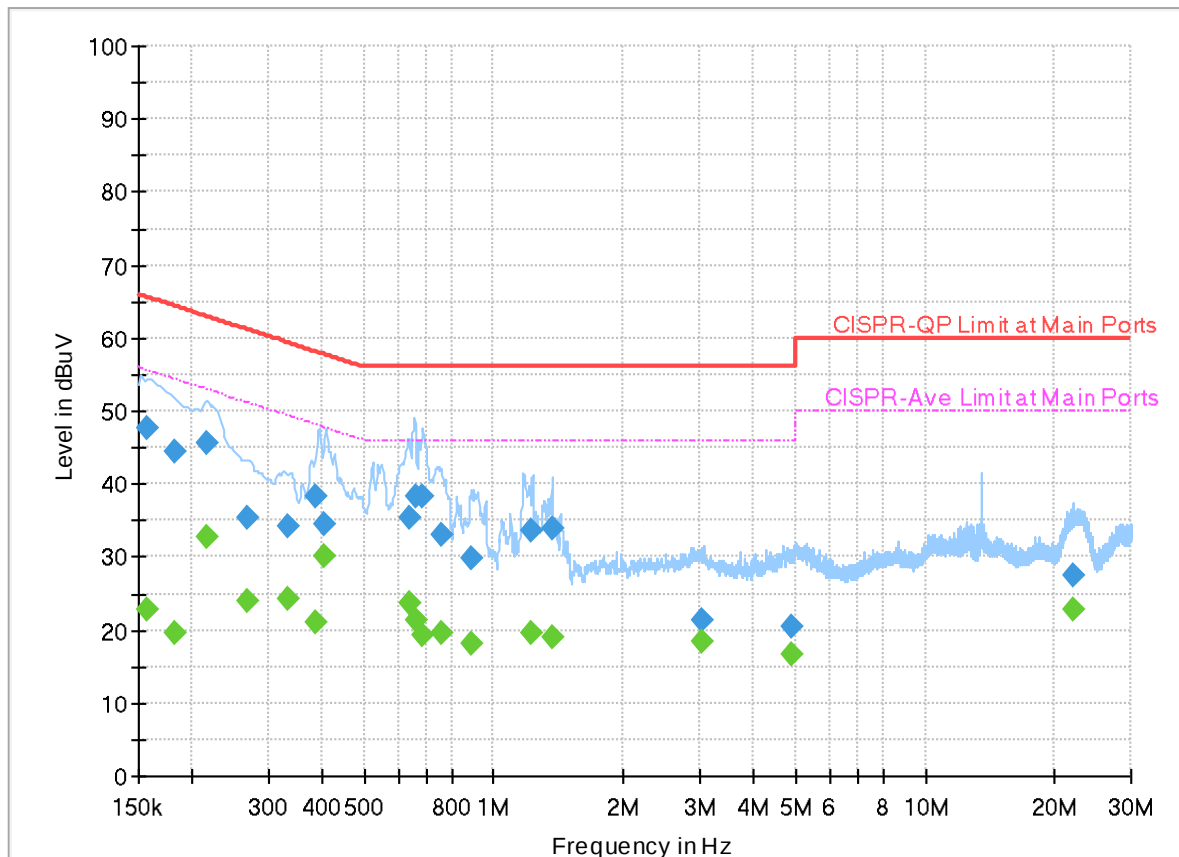
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	PE	Corr. (dB)
0.165750	---	21.32	55.17	33.85	L1	FLO	20.0
0.165750	46.92	---	65.17	18.25	L1	FLO	20.0
0.178440	---	20.07	54.56	34.49	L1	FLO	20.0
0.178440	45.37	---	64.56	19.19	L1	FLO	20.0
0.219750	---	30.27	52.83	22.56	L1	FLO	20.0
0.219750	43.84	---	62.83	18.99	L1	FLO	20.0
0.270060	---	24.31	51.12	26.81	L1	FLO	20.0
0.270060	35.46	---	61.12	25.66	L1	FLO	20.0
0.386250	---	20.94	48.14	27.20	L1	FLO	20.0
0.386250	37.80	---	58.14	20.34	L1	FLO	20.0
0.404610	---	28.85	47.76	18.91	L1	FLO	20.0
0.404610	33.08	---	57.76	24.68	L1	FLO	20.0
0.527370	---	22.94	46.00	23.06	L1	FLO	20.0
0.527370	33.80	---	56.00	22.20	L1	FLO	20.0
0.636000	---	21.63	46.00	24.37	L1	FLO	20.0
0.636000	36.32	---	56.00	19.68	L1	FLO	20.0
0.656070	---	18.48	46.00	27.52	L1	FLO	20.0
0.656070	37.36	---	56.00	18.64	L1	FLO	20.0
0.687750	---	17.63	46.00	28.37	L1	FLO	20.0

0.687750	36.66	---	56.00	19.34	L1	FLO	20.0
0.751740	---	24.95	46.00	21.05	L1	FLO	20.0
0.751740	34.09	---	56.00	21.91	L1	FLO	20.0
0.926250	---	19.19	46.00	26.81	L1	FLO	20.0
0.926250	28.89	---	56.00	27.11	L1	FLO	20.0
1.171500	---	21.12	46.00	24.88	L1	FLO	20.0
1.171500	30.19	---	56.00	25.81	L1	FLO	20.0
1.360500	---	24.12	46.00	21.88	L1	FLO	20.0
1.360500	34.52	---	56.00	21.48	L1	FLO	20.0
2.213970	---	21.16	46.00	24.84	L1	FLO	20.0
2.213970	26.81	---	56.00	29.19	L1	FLO	20.0
4.912170	---	20.10	46.00	25.90	L1	FLO	20.2
4.912170	24.97	---	56.00	31.03	L1	FLO	20.2
10.369500	---	21.34	50.00	28.66	L1	FLO	20.4
10.369500	24.91	---	60.00	35.09	L1	FLO	20.4
13.560450	---	29.06	50.00	20.94	L1	FLO	20.5
13.560450	33.92	---	60.00	26.08	L1	FLO	20.5
22.359750	---	26.46	50.00	23.54	L1	FLO	20.9
22.359750	31.43	---	60.00	28.57	L1	FLO	20.9

EUT Information

Report NO : 4N0918
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	PE	Corr. (dB)
0.156750	---	22.81	55.63	32.82	N	FLO	20.0
0.156750	47.56	---	65.63	18.07	N	FLO	20.0
0.181500	---	19.63	54.42	34.79	N	FLO	20.0
0.181500	44.35	---	64.42	20.07	N	FLO	20.0
0.216960	---	32.89	52.94	20.05	N	FLO	20.0
0.216960	45.75	---	62.94	17.19	N	FLO	20.0
0.269430	---	24.07	51.14	27.07	N	FLO	20.0
0.269430	35.31	---	61.14	25.83	N	FLO	20.0
0.334500	---	24.38	49.34	24.96	N	FLO	20.0
0.334500	34.16	---	59.34	25.18	N	FLO	20.0
0.386250	---	21.11	48.14	27.03	N	FLO	20.0
0.386250	38.31	---	58.14	19.83	N	FLO	20.0
0.404250	---	30.12	47.77	17.65	N	FLO	20.0
0.404250	34.48	---	57.77	23.29	N	FLO	20.0
0.640500	---	23.77	46.00	22.23	N	FLO	20.0
0.640500	35.25	---	56.00	20.75	N	FLO	20.0
0.658500	---	21.25	46.00	24.75	N	FLO	20.0
0.658500	38.44	---	56.00	17.56	N	FLO	20.0
0.682980	---	19.17	46.00	26.83	N	FLO	20.0

0.682980	38.20	---	56.00	17.80	N	FLO	20.0
0.752460	---	19.72	46.00	26.28	N	FLO	20.0
0.752460	33.09	---	56.00	22.91	N	FLO	20.0
0.889890	---	17.99	46.00	28.01	N	FLO	20.0
0.889890	29.97	---	56.00	26.03	N	FLO	20.0
1.225500	---	19.61	46.00	26.39	N	FLO	20.0
1.225500	33.75	---	56.00	22.25	N	FLO	20.0
1.364730	---	19.10	46.00	26.90	N	FLO	20.0
1.364730	33.86	---	56.00	22.14	N	FLO	20.0
3.030000	---	18.33	46.00	27.67	N	FLO	20.1
3.030000	21.36	---	56.00	34.64	N	FLO	20.1
4.926750	---	16.64	46.00	29.36	N	FLO	20.2
4.926750	20.61	---	56.00	35.39	N	FLO	20.2
22.166250	---	22.92	50.00	27.08	N	FLO	20.8
22.166250	27.58	---	60.00	32.42	N	FLO	20.8

————THE END————