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Page Number



FCC RADIO TEST REPORT

FCC ID : A4RG8V0U

Equipment : Phone

Model Name : G8V0U, GF5KQ Applicant : Google LLC

1600 Amphitheatre Parkway,

Mountain View, California, 94043 USA

Standard : 47 CFR FCC Part 15.519

The product was received on May 26, 2021, and testing was started from Jun. 08, 2021 and completed on Jul. 15, 2021. 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

TEL: 886-3-327-0868

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.)

FAX: 886-3-327-0855 Issued Date : Aug. 13, 2021

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Appendix A. Conducted Emissions Test Results

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Report No.: FR121931-04J

Report Version : 01

History of this test report

Report No.: FR121931-04J

Report No.	Version	Description	Issued Date
FR121931-04J	01	Initial issue of report	Aug. 13, 2021

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Summary of Test Result

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Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.2	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

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: William Chen Report Producer: Steve Chen

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1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature			
Equipment	Phone		
Model Name	G8V0U, GF5KQ		
FCC ID	A4RG8V0U		
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/5G NR/NFC/GNSS/WPC/WPT/UWB WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80/VHT160 WLAN 11ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE		

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

EUT Information List		
S/N Performed Test Item		
16011FDEE0009P	Equivalent Isotropic Radiated Power	
16011FDEE0009P	Radiated Spurious Emission	
16011FDEE0009X	Conducted Emission	

1.2 Product Specification of Equipment Under Test

Product Specification subjective to this standard			
Channel Number & CH05: 6489.6 MHz			
Tx/Rx Frequency Range	CH09: 7987.2 MHz		
	<pre><uwb ant.0="">: Patch Antenna(Rx only)</uwb></pre>		
Antenna Type	<pre><uwb ant.1="">: Patch Antenna(Rx only)</uwb></pre>		
	<uwb ant.2="">: ILA Antenna</uwb>		
	CH05:		
Antenna Gain	<uwb ant.2="">: 2.78 dBi</uwb>		
Antenna Gam	CH09:		
	<uwb ant.2="">: 2.84 dBi</uwb>		
Type of Modulation	BPM-BPSK		

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

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1.3 Type of EUT

	Operational Condition				
EUT Power Type AC mains: AC voltage 120 V		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:				

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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.

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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, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855		
Test Site No.		Sporton Site No.	
rest site NO.	03CH11-HY	03CH20-HY	CO07-HY

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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
Conduction	CO07-HY	Howard Huang	23 ~ 26 °C 40 ~ 50 %	Jul. 02, 2021
Radiated	03CH11-HY	Harvey Guo	20 ~ 23 °C 65 ~ 70 %	Jul. 15, 2021
Radiated	03CH20-HY	Bill Chang	20 ~ 23 °C 66 ~ 69 %	Jun. 08, 2021~ Jul. 09, 2021

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)	2.20 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	2.68 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1000MHz)	3.90 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.80 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.50 dB	Confidence levels of 95%

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2 Test Configuration of EUT

2.1 Test Mode

Test Configuration					
Mode	UWB Antenna	UWB Channel	preamble_cidx	rx_sts_mode	packet_length
1	2	5	9	0	125
2	2	5	9	1	125
3	2	5	9	2	125
4	2	5	9	3	0
5	2	5	10	0	125
6	2	5	10	1	125
7	2	5	10	2	125
8	2	5	10	3	0
9	2	5	11	0	125
10	2	5	11	1	125
11	2	5	11	2	125
12	2	5	11	3	0
13	2	5	12	0	125
14	2	5	12	1	125
15	2	5	12	2	125
16	2	5	12	3	0
17	2	9	9	0	125
18	2	9	9	1	125
19	2	9	9	2	125
20	2	9	9	3	0
21	2	9	10	0	125
22	2	9	10	1	125
23	2	9	10	2	125
24	2	9	10	3	0
25	2	9	11	0	125
26	2	9	11	1	125
27	2	9	11	2	125
28	2	9	11	3	0
29	2	9	12	0	125
30	2	9	12	1	125
31	2	9	12	2	125
32	2	9	12	3	0

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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	СТХ		
1	Adapter Mode		

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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".

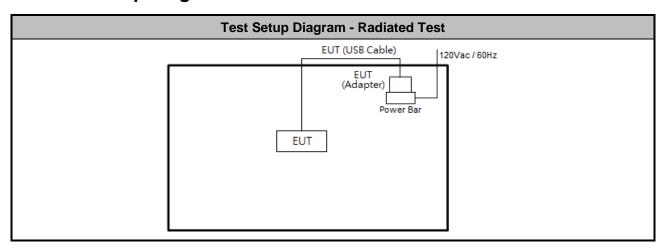
The Worst Case Mode for Following Conformance Tests							
Tests Item	s Item UWB Bandwidth, Peak Power Measurement, Radiated Emissions						
Test Condition	Radiated measurement	Radiated measurement					
Operating Mode CTX							
1	1 Adapter Mode						
Mode 1 configuration was tested	and found to be the wors	st case and measured dur	ring the test.				
Operating Mode > 1GHz	СТХ						
	X Plane	Y Plane	Z Plane				
Orthogonal Planes of EUT							
Worst Plane of all Test Modes	V						

Remark:

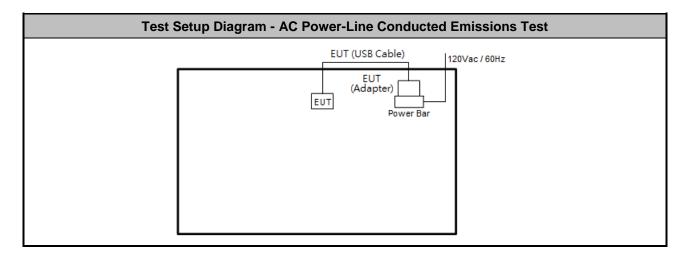
- 1. The measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and find X plane as worst plane, and recorded in this report.
 All the tests were performed with Adapter 2 and USB Cable 1.
- During the preliminary test, both charging modes (Adapter mode and WPC Charging mode) were verified. It is determined that the adaptor mode is the worst case for official test.

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2.3 Test Setup Diagram



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2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
	Notebook	DELL	Latitude 3400	FCC DoC	N/A	AC I/P:
1.						Unshielded, 1.2 m
						DC O/P:
						Shielded, 1.8 m
	Notebook	ASUS	P5448F	FCC DoC		AC I/P:
2.					NI/A	Unshielded, 1.2 m
2.					N/A	DC O/P:
						Shielded, 1.8 m

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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				

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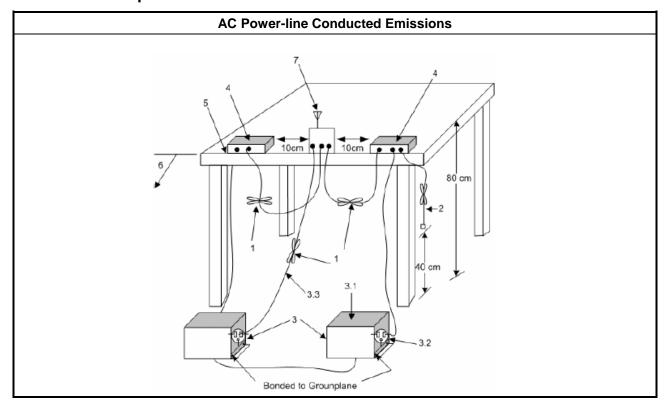
3.1.2 Measuring Instruments

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.

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3.2 UWB bandwidth

3.2.1 UWB bandwidth Limit

UWB bandwidth Limit

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

3.2.2 Measuring Instruments

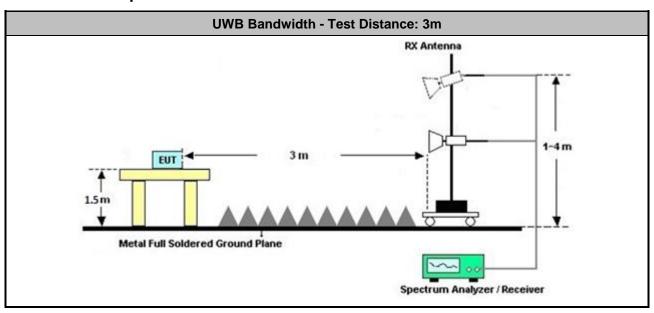
Refer a test equipment and calibration data table in this test report.

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



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3.2.5 Test Result of UWB Bandwidth

T (FL	F _H	UWB Bandwidth	Bandwidth limit	D	Pol	
Test mode	(MHz)	(MHz)	(MHz)	(MHz)	Result	[H/V]	
1	6102	6877	775	≥ 500	Pass	Н	
2	6085	6885	800	≥ 500	Pass	Н	
3	6101	6884	783	≥ 500	Pass	Н	
4	6084	6878	794	≥ 500	Pass	Н	
5	6179	6834	655	≥ 500	Pass	Н	
6	6144	6836	692	≥ 500	Pass	Н	
7	6143	6836	693	≥ 500	Pass	Н	
8	6087	6909	822	≥ 500	Pass	Н	
9	6080	6888	808	≥ 500	Pass	Н	
10	6080	6889	809	≥ 500	Pass	Н	
11	6115	6873	758	≥ 500	Pass	Н	
12	6115	6895	781	≥ 500	Pass	Н	
13	6108	6876	768	≥ 500	Pass	Н	
14	6108	6875	768	≥ 500	Pass	Н	
15	6108	6879	771	≥ 500	Pass	Н	
16	6083	6895	812	≥ 500	Pass	Н	
17	7642	8340	698	≥ 500	Pass	Н	
18	7642	8347	705	≥ 500	Pass	Н	
19	7642	8374	732	≥ 500	Pass	Н	
20	7644	8361	717	≥ 500	Pass	Н	
21	7676	8334	658	≥ 500	Pass	Н	
22	7675	8334	659	≥ 500	Pass	Н	
23	7676	8334	658	≥ 500	Pass	Н	
24	7643	8362	719	≥ 500	Pass	Н	
25	7650	8370	720	≥ 500	Pass	Н	
26	7653	8361	708	≥ 500	Pass	Н	
27	7642	8396	754	≥ 500	Pass	Н	
28	7671	8362	691	≥ 500	Pass	Н	
29	7659	8368	709	≥ 500	Pass	Н	
30	7636	8359	723	≥ 500	Pass	Н	
31	7666	8368	702	≥ 500	Pass	Н	
32	7675	8341	666	≥ 500	Pass	Н	

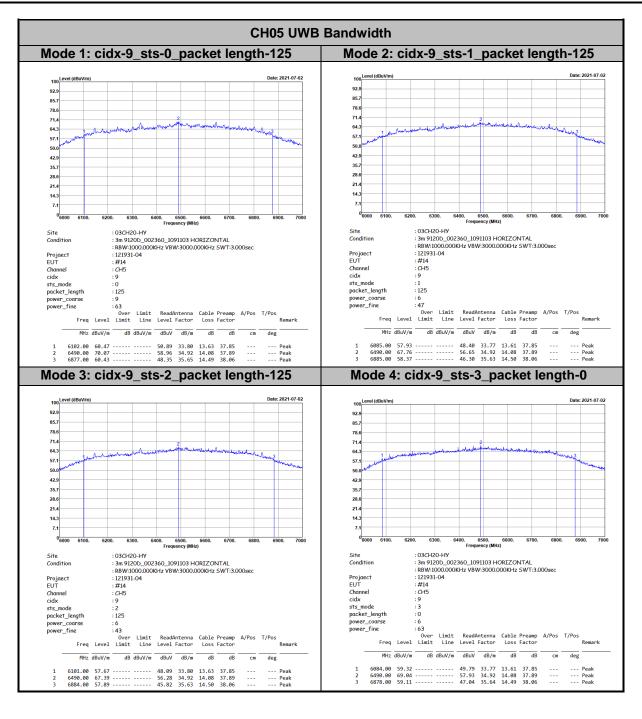
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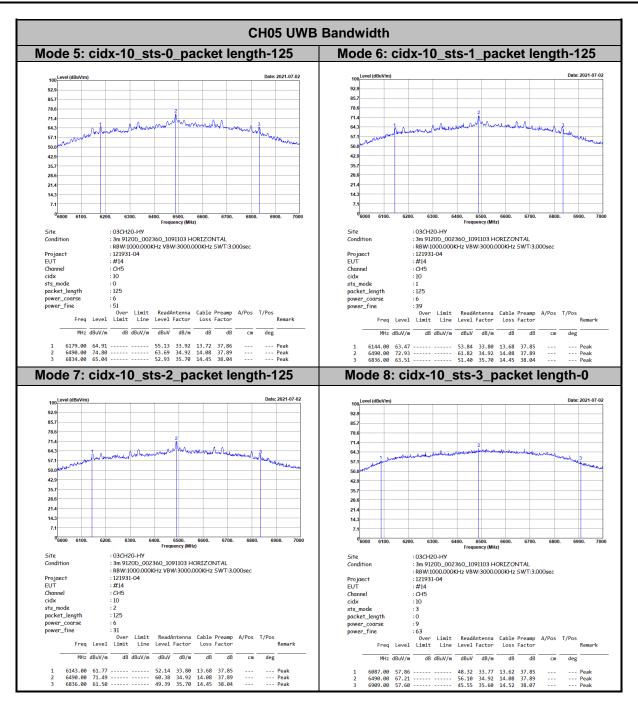
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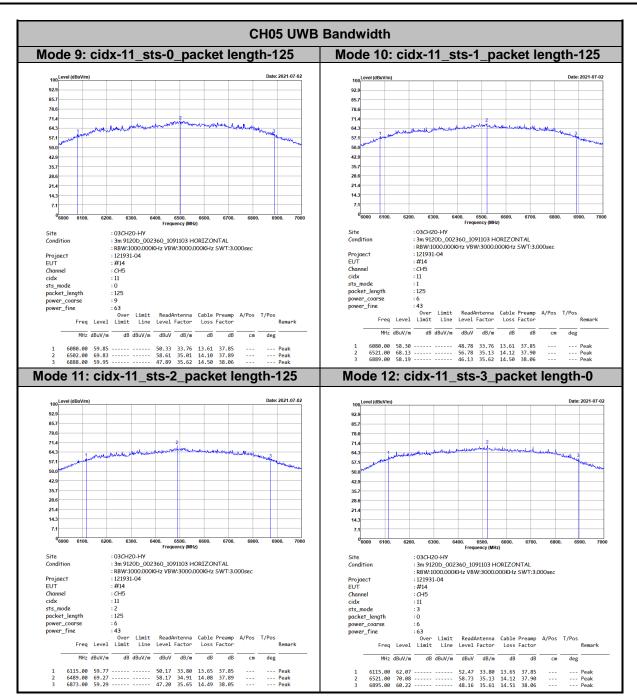
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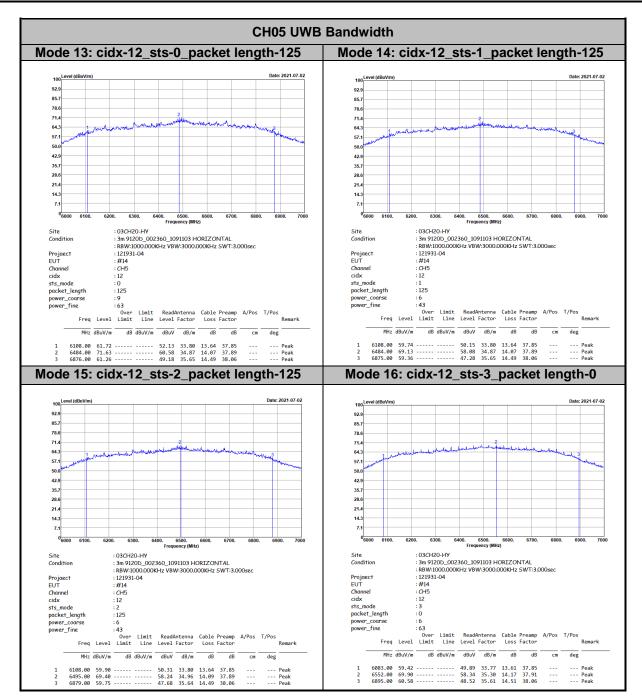
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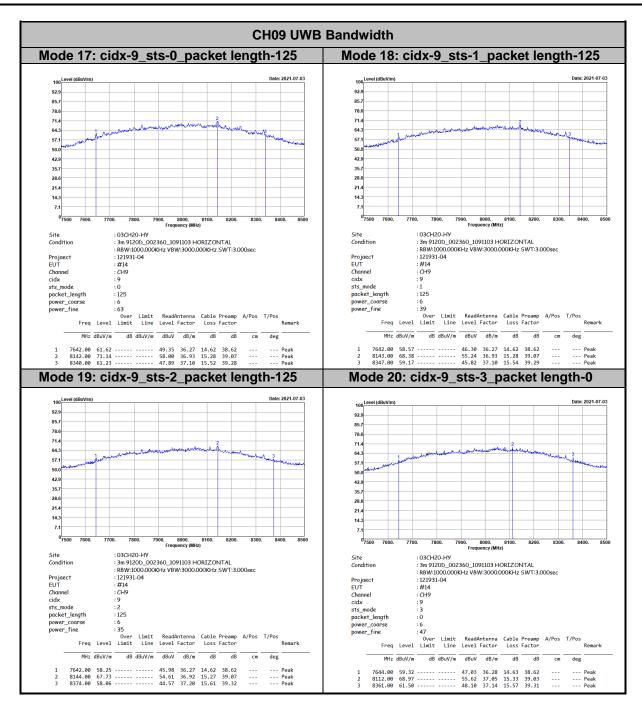
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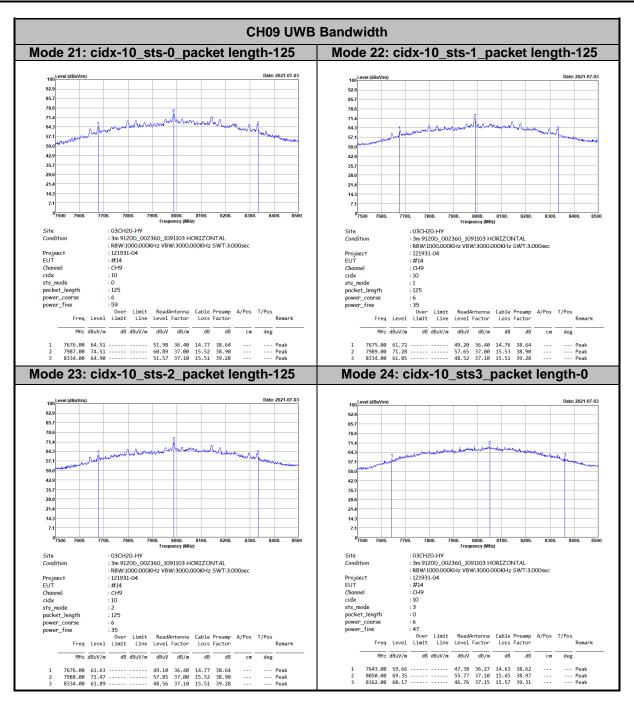
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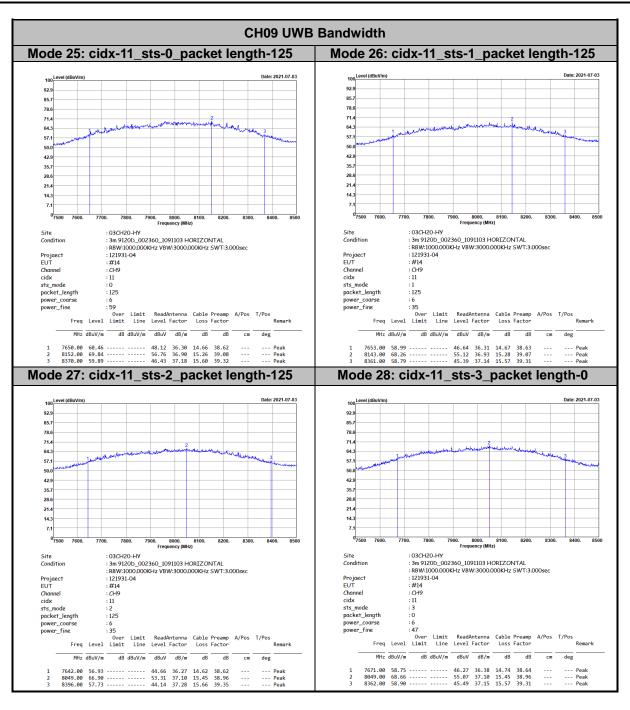
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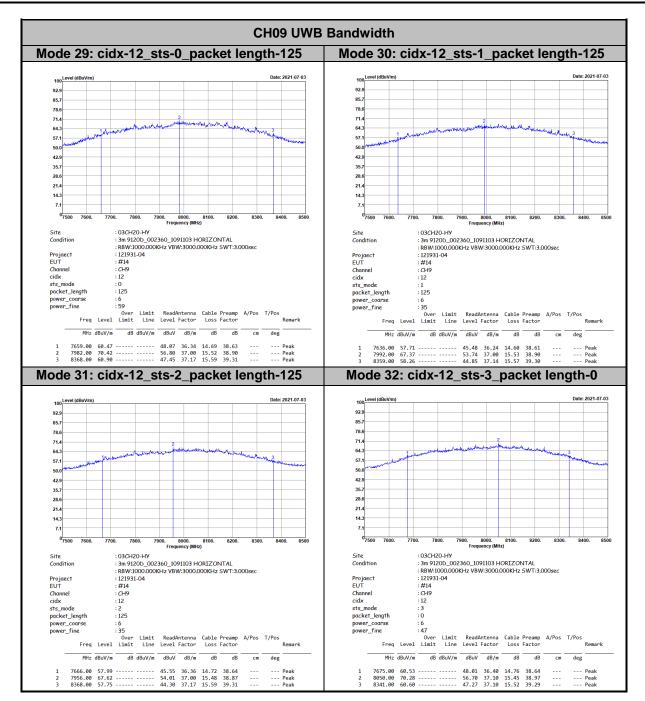
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3.3 Technical requirements for hand held UWB systems

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.

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3.3.2 Measuring Instruments

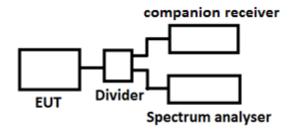
Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedure

Follow the test step as below:

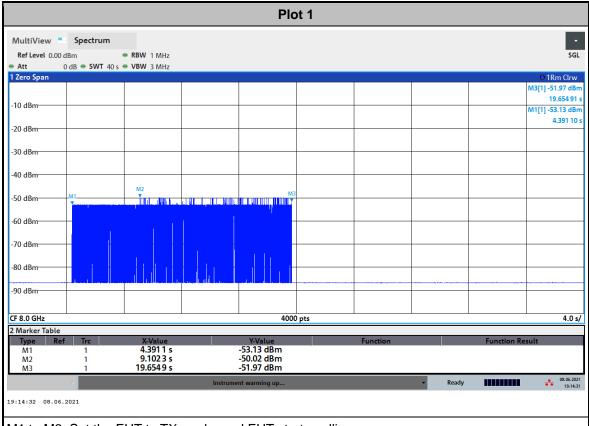
- 1. Turn on both EUT and companion receiver.
- 2. Set the EUT to TX mode, and EUT starts polling.
- 3. Set the companion receiver to associate EUT and EUT starts to transmit.
- 4. Disable the TX function of EUT.
- 5. Check if EUT stop transmitting once step 4 is made. (see plot 1 in clause 3.3.5)
- 6. Turn off both EUT and companion receiver.
- 7. Repeat step 1 to step 3.
- 8. Disable the RX function of the companion receiver to disassociate the EUT.
- 9. Check if EUT stop transmitting once step 8 is made. (see plot 2 in clause 3.3.5)

3.3.4 Test Setup



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3.3.5 Test Result



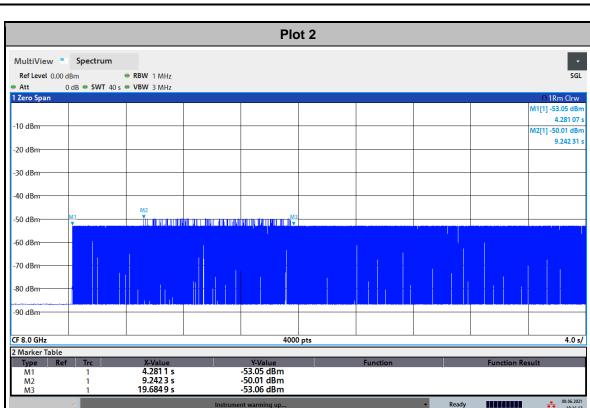
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M1 to M2: Set the EUT to TX mode, and EUT starts polling.

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.

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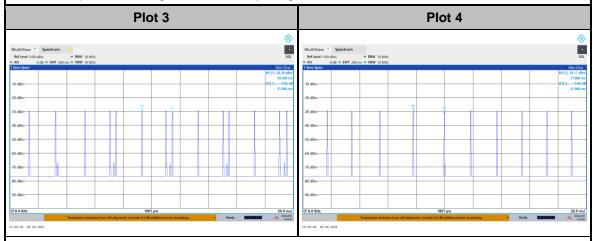


M1 to M2: Set the EUT to TX mode, and EUT starts polling.

19:16:13 08.06.2021

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)

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3.4 Peak Power Measurement

3.4.1 Peak Power Measurement Limit

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

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3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method						
Pea	ak 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:

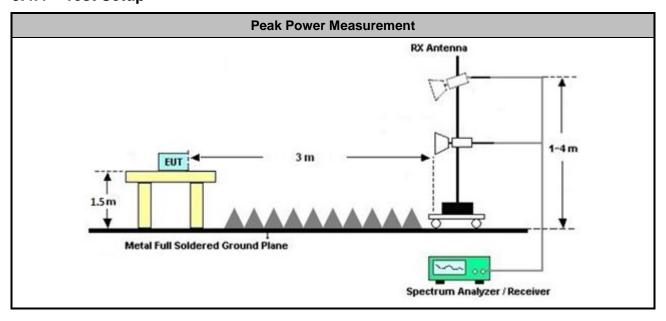
· Central frequency: Worst frequency point

Span: Zero spanRBW: 40MHzVBW: 40MHz

Detector: Peak detector

Trace: Max hold

3.4.4 Test Setup



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3.4.5 Test Result of Peak Power Measurement

	Peak Measurement Result									
Test Mode	Freq. (MHz)	E-Field (dBuV/m)	ERIP _{40MHz} (dBm)	ERIP _{50MHz} Limit (dBm)	EIRP _{40MHz} Limit (dBm)	Margin (dB)	Result	Pol [H/V]		
1	6489.50	92.73	-2.5	0	-1.94	-0.56	Pass	Н		
2	6489.40	90.61	-4.62	0	-1.94	-2.68	Pass	Н		
3	6489.50	90.28	-4.95	0	-1.94	-3.01	Pass	Н		
4	6489.65	82.28	-12.95	0	-1.94	-11.01	Pass	Н		
5	6489.90	93.19	-2.04	0	-1.94	-0.1	Pass	Н		
6	6489.65	91.24	-3.99	0	-1.94	-2.05	Pass	Н		
7	6489.50	89.70	-5.53	0	-1.94	-3.59	Pass	Н		
8	6489.75	82.55	-12.68	0	-1.94	-10.74	Pass	Н		
9	6515.75	89.12	-6.11	0	-1.94	-4.17	Pass	Н		
10	6489.50	89.31	-5.92	0	-1.94	-3.98	Pass	Н		
11	6489.60	89.19	-6.04	0	-1.94	-4.1	Pass	Н		
12	6489.45	84.07	-11.16	0	-1.94	-9.22	Pass	Н		
13	6494.90	92.78	-2.45	0	-1.94	-0.51	Pass	Н		
14	6489.70	90.22	-5.01	0	-1.94	-3.07	Pass	Н		
15	6495.00	90.68	-4.55	0	-1.94	-2.61	Pass	Н		
16	6520.80	81.85	-13.38	0	-1.94	-11.44	Pass	Н		

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Note 1: EIRP [dBm] = E-Field [dBuV/m] - 95.23; Note 2: Bandwidth Correction Factor (BWCF) = 20 log (40MHz/50MHz). Note 3: EIRP_{40MHz} Limit = EIRP_{50MHz} Limit + BWCF, FCC Part 15.521(g). Note 4: Measurement worst emissions of receive antenna polarization.

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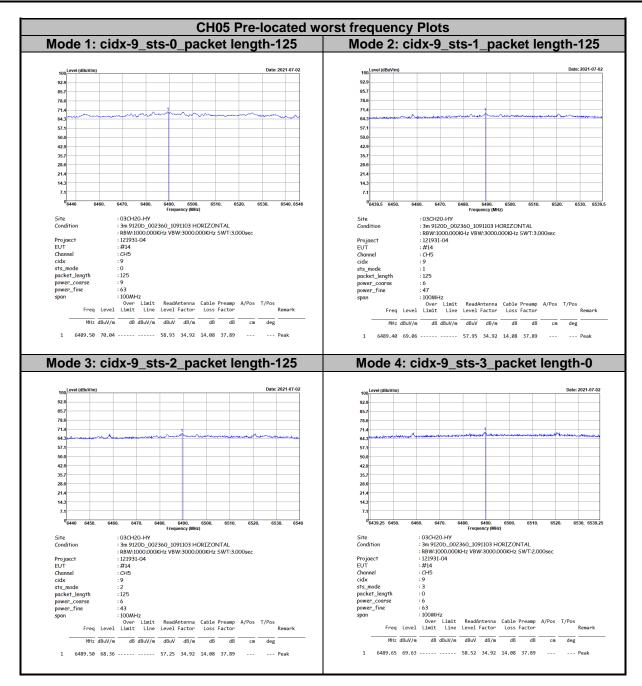


	Peak Measurement Result									
Test Mode	Freq. (MHz)	E-Field (dBuV/m)	ERIP _{40MHz} (dBm)	ERIP _{50MHz} Limit (dBm)	EIRP _{40MHz} Limit (dBm)	Margin (dB)	Result	Pol [H/V]		
17	8143.45	89.62	-5.61	0	-1.94	-3.67	Pass	Н		
18	8142.20	86.90	-8.33	0	-1.94	-6.39	Pass	Н		
19	8141.60	86.10	-9.13	0	-1.94	-7.19	Pass	Н		
20	8049.65	82.59	-12.64	0	-1.94	-10.7	Pass	Н		
21	7987.20	91.56	-3.67	0	-1.94	-1.73	Pass	Н		
22	7987.05	88.73	-6.5	0	-1.94	-4.56	Pass	Н		
23	7987.15	88.56	-6.67	0	-1.94	-4.73	Pass	Н		
24	8049.70	82.12	-13.11	0	-1.94	-11.17	Pass	Н		
25	8152.00	87.65	-7.58	0	-1.94	-5.64	Pass	Н		
26	8049.60	86.68	-8.55	0	-1.94	-6.61	Pass	Н		
27	8049.70	86.59	-8.64	0	-1.94	-6.7	Pass	Н		
28	8049.80	82.27	-12.96	0	-1.94	-11.02	Pass	Н		
29	7992.55	90.28	-4.95	0	-1.94	-3.01	Pass	Н		
30	7992.65	87.40	-7.83	0	-1.94	-5.89	Pass	Н		
31	7992.35	87.15	-8.08	0	-1.94	-6.14	Pass	Н		
32	8049.90	82.32	-12.91	0	-1.94	-10.97	Pass	Н		

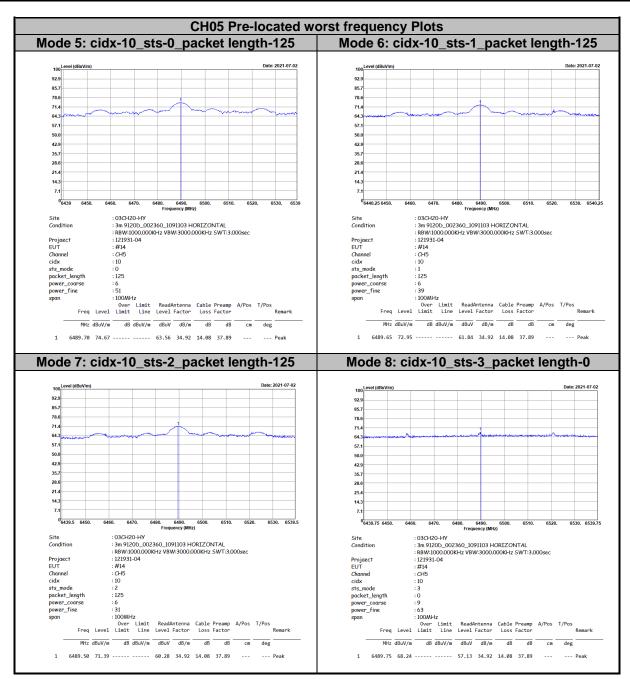
Note 1: EIRP [dBm] = E-Field [dBuV/m] - 95.23; Note 2: Bandwidth Correction Factor (BWCF) = 20 log (40MHz/50MHz). Note 3: EIRP_{40MHz} Limit = EIRP_{50MHz} Limit + BWCF, FCC Part 15.521(g).

Note 4: Measurement worst emissions of receive antenna polarization.

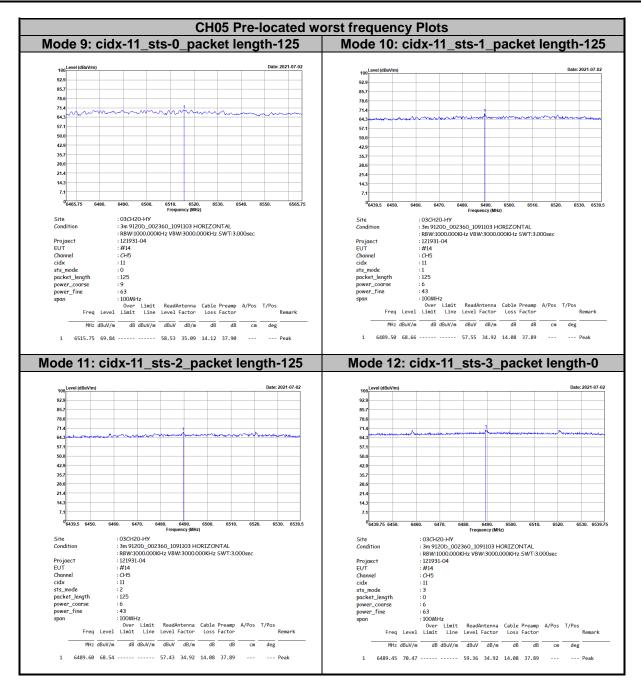
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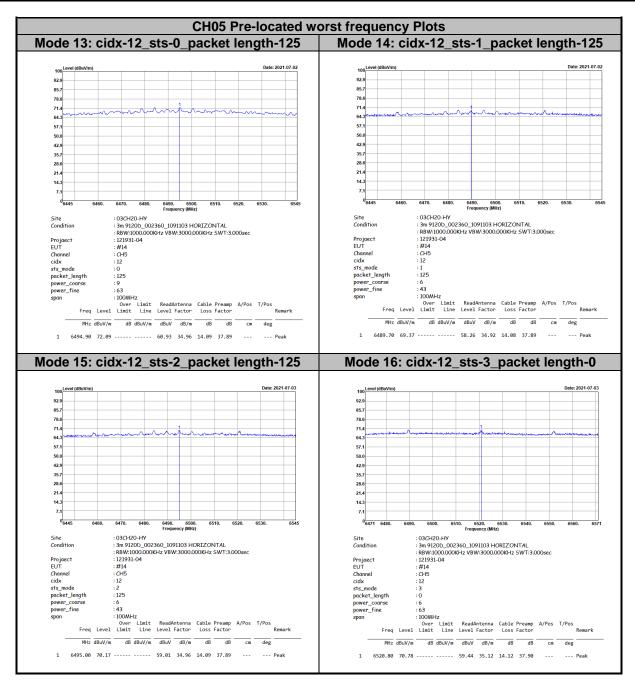
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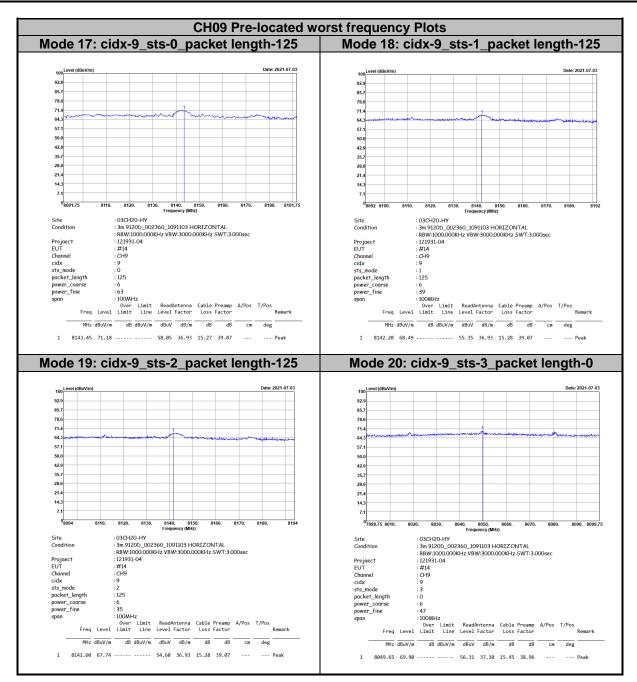
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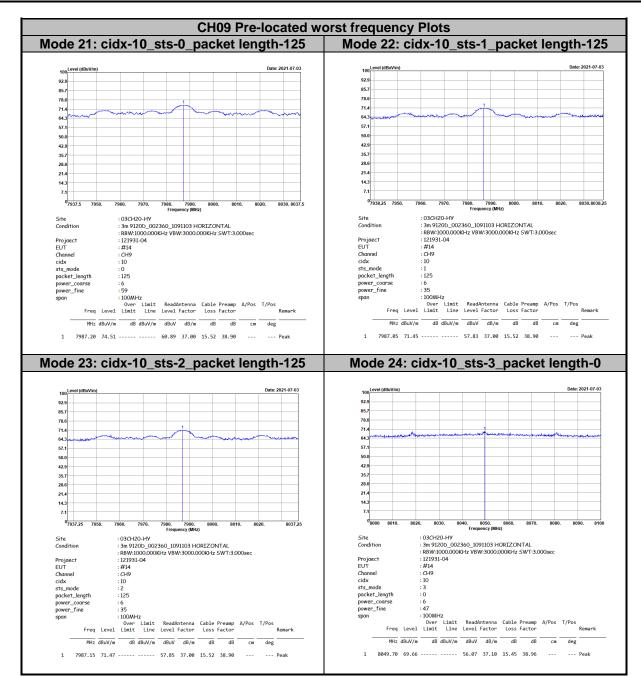
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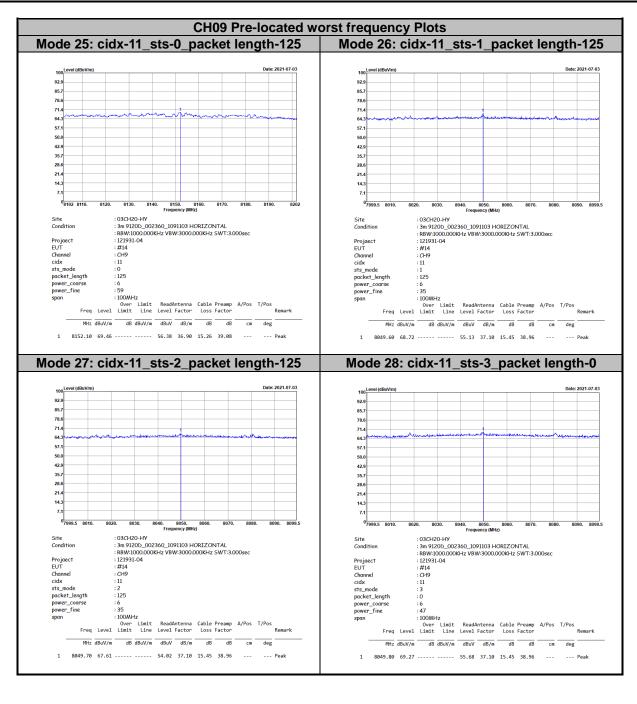
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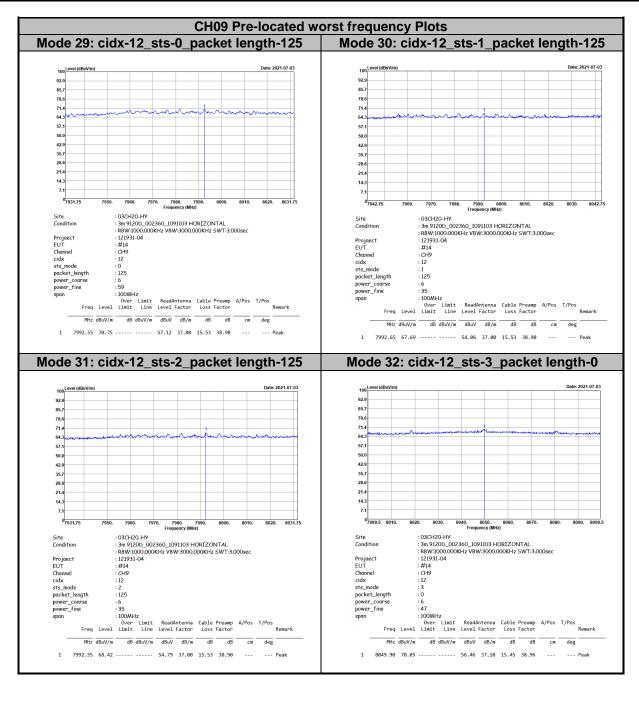
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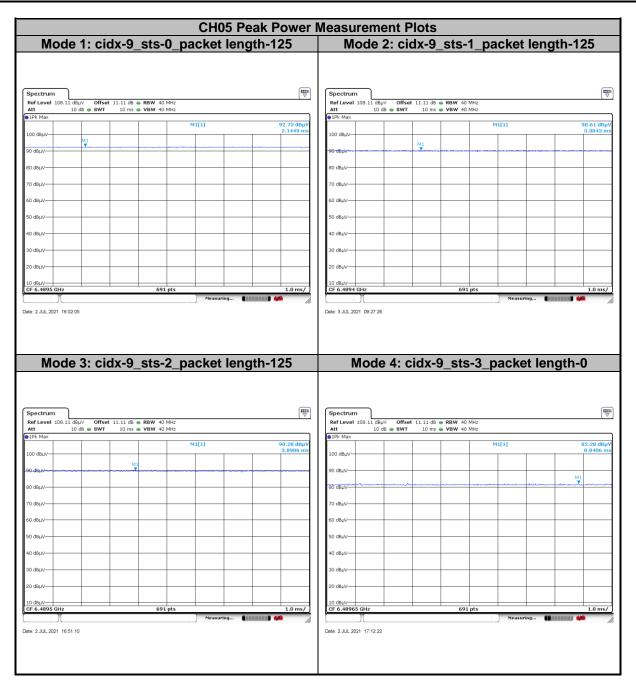
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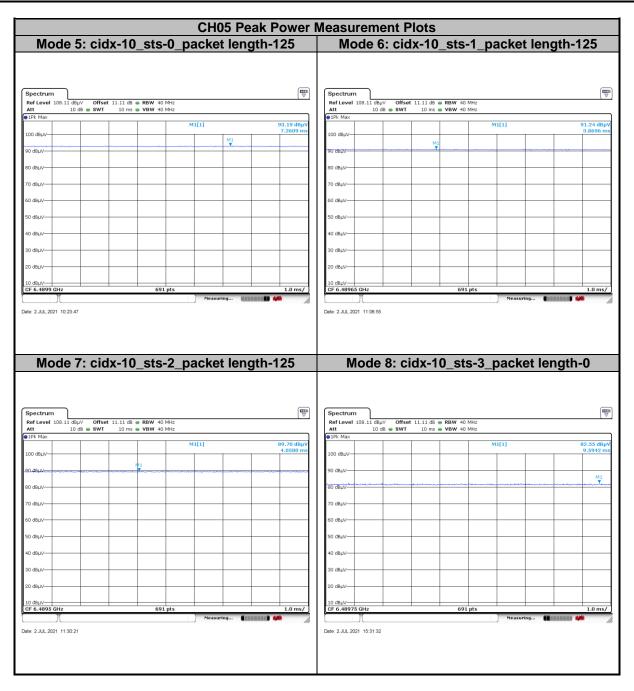
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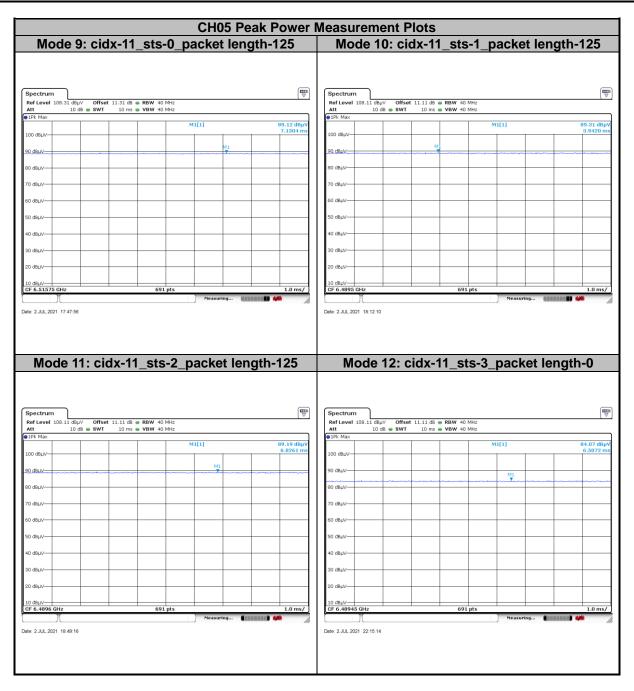
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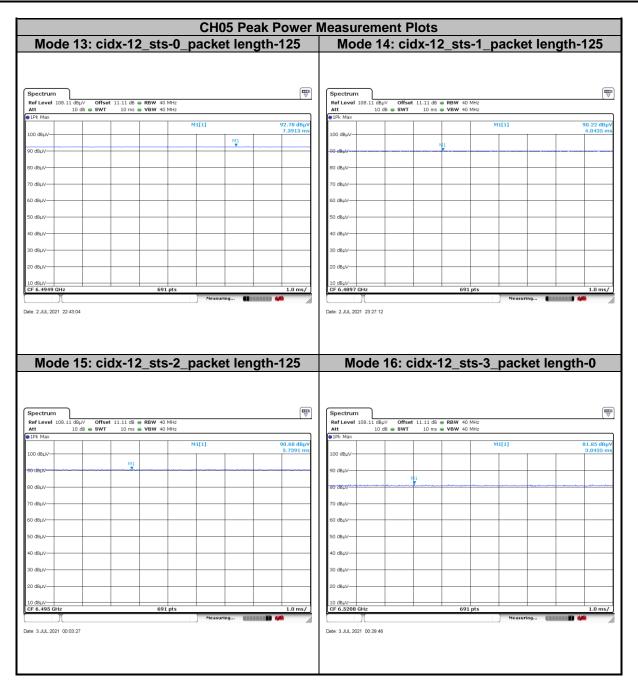
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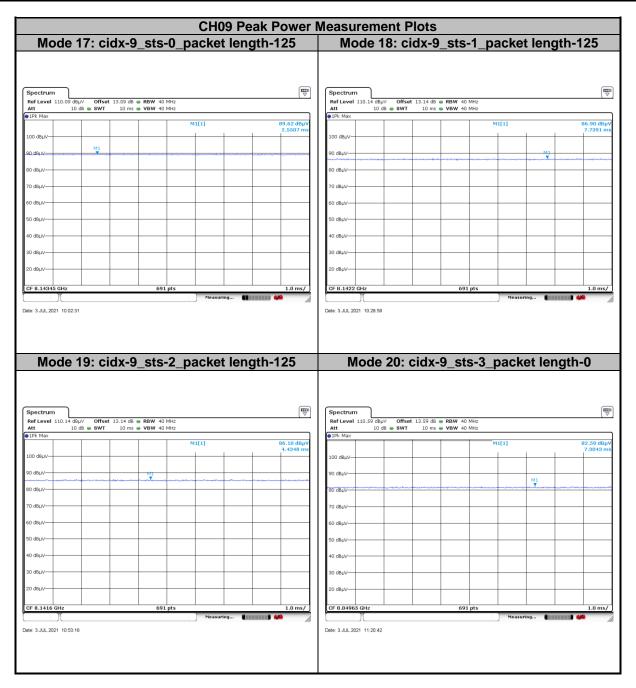
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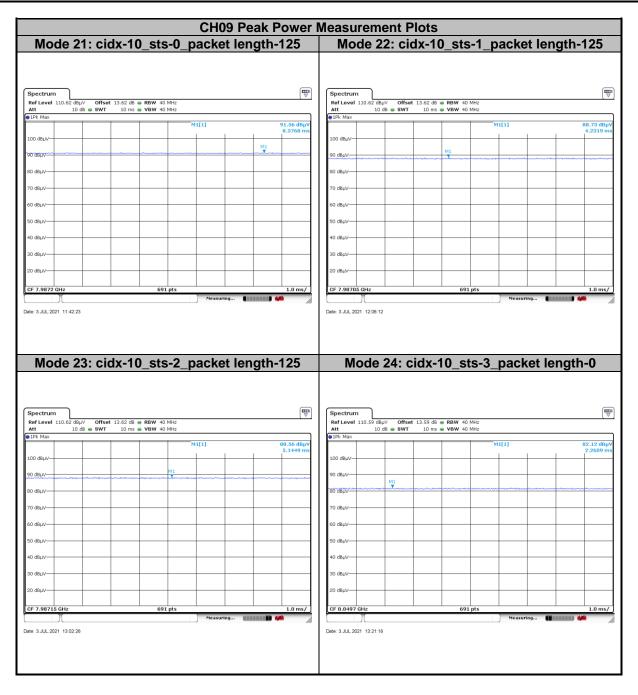
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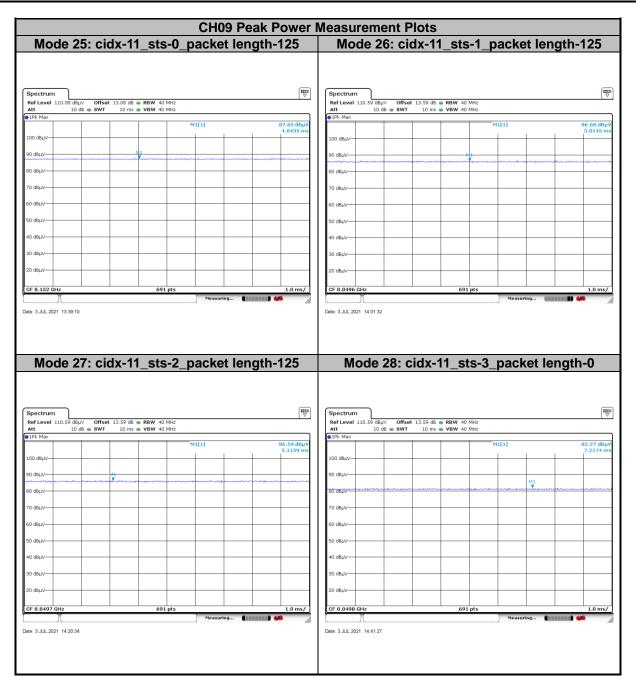
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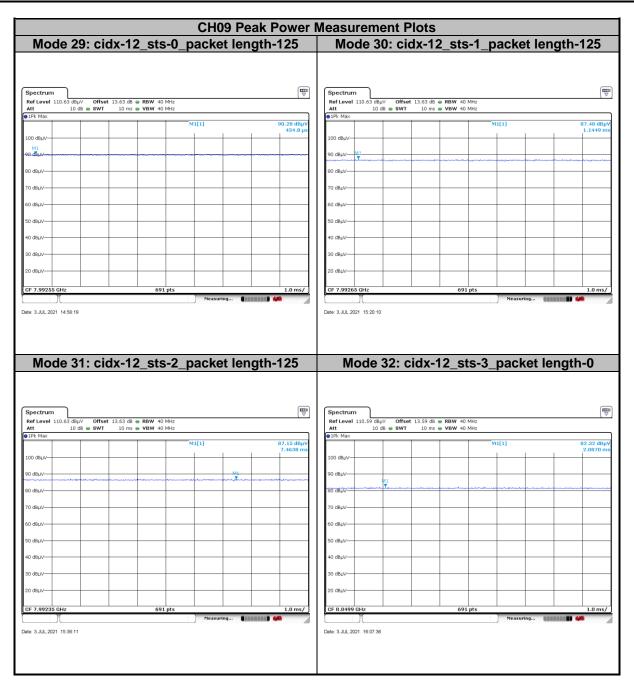
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3.5 Radiated Emissions

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					

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- 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							

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

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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

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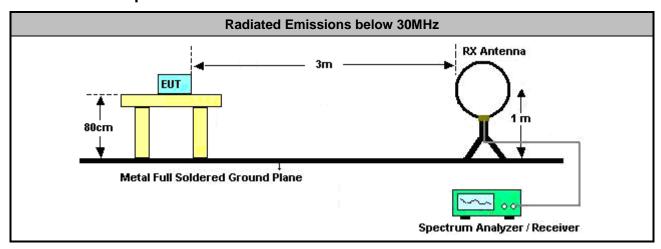
- Radiated Emissions above 960MHz
 - Refer as ANSI C63.10, clause 10.3.1 for radiated measurement procedure testing.
 - Refer as ANSI C63.10, clause 10.3.2 for measurement distance is 3m. In some cases, it may be necessary to measure the radiated UWB emissions at a closer distance to obtain enough signal 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

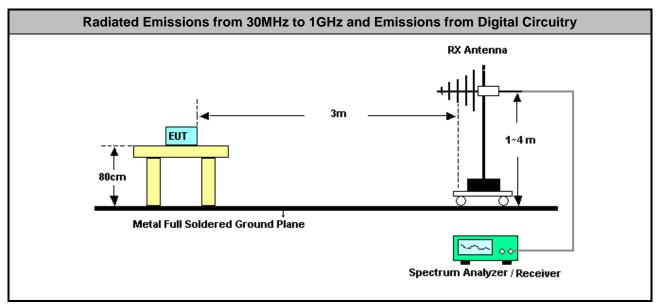
- Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated 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.

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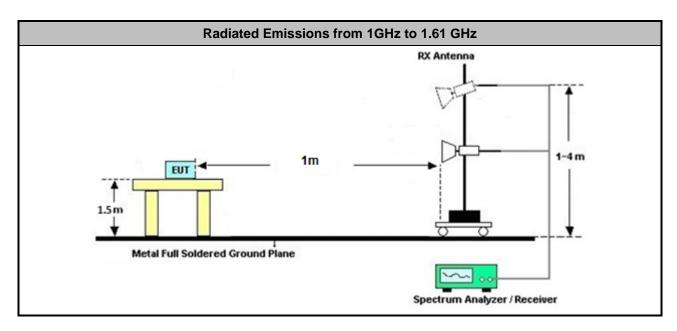
3.5.4 Test Setup

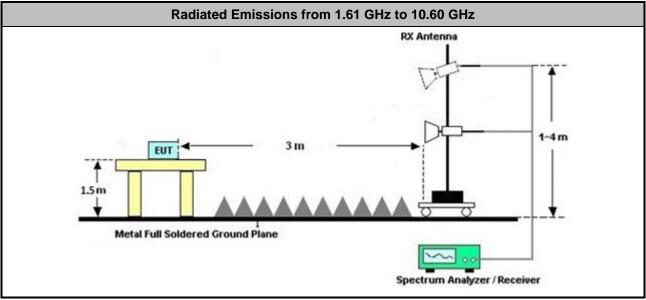


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Radiated Emissions from 10.60 GHz to 18GHz

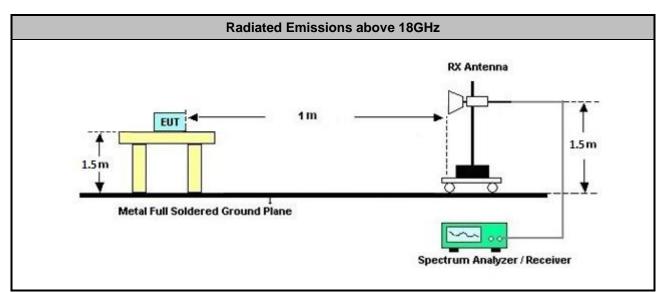
RX Antenna

O.5m

Metal Full Soldered Ground Plane

Spectrum Analyzer / Receiver

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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.

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3.5.6 Radiated Emissions (Fundamental)

Test	Frequency	Emission Level	Emission Limit	Emission Limit	Margin	_	Pol
mode	(MHz)	(dBuV/m)	(dBm/MHz)	(dBuV/m)	(dB)	Result	[H/V]
1	6484	52.56	-41.3	53.93	-1.37	Pass	Н
2	6520	53.46	-41.3	53.93	-0.47	Pass	Н
3	6489	53.10	-41.3	53.93	-0.83	Pass	Н
4	6493	53.22	-41.3	53.93	-0.71	Pass	Н
5	6491	52.48	-41.3	53.93	-1.45	Pass	Н
6	6492	53.35	-41.3	53.93	-0.58	Pass	Н
7	6490	52.39	-41.3	53.93	-1.54	Pass	Н
8	6503	51.56	-41.3	53.93	-2.37	Pass	Н
9	6521	53.14	-41.3	53.93	-0.79	Pass	Н
10	6509	53.27	-41.3	53.93	-0.66	Pass	Н
11	6499	53.45	-41.3	53.93	-0.48	Pass	Н
12	6493	53.25	-41.3	53.93	-0.68	Pass	Н
13	6505	53.18	-41.3	53.93	-0.75	Pass	Н
14	6521	53.45	-41.3	53.93	-0.48	Pass	Н
15	6489	53.53	-41.3	53.93	-0.40	Pass	Н
16	6480	53.14	-41.3	53.93	-0.79	Pass	Н
17	8046	53.74	-41.3	53.93	-0.19	Pass	Н
18	8058	53.78	-41.3	53.93	-0.15	Pass	Н
19	8046	53.13	-41.3	53.93	-0.80	Pass	Н
20	8049	53.49	-41.3	53.93	-0.44	Pass	Н
21	8054	53.50	-41.3	53.93	-0.43	Pass	Н
22	8042	53.12	-41.3	53.93	-0.81	Pass	Н
23	8054	53.23	-41.3	53.93	-0.70	Pass	Н
24	8042	53.56	-41.3	53.93	-0.37	Pass	Н
25	8040	53.52	-41.3	53.93	-0.41	Pass	Н
26	8059	53.23	-41.3	53.93	-0.70	Pass	Н
27	8056	53.29	-41.3	53.93	-0.64	Pass	Н
28	8050	53.52	-41.3	53.93	-0.41	Pass	Н
29	8056	53.50	-41.3	53.93	-0.43	Pass	Н
30	8048	53.11	-41.3	53.93	-0.82	Pass	Н
31	8049	53.19	-41.3	53.93	-0.74	Pass	Н
32	8050	53.42	-41.3	53.93	-0.51	Pass	Н

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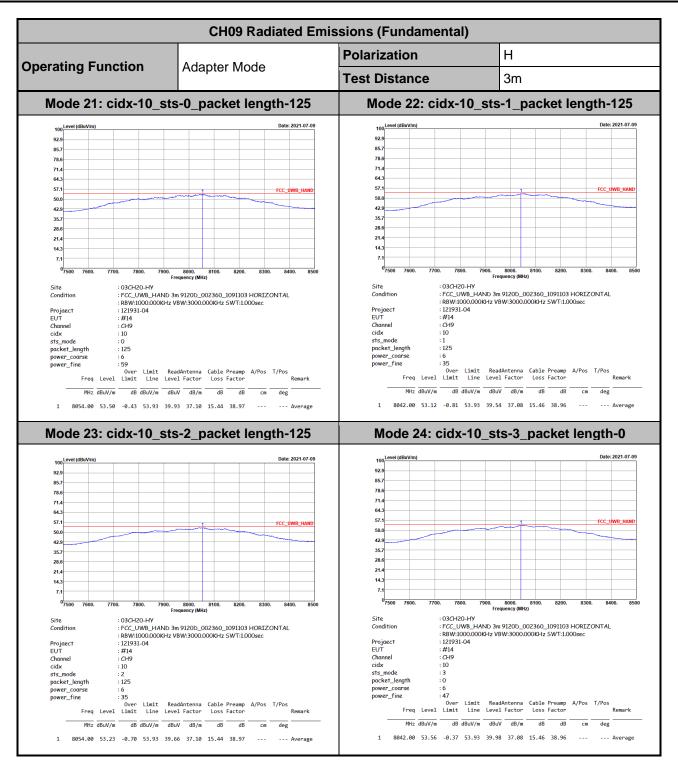
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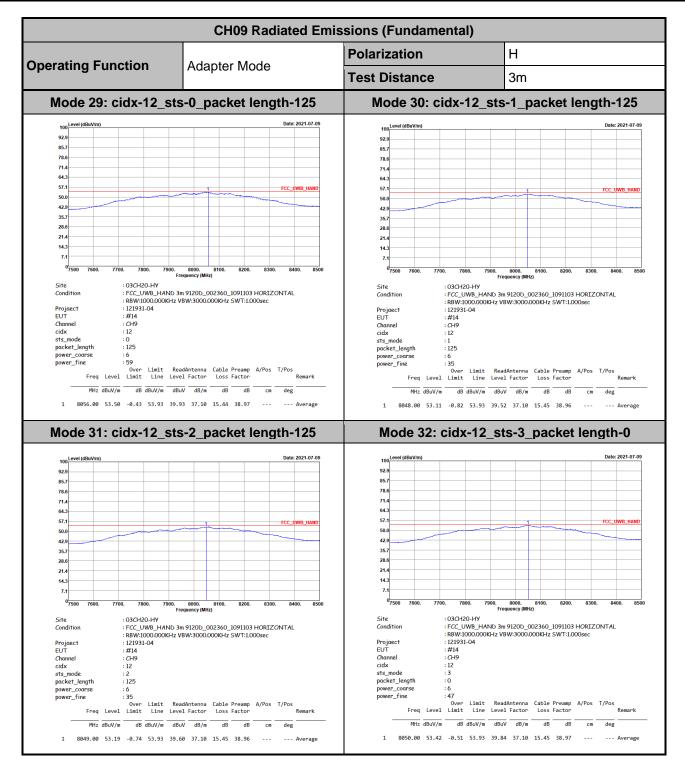
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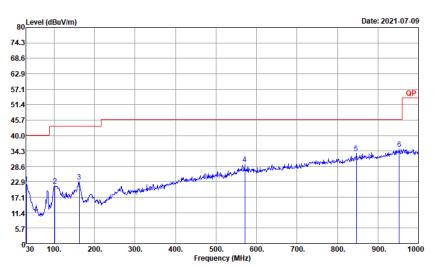


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3.5.7 Radiated Emissions (30MHz - 1GHz)

CH05 Radiated Emissions (30MHz – 1GHz)								
Test Mode	Mode 4: cidx-9_sts-3_packet length-0	Polarization	Н					
Operating Function	Adapter Mode	Test Distance	3m					

Report No.: FR121931-04J



Site : 03CH20-HY

Condition : QP 3m LF_55606&08_1091022 HORIZONTAL

: 121931-04 Projaect : #14 **EUT** : CH5 Channel cidx : 9 sts_mode : 3 packet_length : 0 :9 power_coarse power_fine : 63

			0ver	Limit	ReadA	ntenna	Cable	Preamp	A/Pos	T/Pos	
	Freq	Level	Limit	Line	Level	Factor	Loss	Factor			Remark
-	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.97	22.09	-17.91	40.00	32.71	24.13	0.96	35.72			Peak
2	101.78	21.44	-22.06	43.50	39.01	16.33	1.68	35.65			Peak
3	161.92	22.90	-20.60	43.50	39.82	16.41	2.13	35.54			Peak
4	571.26	29.38	-16.62	46.00	33.46	26.22	4.06	34.50			Peak
5	846.74	33.46	-12.54	46.00	32.79	28.95	4.96	33.54			Peak
6	952.47	34.92	-11.08	46.00	31.58	30.86	5.24	33.14	100	0	Peak

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

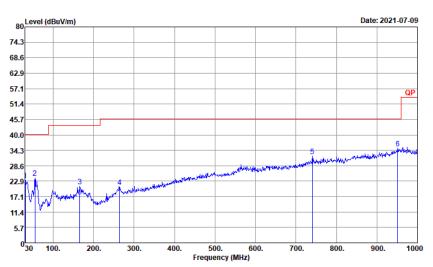
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

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

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CH05 Radiated Emissions (30MHz – 1GHz)								
Test Mode	Mode 4: cidx-9_sts-3_packet length-0	Polarization	V					
Operating Function	Adapter Mode	Test Distance	3m					



Site : 03CH20-HY

Condition : QP 3m LF_55606&08_1091022 VERTICAL
Projaect : 121931-04

951.50 35.05 -10.95 46.00 31.76 30.81

 Projaect
 : 12193

 EUT
 : #14

 Channel
 : CH5

 cidx
 : 9

 sts_mode
 : 3

 packet_length
 : 0

 power_coarse
 : 9

 power_fine
 : 63

	Freq	Level		Limit Line					-	1/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.97	23.10	-16.90	40.00	33.72	24.13	0.96	35.72			Peak
2	55.22	24.10	-15.90	40.00	45.86	12.70	1.22	35.71			Peak
3	165.80	20.95	-22.55	43.50	38.34	15.92	2.16	35.54			Peak
4	263.77	20.74	-25.26	46.00	33.09	20.15	2.75	35.33			Peak
5	741 01	32 11	-13 89	46 99	33 16	28 07	4 63	33 92	100	a	Peak

5.24 33.14

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

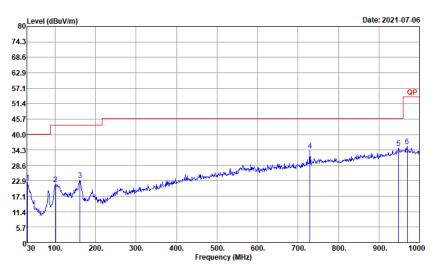
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

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

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CH09: Radiated Emissions (30MHz – 1GHz)								
Test Mode	Mode 17: cidx-9_sts-0_packet length-125	Polarization	Н					
Operating Function	Adapter Mode	Test Distance	3m					



 Site
 : 03CH20-HY

 Condition
 : QP 3m LF_55606&08_1091022 HORIZONTAL

Projaect : 121931-04
EUT : #14
Channel : CH9
cidx : 9
sts_mode : 0

packet_length : 125 power_coarse : 6 power_fine : 63

1 2 3

	Freq	Level		Limit Line						T/Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg		-
L	31.94	22.31	-17.69	40.00	33.54	23.51	0.97	35.72			Peak	
2	100.81	21.64	-21.86	43.50	39.29	16.25	1.68	35.65			Peak	
3	160.95	23.14	-20.36	43.50	39.99	16.49	2.13	35.55			Peak	
1	729.37	34.13	-11.87	46.00	35.65	27.68	4.60	33.96			Peak	
5	948.59	35.05	-10.95	46.00	31.93	30.67	5.23	33.16	100	0	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.)

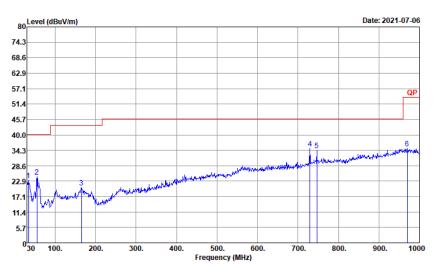
969.93 35.55 -18.45 54.00 31.88 31.05

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

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

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CH09 Radiated Emissions (30MHz – 1GHz)								
Test Mode	Mode 17: cidx-9_sts-0_packet length-125	Polarization	V					
Operating Function	Adapter Mode	Test Distance	3m					



Site : 03CH20-HY

Condition : QP 3m LF_55606&08_1091022 VERTICAL
Projaect : 121931-04

969.93 34.93 -19.07 54.00 31.26 31.05

 Projaect
 : 12193

 EUT
 : #14

 Channel
 : CH9

 cidx
 : 9

 sts_mode
 : 0

 packet_length
 : 125

 power_coarse
 : 6

 power_fine
 : 63

	Freq	Level		Limit Line					-	T/Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg		
1	33.88	23.20	-16.80	40.00	35.31	22.59	1.00	35.72			Peak	
2	55.22	24.53	-15.47	40.00	46.29	12.70	1.22	35.71			Peak	
3	164.83	20.41	-23.09	43.50	37.78	15.94	2.15	35.54			Peak	
4	729.37	34.98	-11.02	46.00	36.50	27.68	4.60	33.96	100	0	Peak	
5	746.83	34.21	-11.79	46 99	35 20	28 09	4 64	33 90			Peak	

5.30 33.07

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.

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3.5.8 Radiated Emissions (960MHz - 18GHz)

CH05 Radiated Emissions (960MHz – 18GHz)						
Test Mode	Mode 4: cidx-9_sts-3_packet length-0	Polarization	Н			
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.					

Report No.: FR121931-04J



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=100kHz; VBW=300kHz.

Note 6: #5 is fundamental signal.

Note 7:

Distance extrapolation factor = 20 log (test distance [X m]/specific distance [3 m]) (dB)
 Example: Distance extrapolation factor = 20log (0.5m/3m) = -15.56 (dB)

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

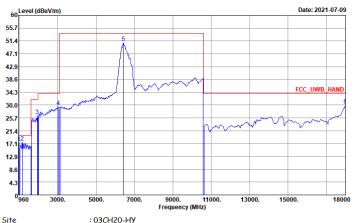
(Note: Aux Factor = Distance extrapolation factor)

Example: Corrected Reading: 30.92 (dB/m) + 5.32 (dB) + 29.64 (dBuV) - 33.05 (dB) +

(-15.56) (dB) = 17.27 (dBuV/m)

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CH 05 Radiated Emissions (960MHz – 18GHz)							
Test Mode	Mode 4: cidx-9_sts-3_packet length-0	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.						



Condition : FCC_UWB_HAND 3m 9120D_002360_1091103 VERTICAL Projaect FUT : #14 Channel : CH5 sts_mode : 3 packet_length : 0 power_coarse . power_fine : 63 AVG Type : RMS : Max Hold Trace

	Freq	Level	Limit	Line	Level	Factor	Loss	Factor			Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	dB
1	973.76	17.32	-2.61	19.93	29.66	30.96	5.31	33.05			-15.56
2	1159.82	17.61	-2.32	19.93	31.08	25.88	5.82	35.63	100	83	-9.54
3	1951.24	26.45	-5.48	31.93	29.03	25.91	7.55	36.04			0.00
4	3035.62	29.42	-4.51	33.93	26.43	29.57	9.52	36.10			0.00
5	6430.00	50.76	-3.17	53.93	40.08	34.56	14.00	37.88			0.00
6	17992.60	29.88	-4.05	33.93	24.63	42.24	23.89	45.32			-15.56

Limit ReadAntenna Cable Preamp A/Pos T/Pos

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=100kHz; VBW=300kHz.

Note 6: #5 is fundamental signal.

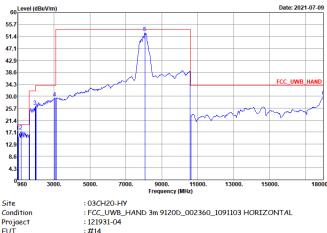
Note 7:

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

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CH09 Radiated Emissions (960MHz – 18GHz)							
Test Mode	Mode 17: cidx-9_sts-0_packet length-125	Polarization	Н				
Operating Function	Adapter Mode	Adapter Mode					
Test Distance	The test distance between the receiving ar 3m for 1.61 GHz ~ 10.60 GHz frequency r 0.5 m for other frequency ranges.						



Projaect EUT Channel : CH9 : 9 : 0 cidx sts mode packet_length : 125 power_coarse power_fine : 6 : RMS AVG Type : Max Hold Limit ReadAntenna Cable Preamp A/Pos T/Pos

	Freq	Level	Limit	Line	Level	Factor	Loss	Factor			Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB .	cm	deg	dB
1	979.48	17.41	-2.52	19.93	29.88	30.79	5.33	33.03			-15.56
2	1159.82	17.57	-2.36	19.93	31.04	25.88	5.82	35.63			-9.54
3	1950.48	26.40	-5.53	31.93	28.99	25.90	7.55	36.04			0.00
4	3025.63	29.37	-4.56	33.93	26.40	29.55	9.50	36.08			0.00
5	8065.00	52.87	-1.06	53.93	39.33	37.10	15.42	38.98	108	85	0.00
6	18000.00	29.84	-4.09	33.93	24.54	42.30	23.89	45.33			-15.56

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=100kHz; VBW=300kHz.

Note 6: #5 is fundamental signal.

Note 7:

Distance extrapolation factor = 20 log (test distance [X m]/specific distance [3 m]) (dB) **Example:** Distance extrapolation factor = $20\log (0.5\text{m/3m}) = -15.56 \text{ (dB)}$

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

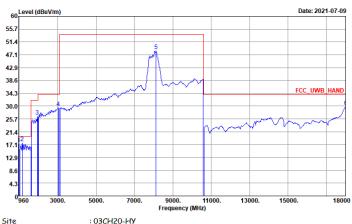
(Note: Aux Factor = Distance extrapolation factor)

Example: Corrected Reading: 30.79 (dB/m) + 5.33 (dB) + 29.88 (dBuV) - 33.03 (dB) +

(-15.56) (dB) = 17.41 (dBuV/m)

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CH09 Radiated Emissions (960MHz – 18GHz)						
Test Mode	Mode 17: cidx-9_sts-0_packet length-125	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.					



Condition : FCC_UWB_HAND 3m 9120D_002360_1091103 VERTICAL Projaect FUT : #14 Channel : CH9 sts_mode : 0 packet_length : 125 power_coarse . power_fine : 63 AVG Type : RMS : Max Hold

	_			Limit						T/Pos	
	Freq	Level	Limit	Line	Level	Factor	Loss	Factor			Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	dB
1	980.88	17.35	-2.58	19.93	29.88	30.73	5.33	33.03			-15.56
2	1156.77	17.68	-2.25	19.93	31.15	25.89	5.81	35.63	100	253	-9.54
3	1951.24	26.49	-5.44	31.93	29.07	25.91	7.55	36.04			0.00
4	3040.06	29.42	-4.51	33.93	26.41	29.58	9.53	36.10			0.00
5	8132.50	48.55	-5.38	53.93	35.35	36.97	15.29	39.06			0.00
6	18000.00	29.72	-4.21	33.93	24.42	42.30	23.89	45.33			-15.56

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=100kHz; VBW=300kHz.

Note 6: #5 is fundamental signal.

Note 7:

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

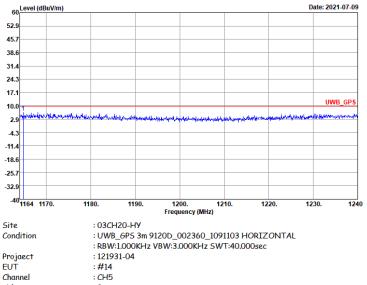
 Corrected Reading: Antenna Factor (dB/m) + Cable Loss (dB) + Read Level (dBuV) - Preamp Factor (dB) + Aux Factor (dB) = Level (dBuV/m) (Note: Aux Factor = Distance extrapolation factor)

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3.5.9 Radiated Emissions (1164MHz - 1240MHz)

CH05 Radiated Emissions (1164MHz – 1240MHz)						
Test Mode Mode 4: cidx-9_sts-3_packet length-0 Polarization H						
Operating Function	Adapter Mode	Test Distance	3m			

Report No.: FR121931-04J



| CHS | CHS

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.)

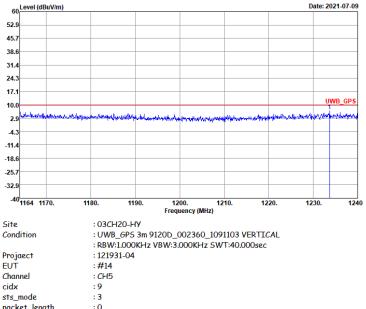
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: E (dBuV/m) = EIRP (dBm) + 95.2. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.

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CH05 Radiated Emissions (1164MHz – 1240MHz)						
Test Mode	Mode 4: cidx-9_sts-3_packet length-0	Polarization	V			
Operating Function	Adapter Mode	Test Distance	3m			



EUT :#14
Channel : CH5
cidx :9
sts_mode :3
packet_length :0
power_coarse :9
power_fine :63
AV6 Type :RMS
Trace :Max Hold

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.)

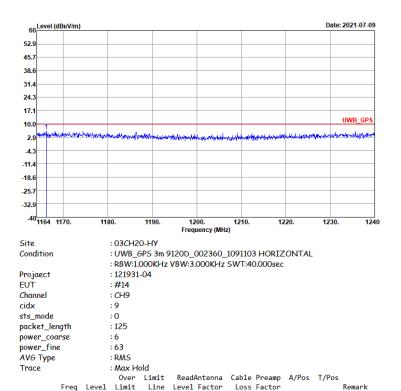
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: E (dBuv/m) = EIRP (dBm) + 95.2. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.

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CH09 Radiated Emissions (1164MHz – 1240MHz)						
Test Mode	Mode 17: cidx-9_sts-0_packet length-125	Polarization	Н			
Operating Function	Adapter Mode	Test Distance	3m			



Loss Factor

dB

dB

cm deg

108

85 Average

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

dB dBuV/m dBuV dB/m

1166.20 6.16 -3.77 9.93 10.10 25.87 5.83 35.64

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

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

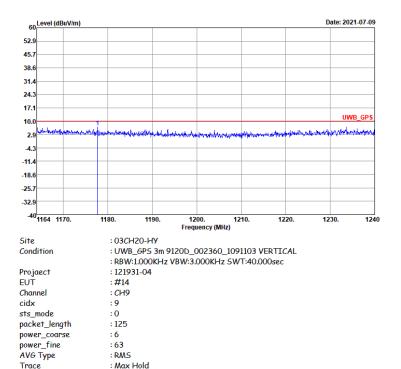
MHz dBuV/m

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

Note 5: E (dBuv/m) = EIRP (dBm) + 95.2. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.

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CH09 Radiated Emissions (1164MHz – 1240MHz)							
Test Mode	Test Mode Mode 17: cidx-9_sts-0_packet length-125 Polarization V						
Operating Function	Adapter Mode	Test Distance	3m				



ReadAntenna Cable Preamp A/Pos T/Pos

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.

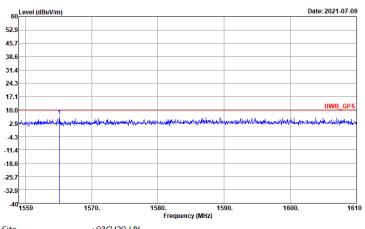
Note 5: E (dBuv/m) = EIRP (dBm) + 95.2. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.

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3.5.10 Radiated Emissions (1559MHz - 1610MHz)

CH05 Radiated Emissions (1559MHz – 1610MHz)						
Test Mode Mode 4: cidx-9_sts-3_packet length-0 Polarization H						
Operating Function	Adapter Mode	Test Distance	3m			

Report No.: FR121931-04J



 Site
 : 03CH20-HY

 Condition
 : UWB_6PS 3m 9120D_002360_1091103 HORIZONTAL

 : RBW:1.000KHz VBW:3.000KHz SWT:40.000sec

 Projacct
 : 121931-04

EUT : #14 Channel : CH5 : 9 cidx sts_mode : 3 packet_length :0 power_coarse :9 : 63 power_fine AVG Type : RM5 Trace : Max Hold

 Freq
 Level Limit Limit Lime
 ReadAntenna Level Factor Loss Factor
 Cable Preamp Loss Factor
 A/Pos Remark

 MHz
 dBuV/m
 dB dBuV/m
 dBuV dB/m
 dB dB dB
 cm
 deg

 1565.17
 6.42
 -3.51
 9.93
 10.18
 25.27
 6.76
 35.79
 100
 54 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.)

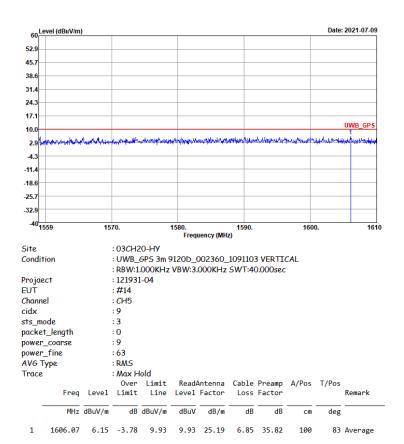
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: E (dBuv/m) = EIRP (dBm) + 95.2. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.

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CH05 Radiated Emissions (1559MHz – 1610MHz)					
Test Mode	Mode 4: cidx-9_sts-3_packet length-0	Polarization	V		
Operating Function	Adapter Mode	Test Distance	3m		



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.)

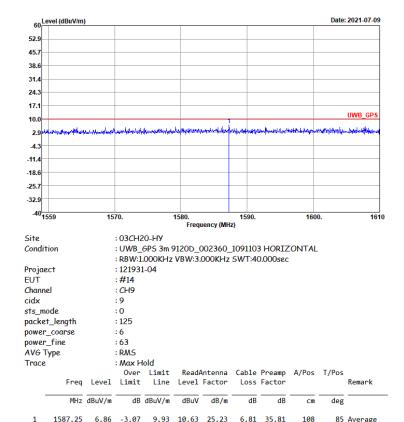
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: E (dBuv/m) = EIRP (dBm) + 95.2. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.

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CH09 Radiated Emissions (1559MHz – 1610MHz)					
Test Mode	Mode 17: cidx-9_sts-0_packet length-125	Polarization	Н		
Operating Function	Adapter Mode	Test Distance	3m		



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.)

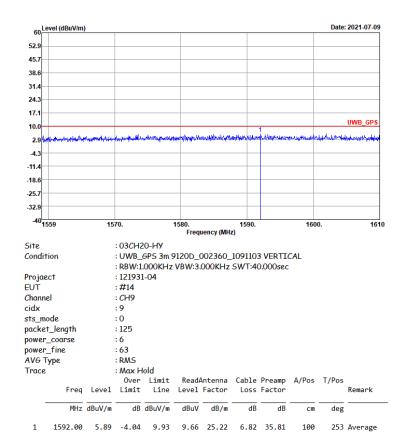
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: E (dBuv/m) = EIRP (dBm) + 95.2. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.

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CH09 Radiated Emissions (1559MHz – 1610MHz)					
Test Mode	Polarization	V			
Operating Function	Adapter Mode	Test Distance	3m		



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.

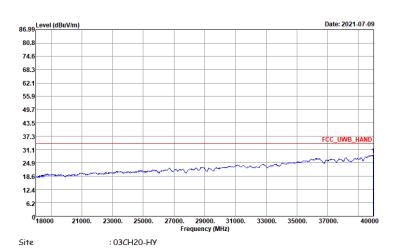
Note 5: E (dBuv/m) = EIRP (dBm) + 95.2. E(dBuV/m) = -85.3 + 95.23 = 9.93dBuV/m.

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3.5.11 Radiated Emissions (18GHz - 40GHz)

CH05 Radiated Emissions (18GHz – 40GHz)					
Test Mode	Mode 4: cidx-9_sts-3_packet length-0	Polarization	Н		
Operating Function	Adapter Mode	Test Distance	0.5m		

Report No.: FR121931-04J



Condition : FCC_UWB_HAND 1m SHF_00991_210512 HORIZONTAL : 121931-04 Projaect EUŤ : #14 Channel : *C*H5 : 9 cidx sts_mode : 3 packet_length :0 power_coarse : 9 power_fine :63 AVG Type : RMS : Max Hold Trace

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.

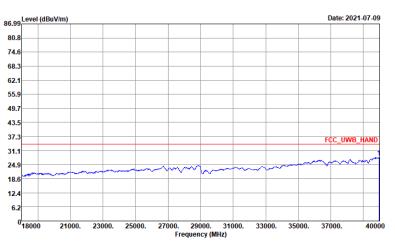
Note 5:

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

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CH05 Radiated Emissions (18GHz – 40GHz)					
Test Mode	Polarization	V			
Operating Function	Adapter Mode	Test Distance	0.5m		



Site : 03CH20-HY

Condition : FCC_UWB_HAND 1m SHF_00991_210512 VERTICAL
Project : 121931-04

Projaect EUT : #14 Channel : CH5 : 9 cidx sts_mode : 3 packet_length :0 : 9 power_coarse power_fine :63 AVG Type : RMS Trace : Max Hold

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.

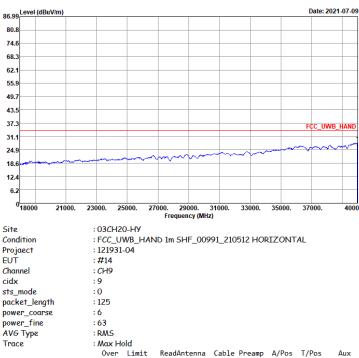
Note 5:

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

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CH09 Radiated Emissions (18GHz – 40GHz)					
Test Mode	Polarization	Н			
Operating Function	Adapter Mode	Test Distance	0.5m		



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.

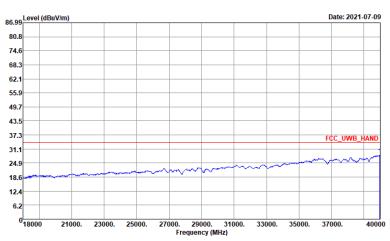
Note 5:

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

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CH09 Radiated Emissions (18GHz – 40GHz)					
Test Mode	Polarization	V			
Operating Function	Adapter Mode	Test Distance	0.5m		



Site : 03CH20-HY

Condition : FCC_UWB_HAND 1m SHF_00991_210512 VERTICAL

: 121931-04 Projaect EUŤ Channel : CH9 cidx : 9 sts_mode : 0 packet_length : 125 power_coarse : 6 power_fine AVG Type : 63 : RMS : Max Hold Trace

Over Limit ReadAntenna Cable Preamp A/Pos T/Pos Aux
Freq Level Limit Line Level Factor Loss Factor Factor

MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg dB

1 39967.00 28.35 -5.58 33.93 46.64 44.29 8.81 55.83 --- --- -15.56

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 (test distance [X m]/specific distance [3 m]) (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)

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4 Test Equipment and Calibration Data

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	Jul. 15, 2021	N/A	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 04, 2021	Jul. 15, 2021	Jan. 03, 2022	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Jul. 15, 2021	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Jul. 15, 2021	N/A	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 23, 2020	Jul. 15, 2021	Oct. 22, 2021	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz-30MHz	Mar. 11, 2021	Jul. 15, 2021	Mar. 10, 2022	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	30M-18G	Mar. 11, 2021	Jul. 15, 2021	Mar. 10, 2022	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz-40GHz	Mar. 11, 2021	Jul. 15, 2021	Mar. 10, 2022	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY4274/2	30MHz-40GHz	Mar. 11, 2021	Jul. 15, 2021	Mar. 10, 2022	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTN-303B	TP200880	QA-3-031	Oct. 22, 2020	Jul. 15, 2021	Oct. 21, 2021	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTN-303B	TP140325	N/A	Nov. 18, 2020	Jul. 15, 2021	Nov. 17, 2021	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 23, 2020	Jun. 29, 2021 ~ Jul. 09, 2021	Oct. 22, 2021	Radiation (03CH20-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV30	103738	9kHz~30GHz	May 19, 2021	Jun. 29, 2021 ~ Jul. 09, 2021	May 18, 2022	Radiation (03CH20-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 04 , 2021	Jun. 29, 2021 ~ Jul. 09, 2021	Jan. 03 , 2022	Radiation (03CH20-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802 N1D01N-06	55606 & 08	30MHz~1GHz	Oct. 22, 2020	Jun. 29, 2021 ~ Jul. 09, 2021	Oct. 21, 2021	Radiation (03CH20-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	002360	1GHz-18GHz	Nov. 03, 2020	Jun. 29, 2021 ~ Jul. 09, 2021	Nov. 02, 2021	Radiation (03CH20-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA9170	00993	18GHz-40GHz	Nov. 19, 2020	Jun. 29, 2021 ~ Jul. 09, 2021	Nov. 18, 2021	Radiation (03CH20-HY)
Preamplifier	COM-POWER	PAM-103	18020201	1MHz-1000MHz	Jan. 04, 2021	Jun. 29, 2021 ~ Jul. 09, 2021	Jan. 03, 2022	Radiation (03CH20-HY)
Amplifier	EMCI	EMC118A45S E	980792	N/A	Nov. 16, 2020	Jun. 29, 2021 ~ Jul. 09, 2021	Nov. 15, 2021	Radiation (03CH20-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 11, 2020	Jun. 29, 2021 ~ Jul. 09, 2021	Dec. 10, 2021	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,804 015/2,804027 /2	N/A	Jan. 20, 2021	Jun. 29, 2021 ~ Jul. 09, 2021	Jan. 19, 2022	Radiation (03CH20-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Jun. 29, 2021 ~ Jul. 09, 2021	N/A	Radiation (03CH20-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Jun. 29, 2021 ~ Jul. 09, 2021	N/A	Radiation (03CH20-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Jun. 29, 2021 ~ Jul. 09, 2021	N/A	Radiation (03CH20-HY)
Hygrometer	TECPEL	DTM-303B	TP200728	N/A	Mar. 09, 2021	Jun. 29, 2021 ~ Jul. 09, 2021	Mar. 08, 2022	Radiation (03CH20-HY)
Software	Audix	E3 6.2009-8-24	RK-002156	N/A	N/A	Jun. 29, 2021 ~ Jul. 09, 2021	N/A	Radiation (03CH20-HY)
Spectrum Analyzer	R&S	FSV3044	101010	10Hz~44GHz	Nov. 25, 2020	Jun. 08, 2021	Nov. 24, 2021	Radiation (03CH20-HY)

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Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Jul. 02, 2021	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jul. 02, 2021	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBE CK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Nov. 02, 2020	Jul. 02, 2021	Nov. 01, 2021	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	N/A	Jul. 02, 2021	N/A	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Feb. 01, 2021	Jul. 02, 2021	Jan. 31, 2022	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 11, 2020	Jul. 02, 2021	Sep. 10, 2021	Conduction (CO07-HY)

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Appendix A. AC Conducted Emission Test Results

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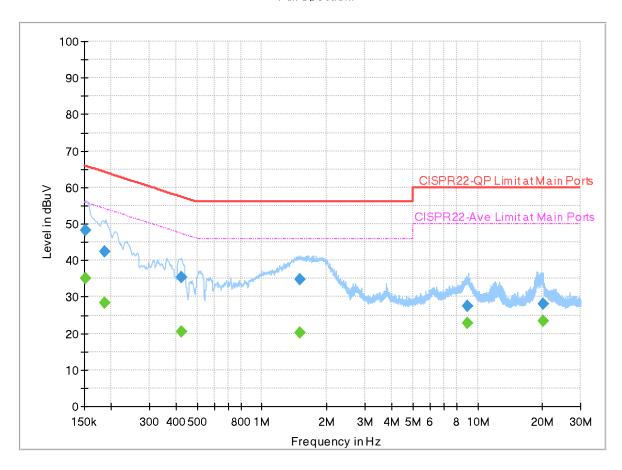
FAX: 886-3-327-0855

EUT Information

Report NO: 121931-04
Test Mode: Mode 1
Test Voltage: 120Vac/60Hz

Phase: Line

Full Spectrum



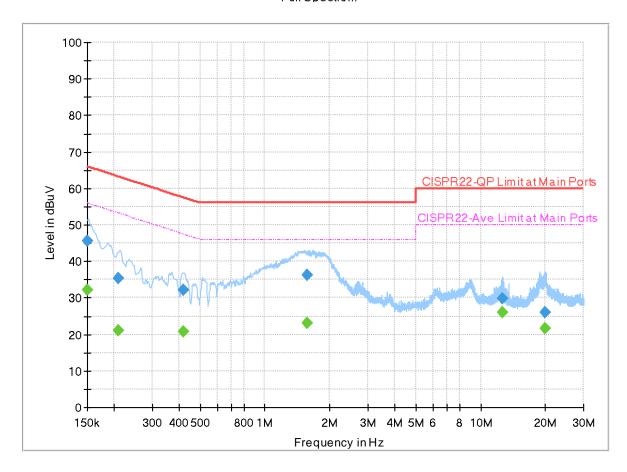
Final_Result

Frequency	QuasiPeak	CAverage	Limit	Margin	Line	Filter	Corr.
(MHz)	(dBuV)	(dBuV)	(dBuV)	(dB)			(dB)
0.151553		35.03	55.91	20.88	L1	OFF	20.0
0.151553	48.33		65.91	17.58	L1	OFF	20.0
0.185730		28.37	54.23	25.86	L1	OFF	20.0
0.185730	42.49		64.23	21.74	L1	OFF	20.0
0.421620		20.59	47.42	26.83	L1	OFF	20.0
0.421620	35.40		57.42	22.02	L1	OFF	20.0
1.507020		20.31	46.00	25.69	L1	OFF	20.0
1.507020	34.66		56.00	21.34	L1	OFF	20.0
8.945250		22.73	50.00	27.27	L1	OFF	20.1
8.945250	27.62		60.00	32.38	L1	OFF	20.1
20.028750		23.49	50.00	26.51	L1	OFF	20.2
20.028750	28.04		60.00	31.96	L1	OFF	20.2

EUT Information

Report NO: 121931-04
Test Mode: Mode 1
Test Voltage: 120Vac/60Hz
Phase: Neutral

Full Spectrum



Final_Result

Frequency	QuasiPeak	CAverage	Limit	Margin	Line	Filter	Corr.
(MHz)	(dBuV)	(dBuV)	(dBuV)	(dB)			(dB)
0.150540		32.16	55.97	23.81	N	OFF	20.0
0.150540	45.57		65.97	20.40	N	OFF	20.0
0.208500		20.97	53.27	32.30	N	OFF	20.0
0.208500	35.25		63.27	28.02	N	OFF	20.0
0.420450		20.83	47.44	26.61	N	OFF	20.0
0.420450	32.23		57.44	25.21	N	OFF	20.0
1.575330		22.98	46.00	23.02	N	OFF	20.0
1.575330	36.15		56.00	19.85	N	OFF	20.0
12.677010		26.09	50.00	23.91	N	OFF	20.2
12.677010	29.79		60.00	30.21	N	OFF	20.2
19.946760		21.50	50.00	28.50	N	OFF	20.3
19.946760	26.05		60.00	33.95	N	OFF	20.3