



# FCC RADIO TEST REPORT

**FCC ID** : KR5I25U  
**Equipment** : Radio Frequency Bidirectional Key  
**Brand Name** : Continental  
**Model Name** : I25U  
**Applicant** : Continental Automotive Technologies GmbH  
Siemensstrasse 12, 93055 Regensburg, Germany  
**Manufacturer** : Continental Automotive Technologies GmbH  
Siemensstrasse 12, 93055 Regensburg, Germany  
**Factory** : Continental Automotive Lithuania UAB  
Sergeiciku I k. Karmelavos sen. Davalgonių g. 12  
54462 Kaunas  
Lithuania  
**Standard** : 47 CFR FCC Part 15.519

The product was received on Jan. 02, 2025, and testing was performed from Jan. 20, 2025 to Mar. 12, 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.

*Louis Wu*

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.)



## Table of Contents

<b>History of this test report.....</b>	<b>3</b>
<b>Summary of Test Result.....</b>	<b>4</b>
<b>1 General Description .....</b>	<b>5</b>
1.1 Product Feature of Equipment Under Test .....	5
1.2 Product Specification of Equipment Under Test .....	5
1.3 Modification of EUT .....	5
1.4 Type of EUT .....	6
1.5 Testing Applied Standards .....	6
1.6 Testing Location Information .....	7
1.7 Measurement Uncertainty .....	7
<b>2 Test Configuration of EUT .....</b>	<b>8</b>
2.1 Test Mode.....	8
2.2 The Worst Case Measurement Configuration.....	8
2.3 Test Setup Diagram .....	9
<b>3 Transmitter Test Result .....</b>	<b>10</b>
3.1 UWB bandwidth.....	10
3.2 Technical requirements for hand held UWB systems .....	12
3.3 Peak Power Measurement .....	14
3.4 Radiated Emissions.....	17
<b>4 Test Equipment and Calibration Data .....</b>	<b>64</b>
<b>Appendix A. Setup Photographs</b>	



## History of this test report

Report No.	Version	Description	Issue Date
FR4D1104B	01	Initial issue of report	Apr. 24, 2025
FR4D1104B	02	Revise Section 3.3.5 This report is an updated version, replacing the report issued on Apr. 24, 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
-	15.207	AC Power-line Conducted Emissions	Not Required	15.207
3.1	15.503	UWB Bandwidth	PASS	≥ 500MHz
3.2	15.519(a)(1)	Technical requirements for Hand Held UWB systems	PASS	15.519(a)(1)
3.3	15.519(e)	Peak Power Measurement	PASS	≤ 0 dBm/50MHz
3.4	15.519(c) /15.519(d)	Radiated Emissions	PASS	UWB Emissions: 15.519(c) GPS Emissions: 15.519(d) Digital Emissions: 15.209

**Note:** Not required means after assessing, test items are not necessary to carry out.

### 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: Keven Cheng**

**Report Producer: Ming Chen**

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Radio Frequency Bidirectional Key
Brand Name	Continental
Model Name	I25U
FCC ID	KR5I25U
EUT supports Radios application	RFID/SRD/UWB
HW Version	H02
SW Version	0248
EUT Stage	Production Unit

**Remark:** The above EUT's information was declared by manufacturer.

EUT Information List	
S/N	Performed Test Item
474199B0	Radiated Spurious Emission

## 1.2 Product Specification of Equipment Under Test

Product Specification is subject to this standard	
Channel Number & Tx/Rx Frequency Range	CH05: 6489.6 MHz CH06: 6988.8 MHz CH08: 7488.0 MHz CH09: 7987.2 MHz
Antenna Type	Monopole Antenna – PCB Printed
Antenna Gain	4.91 dBi
Type of Modulation	BPM-BPSK

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

## 1.3 Modification of EUT

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

## 1.4 Type of EUT

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

## 1.5 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.

## 1.6 Testing Location Information

<b>Test Site</b>	Sporton International Inc. Wensan Laboratory
<b>Test Site Location</b>	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
<b>Test Site No.</b>	<b>Sporton Site No.</b> 03CH20-HY, 05CH05-HY

**Note:** The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW3786

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
Radiated	03CH20-HY	John Chuang, David Dai and Sam Chou	18.2~19.6 °C 65.3~69.4 %	Jan. 10, 2025~ Feb. 21, 2025
Technical requirements for Hand Held UWB systems	05CH05-HY	Steven Shu	17.3~18.1 °C 51.1~52.3 %	Mar. 12, 2025

## 1.7 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
Radiated Emission (30MHz ~ 1000MHz)	6.7 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 6GHz)	5.4 dB	Confidence levels of 95%
Radiated Emission (6GHz ~ 18GHz)	5.6 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	UWB Channel
1	5
2	6
3	8
4	9

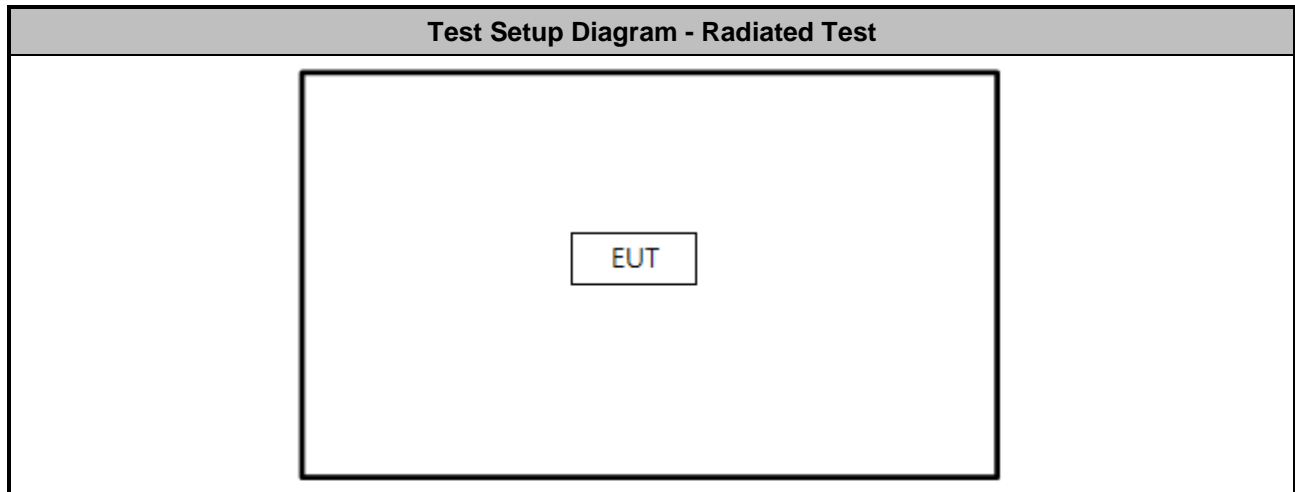
### 2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests			
Tests Item	UWB Bandwidth, Peak Power Measurement, Radiated Emissions		
Test Condition	Radiated measurement		
Operating Mode	CTX		
1	Stand-alone Mode		
Mode 1 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
			
Worst Plane of all Test Modes		V	
<b>Remark:</b> The measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT (Open and Close) and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape) and accessory (Adapter or Earphone), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and find as worst plane, and recorded in this report.			





## 2.3 Test Setup Diagram



### 3 Transmitter Test Result

#### 3.1 UWB bandwidth

##### 3.1.1 UWB bandwidth Limit

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

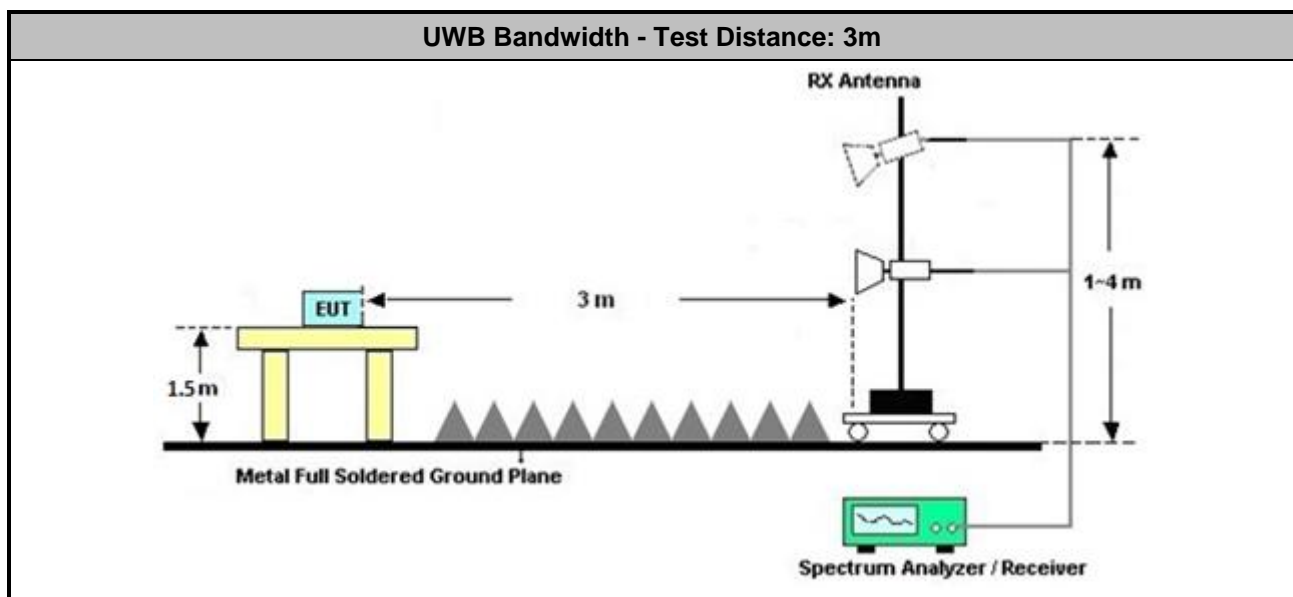
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 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.

##### 3.1.4 Test Setup



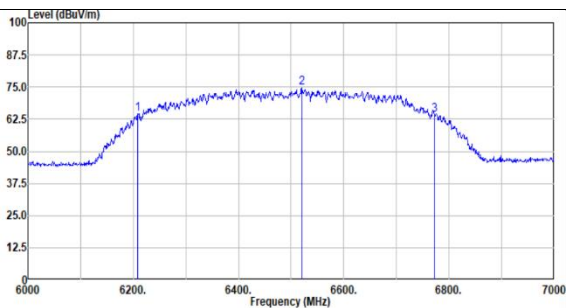


## 3.1.5 Test Result of UWB Bandwidth

Test mode	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	UWB Bandwidth (MHz)	Bandwidth limit (MHz)	Result	Pol [H/V]
1	6208	6772	564	≥ 500	Pass	H
2	6674	7292	618	≥ 500	Pass	H
3	7201	7782	581	≥ 500	Pass	H
4	7672	8281	609	≥ 500	Pass	H

## UWB Bandwidth

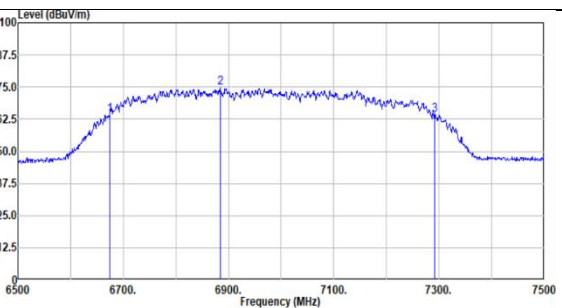
Mode 1: CH 05



Site : 03CH20-HY  
Condition: 3m HF\_91280\_02360\_241101 Horizontal  
: RBW:1000.000kHz VBW:3000.000kHz SWT:3.000sec  
Project : 4D1104  
Detector : Peak  
Channel : CH5

	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	dB	cm	deg
1	6208.00	64.59	-----	-----	54.12	34.32	14.09	37.94	0.00	--	--	Peak
2	6521.00	74.64	-----	-----	62.78	35.38	14.45	37.97	0.00	--	--	Peak
3	6772.00	64.13	-----	-----	51.53	35.96	14.74	38.10	0.00	--	--	Peak

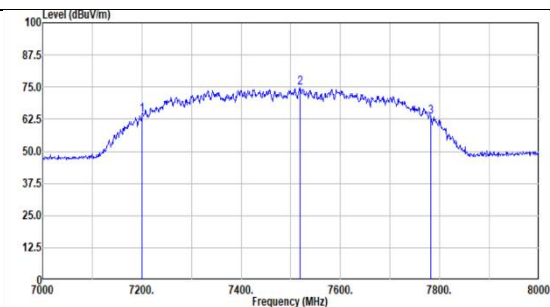
Mode 2: CH 06



Site : 03CH20-HY  
Condition: 3m HF\_91280\_02360\_241101 Horizontal  
: RBW:1000.000kHz VBW:3000.000kHz SWT:3.000sec  
Project : 4D1104  
Detector : Peak  
Channel : CH6

	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	dB	cm	deg
1	6674.00	64.25	-----	-----	51.67	36.00	14.63	38.05	0.00	--	--	Peak
2	6885.00	74.74	-----	-----	62.23	35.00	14.86	38.15	0.00	--	--	Peak
3	7292.00	64.12	-----	-----	50.34	36.09	15.34	38.46	0.00	--	--	Peak

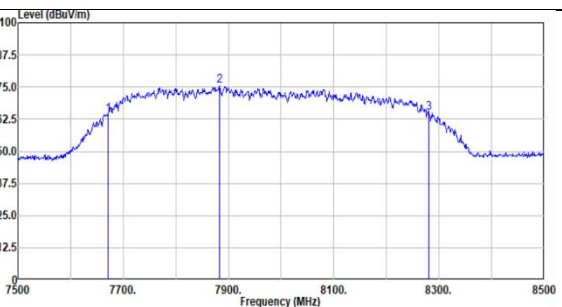
Mode 3: CH 08



Site : 03CH20-HY  
Condition: 3m HF\_91280\_02360\_241101 Horizontal  
: RBW:1000.000kHz VBW:3000.000kHz SWT:3.000sec  
Project : 4D1104  
Detector : Peak  
Channel : CH8

	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	dB	cm	deg
1	7201.00	64.23	-----	-----	50.48	36.90	15.23	38.38	0.00	--	--	Peak
2	7519.00	74.55	-----	-----	61.26	36.36	15.58	38.65	0.00	--	--	Peak
3	7782.00	63.30	-----	-----	49.57	36.79	15.80	38.86	0.00	--	--	Peak

Mode 4: CH 09



Site : 03CH20-HY  
Condition: 3m HF\_91280\_02360\_241101 Horizontal  
: RBW:1000.000kHz VBW:3000.000kHz SWT:3.000sec  
Project : 4D1104  
Detector : Peak  
Channel : CH9

	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	dB	cm	deg
1	7672.00	64.23	-----	-----	50.91	36.38	15.71	38.77	0.00	--	--	Peak
2	7883.00	75.32	-----	-----	61.22	37.07	15.97	38.94	0.00	--	--	Peak
3	8281.00	64.85	-----	-----	50.65	37.16	16.34	39.30	0.00	--	--	Peak

## 3.2 Technical requirements for hand held UWB systems

### 3.2.1 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.

### 3.2.2 Measuring Instruments

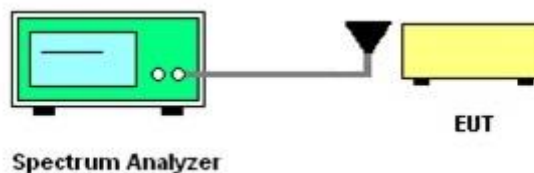
Refer a test equipment and calibration data table in this test report.

### 3.2.3 Test Procedure

Follow the test step as below:

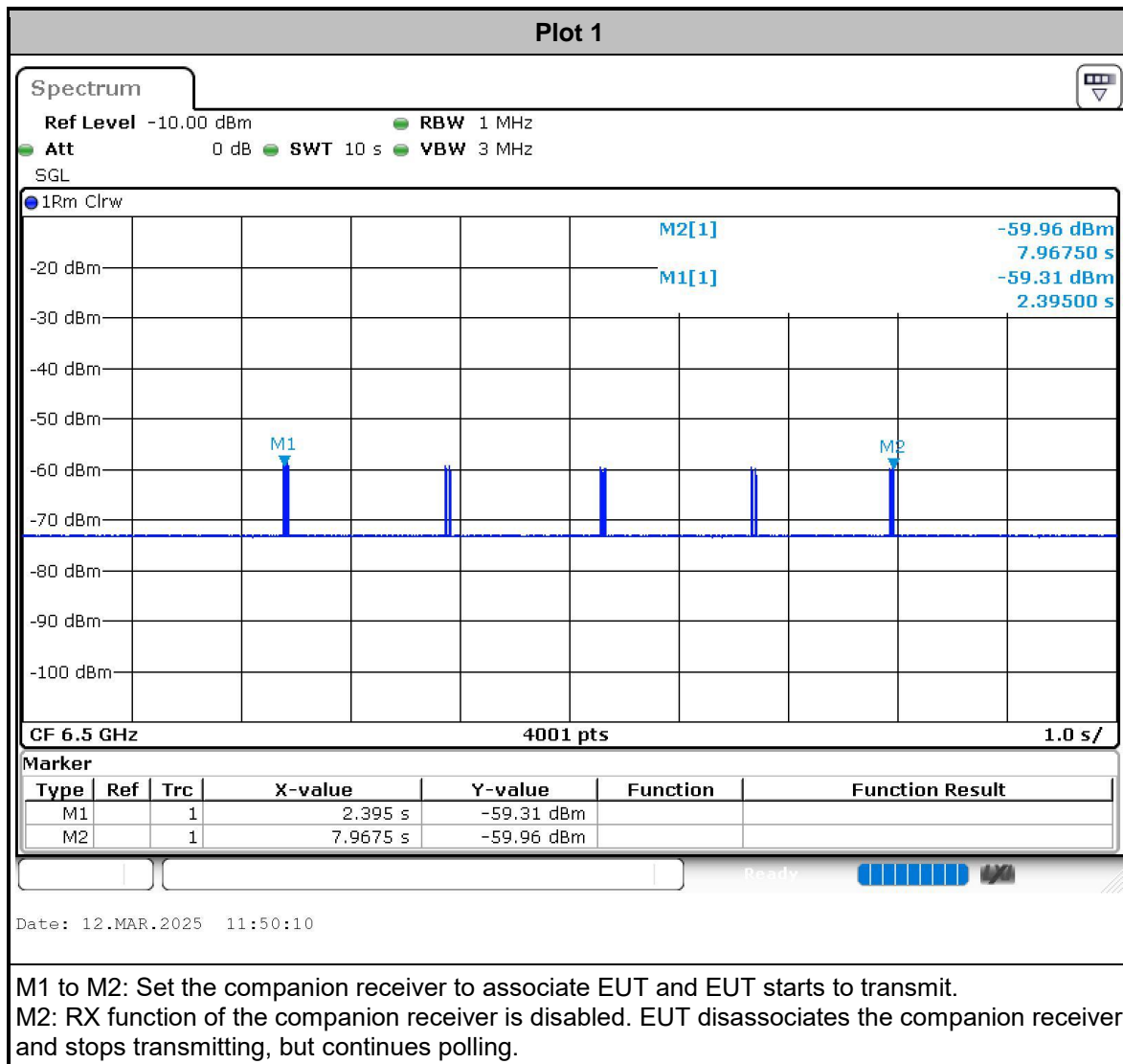
1. Turn on both EUT and companion receiver.
2. Set the EUT to TX mode, and EUT starts polling.
3. Set the companion receiver to associate EUT and EUT starts to transmit.
4. Disable the RX function of the companion receiver to disassociate the EUT.
5. Check if EUT stop transmitting once step 4 is made.

### 3.2.4 Test Setup





## 3.2.5 Test Result



### 3.3 Peak Power Measurement

#### 3.3.1 Peak Power Measurement Limit

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

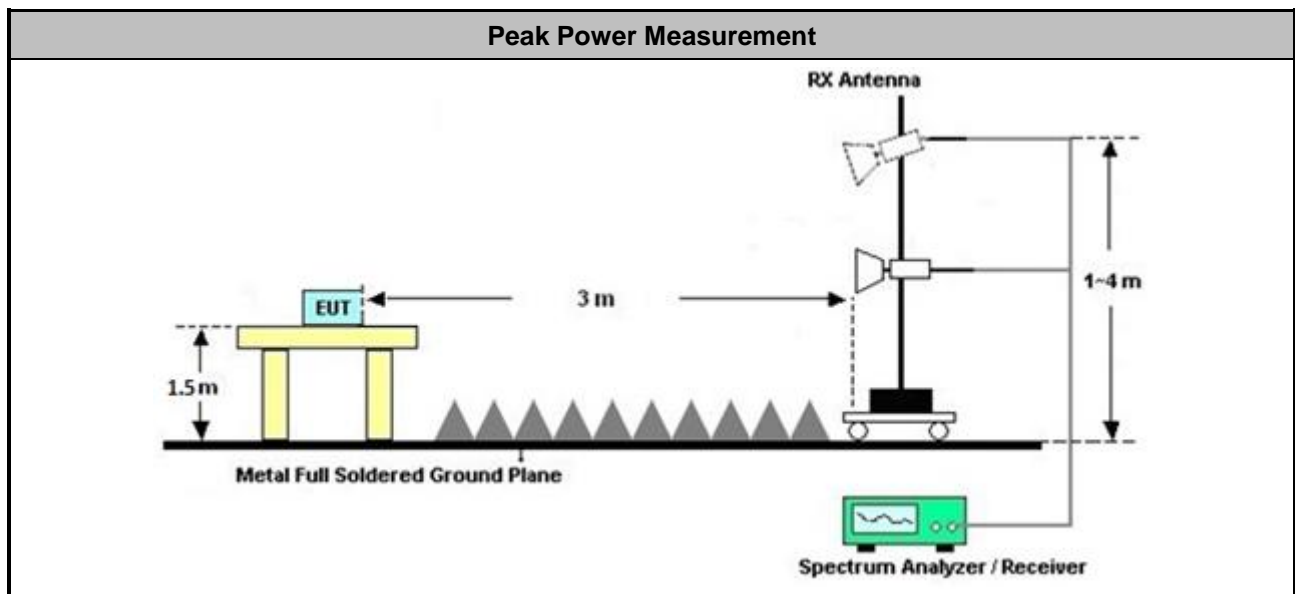
#### 3.3.2 Measuring Instruments

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

#### 3.3.3 Test Procedures

Test Method
<p>■ Peak Power Measurement</p> <p>■ Refer as ANSI C63.10, clause 10.3.1 for radiated measurement procedure testing.</p> <p>■ Refer as ANSI C63.10, clause 10.3.2 for measurement distance is 3m.</p> <p>■ Refer as ANSI C63.10, clause 10.3.5 for peak detector procedure testing.</p> <p>■ Refer as ANSI C63.10, clause 10.3.6 for bandwidth conversion of peak power.</p> <p>■ 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:</p> <ul style="list-style-type: none"> <li>• Central frequency: Worst frequency point</li> <li>• Span: Zero span</li> <li>• RBW: 50MHz</li> <li>• VBW: 80MHz</li> <li>• Detector: Peak detector</li> <li>• Trace: Max hold</li> </ul>

#### 3.3.4 Test Setup



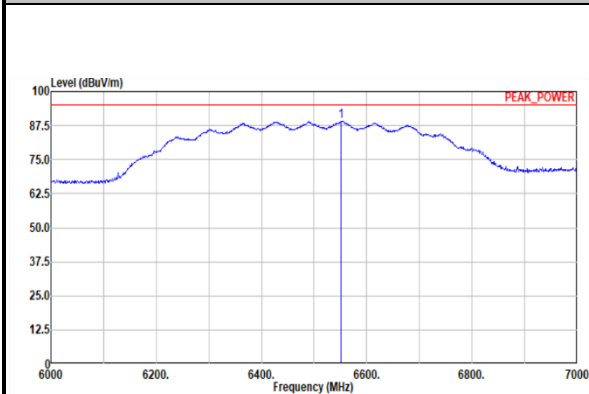
**3.3.5 Test Result of Peak Power Measurement**

Peak Measurement Result							
Test Mode	Freq. (MHz)	E-Field (dBuV/m)	ERIP <sub>50MHz</sub> Limit (dBm)	EIRP <sub>50MHz</sub> Limit (dBm)	Margin (dB)	Result	Pol [H/V]
1	6551	89.11	-6.12	0	-6.12	Pass	H
2	6864	89.67	-5.56	0	-5.56	Pass	H
3	7551	90.31	-4.92	0	-4.92	Pass	H
4	7863	90.15	-5.08	0	-5.08	Pass	H
Note 1: EIRP [dBm] = E-Field [dBuV/m] - 95.23; Note 2: Measurement worst emissions of receive antenna polarization.							



## Pre-located worst frequency Plots

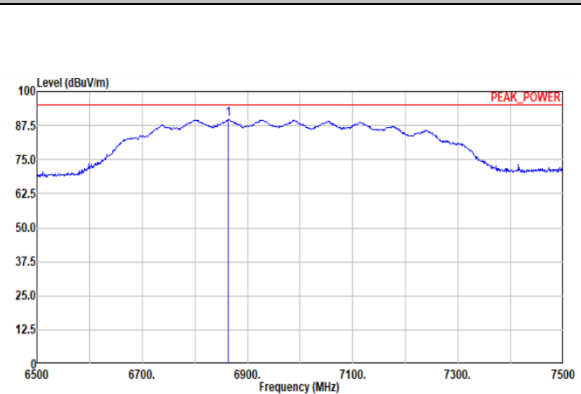
Mode 1



Site : 03CH2  
Condition: PEAK\_POWER 3m HF\_91200\_02360\_241101 Horizontal  
: RBW:50000.000kHz VBN:80000.000kHz SMT:1.000sec  
Project : 4D1104  
Detector : Peak  
Channel : CH5

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	dB	cm	deg	
1 6551.00	89.11	95.23	-6.12	77.11	35.51	14.48	37.99	0.00	--	--	--	Peak

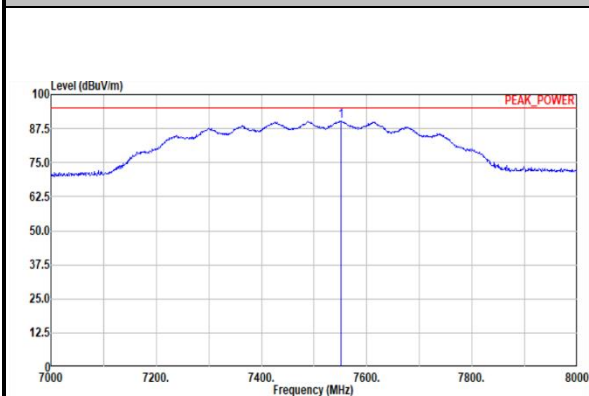
Mode 2



Site : 03CH2  
Condition: PEAK\_POWER 3m HF\_91200\_02360\_241101 Horizontal  
: RBW:50000.000kHz VBN:80000.000kHz SMT:1.000sec  
Project : 4D1104  
Detector : Peak  
Channel : CH6

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	dB	cm	deg	
1 6864.00	89.67	95.23	-5.56	77.17	35.80	14.84	38.14	0.00	--	--	--	Peak

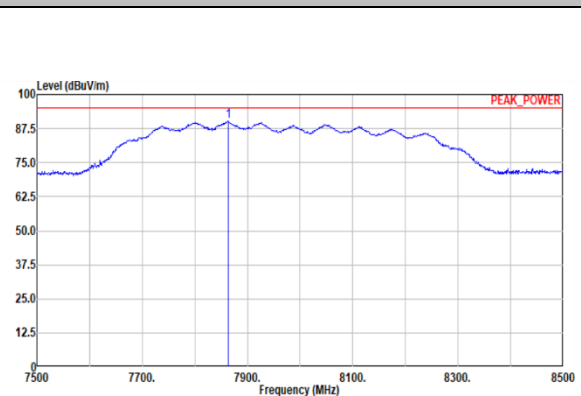
Mode 3



Site : 03CH2  
Condition: PEAK\_POWER 3m HF\_91200\_02360\_241101 Horizontal  
: RBW:50000.000kHz VBN:80000.000kHz SMT:1.000sec  
Project : 4D1104  
Detector : Peak  
Channel : CH8

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	dB	cm	deg	
1 7551.00	90.31	95.23	-4.92	77.07	36.30	15.61	38.67	0.00	--	--	--	Peak

Mode 4



Site : 03CH2  
Condition: PEAK\_POWER 3m HF\_91200\_02360\_241101 Horizontal  
: RBW:50000.000kHz VBN:80000.000kHz SMT:1.000sec  
Project : 4D1104  
Detector : Peak  
Channel : CH9

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	dB	cm	deg	
1 7863.00	90.15	95.23	-5.08	76.11	37.03	15.93	38.92	0.00	--	--	--	Peak



### 3.4 Radiated Emissions

#### 3.4.1 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 =  $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$  (dB)

Radiated Emissions in GPS Bands Limit	
Frequency Range (MHz)	EIRP (dBm), RBW $\geq$ 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

### 3.4.2 Measuring Instruments

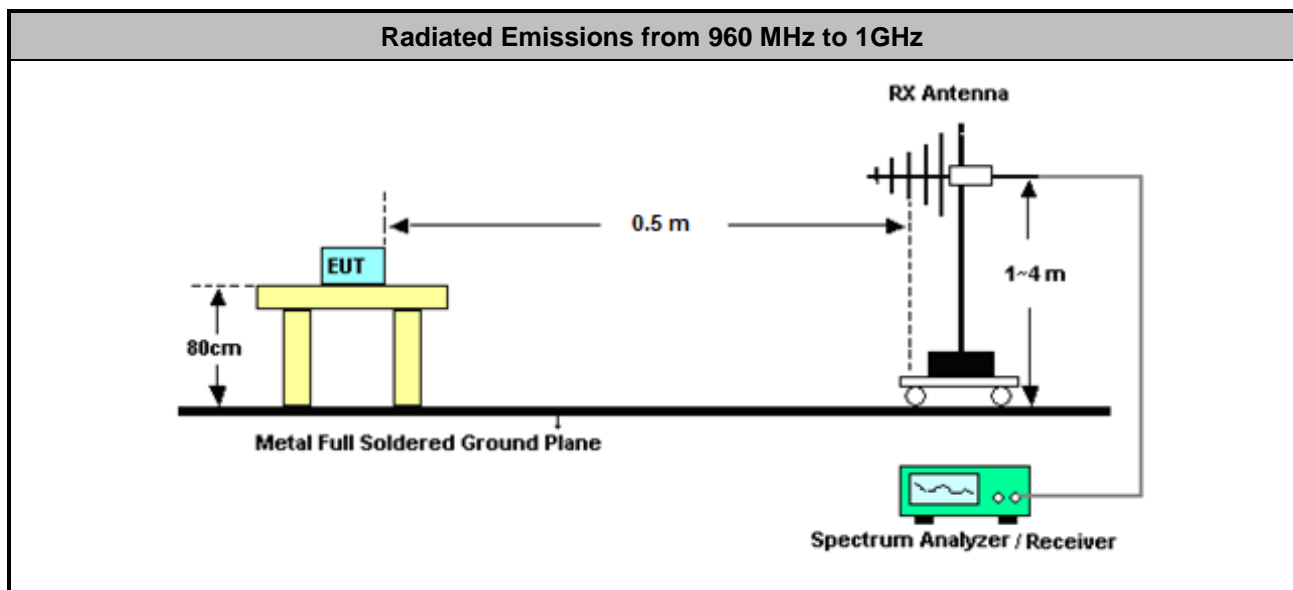
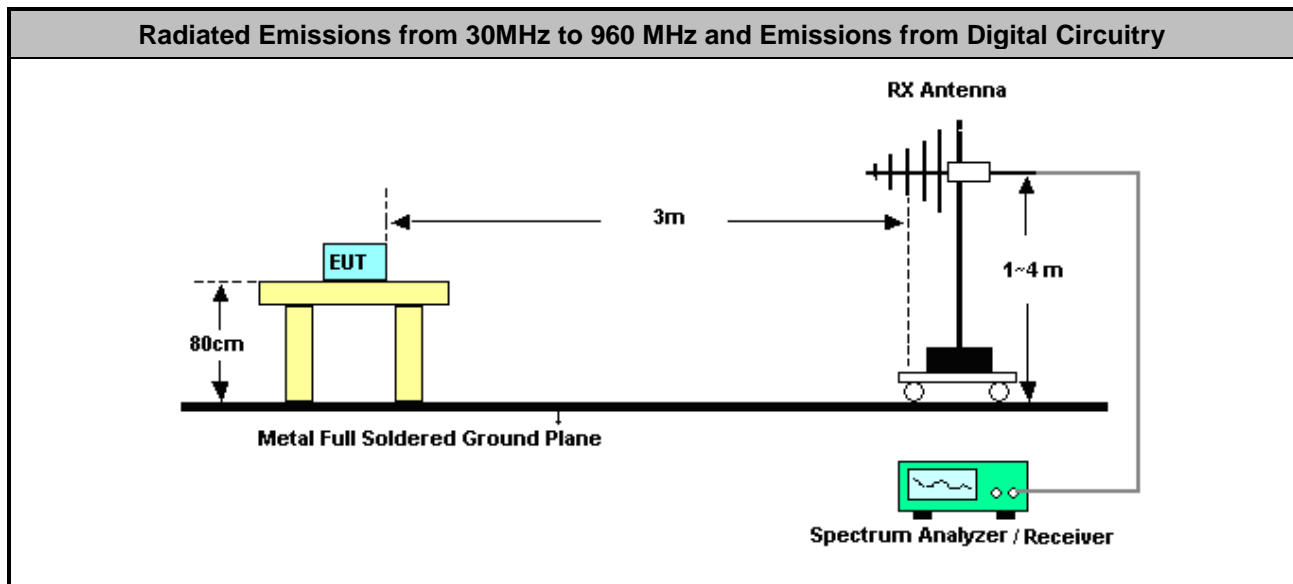
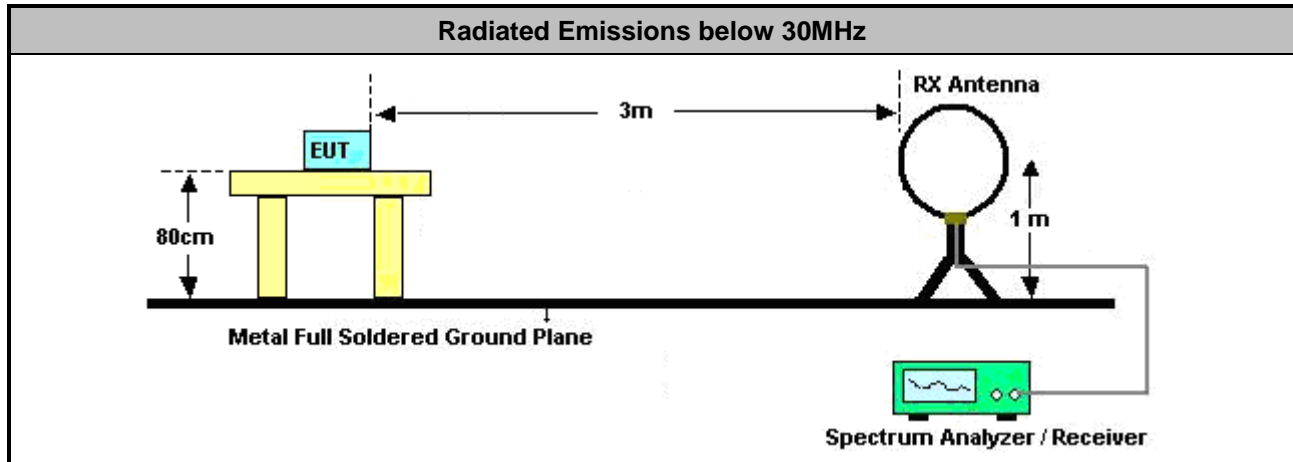
Refer a test equipment and calibration data table in this test report.

### 3.4.3 Test Procedures

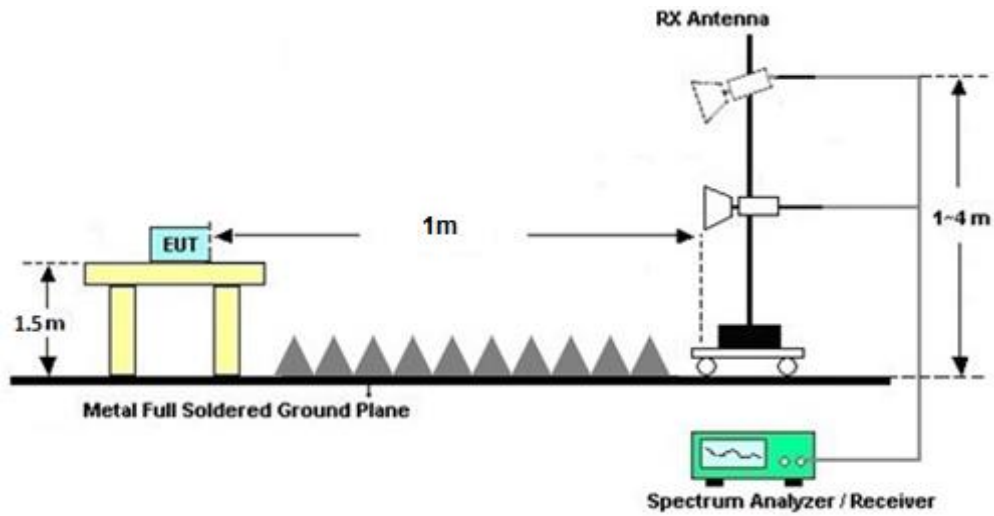
Test Method for Radiated Emissions above 960MHz	
■ Radiated Emissions above 960MHz	
■	Refer as ANSI C63.10, clause 10.3.1 for radiated measurement procedure testing.
■	Refer as ANSI C63.10, clause 10.3.2 for measurement distance is 3m. In some cases, it may be necessary to measure the radiated UWB emissions 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.	

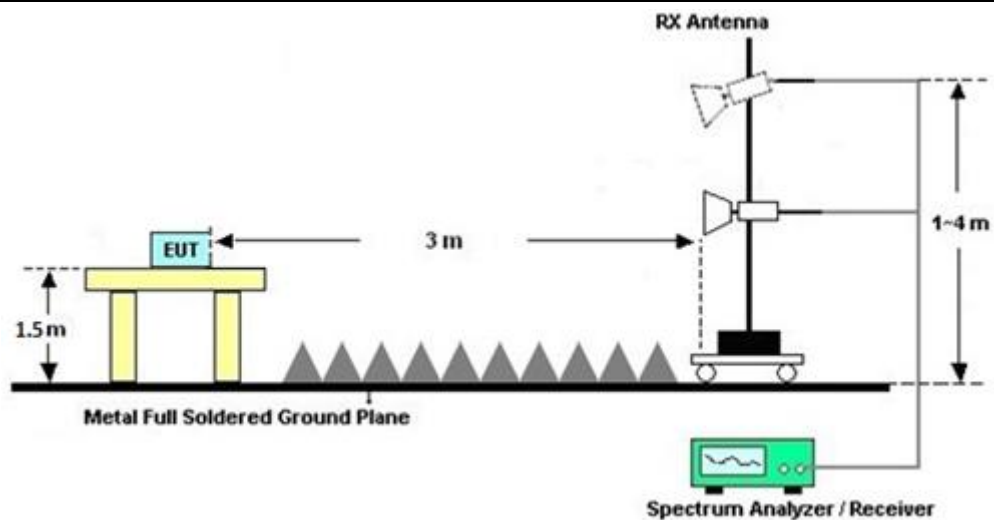
### 3.4.4 Test Setup

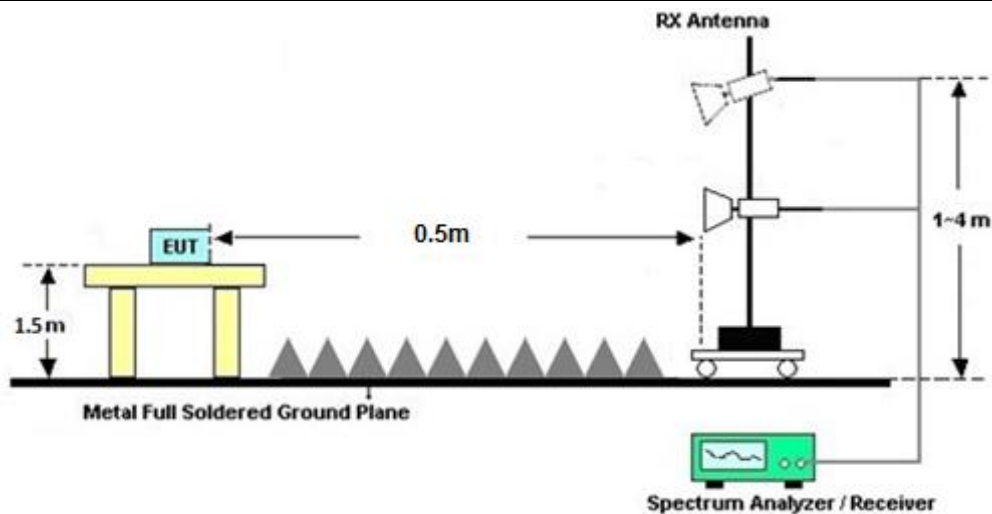
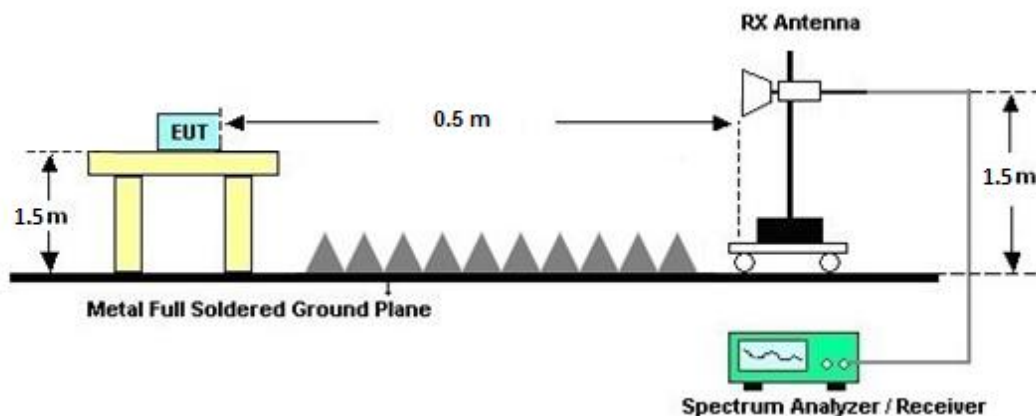


**Radiated Emissions from 1GHz to 1.61 GHz**



**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.

**3.4.5 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.

**3.4.6 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	6527	53.55	-41.3	53.93	-0.38	Pass	H
2	6880	53.51	-41.3	53.93	-0.42	Pass	H
3	7520	53.61	-41.3	53.93	-0.32	Pass	H
4	7869	53.49	-41.3	53.93	-0.44	Pass	H



## Radiated Emissions (Fundamental)

Operating Function

Stand-alone Mode

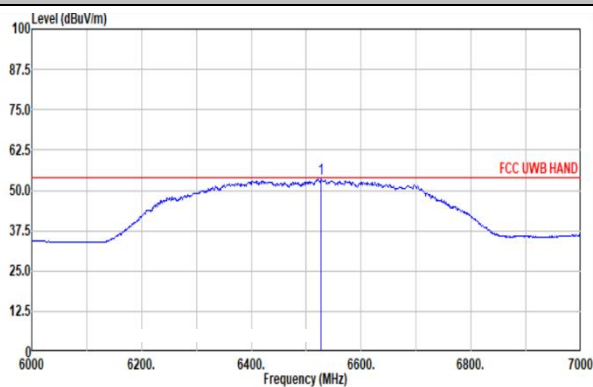
Polarization

H

Test Distance

3m

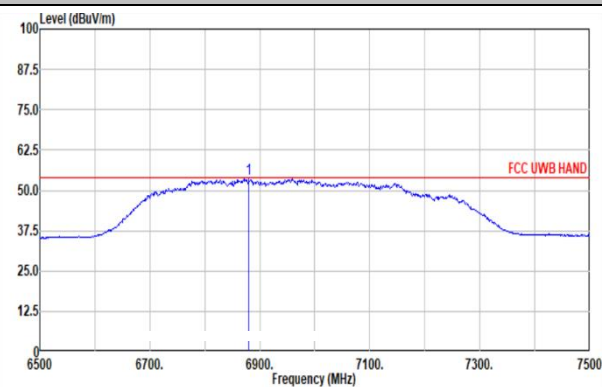
## Mode 1



Site : 03CH20-HY  
Condition: FCC UWB HAND 3m HF\_91200\_02360\_241101 Horizontal  
: RBW:1000.000kHz VBN:3000.000kHz SWT:1.000sec  
Project : 401104  
Detector : Average  
Channel : CH5

Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
		Line	Margin								
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg
1	6527.00	53.55	53.93	-0.38	41.65	35.41	14.46	37.97	0.00	--	-- Average

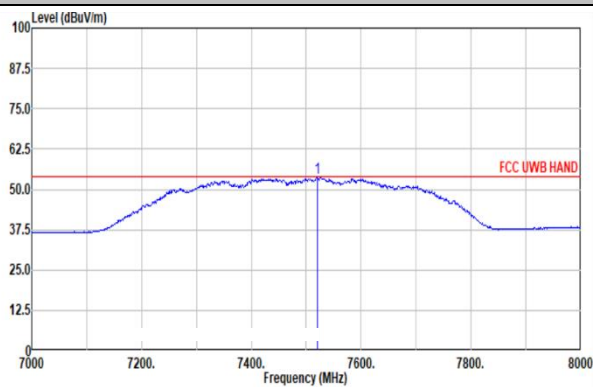
## Mode 2



Site : 03CH20-HY  
Condition: FCC UWB HAND 3m HF\_91200\_02360\_241101 Horizontal  
: RBW:1000.000kHz VBN:3000.000kHz SWT:1.000sec  
Project : 401104  
Detector : Average  
Channel : CH6

Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
		Line	Margin								
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg
1	6880.00	53.51	53.93	-0.42	41.00	35.80	14.86	38.15	0.00	--	-- Average

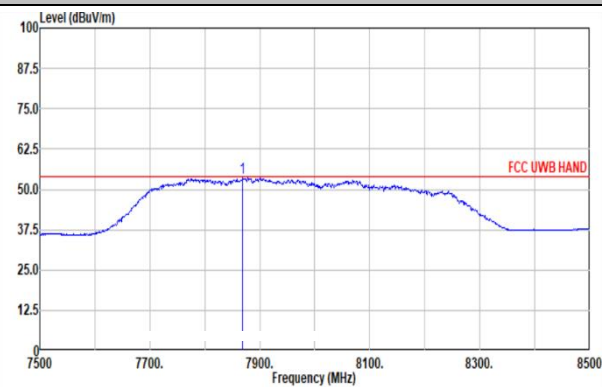
## Mode 3



Site : 03CH20-HY  
Condition: FCC UWB HAND 3m HF\_91200\_02360\_241101 Horizontal  
: RBW:1000.000kHz VBN:3000.000kHz SWT:1.000sec  
Project : 401104  
Detector : Average  
Channel : CH8

Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
		Line	Margin								
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg
1	7520.00	53.61	53.93	-0.32	40.32	36.36	15.58	38.65	0.00	--	-- Average

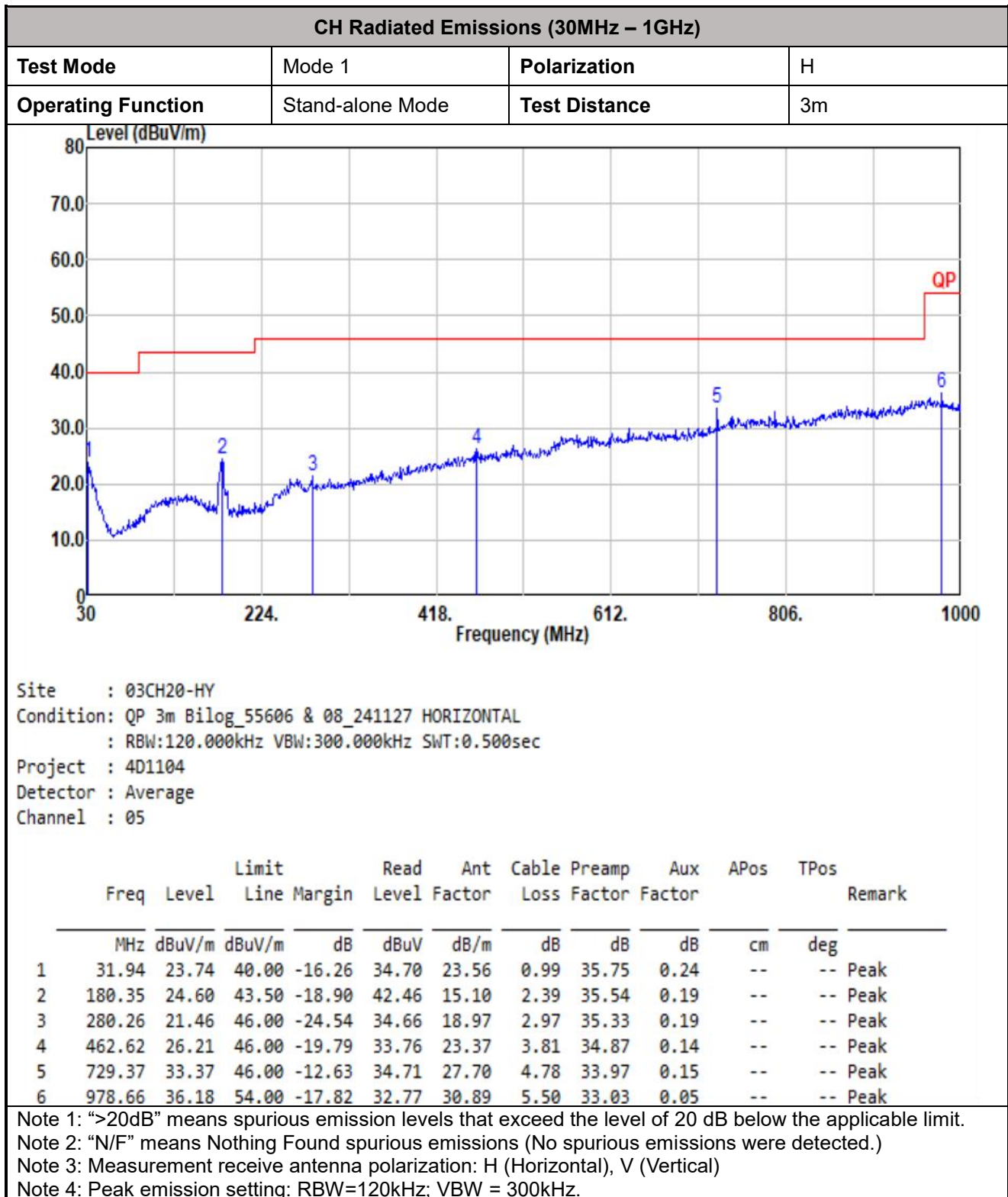
## Mode 4



Site : 03CH20-HY  
Condition: FCC UWB HAND 3m HF\_91200\_02360\_241101 Horizontal  
: RBW:1000.000kHz VBN:3000.000kHz SWT:1.000sec  
Project : 401104  
Detector : Average  
Channel : CH9

Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
		Line	Margin								
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg
1	7869.00	53.49	53.93	-0.44	39.44	37.04	15.94	38.93	0.00	--	-- Average

### 3.4.7 Radiated Emissions (30MHz – 1GHz)

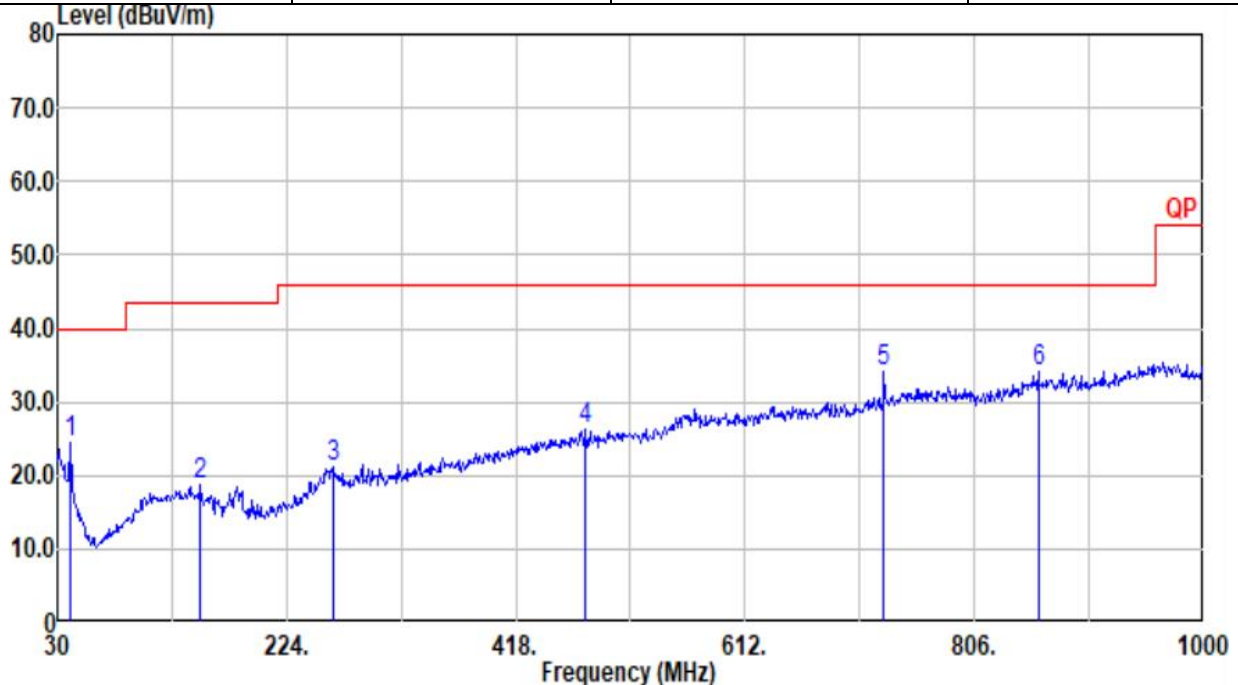






## CH Radiated Emissions (30MHz – 1GHz)

Test Mode	Mode 1	Polarization	V
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: QP 3m Bilog\_55606 & 08\_241127 VERTICAL  
: RBW:120.000kHz VBW:300.000kHz SWT:0.500sec  
Project : 4D1104  
Detector : Average  
Channel : 05

	Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	Line	Margin	Level	Factor	Loss	Factor	Factor			
			dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	41.64	24.32	40.00	-15.68	40.10	18.59	1.14	35.74	0.23	--	--	Peak
2	151.25	18.75	43.50	-24.75	34.65	17.31	2.19	35.60	0.20	--	--	Peak
3	262.80	21.01	46.00	-24.99	33.02	20.29	2.88	35.37	0.19	--	--	Peak
4	477.17	26.31	46.00	-19.69	33.65	23.50	3.86	34.83	0.13	--	--	Peak
5	729.37	33.99	46.00	-12.01	35.33	27.70	4.78	33.97	0.15	--	--	Peak
6	860.32	33.99	46.00	-12.01	33.00	29.15	5.18	33.45	0.11	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

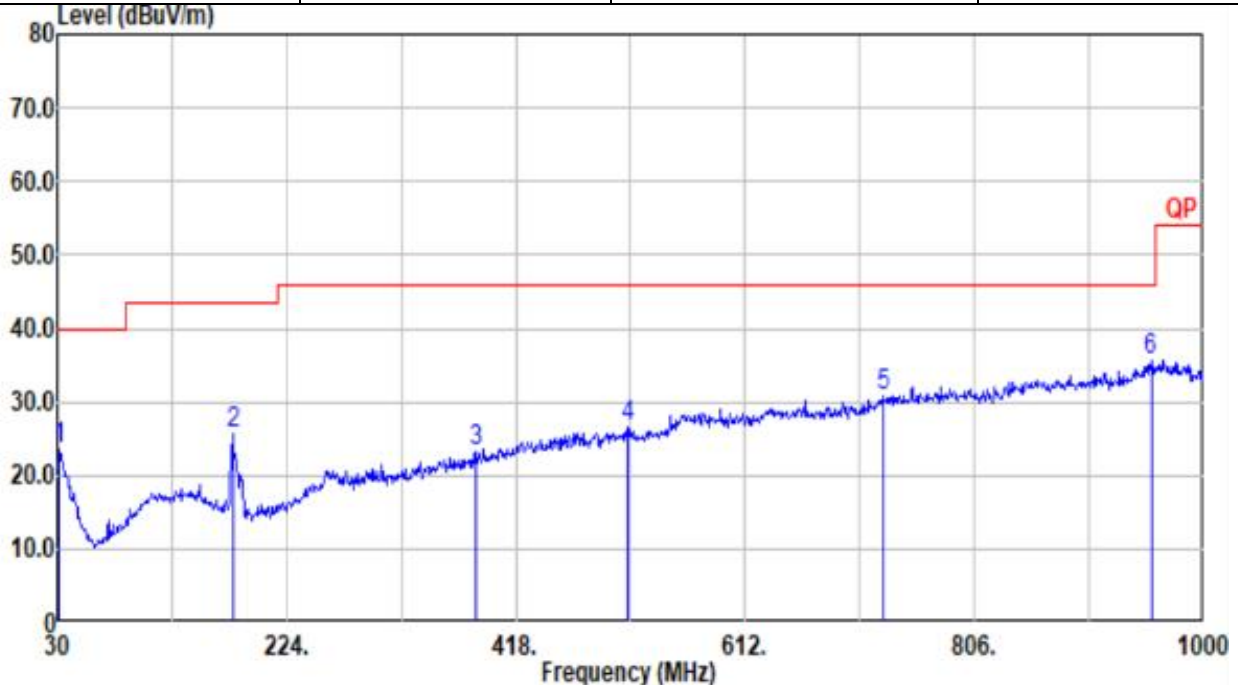
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Peak emission setting: RBW=120kHz; VBW = 300kHz.



## CH Radiated Emissions (30MHz – 1GHz)

Test Mode	Mode 2	Polarization	H
Operating Function	Stand-alone 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 : 4D1104  
Detector : Average  
Channel : 06

	Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	Line	Margin	Level	Factor	Loss	Factor	Factor	cm	deg	
1	31.94	23.69	40.00	-16.31	34.65	23.56	0.99	35.75	0.24	--	--	Peak
2	178.41	25.75	43.50	-17.75	43.54	15.18	2.38	35.54	0.19	--	--	Peak
3	384.05	23.35	46.00	-22.65	33.48	21.29	3.47	35.04	0.15	--	--	Peak
4	512.09	26.47	46.00	-19.53	33.08	24.00	3.99	34.73	0.13	--	--	Peak
5	728.40	30.80	46.00	-15.20	32.22	27.64	4.77	33.98	0.15	--	--	Peak
6	955.38	35.76	46.00	-10.24	32.43	30.94	5.44	33.14	0.09	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

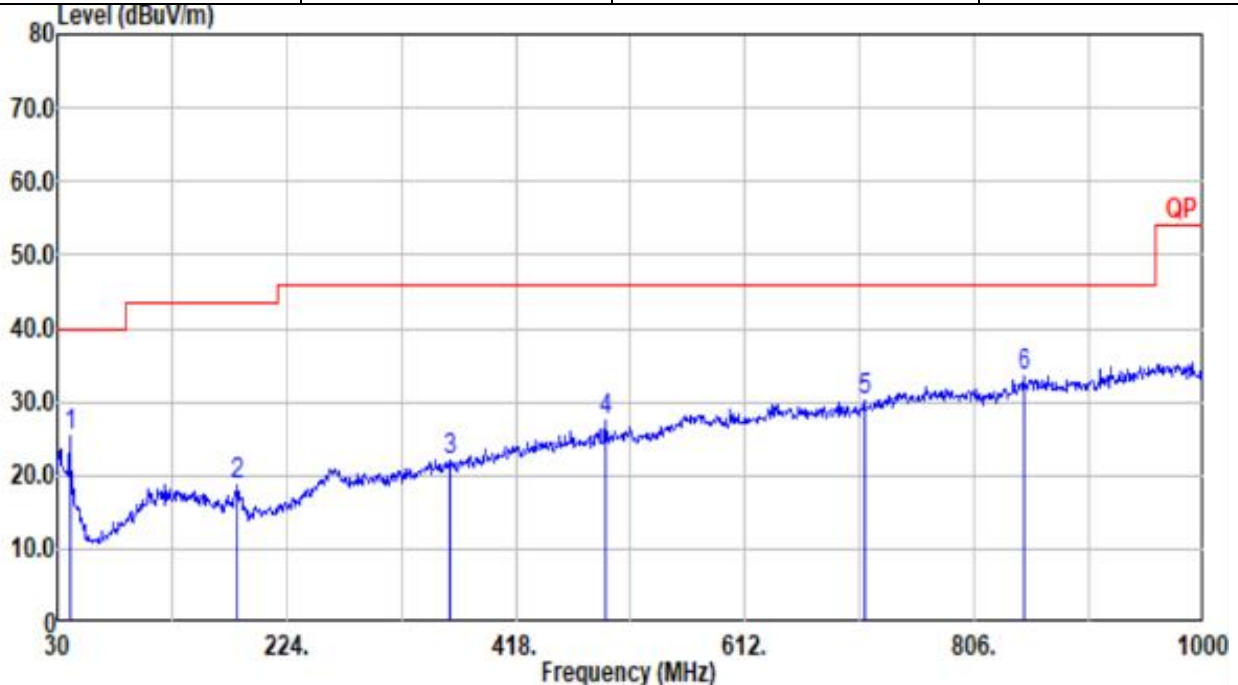
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Peak emission setting: RBW=120kHz; VBW = 300kHz.



## CH Radiated Emissions (30MHz – 1GHz)

Test Mode	Mode 2	Polarization	V
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: QP 3m Bilog\_55606 & 08\_241127 VERTICAL  
: RBW:120.000kHz VBW:300.000kHz SWT:0.500sec  
Project : 4D1104  
Detector : Average  
Channel : 06

	Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	Line	Margin	Level	Factor	Loss	Factor	Factor			
			dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	40.67	25.46	40.00	-14.54	40.74	19.09	1.13	35.74	0.24	--	--	Peak
2	182.29	18.83	43.50	-24.67	36.75	15.03	2.40	35.54	0.19	--	--	Peak
3	361.74	22.16	46.00	-23.84	32.93	20.78	3.37	35.08	0.16	--	--	Peak
4	493.66	27.38	46.00	-18.62	34.27	23.85	3.92	34.79	0.13	--	--	Peak
5	712.88	30.25	46.00	-15.75	32.51	26.90	4.72	34.04	0.16	--	--	Peak
6	847.71	33.63	46.00	-12.37	32.87	29.01	5.14	33.49	0.10	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

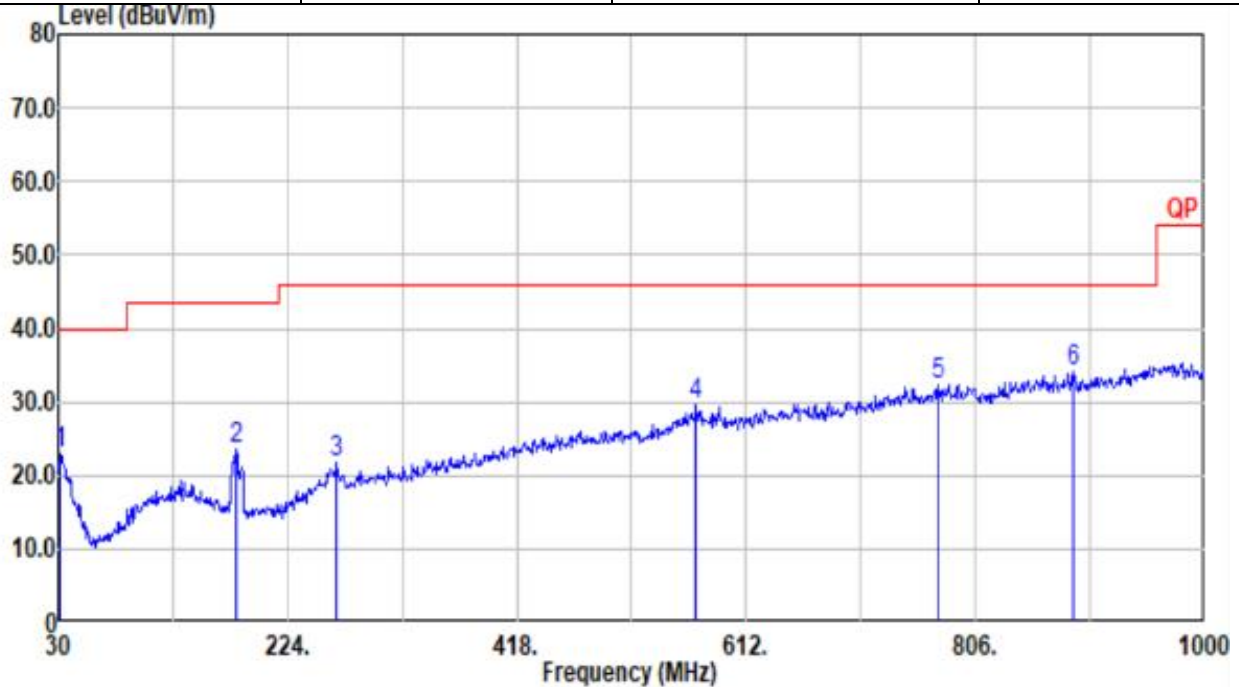
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Peak emission setting: RBW=120kHz; VBW = 300kHz.



## CH Radiated Emissions (30MHz – 1GHz)

Test Mode	Mode 3	Polarization	H
Operating Function	Stand-alone 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 : 4D1104  
Detector : Average  
Channel : 08

	Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	Line	Margin	Level	Factor	Loss	Factor	Factor	cm	deg	
1	30.97	22.90	40.00	-17.10	33.30	24.12	0.98	35.75	0.25	--	--	Peak
2	180.35	23.50	43.50	-20.00	41.36	15.10	2.39	35.54	0.19	--	--	Peak
3	265.71	21.75	46.00	-24.25	34.01	20.02	2.89	35.36	0.19	--	--	Peak
4	569.32	29.53	46.00	-16.47	33.47	26.28	4.23	34.56	0.11	--	--	Peak
5	774.96	32.25	46.00	-13.75	32.74	28.24	4.91	33.79	0.15	--	--	Peak
6	889.42	34.18	46.00	-11.82	33.07	29.05	5.27	33.36	0.15	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

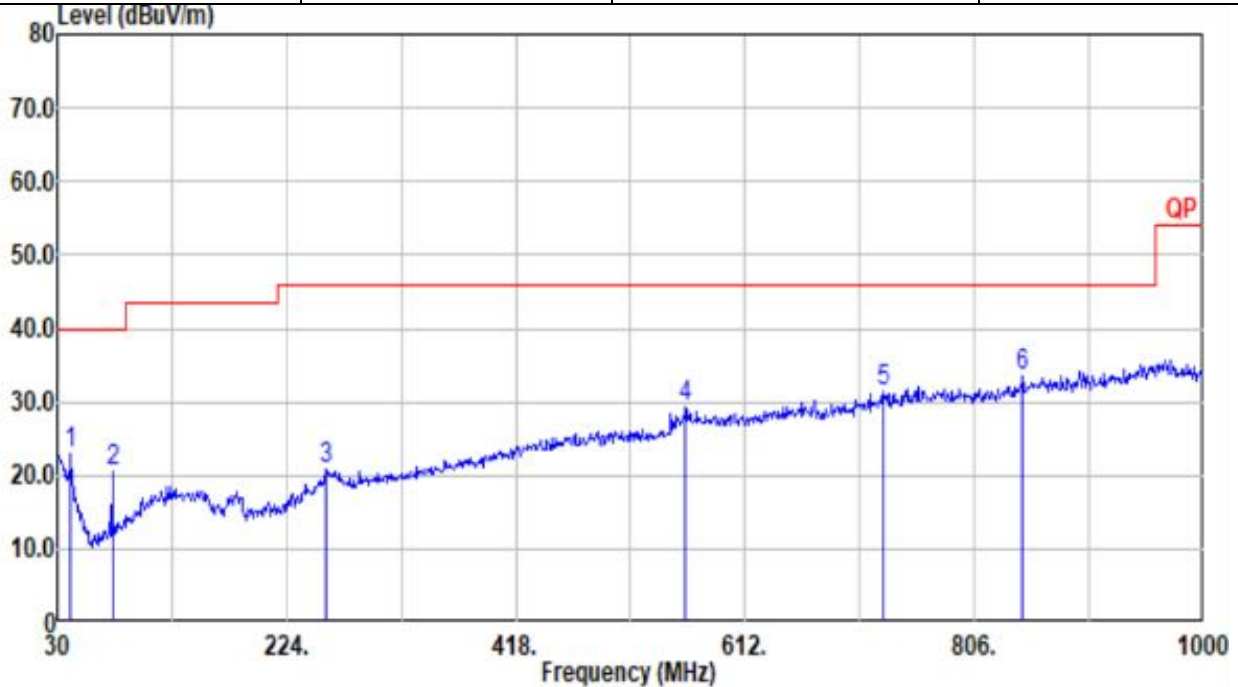
Note 4: Peak emission setting: RBW=120kHz; VBW = 300kHz.





## CH Radiated Emissions (30MHz – 1GHz)

Test Mode	Mode 3	Polarization	V
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: QP 3m Bilog\_55606 & 08\_241127 VERTICAL  
: RBW:120.000kHz VBW:300.000kHz SWT:0.500sec  
Project : 4D1104  
Detector : Average  
Channel : 08

	Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	Line	Margin	Level	Factor	Loss	Factor	Factor	cm	deg	
1	41.64	22.83	40.00	-17.17	38.61	18.59	1.14	35.74	0.23	--	--	Peak
2	76.56	20.46	40.00	-19.54	41.20	13.22	1.56	35.71	0.19	--	--	Peak
3	256.98	20.86	46.00	-25.14	33.61	19.59	2.85	35.38	0.19	--	--	Peak
4	561.56	29.19	46.00	-16.81	33.17	26.29	4.20	34.58	0.11	--	--	Peak
5	729.37	31.30	46.00	-14.70	32.64	27.70	4.78	33.97	0.15	--	--	Peak
6	846.74	33.51	46.00	-12.49	32.77	28.99	5.14	33.49	0.10	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

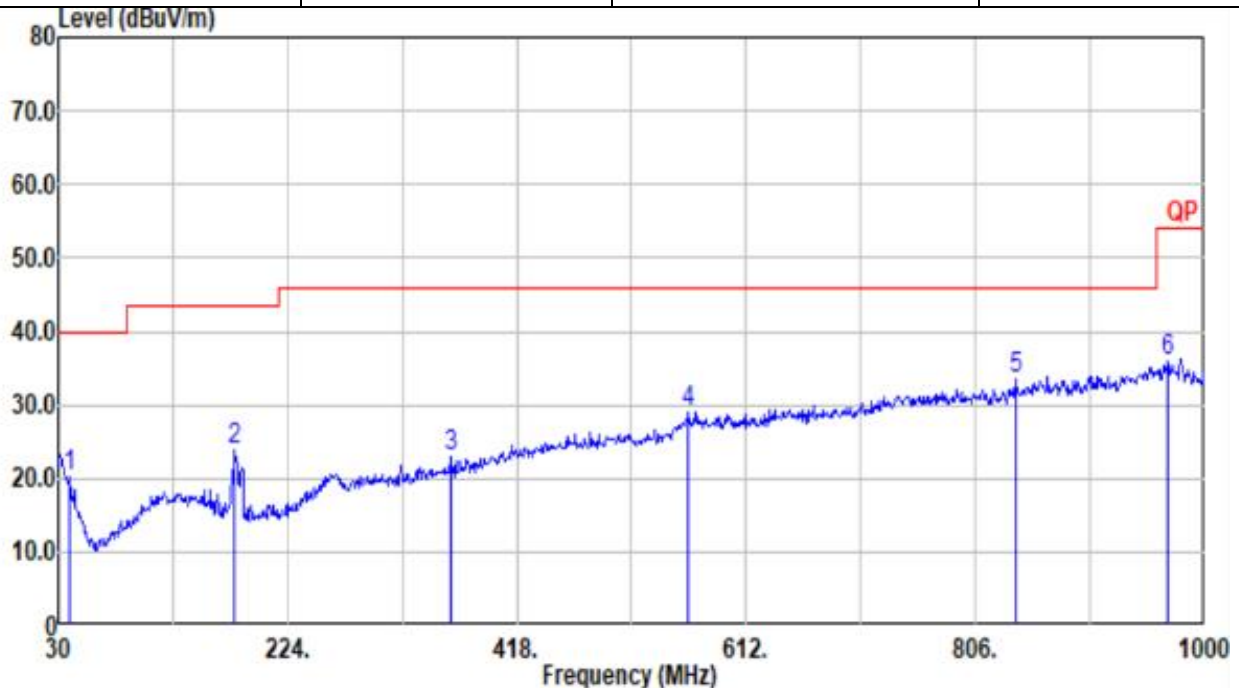
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Peak emission setting: RBW=120kHz; VBW = 300kHz.



## CH Radiated Emissions (30MHz – 1GHz)

Test Mode	Mode 4	Polarization	H
Operating Function	Stand-alone 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 : 4D1104  
Detector : Average  
Channel : 09

	Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	Line	Margin	Level	Factor	Loss	Factor	Factor	cm	deg	
1	38.73	20.23	40.00	-19.77	34.45	20.19	1.10	35.74	0.23	--	--	Peak
2	179.38	23.74	43.50	-19.76	41.56	15.14	2.39	35.54	0.19	--	--	Peak
3	361.74	23.04	46.00	-22.96	33.81	20.78	3.37	35.08	0.16	--	--	Peak
4	563.50	29.09	46.00	-16.91	33.03	26.32	4.21	34.58	0.11	--	--	Peak
5	840.92	33.51	46.00	-12.49	33.08	28.72	5.12	33.52	0.11	--	--	Peak
6	968.96	36.05	54.00	-17.95	32.44	31.14	5.48	33.08	0.07	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

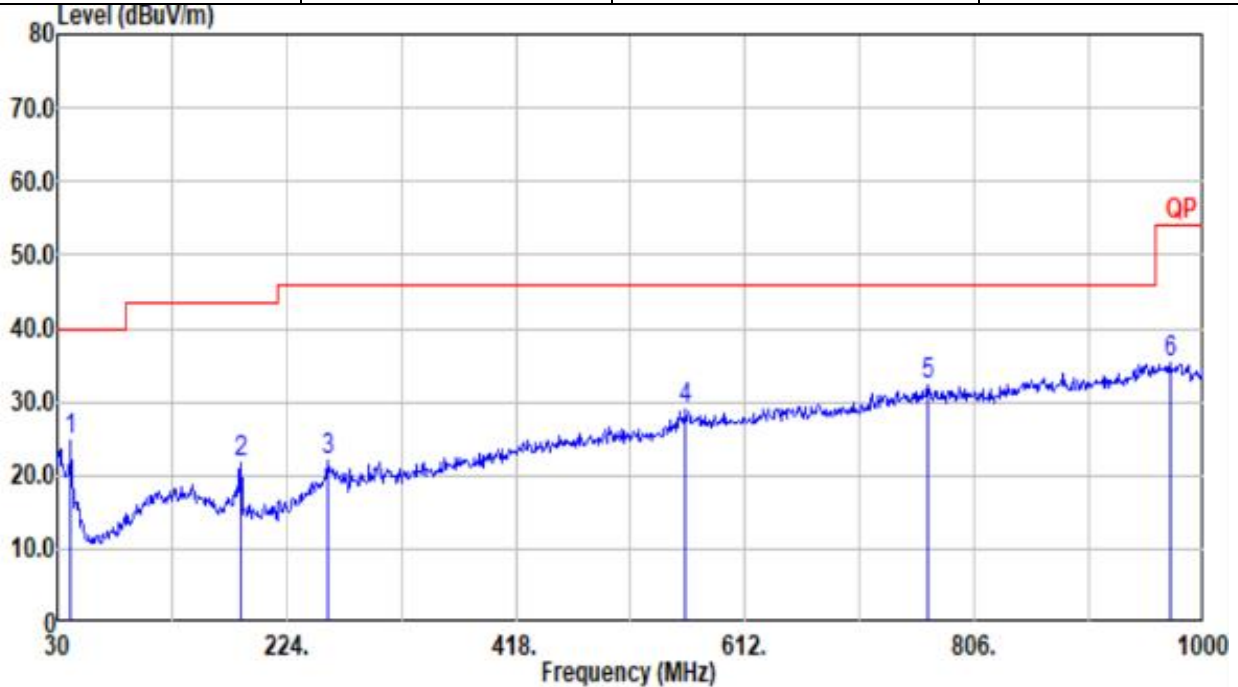
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Peak emission setting: RBW=120kHz; VBW = 300kHz.

**CH Radiated Emissions (30MHz – 1GHz)**

<b>Test Mode</b>	Mode 4	<b>Polarization</b>	V
<b>Operating Function</b>	Stand-alone Mode	<b>Test Distance</b>	3m



Site : 03CH20-HY  
 Condition: QP 3m Bilog\_55606 & 08\_241127 VERTICAL  
 : RBW:120.000kHz VBW:300.000kHz SWT:0.500sec  
 Project : 4D1104  
 Detector : Average  
 Channel : 09

	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	41.64	24.68	40.00	-15.32	40.46	18.59	1.14	35.74	0.23	--	--	--	Peak
2	185.20	21.79	43.50	-21.71	39.76	14.95	2.42	35.53	0.19	--	--	--	Peak
3	258.92	22.01	46.00	-23.99	34.39	19.95	2.86	35.38	0.19	--	--	--	Peak
4	561.56	28.94	46.00	-17.06	32.92	26.29	4.20	34.58	0.11	--	--	--	Peak
5	766.23	32.43	46.00	-13.57	33.01	28.21	4.89	33.83	0.15	--	--	--	Peak
6	971.87	35.47	54.00	-18.53	31.85	31.12	5.49	33.06	0.07	--	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

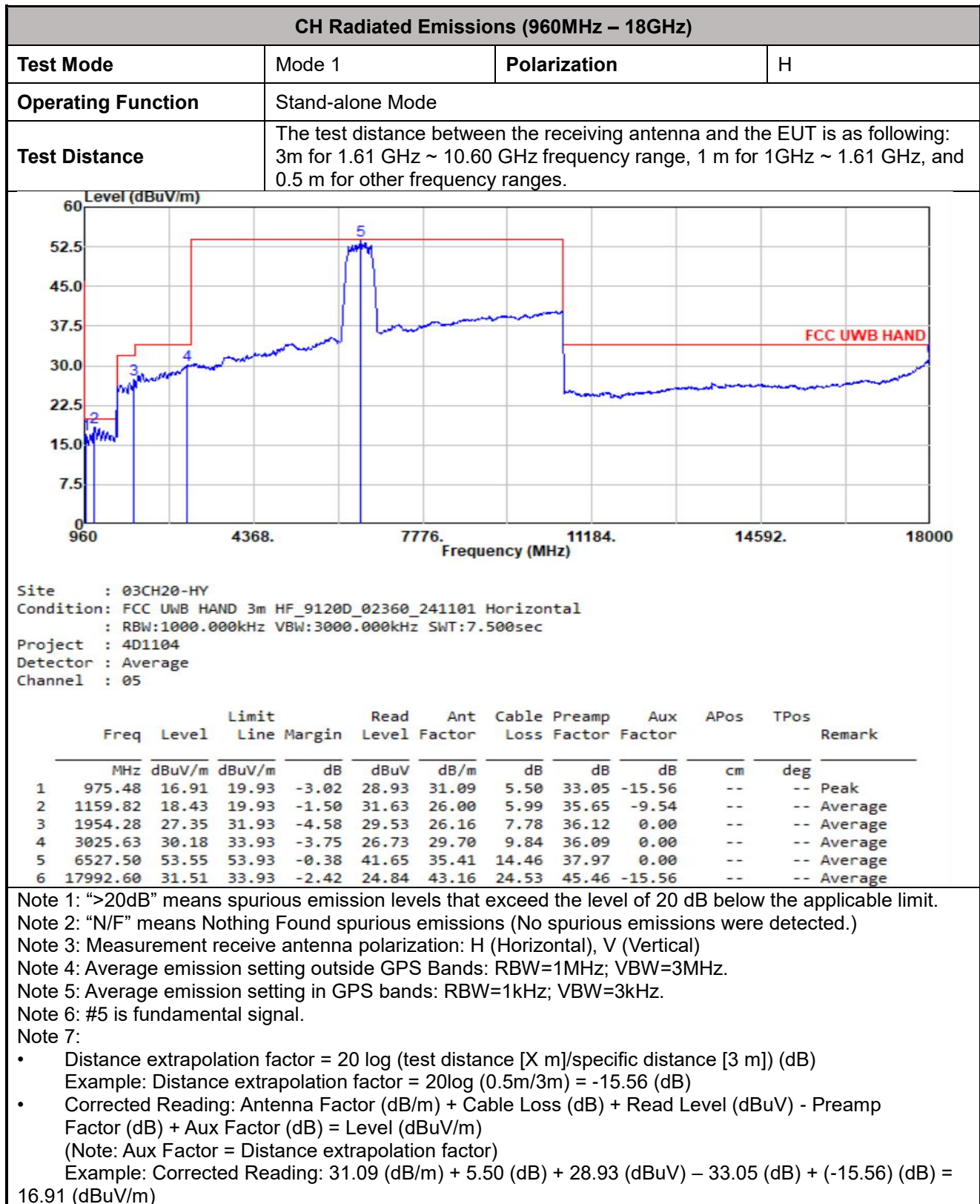
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Peak emission setting: RBW=120kHz; VBW = 300kHz.

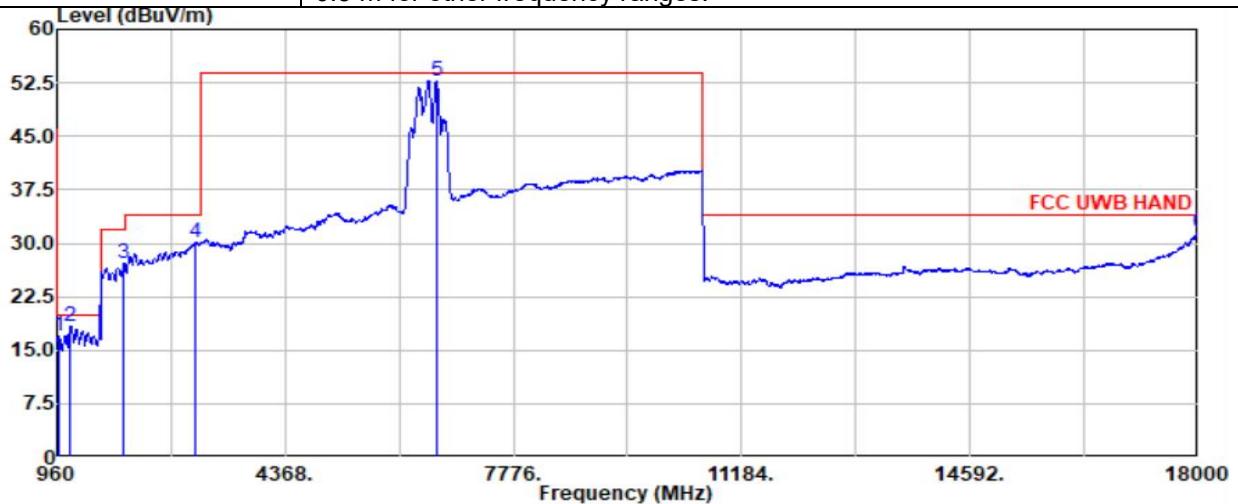


## 3.4.8 Radiated Emissions (960MHz – 18GHz)





CH Radiated Emissions (960MHz – 18GHz)			
Test Mode	Mode 1	Polarization	V
Operating Function	Stand-alone 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      : 03CH20-HY
Condition: FCC UWB HAND 3m HF_9120D_02360_241101 Vertical
          : RBW:1000.000kHz VBW:3000.000kHz SWT:7.500sec
Project   : 4D1104
Detector  : Average
Channel   : 05
```

	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	976.64	16.90	19.93	-3.03	28.96	31.04	5.50	33.04	-15.56	--	--	Peak
2	1161.04	18.43	19.93	-1.50	31.63	26.00	5.99	35.65	-9.54	--	--	Average
3	1953.52	27.27	31.93	-4.66	29.46	26.16	7.77	36.12	0.00	--	--	Average
4	3026.74	30.16	33.93	-3.77	26.70	29.70	9.85	36.09	0.00	--	--	Average
5	6625.00	52.86	53.93	-1.07	40.46	35.85	14.57	38.02	0.00	--	--	Average
6	17992.60	31.56	33.93	-2.37	24.89	43.16	24.53	45.46	-15.56	--	--	Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting outside GPS Bands: RBW=1MHz: VBW=3MHz.

Note 5: Average emission setting in GPS bands: RBW=1kHz; VBW=3kHz.

Note 6: #5 is fundamental signal.

Note 7:

Distance extrapolation factor =  $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$  (dB)

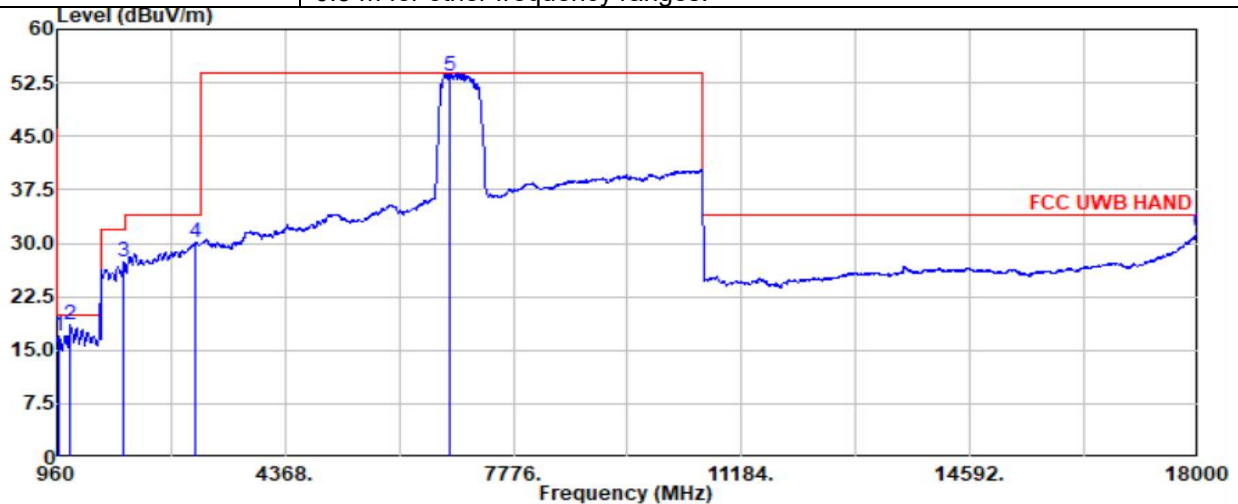
Example: Distance extrapolation factor =  $20 \log (0.5\text{m}/3\text{m}) = -15.56 \text{ (dB)}$

- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)  
(Note: Aux Factor = Distance extrapolation factor)



## CH Radiated Emissions (960MHz – 18GHz)

Test Mode	Mode 2	Polarization	H
Operating Function	Stand-alone 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 : 03CH20-HY  
Condition: FCC UWB HAND 3m HF\_9120D\_02360\_241101 Horizontal  
: RBW:1000.000kHz VBW:3000.000kHz SWT:7.500sec  
Project : 4D1104  
Detector : Average  
Channel : 06

	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	975.36	16.90	19.93	-3.03	28.92	31.09	5.50	33.05	-15.56	--	--	Peak
2	1162.26	18.62	19.93	-1.31	31.81	26.00	6.00	35.65	-9.54	--	--	Average
3	1953.52	27.29	31.93	-4.64	29.48	26.16	7.77	36.12	0.00	--	--	Average
4	3028.96	30.20	33.93	-3.73	26.75	29.70	9.85	36.10	0.00	--	--	Average
5	6835.00	53.45	53.93	-0.48	40.94	35.83	14.81	38.13	0.00	--	--	Average
6	17992.60	31.52	33.93	-2.41	24.85	43.16	24.53	45.46	-15.56	--	--	Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting outside GPS Bands: RBW=1MHz; VBW=3MHz.

Note 5: Average emission setting in GPS bands: RBW=1kHz; VBW=3kHz.

Note 6: #5 is fundamental signal.

Note 7:

Distance extrapolation factor =  $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$  (dB)

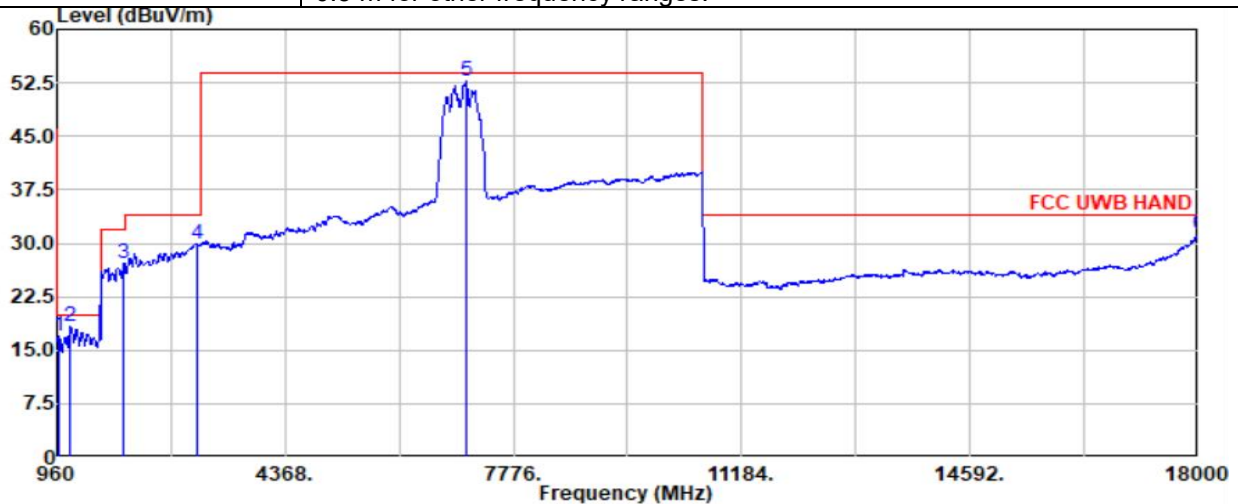
Example: Distance extrapolation factor =  $20 \log (0.5\text{m}/3\text{m}) = -15.56$  (dB)

- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)  
(Note: Aux Factor = Distance extrapolation factor)



## CH Radiated Emissions (960MHz – 18GHz)

Test Mode	Mode 2	Polarization	V
Operating Function	Stand-alone 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 : 03CH20-HY  
Condition: FCC UWB HAND 3m HF\_9120D\_02360\_241101 Vertical  
: RBW:1000.000kHz VBW:3000.000kHz SWT:7.500sec  
Project : 4D1104  
Detector : Average  
Channel : 06

	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	978.20	16.89	19.93	-3.04	29.07	30.92	5.50	33.04	-15.56	--	--	Peak
2	1159.82	18.23	19.93	-1.70	31.43	26.00	5.99	35.65	-9.54	--	--	Average
3	1953.14	27.11	31.93	-4.82	29.29	26.17	7.77	36.12	0.00	--	--	Average
4	3043.39	29.99	33.93	-3.94	26.53	29.70	9.88	36.12	0.00	--	--	Average
5	7060.00	52.65	53.93	-1.28	39.63	36.22	15.06	38.26	0.00	--	--	Average
6	17992.60	31.23	33.93	-2.70	24.56	43.16	24.53	45.46	-15.56	--	--	Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting outside GPS Bands: RBW=1MHz; VBW=3MHz.

Note 5: Average emission setting in GPS bands: RBW=1kHz; VBW=3kHz.

Note 6: #5 is fundamental signal.

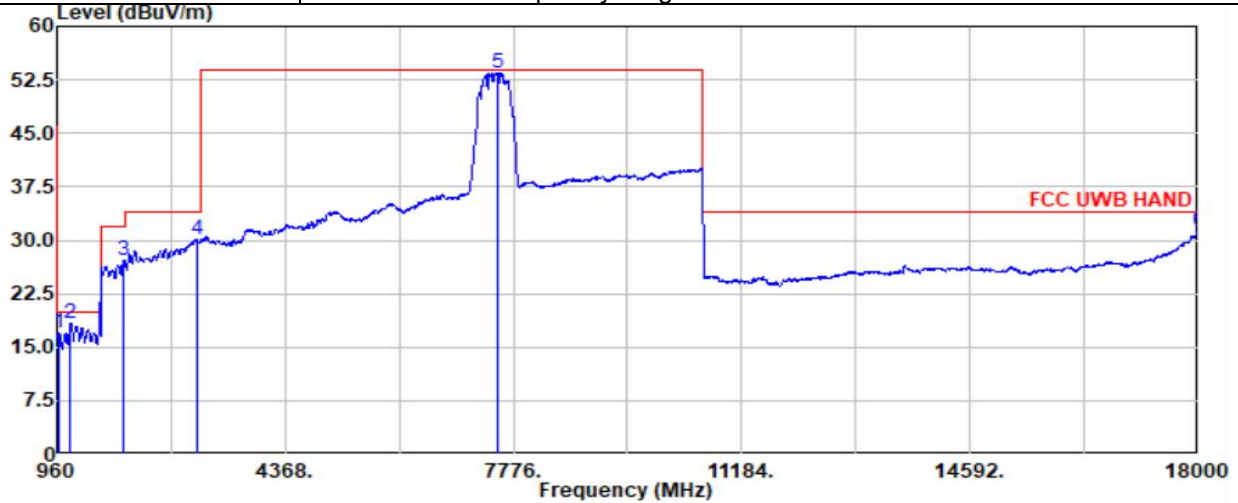
Note 7:

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 Factor = Distance extrapolation factor)

CH Radiated Emissions (960MHz – 18GHz)			
Test Mode	Mode 3	Polarization	H
Operating Function	Stand-alone 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 : 03CH20-HY  
Condition: FCC UWB HAND 3m HF\_9120D\_02360\_241101 Horizontal  
: RBW:1000.000kHz VBW:3000.000kHz SWT:7.500sec  
Project : 4D1104  
Detector : Average  
Channel : 08

	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	976.12	16.90	19.93	-3.03	28.94	31.07	5.50	33.05	-15.56	--	--	Peak
2	1161.04	18.38	19.93	-1.55	31.58	26.00	5.99	35.65	-9.54	--	--	Average
3	1954.66	27.26	31.93	-4.67	29.45	26.15	7.78	36.12	0.00	--	--	Average
4	3043.39	30.19	33.93	-3.74	26.73	29.70	9.88	36.12	0.00	--	--	Average
5	7532.50	53.50	53.93	-0.43	40.24	36.33	15.59	38.66	0.00	--	--	Average
6	17992.60	31.33	33.93	-2.60	24.66	43.16	24.53	45.46	-15.56	--	--	Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting outside GPS Bands: RBW=1MHz; VBW=3MHz.

Note 5: Average emission setting in GPS bands: RBW=1kHz; VBW=3kHz.

Note 6: #5 is fundamental signal.

Note 7:

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)

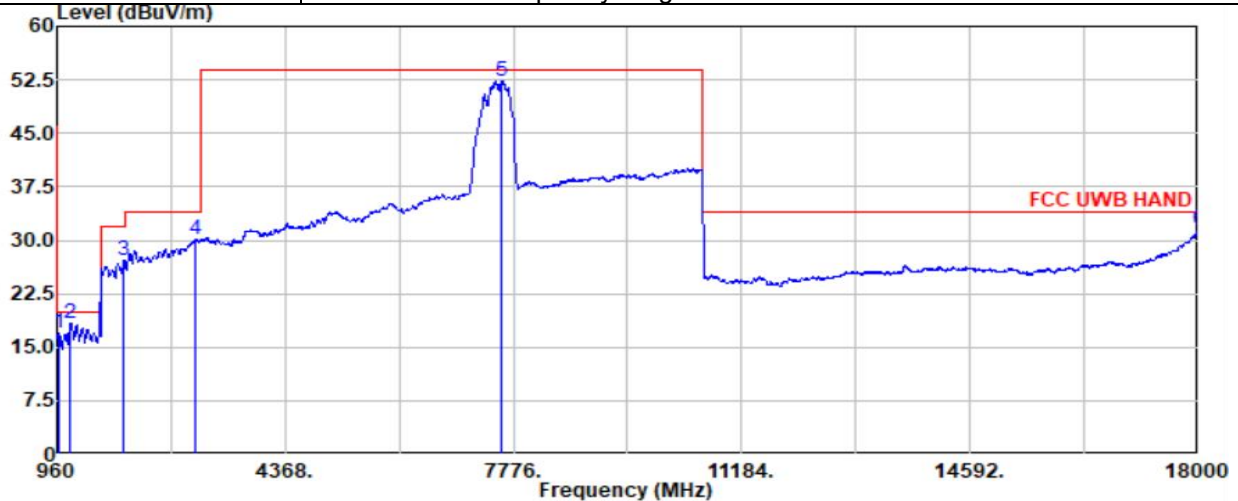
- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)  
(Note: Aux Factor = Distance extrapolation factor)





## CH Radiated Emissions (960MHz – 18GHz)

Test Mode	Mode 3	Polarization	V
Operating Function	Stand-alone 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 : 03CH20-HY  
Condition: FCC UWB HAND 3m HF\_9120D\_02360\_241101 Vertical  
: RBW:1000.000kHz VBW:3000.000kHz SWT:7.500sec  
Project : 4D1104  
Detector : Average  
Channel : 08

	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	975.64	16.92	19.93	-3.01	28.95	31.08	5.50	33.05	-15.56	--	--	Peak
2	1159.82	18.42	19.93	-1.51	31.62	26.00	5.99	35.65	-9.54	--	--	Average
3	1958.46	27.20	31.93	-4.73	29.42	26.12	7.78	36.12	0.00	--	--	Average
4	3030.07	30.13	33.93	-3.80	26.68	29.70	9.85	36.10	0.00	--	--	Average
5	7607.50	52.24	53.93	-1.69	39.19	36.11	15.66	38.72	0.00	--	--	Average
6	18000.00	31.39	33.93	-2.54	24.68	43.20	24.54	45.47	-15.56	--	--	Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting outside GPS Bands: RBW=1MHz; VBW=3MHz.

Note 5: Average emission setting in GPS bands: RBW=1kHz; VBW=3kHz.

Note 6: #5 is fundamental signal.

Note 7:

Distance extrapolation factor =  $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$  (dB)

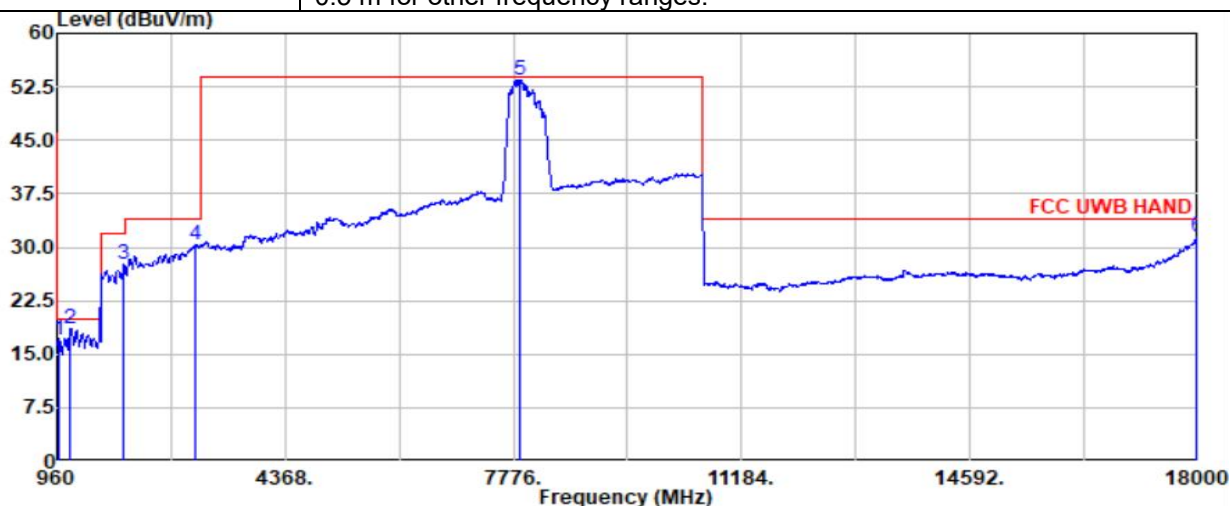
Example: Distance extrapolation factor =  $20 \log (0.5\text{m}/3\text{m}) = -15.56$  (dB)

- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)  
(Note: Aux Factor = Distance extrapolation factor)



## CH Radiated Emissions (960MHz – 18GHz)

Test Mode	Mode 4	Polarization	H
Operating Function	Stand-alone 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 : 03CH20-HY  
Condition: FCC UWB HAND 3m HF\_9120D\_02360\_241101 Horizontal  
: RBW:1000.000kHz VBW:3000.000kHz SWT:7.500sec  
Project : 4D1104  
Detector : Average  
Channel : 09

	Freq	Level	Limit		Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	Level	Factor	Loss	Factor	Factor	cm	deg	
1	976.08	16.93	19.93	-3.00	28.97	31.07	5.50	33.05	-15.56	--	--	Peak
2	1161.04	18.63	19.93	-1.30	31.83	26.00	5.99	35.65	-9.54	--	--	Average
3	1952.38	27.55	31.93	-4.38	29.72	26.18	7.77	36.12	0.00	--	--	Average
4	3027.85	30.38	33.93	-3.55	26.92	29.70	9.85	36.09	0.00	--	--	Average
5	7870.00	53.39	53.93	-0.54	39.34	37.04	15.94	38.93	0.00	--	--	Average
6	17985.20	31.40	33.93	-2.53	24.77	43.11	24.53	45.45	-15.56	--	--	Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting outside GPS Bands: RBW=1MHz; VBW=3MHz.

Note 5: Average emission setting in GPS bands: RBW=1kHz; VBW=3kHz.

Note 6: #5 is fundamental signal.

Note 7:

Distance extrapolation factor =  $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$  (dB)

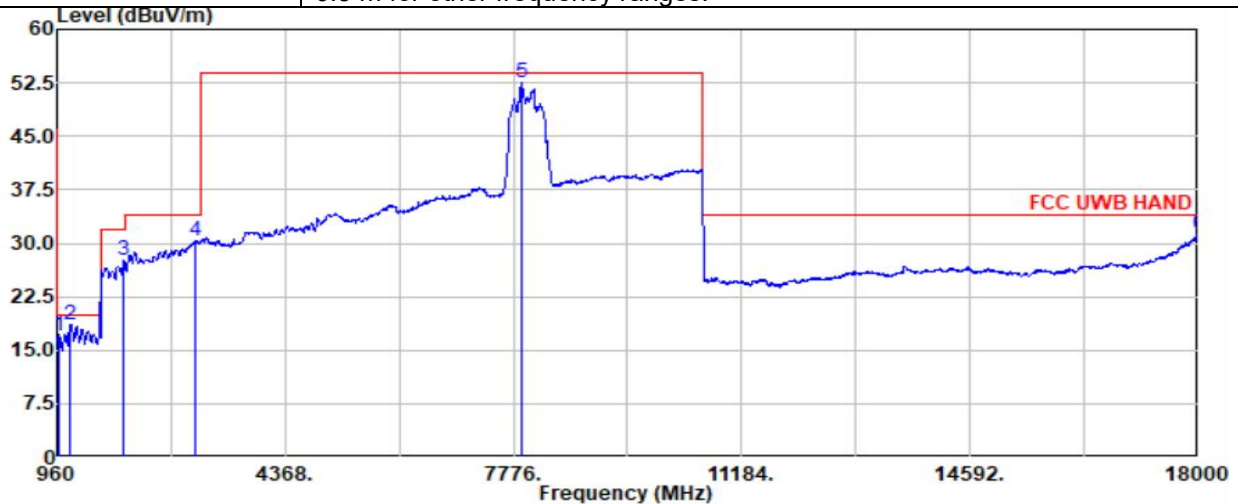
Example: Distance extrapolation factor =  $20 \log (0.5\text{m}/3\text{m}) = -15.56$  (dB)

- Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m)  
(Note: Aux Factor = Distance extrapolation factor)



## CH Radiated Emissions (960MHz – 18GHz)

Test Mode	Mode 4	Polarization	V
Operating Function	Stand-alone 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 : 03CH20-HY  
Condition: FCC UWB HAND 3m HF\_9120D\_02360\_241101 Vertical  
: RBW:1000.000kHz VBW:3000.000kHz SWT:7.500sec  
Project : 4D1104  
Detector : Average  
Channel : 09

	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	976.40	16.94	19.93	-2.99	28.99	31.05	5.50	33.04	-15.56	--	--	Peak
2	1162.87	18.67	19.93	-1.26	31.86	26.00	6.00	35.65	-9.54	--	--	Average
3	1954.28	27.55	31.93	-4.38	29.73	26.16	7.78	36.12	0.00	--	--	Average
4	3027.85	30.42	33.93	-3.51	26.96	29.70	9.85	36.09	0.00	--	--	Average
5	7892.50	52.44	53.93	-1.49	38.32	37.08	15.98	38.94	0.00	--	--	Average
6	17992.60	31.30	33.93	-2.63	24.63	43.16	24.53	45.46	-15.56	--	--	Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting outside GPS Bands: RBW=1MHz; VBW=3MHz.

Note 5: Average emission setting in GPS bands: RBW=1kHz; VBW=3kHz.

Note 6: #5 is fundamental signal.

Note 7:

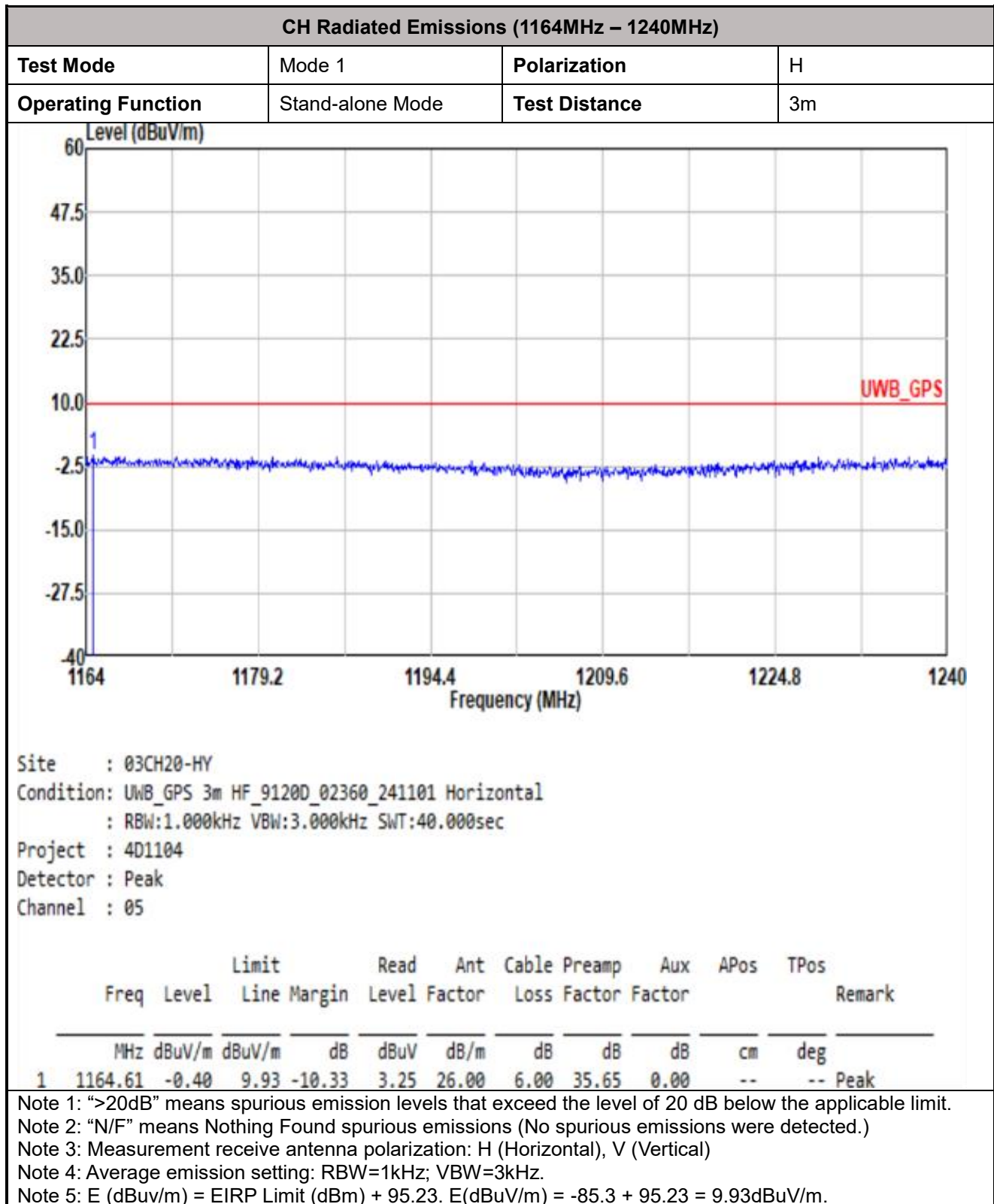
Distance extrapolation factor =  $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$  (dB)

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 Factor = Distance extrapolation factor)



## 3.4.9 Radiated Emissions (1164MHz – 1240MHz)

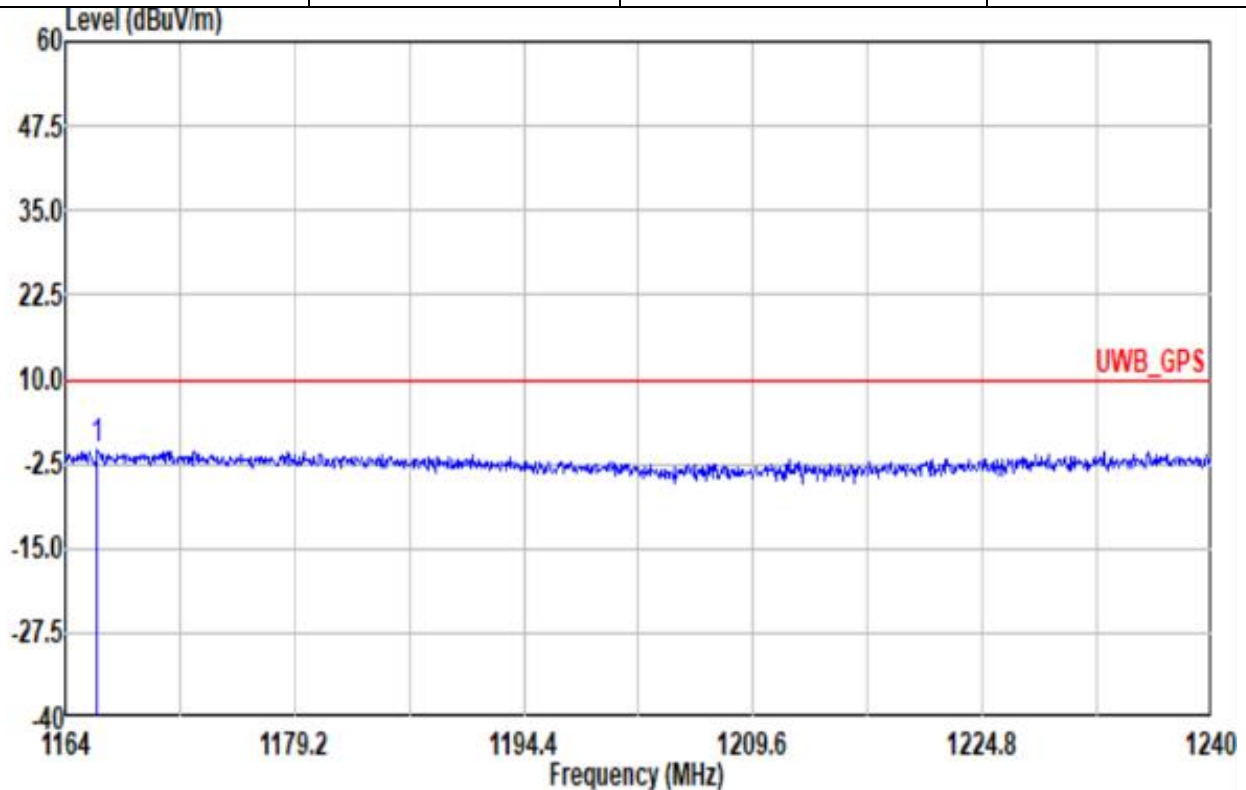






## CH Radiated Emissions (1164MHz – 1240MHz)

Test Mode	Mode 1	Polarization	V
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: UWB\_GPS 3m HF\_91200\_02360\_241101 Vertical  
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
Project : 4D1104  
Detector : Peak  
Channel : 05

		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	dB	cm	deg	
1 1166.13	-0.28	9.93	-10.21	3.36	26.00	6.01	35.65	0.00	--	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

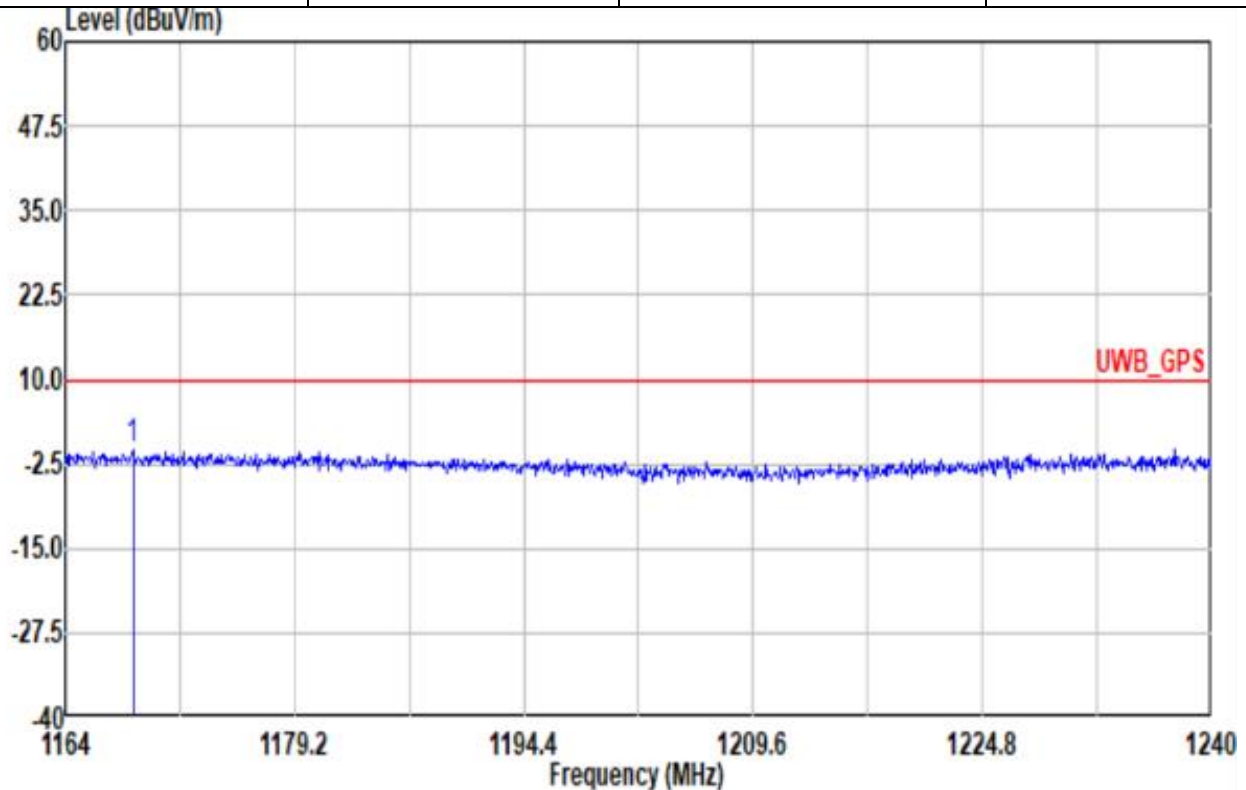
Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 5:  $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$ .  $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$ .



## CH Radiated Emissions (1164MHz – 1240MHz)

Test Mode	Mode 2	Polarization	H
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: UWB\_GPS 3m HF\_91200\_02360\_241101 Horizontal  
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
Project : 4D1104  
Detector : Average  
Channel : 06

		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	dB	cm	deg	
1 1168.48	-0.48	9.93	-10.41	3.16	26.00	6.01	35.65	0.00	--	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

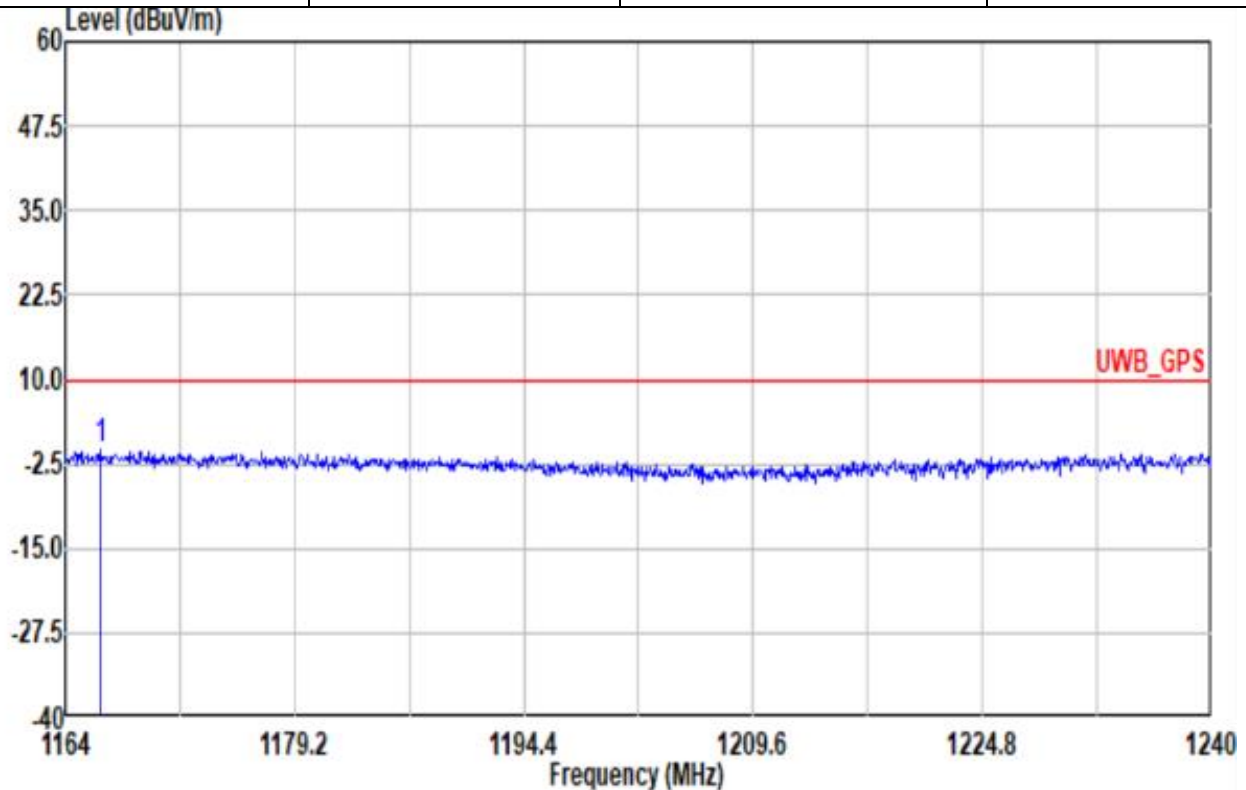
Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 5:  $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$ .  $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$ .



## CH Radiated Emissions (1164MHz – 1240MHz)

Test Mode	Mode 2	Polarization	V
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: UWB\_GPS 3m HF\_91200\_02360\_241101 Vertical  
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
Project : 4D1104  
Detector : Average  
Channel : 06

		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	dB	cm	deg	
1 1166.28	-0.48	9.93	-10.41	3.16	26.00	6.01	35.65	0.00	--	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

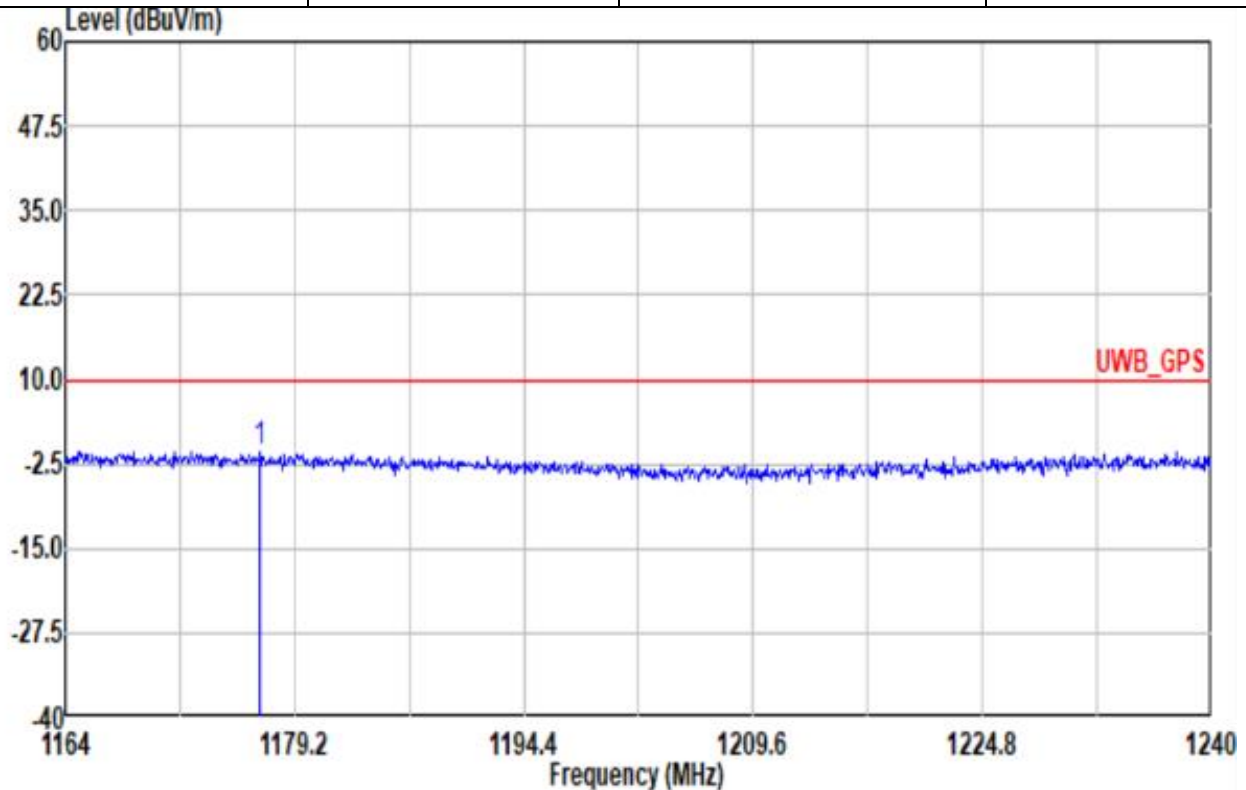
Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 5:  $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$ .  $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$ .



## CH Radiated Emissions (1164MHz – 1240MHz)

Test Mode	Mode 3	Polarization	H
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: UWB\_GPS 3m HF\_91200\_02360\_241101 Horizontal  
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
Project : 4D1104  
Detector : Average  
Channel : 08

Freq	Limit			Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
	Level	Line	Margin	Level	Factor							
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	1176.92	-0.64	9.93	-10.57	2.84	26.14	6.04	35.66	0.00	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

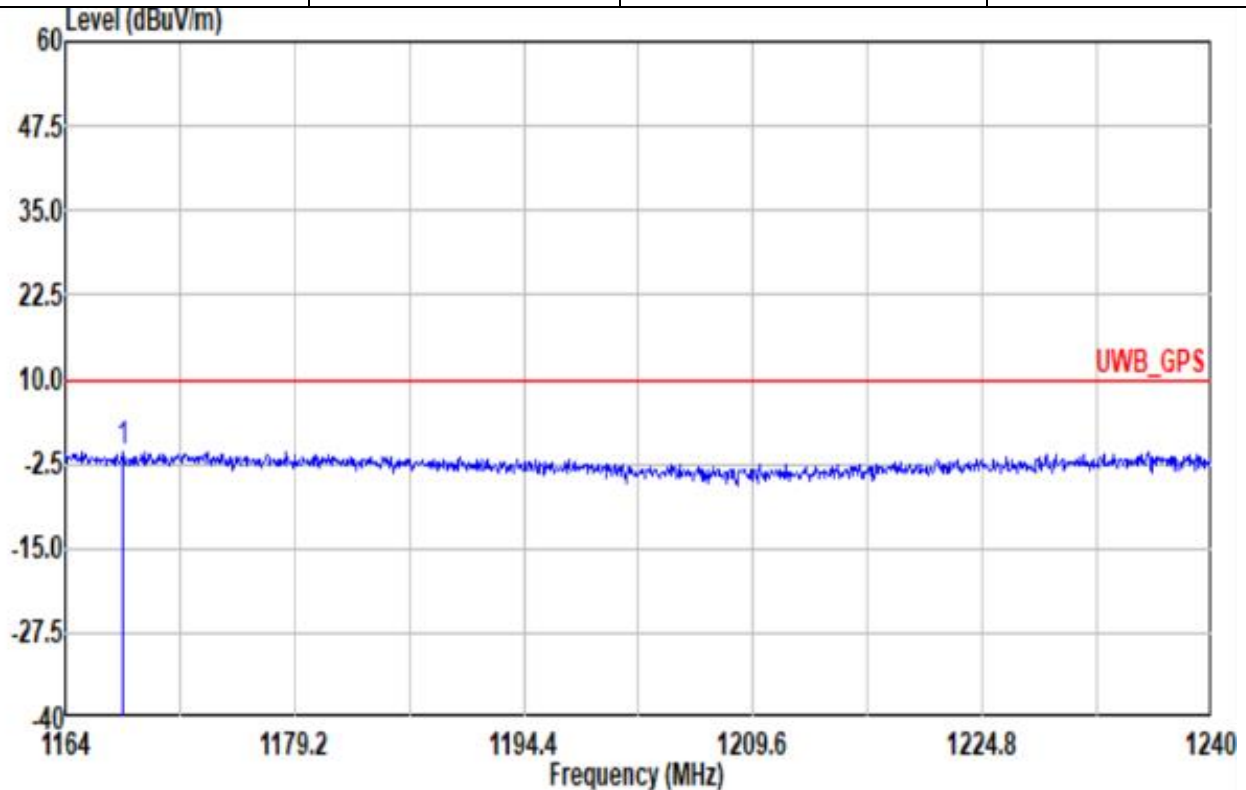
Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 5:  $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$ .  $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$ .



## CH Radiated Emissions (1164MHz – 1240MHz)

Test Mode	Mode 3	Polarization	V
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: UWB\_GPS 3m HF\_91200\_02360\_241101 Vertical  
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
Project : 4D1104  
Detector : Average  
Channel : 08

Freq	Limit			Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark
	Level	Line	Margin	Level	Factor	Loss	Factor	Factor			
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg
1	1167.80	-0.65	9.93	-10.58	2.99	26.00	6.01	35.65	0.00	--	-- Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

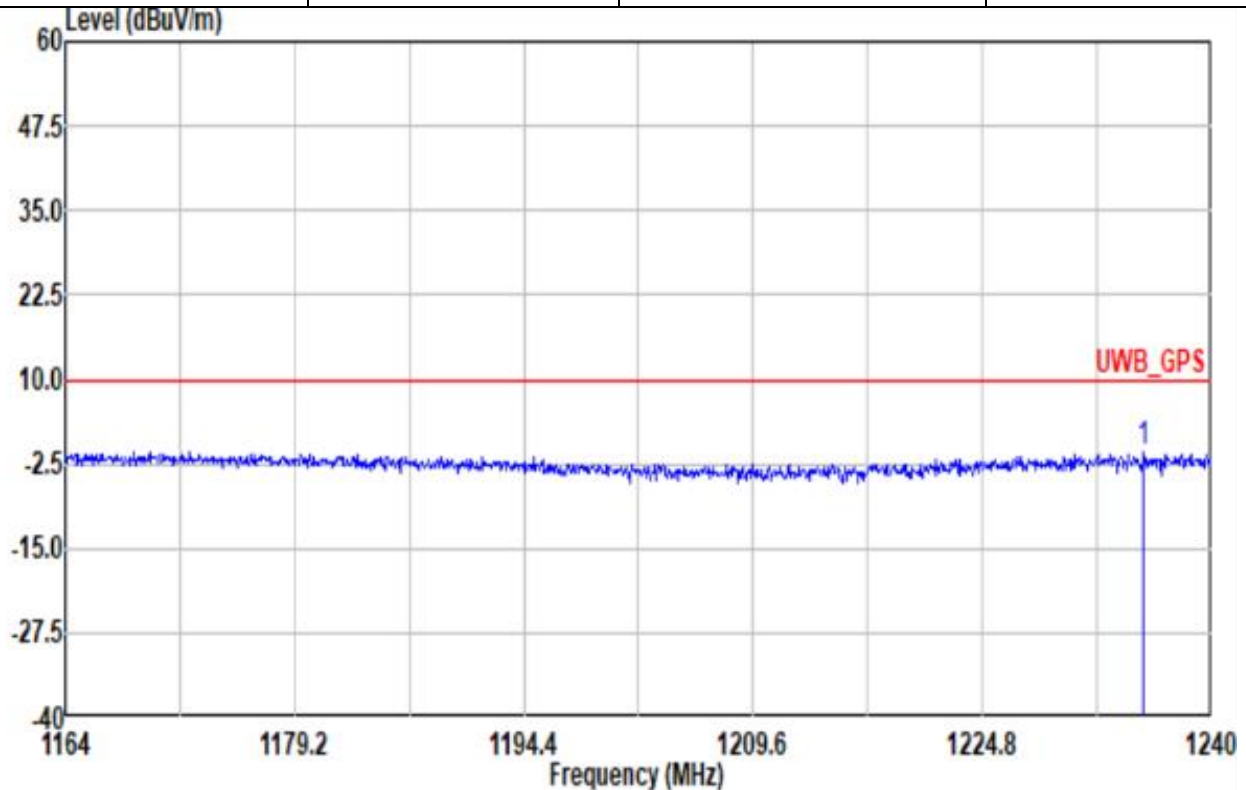
Note 5:  $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$ .  $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$ .





## CH Radiated Emissions (1164MHz – 1240MHz)

Test Mode	Mode 4	Polarization	H
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: UWB\_GPS 3m HF\_91200\_02360\_241101 Horizontal  
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
Project : 4D1104  
Detector : Average  
Channel : 09

		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	dB	cm	deg	
1 1235.52	-0.67	9.93	-10.60	2.83	25.99	6.19	35.68	0.00	--	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

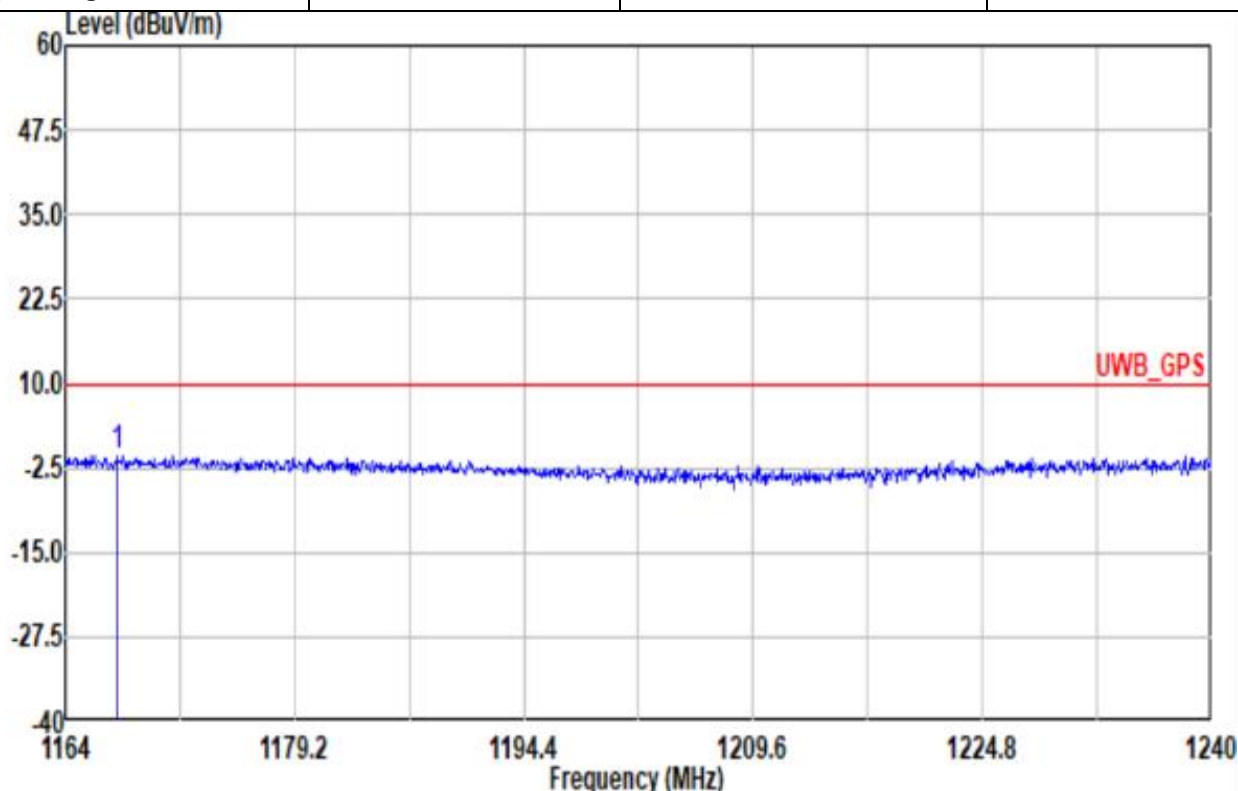
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 5:  $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$ .  $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$ .

**CH Radiated Emissions (1164MHz – 1240MHz)**

<b>Test Mode</b>	Mode 4	<b>Polarization</b>	V
<b>Operating Function</b>	Stand-alone Mode	<b>Test Distance</b>	3m



Site : 03CH20-HY  
 Condition: UWB\_GPS 3m HF\_91200\_02360\_241101 Vertical  
 : RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
 Project : 4D1104  
 Detector : Average  
 Channel : 09

		Limit			Read	Ant	Cable	Preamp	Aux	APos	TPos	
Freq	Level	Line	Margin		Level	Factor	Loss	Factor	Factor			Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	1167.50	-0.70	9.93	-10.63	2.94	26.00	6.01	35.65	0.00	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

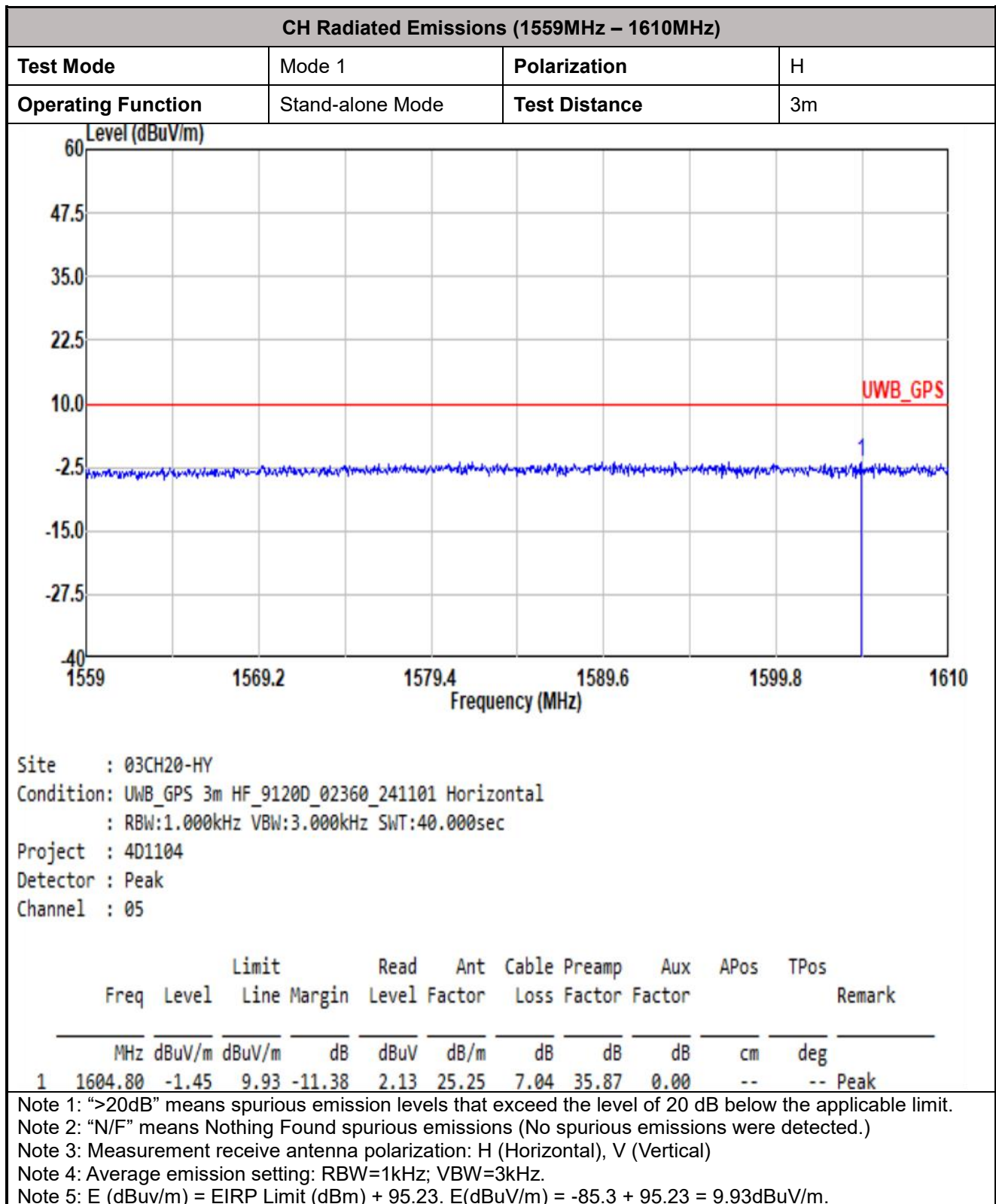
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 5:  $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$ .  $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$ .



## 3.4.10 Radiated Emissions (1559MHz – 1610MHz)

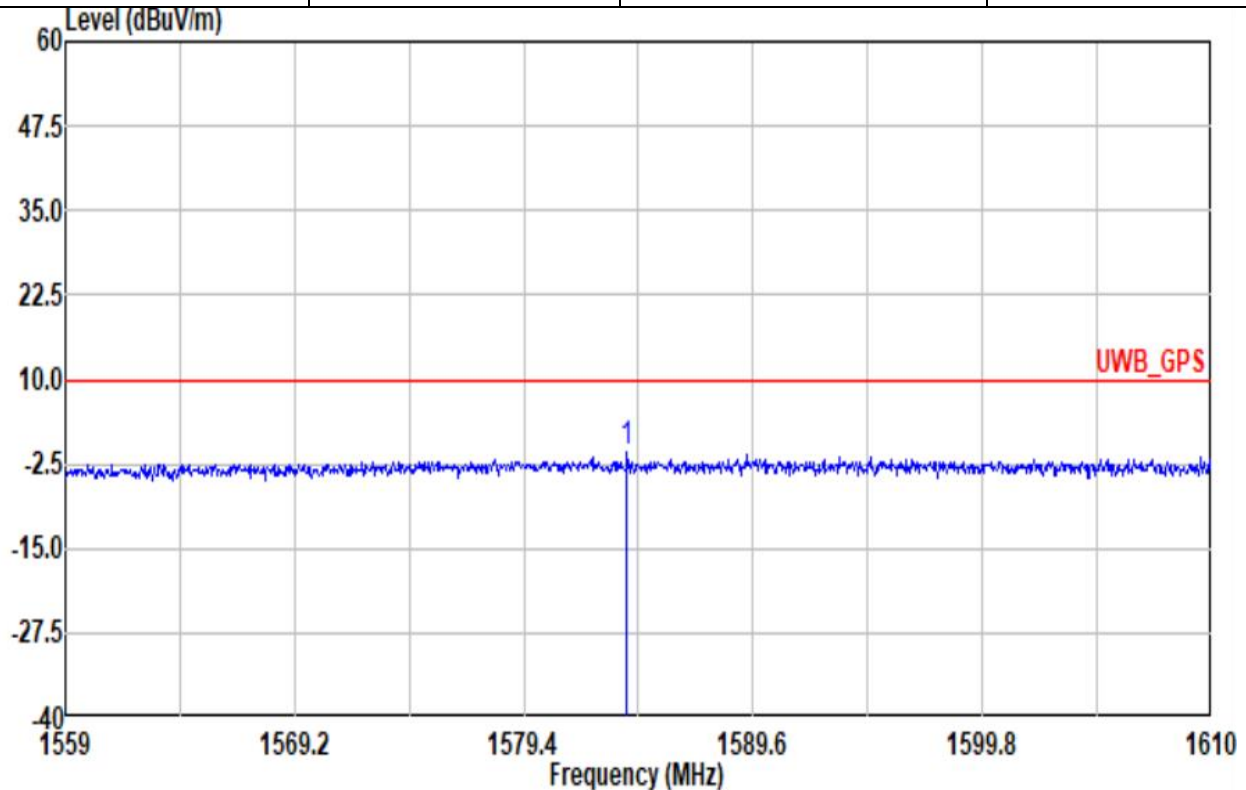






## CH Radiated Emissions (1559MHz – 1610MHz)

Test Mode	Mode 1	Polarization	V
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: UWB\_GPS 3m HF\_9120D\_02360\_241101 Vertical  
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
Project : 4D1104  
Detector : Peak  
Channel : 05

1	Freq MHz	Level dBuV/m	Limit		Read Level dBuV	Ant Factor dB/m	Cable Loss dB	Preamp Factor dB	Aux Factor dB	APos cm	TPos deg	Remark
			Line	Margin								
1	1583.99	-0.86	9.93	-10.79	2.61	25.40	6.99	35.86	0.00	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

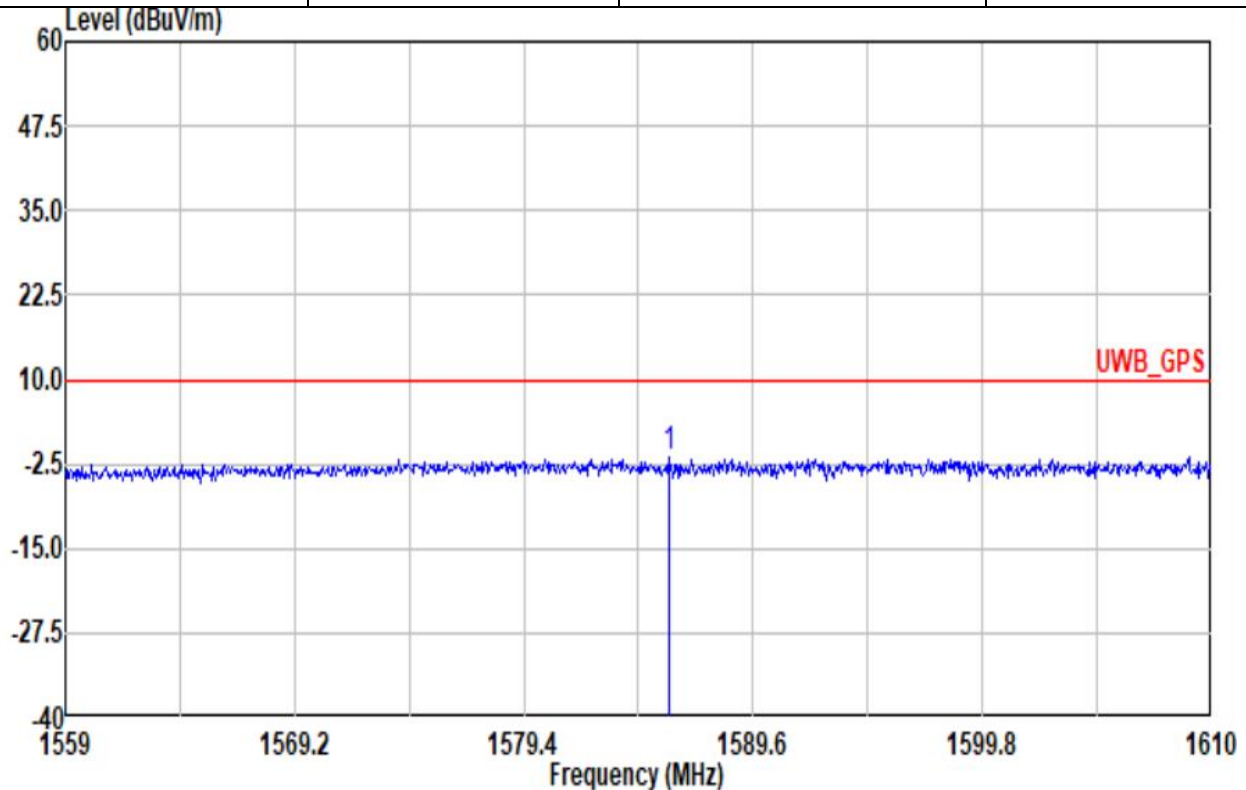
Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 5:  $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$ .  $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$ .



## CH Radiated Emissions (1559MHz – 1610MHz)

Test Mode	Mode 2	Polarization	H
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: UWB\_GPS 3m HF\_9120D\_02360\_241101 Horizontal  
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
Project : 4D1104  
Detector : Average  
Channel : 06

		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	dB	cm	deg	
1	1585.83	-1.57	9.93	-11.50	1.89	25.40	7.00	35.86	0.00	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

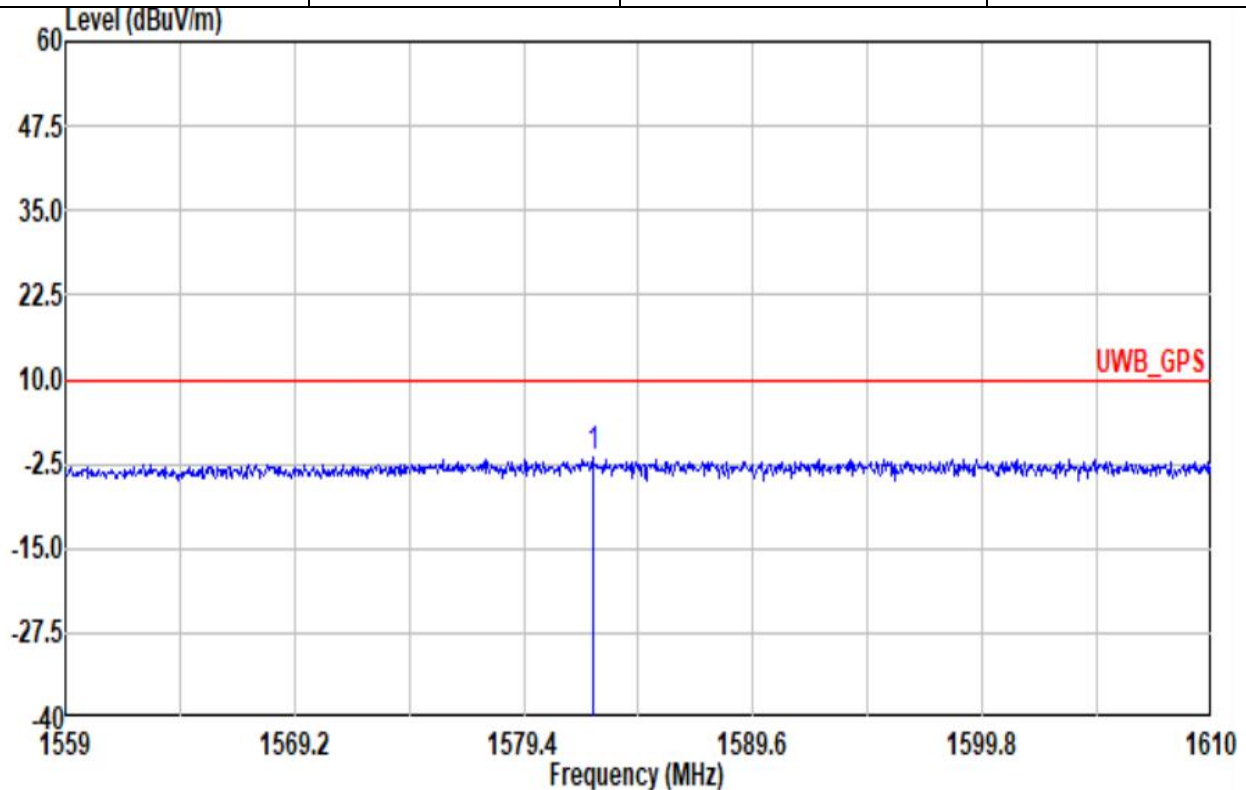
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 5: E (dBuV/m) = EIRP Limit (dBm) + 95.23. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.

**CH Radiated Emissions (1559MHz – 1610MHz)**

<b>Test Mode</b>	Mode 2	<b>Polarization</b>	V
<b>Operating Function</b>	Stand-alone Mode	<b>Test Distance</b>	3m



Site : 03CH20-HY  
Condition: UWB\_GPS 3m HF\_9120D\_02360\_241101 Vertical  
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
Project : 4D1104  
Detector : Average  
Channel : 06

		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	dB	cm	deg	
1	1582.46	-1.69	9.93	-11.62	1.78	25.40	6.99	35.86	0.00	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

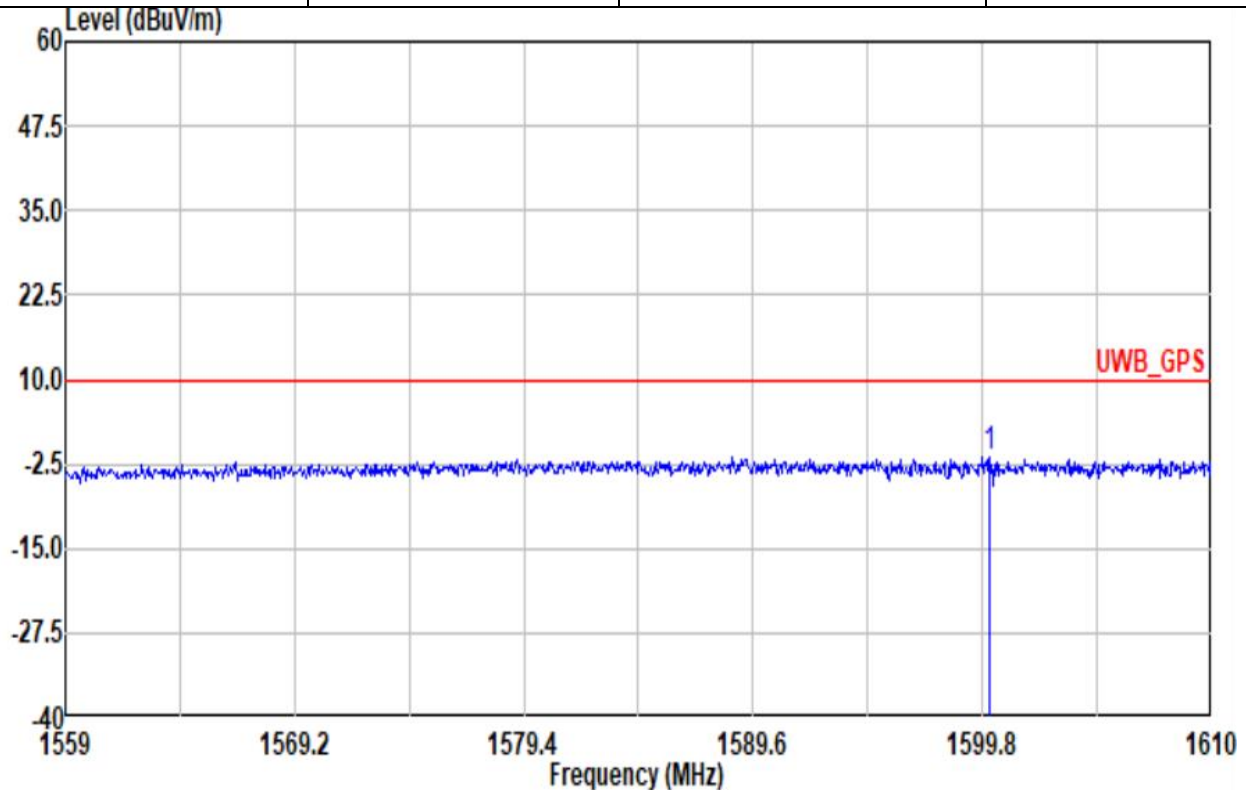
Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 5: E (dBuV/m) = EIRP Limit (dBm) + 95.23. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.



## CH Radiated Emissions (1559MHz – 1610MHz)

Test Mode	Mode 3	Polarization	H
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: UWB\_GPS 3m HF\_9120D\_02360\_241101 Horizontal  
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
Project : 4D1104  
Detector : Average  
Channel : 08

		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	dB	cm	deg	
1	1600.11	-1.51	9.93	-11.44	2.13	25.20	7.03	35.87	0.00	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

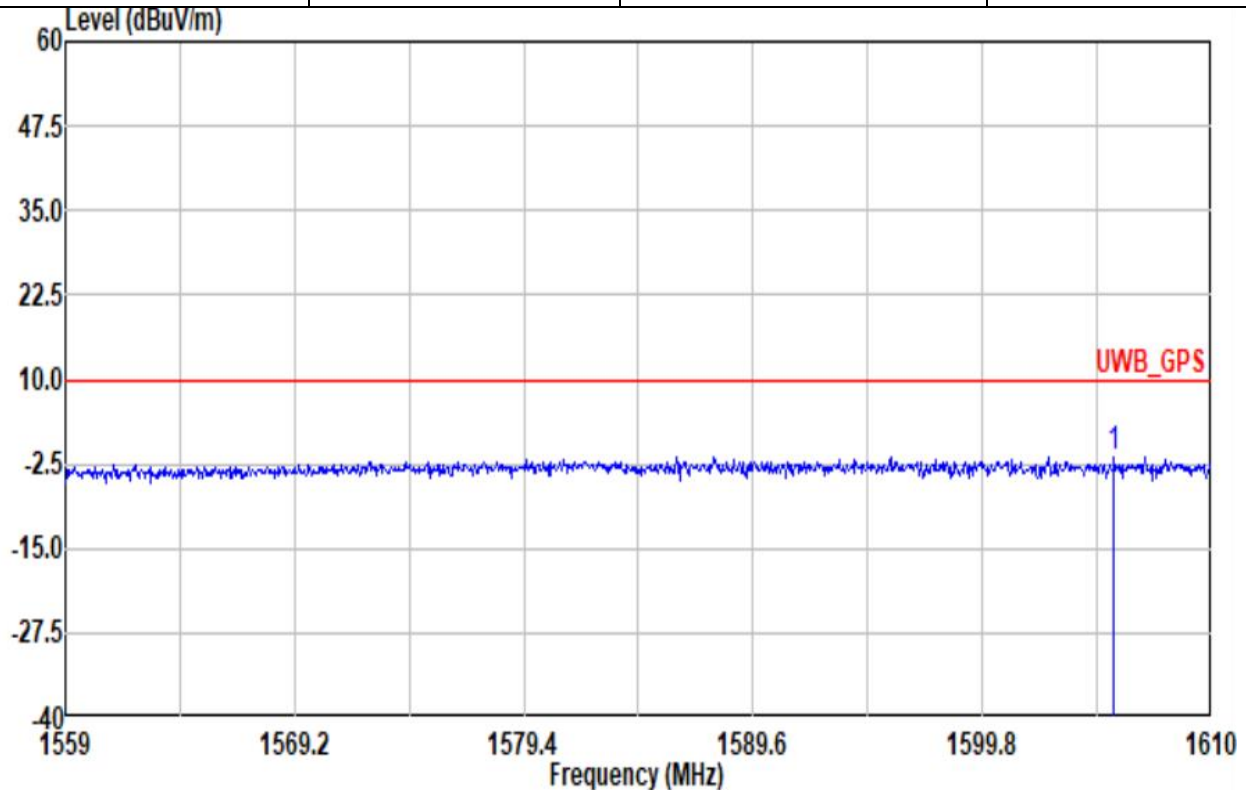
Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 5:  $E \text{ (dBuV/m)} = \text{EIRP Limit (dBm)} + 95.23$ .  $E \text{ (dBuV/m)} = -85.3 + 95.23 = 9.93 \text{ dBuV/m}$ .



## CH Radiated Emissions (1559MHz – 1610MHz)

Test Mode	Mode 3	Polarization	V
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: UWB\_GPS 3m HF\_9120D\_02360\_241101 Vertical  
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
Project : 4D1104  
Detector : Average  
Channel : 08

		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	dB	cm	deg	
1	1605.67	-1.39	9.93	-11.32	2.18	25.26	7.04	35.87	0.00	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

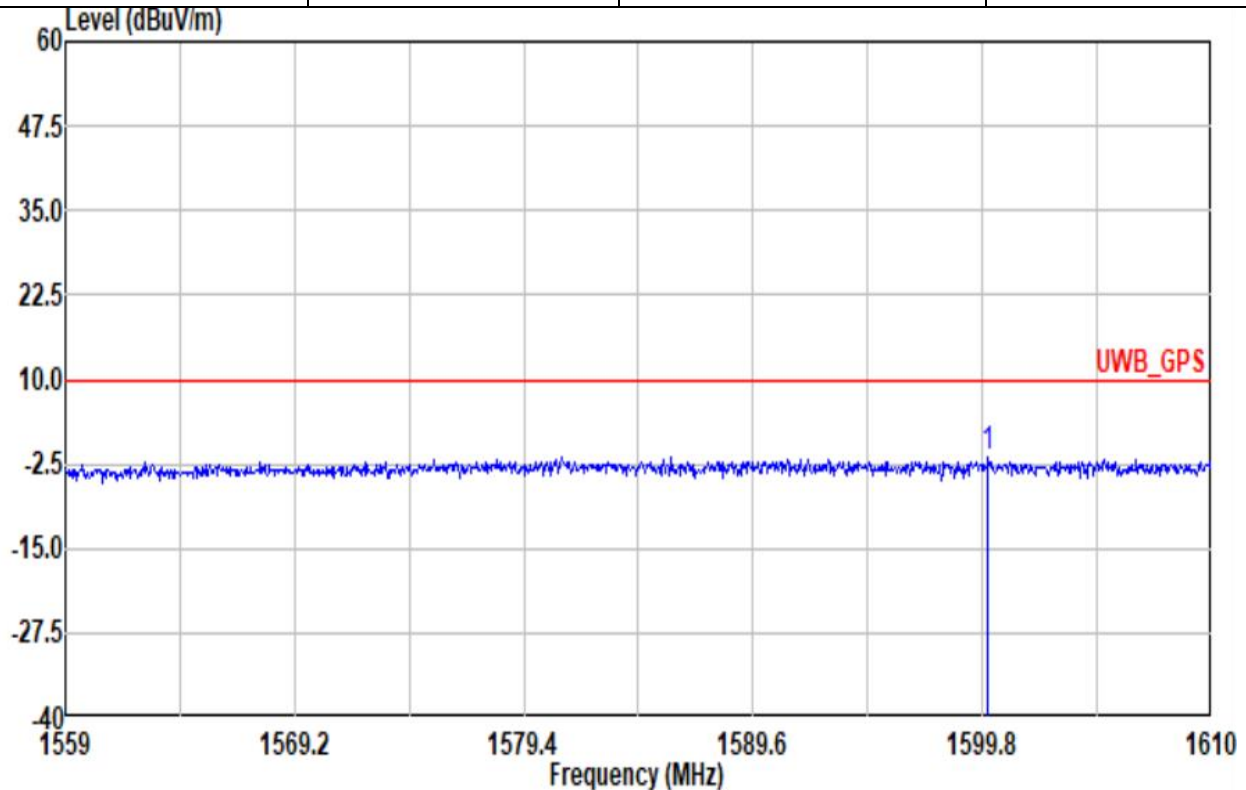
Note 5: E (dBuV/m) = EIRP Limit (dBm) + 95.23. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.





## CH Radiated Emissions (1559MHz – 1610MHz)

Test Mode	Mode 4	Polarization	H
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: UWB\_GPS 3m HF\_9120D\_02360\_241101 Horizontal  
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
Project : 4D1104  
Detector : Average  
Channel : 09

		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	dB	cm	deg	
1	1600.06	-1.57	9.93	-11.50	2.07	25.20	7.03	35.87	0.00	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

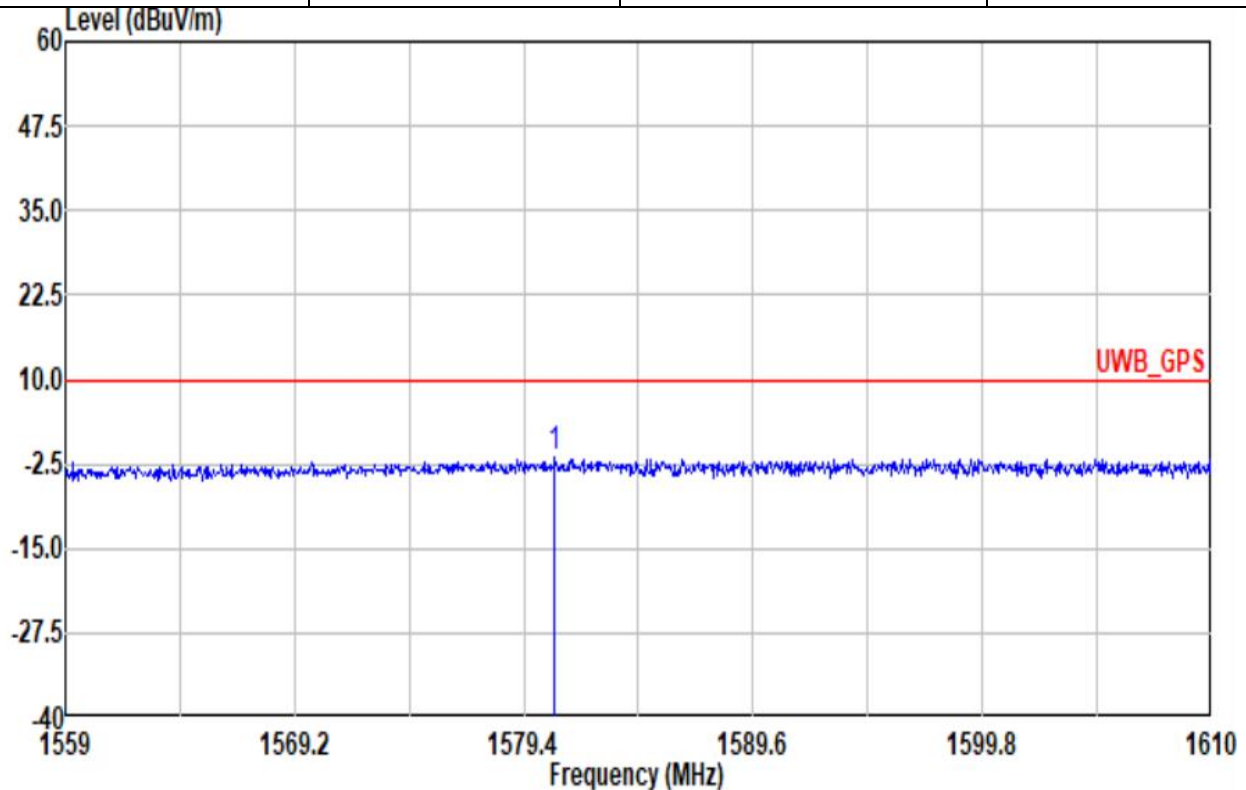
Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 5: E (dBuV/m) = EIRP Limit (dBm) + 95.23. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.



## CH Radiated Emissions (1559MHz – 1610MHz)

Test Mode	Mode 4	Polarization	V
Operating Function	Stand-alone Mode	Test Distance	3m



Site : 03CH20-HY  
Condition: UWB\_GPS 3m HF\_9120D\_02360\_241101 Vertical  
: RBW:1.000kHz VBW:3.000kHz SWT:40.000sec  
Project : 4D1104  
Detector : Average  
Channel : 09

		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	dB	cm	deg	
1	1580.78	-1.65	9.93	-11.58	1.82	25.40	6.99	35.86	0.00	--	--	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

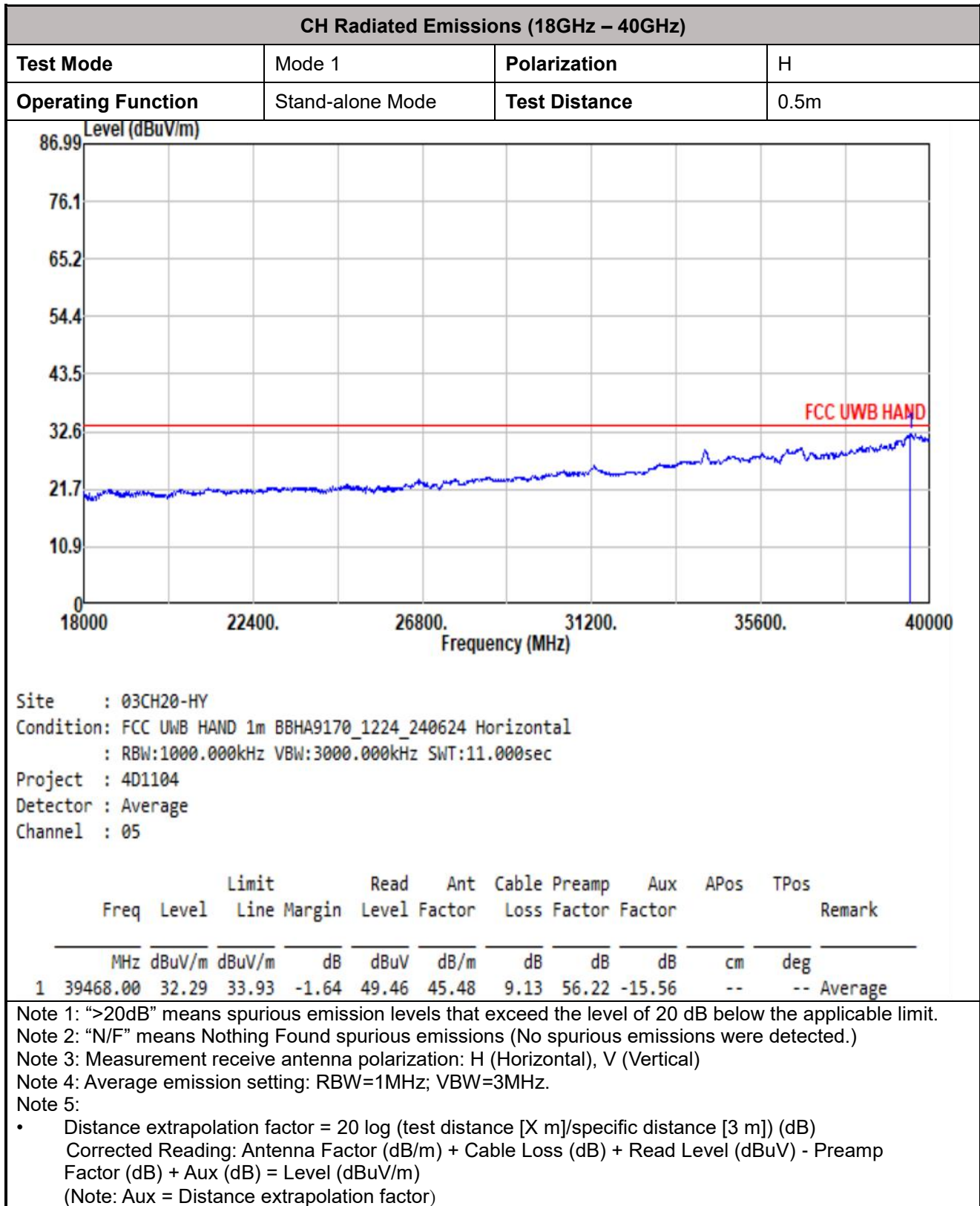
Note 4: Average emission setting: RBW=1kHz; VBW=3kHz.

Note 5: E (dBuV/m) = EIRP Limit (dBm) + 95.23. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.





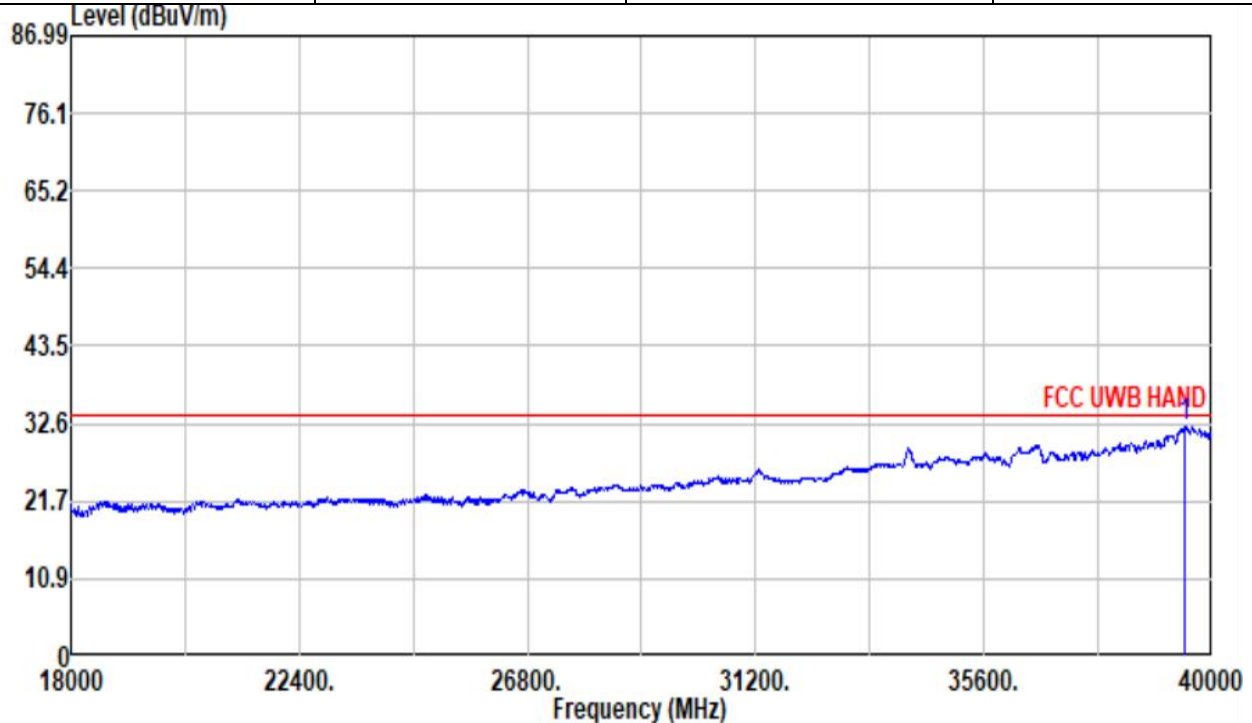
## 3.4.11 Radiated Emissions (18GHz – 40GHz)





## CH Radiated Emissions (18GHz – 40GHz)

Test Mode	Mode 1	Polarization	V
Operating Function	Stand-alone Mode	Test Distance	0.5m



Site : 03CH20-HY  
Condition: FCC UWB HAND 1m BBHA9170\_1224\_240624 Vertical  
: RBW:1000.000kHz VBW:3000.000kHz SWT:11.000sec  
Project : 4D1104  
Detector : Average  
Channel : 05

		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	dB	cm	deg	
1	39468.00	32.28	33.93	-1.65	49.45	45.48	9.13	56.22	-15.56	--	--	Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting: RBW=1MHz; VBW=3MHz.

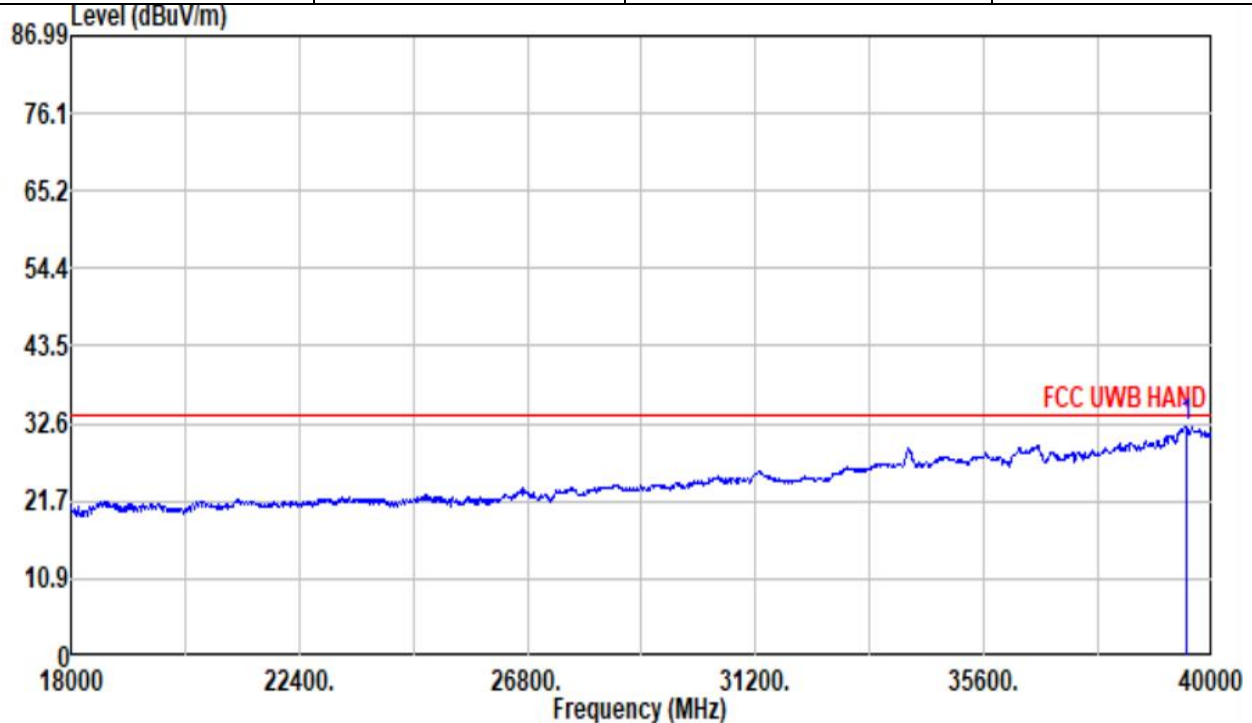
Note 5:

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



## CH Radiated Emissions (18GHz – 40GHz)

Test Mode	Mode 2	Polarization	H
Operating Function	Stand-alone Mode	Test Distance	0.5m



Site : 03CH20-HY  
Condition: FCC UWB HAND 1m BBHA9170\_1224\_240624 Horizontal  
: RBW:1000.000kHz VBW:3000.000kHz SWT:11.000sec  
Project : 4D1104  
Detector : Average  
Channel : 06

		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	dB	cm	deg	
1 39496.00	32.22	33.93	-1.71	49.03	45.76	9.19	56.20	-15.56	--	--	--	Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting: RBW=1MHz; VBW=3MHz.

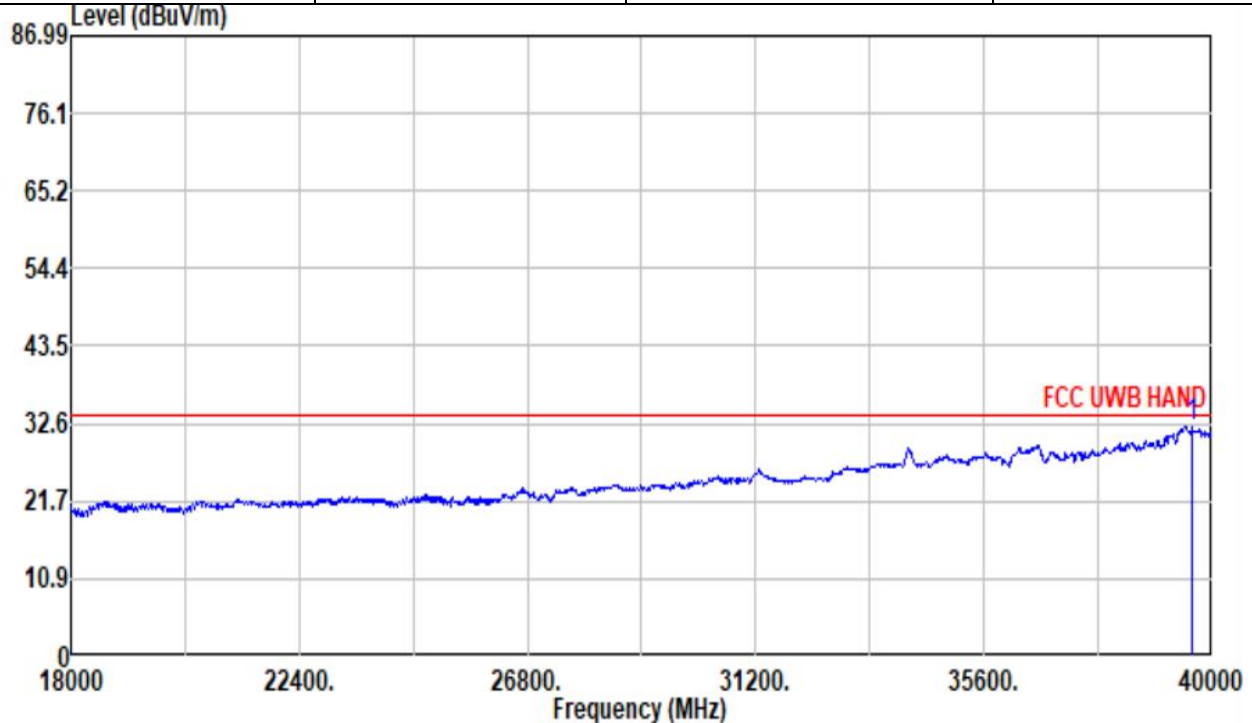
Note 5:

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



## CH Radiated Emissions (18GHz – 40GHz)

Test Mode	Mode 2	Polarization	V
Operating Function	Stand-alone Mode	Test Distance	0.5m



Site : 03CH20-HY  
Condition: FCC UWB HAND 1m BBHA9170\_1224\_240624 Vertical  
: RBW:1000.000kHz VBW:3000.000kHz SWT:11.000sec  
Project : 4D1104  
Detector : Average  
Channel : 06

Freq	Limit		Line	Margin	Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
	Level	dBuV/m			Level	dB							
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		dB	dB	dB	cm	deg	
1	39608.00	32.23	33.93	-1.70	49.29	45.50		9.03	56.03	-15.56	--	--	Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting: RBW=1MHz; VBW=3MHz.

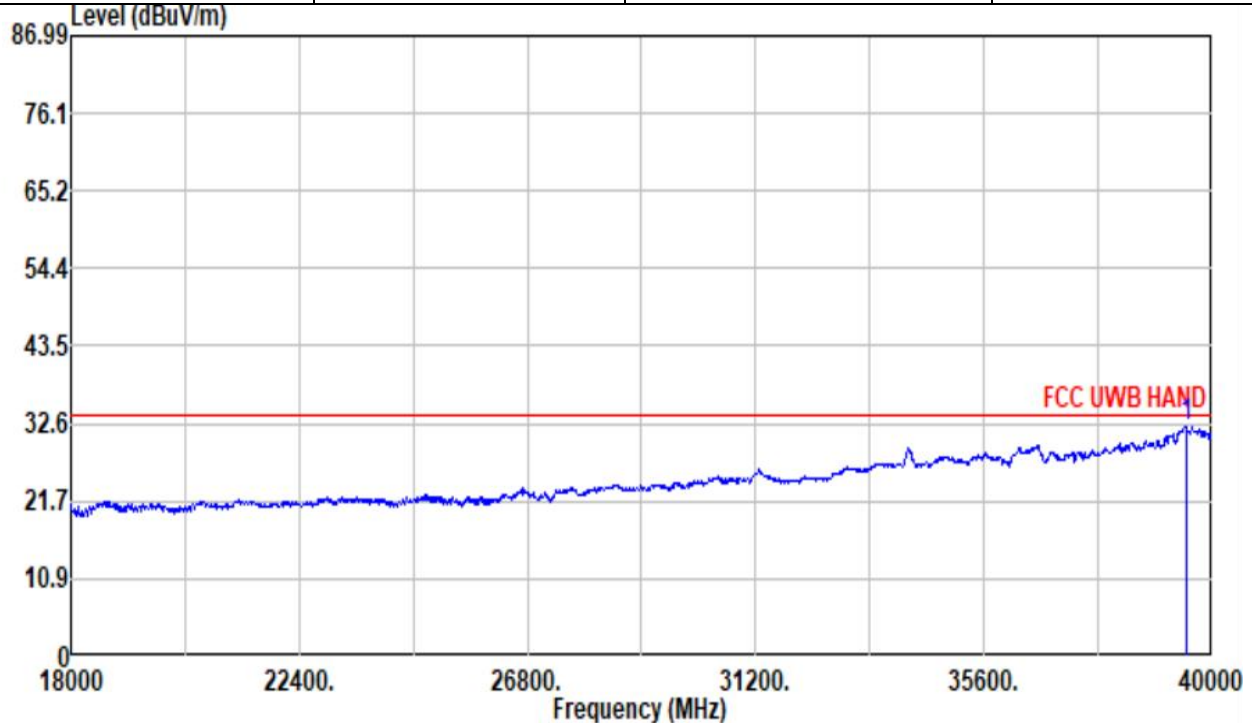
Note 5:

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



## CH Radiated Emissions (18GHz – 40GHz)

Test Mode	Mode 3	Polarization	H
Operating Function	Stand-alone Mode	Test Distance	0.5m



Site : 03CH20-HY  
Condition: FCC UWB HAND 1m BBHA9170\_1224\_240624 Horizontal  
: RBW:1000.000kHz VBW:3000.000kHz SWT:11.000sec  
Project : 4D1104  
Detector : Average  
Channel : 08

		Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	dB	cm	deg	
1	39496.00	32.24	33.93	-1.69	49.05	45.76	9.19	56.20	-15.56	--	--	Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting: RBW=1MHz; VBW=3MHz.

Note 5:

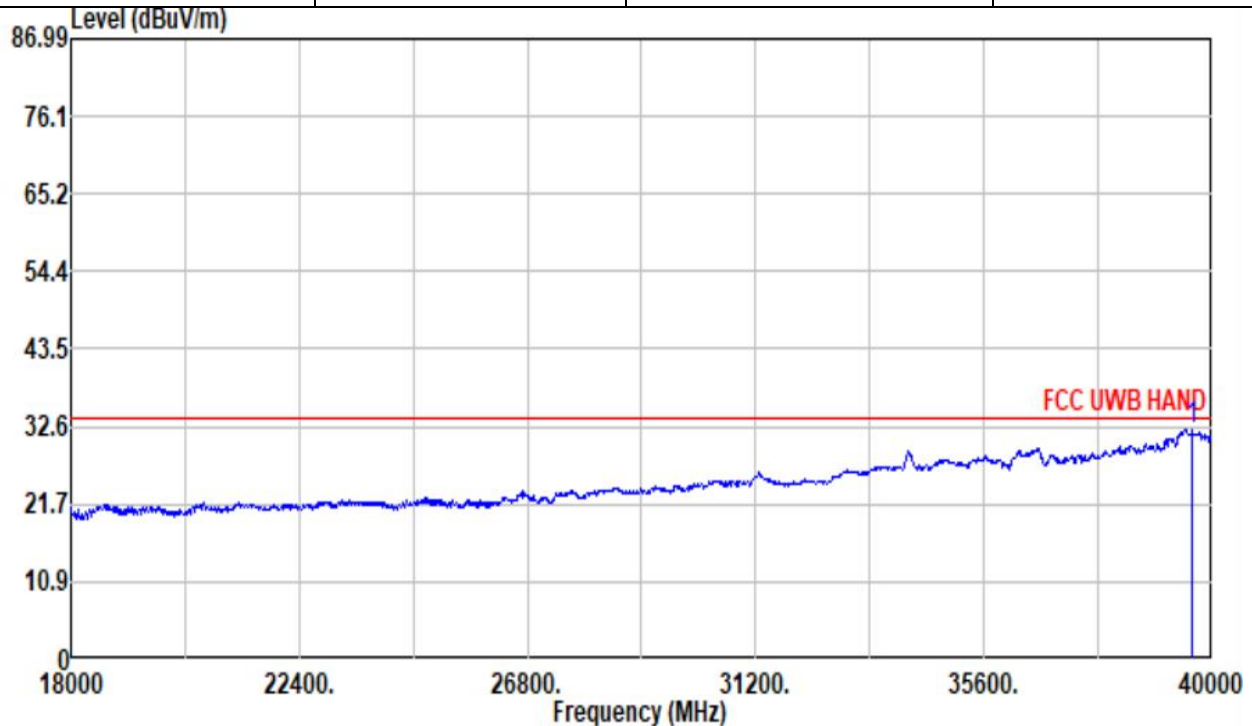
- Distance extrapolation factor =  $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$  (dB)  
Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux (dB) = Level (dBuV/m)  
(Note: Aux = Distance extrapolation factor)





## CH Radiated Emissions (18GHz – 40GHz)

Test Mode	Mode 3	Polarization	V
Operating Function	Stand-alone Mode	Test Distance	0.5m



Site : 03CH20-HY  
Condition: FCC UWB HAND 1m BBHA9170\_1224\_240624 Vertical  
: RBW:1000.000kHz VBW:3000.000kHz SWT:11.000sec  
Project : 4D1104  
Detector : Average  
Channel : 08

Freq	Limit		Line	Margin	Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
	Level	dBuV/m			Level	Factor							
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		dB	dB	dB	cm	deg	
1	39608.00	32.21	33.93	-1.72	49.27	45.50		9.03	56.03	-15.56	--	--	Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting: RBW=1MHz; VBW=3MHz.

Note 5:

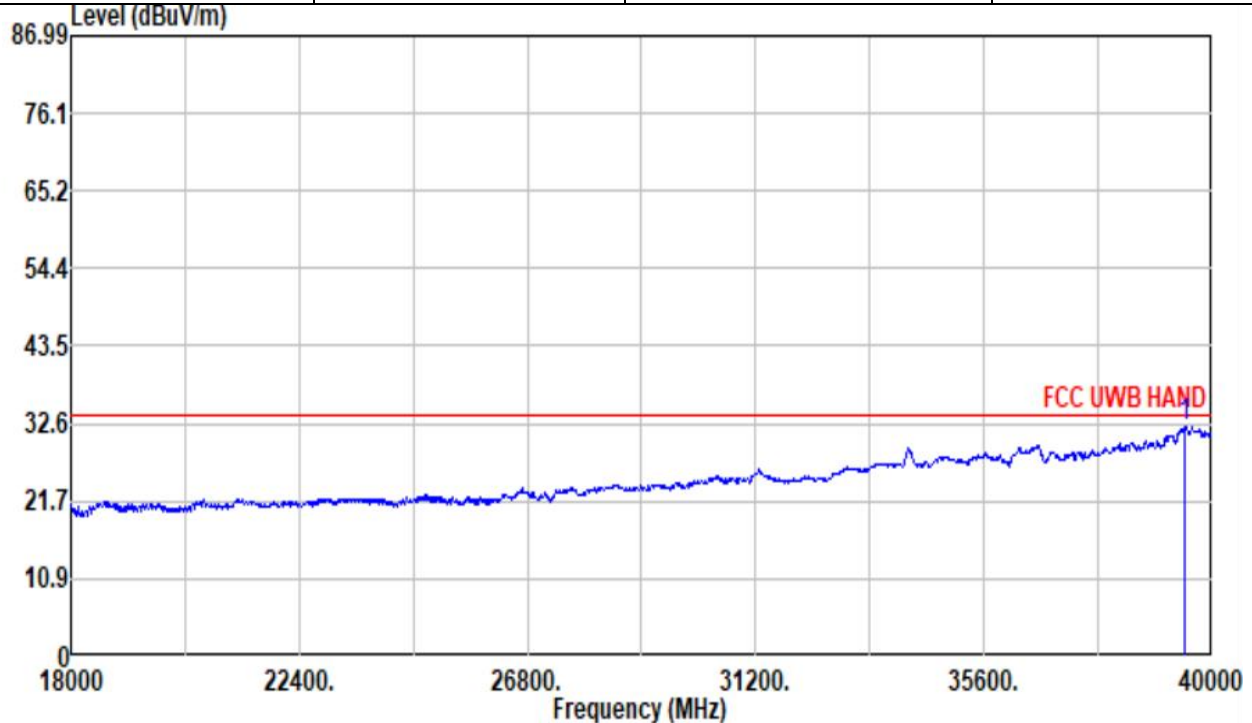
- Distance extrapolation factor =  $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$  (dB)  
Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux (dB) = Level (dBuV/m)  
(Note: Aux = Distance extrapolation factor)





## CH Radiated Emissions (18GHz – 40GHz)

Test Mode	Mode 4	Polarization	H
Operating Function	Stand-alone Mode	Test Distance	0.5m



Site : 03CH20-HY  
Condition: FCC UWB HAND 1m BBHA9170\_1224\_240624 Horizontal  
: RBW:1000.000kHz VBW:3000.000kHz SWT:11.000sec  
Project : 4D1104  
Detector : Average  
Channel : 09

Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor		
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg
1 39468.00	32.22	33.93	-1.71	49.39	45.48	9.13	56.22	-15.56	--	-- Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting: RBW=1MHz; VBW=3MHz.

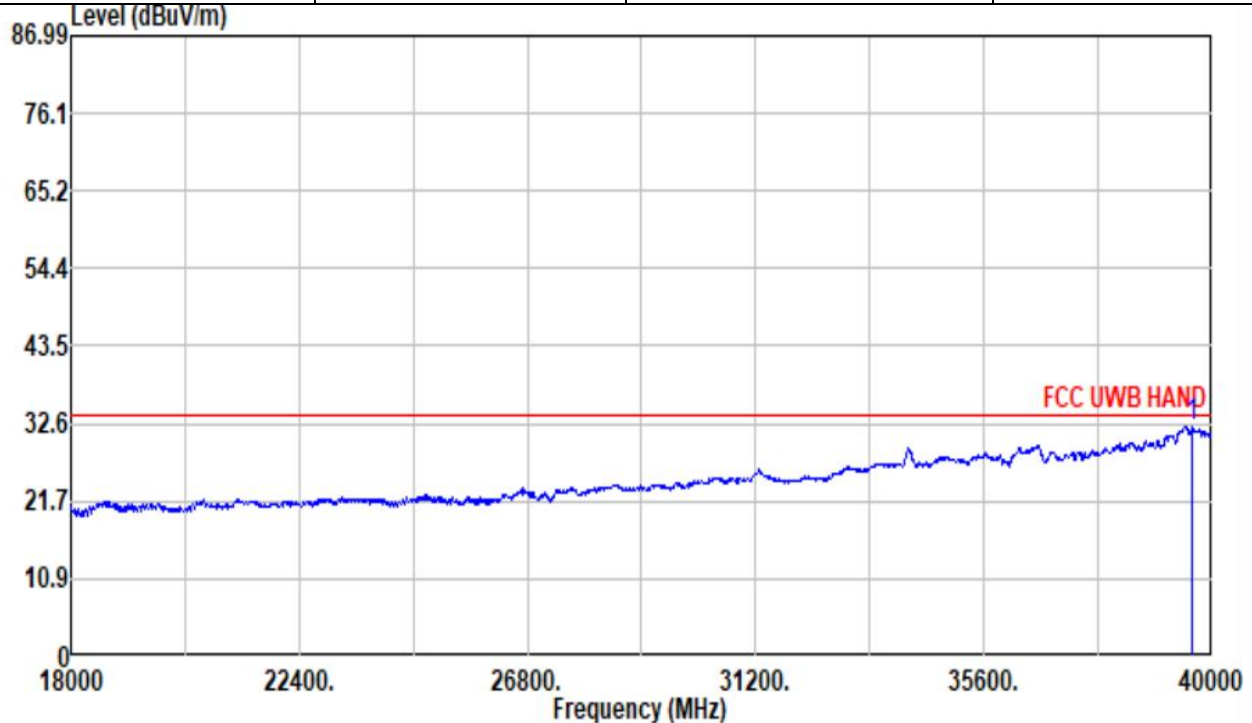
Note 5:

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



## CH Radiated Emissions (18GHz – 40GHz)

Test Mode	Mode 4	Polarization	V
Operating Function	Stand-alone Mode	Test Distance	0.5m



Site : 03CH20-HY  
Condition: FCC UWB HAND 1m BBHA9170\_1224\_240624 Vertical  
: RBW:1000.000kHz VBW:3000.000kHz SWT:11.000sec  
Project : 4D1104  
Detector : Average  
Channel : 09

Limit		Read		Ant	Cable	Preamp	Aux	APos	TPos	Remark
Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor		
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg
1 39608.00	32.28	33.93	-1.65	49.34	45.50	9.03	56.03	-15.56	--	-- Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Average emission setting: RBW=1MHz; VBW=3MHz.

Note 5:

- Distance extrapolation factor =  $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$  (dB)  
Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux (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
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	N/A	Oct. 16, 2024	Jan. 20, 2025~ Feb. 21, 2025	Oct. 15, 2025	Radiation (03CH20-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Aug. 29, 2024	Jan. 20, 2025~ Feb. 21, 2025	Aug. 28, 2025	Radiation (03CH20-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	May 27, 2024	Jan. 20, 2025~ Feb. 21, 2025	May 26, 2025	Radiation (03CH20-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Jan. 20, 2025~ Feb. 21, 2025	N/A	Radiation (03CH20-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jan. 20, 2025~ Feb. 21, 2025	N/A	Radiation (03CH20-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jan. 20, 2025~ Feb. 21, 2025	N/A	Radiation (03CH20-HY)
Signal Analyzer	Keysight	N9010B	MY60240520	N/A	Dec. 09, 2024	Jan. 20, 2025~ Feb. 21, 2025	Dec. 08, 2025	Radiation (03CH20-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802N1 D01N-06	55606 & 08	30MHz~1GHz	Nov. 27, 2024	Jan. 20, 2025~ Feb. 21, 2025	Nov. 26, 2025	Radiation (03CH20-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	02360	1GHz-18GHz	Nov. 01, 2024	Jan. 20, 2025~ Feb. 21, 2025	Oct. 31, 2025	Radiation (03CH20-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	1224	18GHz-40GHz	Jun. 24, 2024	Jan. 20, 2025~ Feb. 21, 2025	Jun. 23, 2025	Radiation (03CH20-HY)
Preamplifier	COM-POWER	PAM-103	18020201	1MHz-1000MHz	Dec. 31, 2024	Jan. 20, 2025~ Feb. 21, 2025	Dec. 30, 2025	Radiation (03CH20-HY)
Amplifier	EMCI	EMC118A45SE	980792	N/A	Nov. 12, 2024	Jan. 20, 2025~ Feb. 21, 2025	Nov. 11, 2025	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,8040 15/2,804027/2	N/A	Jan. 16, 2025	Jan. 20, 2025~ Feb. 21, 2025	Jan. 15, 2026	Radiation (03CH20-HY)
Hygrometer	TECPEL	DTM-303A	TP211382	N/A	Mar. 27, 2024	Jan. 20, 2025~ Feb. 21, 2025	Mar. 26, 2025	Radiation (03CH20-HY)
Software	Audix	N/A	RK-002156	N/A	N/A	Jan. 20, 2025~ Feb. 21, 2025	N/A	Radiation (03CH20-HY)
Preamplifier	COM-POWER	PAM-103	18020201	1MHz-1000MHz	Dec. 31, 2024	Jan. 20, 2025~ Feb. 21, 2025	Dec. 30, 2025	Radiation (03CH20-HY)
Amplifier	EMCI	EMC118A45SE	980792	N/A	Nov. 12, 2024	Jan. 20, 2025~ Feb. 21, 2025	Nov. 11, 2025	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,8040 15/2,804027/2	N/A	Jan. 16, 2025	Jan. 20, 2025~ Feb. 21, 2025	Jan. 15, 2026	Radiation (03CH20-HY)
Hygrometer	TECPEL	DTM-303A	TP211382	N/A	Mar. 27, 2024	Jan. 20, 2025~ Feb. 21, 2025	Mar. 26, 2025	Radiation (03CH20-HY)
Software	Audix	N/A	RK-002156	N/A	N/A	Jan. 20, 2025~ Feb. 21, 2025	N/A	Radiation (03CH20-HY)
Horn Antenna	ETS-Lindgren	3117	00227636	1GHz~18GHz	May 15, 2024	Mar. 12, 2025	May 14, 2025	Radiation (05CH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101756	10GHz~40GHz	Dec. 26, 2024	Mar. 12, 2025	Dec. 25, 2025	Radiation (05CH05-HY)
Preamplifier	EM Electronics	EM01G18G	060805	1GHz-18GHz	Jul. 23, 2024	Mar. 12, 2025	Jul. 22, 2025	Radiation (05CH05-HY)
Hygrometer	TECPEL	DTM-303B	TP210117	N/A	Oct. 08, 2024	Mar. 12, 2025	Oct. 07, 2025	Radiation (05CH05-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mas	N/A	Mar. 12, 2025	N/A	Radiation (05CH05-HY)
Antenna Mast	ChainTek	MD-200	1308055	1m~4m	N/A	Mar. 12, 2025	N/A	Radiation (05CH05-HY)
Turn Table	EMEC	TT 2000	N/A	0-360 degree	N/A	Mar. 12, 2025	N/A	Radiation (05CH05-HY)