

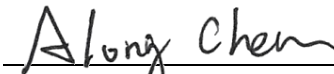
FCC Co-Location Test Report

FCC ID : YQMLLS090
Equipment : Focus Premium ; Focus Core
(Refer to item 1.1.1 for more details.)
Model No. : Focus Premium ; Focus Core
(Refer to item 1.1.1 for more details.)
Brand Name : FARO
Applicant : FARO Technologies, Inc.
Address : 250 Technology Park, Lake Mary, Florida,
United States, 32746
Standard : 47 CFR FCC Part 15.247
47 CFR FCC Part 15.407
47 CFR FCC Part 15.209
Received Date : Aug. 10, 2022
Tested Date : Aug. 17, 2022

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:

Approved by:


Along Chen / Assistant Manager


Gary Chang / Manager

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Release Record

Report No.	Version	Description	Issued Date
FR1D1602-02CO	Rev. 01	Initial issue	Sep. 27, 2022

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.247(d) 15.407(b) 15.209	Radiated Emissions	[dBuV/m at 3m]: 950.02MHz 44.50 (Margin -1.50dB) - QP	Pass

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.

1 General Description

1.1 Information

This is a Class II Permissive Change report (C2PC).

This report is issued as a supplementary report to original report no. FR1D1602CO. The modification is adding one model **Focus Core**. Differences between two models are listed in 1.1.1.

1.1.1 Product Details

The following models are provided to this EUT. (**New addition is marked in boldface.**)

Model Name	Product Name	Description
Focus Premium	Focus Premium	Two model names with same hardware, RF function and user's manual. The difference is listed as below: 1. Focus Premium - The scanner is designed to scan objects at distances between 0.5 meters and approximately 70, 150, or 350 meters, depending on your license. Focus Core - The scanner is designed to scan objects at distances between 0.5 meters and approximately 70 meters. 2. Focus Premium - "Status indicator" is accessory Focus Core - "Status indicator" is not accessory, user needs to buy it from FARO company.
Focus Core	Focus Core	

1.1.2 Specification of the Equipment under Test (EUT)

WLAN	
Operating Frequency	802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz, 5745 ~ 5825 MHz
Modulation Type	802.11b: DSSS (DBPSK/DQPSK/CCK) 802.11a/g/n/ac: OFDM (BPSK/QPSK/16QAM/64QAM/256QAM)
Bluetooth	
Operating Frequency	2402 MHz ~ 2480 MHz
Modulation Type	Bluetooth 5.0 LE: GFSK Bluetooth BR(1Mbps): GFSK Bluetooth EDR (2Mbps): $\pi/4$ -DQPSK Bluetooth EDR (3Mbps): 8-DPSK
NFC	
Operating Frequency	13.56 MHz
Modulation Type	NFC-ASK

1.1.3 Antenna Details

Wi-Fi antenna

Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)			
		2400~2483.5	5150~5250	5250~5350	5470~5850
Dipole	IPEX	2.55	4.66	4.66	4.66

Bluetooth antenna

Type	Connector	Gain (dBi)	Remark
Dipole	UFL	2.55	---

NFC Antenna

Type	Connector	Gain (dBi)	Remark
PCB integrated Antenna	---	---	---

1.1.4 Power Supply Type of Equipment under Test (EUT)

Supply Voltage	14.4Vdc from battery
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1.1.5 Test Sample Information

Serial Number of Test Sample	Radiated Emission: LLS092125034
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1.2 The Equipment List

Test Item	Radiated Emission Below 1GHz				
Test Site	966 chamber3 / (03CH03-WS)				
Tested Date	Aug. 17, 2022				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101657	Mar. 15, 2022	Mar. 14, 2023
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 08, 2021	Nov. 07, 2022
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Jun. 28, 2022	Jun. 27, 2023
Preamplifier	EMC	EMC02325	980187	Jul. 16, 2022	Jul. 15, 2023
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 05, 2021	Oct. 04, 2022
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Sep. 24, 2021	Sep. 23, 2022
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Sep. 24, 2021	Sep. 23, 2022
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Sep. 24, 2021	Sep. 23, 2022
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.3 Test Standards

47 CFR FCC Part 15.247
 47 CFR FCC Part 15.407
 47 CFR FCC Part 15.209
 ANSI C63.10-2013

1.4 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02
 FCC KDB 662911 D01 Multiple Transmitter Output v02r01
 FCC KDB 412172 D01 Determining ERP and EIRP v01r01
 FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

1.5 Deviation from Test Standard and Measurement Procedure

None

1.6 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Measurement Uncertainty	
Parameters	Uncertainty
Radiated emission \leq 1GHz	± 3.96 dB

2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	03CH03-WS
Address of Test Site	No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 333, Taiwan (R.O.C.)

- FCC Designation No.: TW0009
- FCC site registration No.: 207696
- ISED#: 10807C
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Test Mode
Radiated Emissions	Mode 1: 2.4G 11n HT20 CH06 + NFC Mode 2: 5G 11ac VHT20 CH64 + NFC Mode 3: BT EDR 8DPSK CH78 + NFC
NOTE 1: The selected channel is the maximum power channel of wireless mode.	

3 Transmitter Test Results

3.1 Unwanted Emissions into Restricted Frequency Bands

3.1.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions 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:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

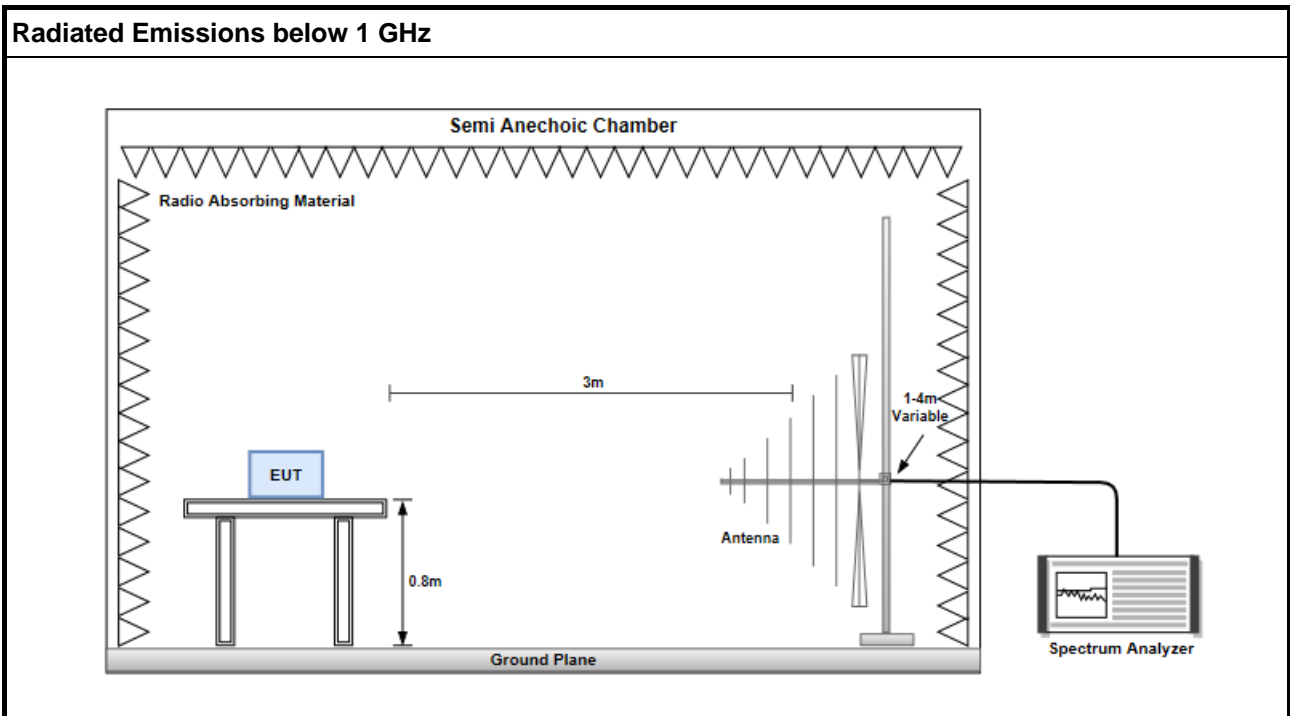
3.1.2 Test Procedures

1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m.
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

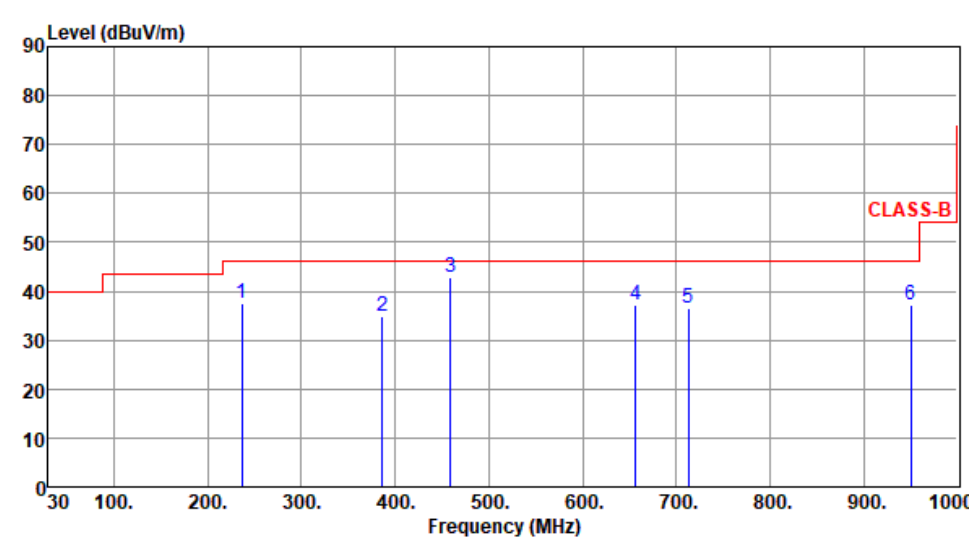
Note:

1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.

3.1.3 Test Setup



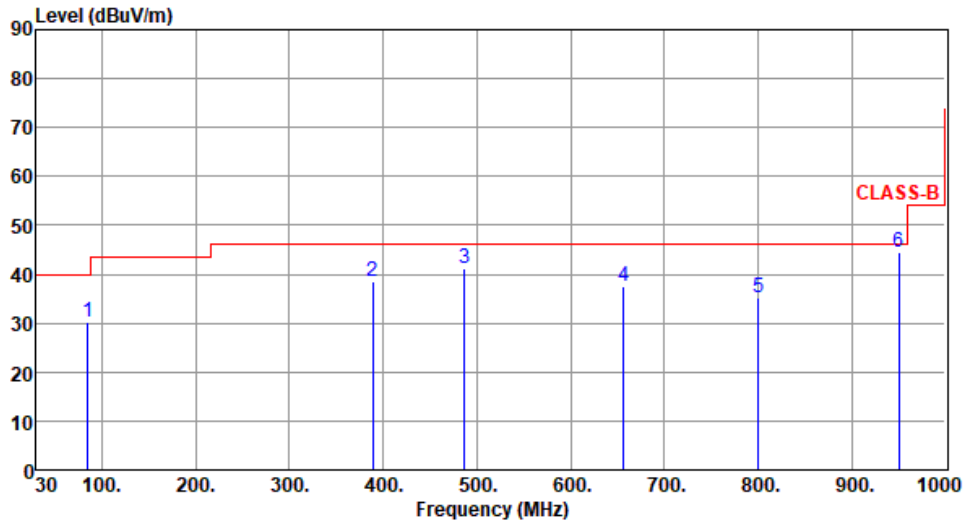
3.1.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Test Mode	Mode 1: 2.4G 11n HT20 CH06 + NFC										
Polarization	Horizontal										
Test By :Brad Wu			Temperature(°C):26			Humidity(%):63					
											
	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn		
	MHz	level	dBuV/m	dB	reading	dB/m		High	Table		
					dBuV			cm	deg		
1	236.61	37.58	46.00	-8.42	47.82	-10.24	Peak	---	---		
2	385.99	34.89	46.00	-11.11	40.38	-5.49	Peak	---	---		
3	458.74	42.75	46.00	-3.25	46.08	-3.33	Peak	---	---		
4	656.62	37.35	46.00	-8.65	36.55	0.80	Peak	---	---		
5	712.88	36.41	46.00	-9.59	34.55	1.86	Peak	---	---		
6	950.53	37.09	46.00	-8.91	30.79	6.30	Peak	---	---		

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Test Mode	Mode 1: 2.4G 11n HT20 CH06 + NFC
Polarization	Vertical

Test By :Brad Wu Temperature(°C):26 Humidity(%):63



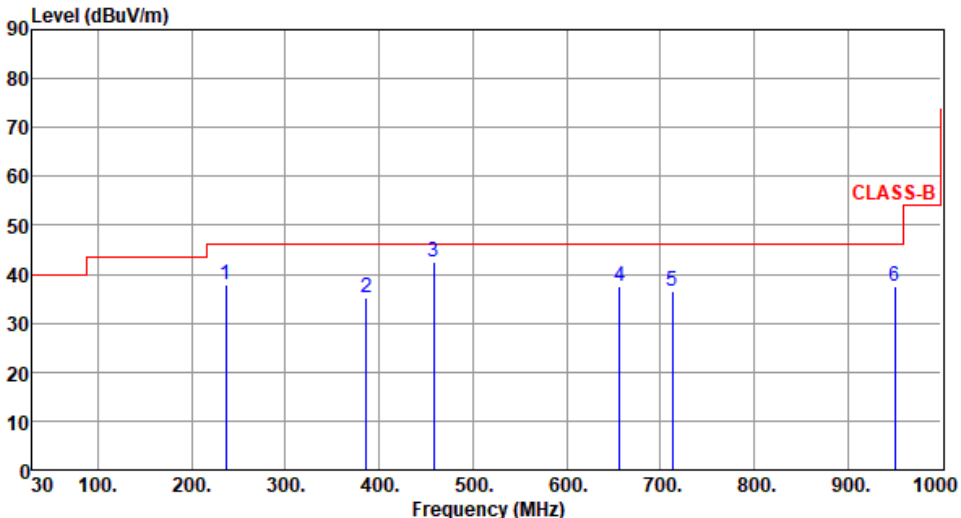
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	85.29	30.13	40.00	-9.87	44.68	-14.55	Peak	---	---
2	388.90	38.66	46.00	-7.34	44.07	-5.41	Peak	---	---
3	486.87	41.04	46.00	-4.96	43.98	-2.94	Peak	---	---
4	656.62	37.51	46.00	-8.49	36.71	0.80	Peak	---	---
5	800.18	35.22	46.00	-10.78	31.59	3.63	Peak	---	---
6	950.02	44.50	46.00	-1.50	38.20	6.30	QP	100	275

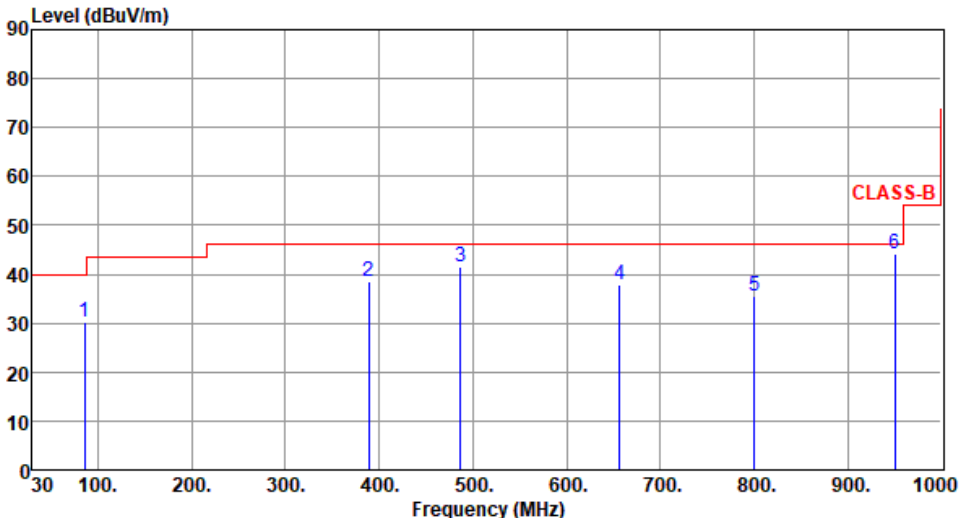
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

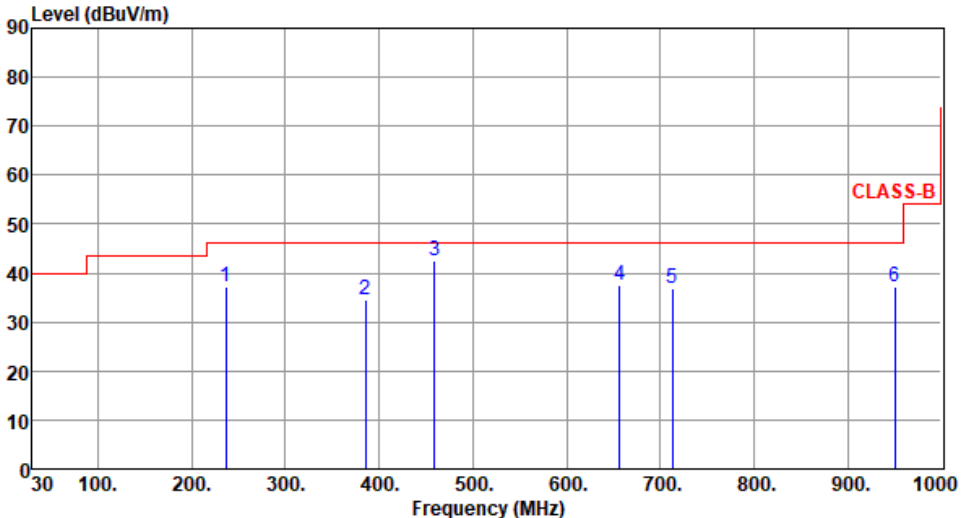
*Factor includes antenna factor , cable loss and amplifier gain

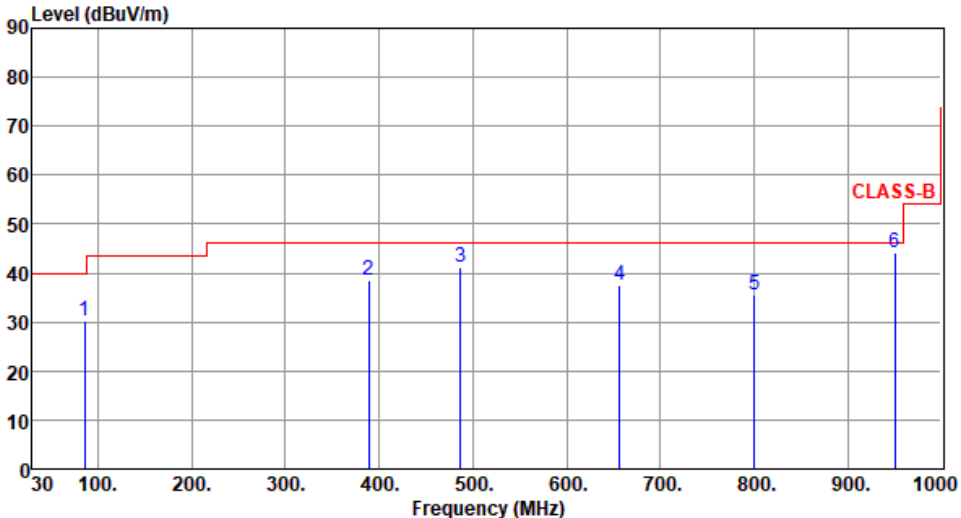
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Test Mode	Mode 2: 5G 11ac VHT20 CH64 + NFC									
Polarization	Horizontal									
Test By :Brad Wu			Temperature(°C):26			Humidity(%):63				
 <p>The graph displays the emission spectrum for Mode 2: 5G 11ac VHT20 CH64 + NFC. The y-axis represents Level (dBuV/m) from 0 to 90, and the x-axis represents Frequency (MHz) from 30 to 1000. A red line indicates the CLASS-B emission limit, which is constant at 46 dBuV/m from 100 MHz to 1000 MHz. Six peaks are identified and numbered 1 through 6, with their corresponding data listed in the table below.</p>										
	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn	
	MHz	level	dBuV/m	dB	reading	dB/m		High	Table	
		dBuV/m			dBuV			cm	deg	
1	236.41	37.86	46.00	-8.14	48.12	-10.26	Peak	---	---	
2	386.11	35.22	46.00	-10.78	40.71	-5.49	Peak	---	---	
3	458.25	42.45	46.00	-3.55	45.79	-3.34	Peak	---	---	
4	656.51	37.66	46.00	-8.34	36.86	0.80	Peak	---	---	
5	713.14	36.55	46.00	-9.45	34.69	1.86	Peak	---	---	
6	950.12	37.44	46.00	-8.56	31.14	6.30	Peak	---	---	
<p>Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m) *Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m). Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.</p>										

Test Mode	Mode 2: 5G 11ac VHT20 CH64 + NFC								
Polarization	Vertical								
Test By	:Brad Wu	Temperature(°C)	:26	Humidity(%)	:63				
									
	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
	MHz	level	dBuV/m	dB	reading	dB/m		High	Table
		dBuV/m			dBuV			cm	deg
1	85.42	30.25	40.00	-9.75	44.82	-14.57	Peak	---	---
2	388.56	38.44	46.00	-7.56	43.87	-5.43	Peak	---	---
3	486.52	41.39	46.00	-4.61	44.34	-2.95	Peak	---	---
4	656.43	37.86	46.00	-8.14	37.06	0.80	Peak	---	---
5	800.25	35.39	46.00	-10.61	31.76	3.63	Peak	---	---
6	950.06	44.24	46.00	-1.76	37.94	6.30	QP	100	265
<p>Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m) *Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m). Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.</p>									

Test Mode	Mode 3: BT EDR 8DPSK CH78 + NFC										
Polarization	Horizontal										
Test By :Brad Wu			Temperature(°C):26			Humidity(%):63					
 <p>The graph displays the emission spectrum for Mode 3: BT EDR 8DPSK CH78 + NFC. The y-axis represents Level (dBuV/m) from 0 to 90, and the x-axis represents Frequency (MHz) from 30 to 1000. A red line indicates the CLASS-B emission limit, which is constant at 46 dBuV/m from 100 MHz to 1000 MHz. Six peaks are identified and numbered 1 through 6, with their respective frequencies, emission levels, limits, margins, SA readings, and factors listed in the table below.</p>											
	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn		
	MHz	level	dBuV/m	dB	reading	dB/m		High	Table		
		dBuV/m			dBuV			cm	deg		
1	236.15	37.21	46.00	-8.79	47.49	-10.28	Peak	---	---		
2	385.81	34.69	46.00	-11.31	40.18	-5.49	Peak	---	---		
3	458.74	42.58	46.00	-3.42	45.91	-3.33	Peak	---	---		
4	656.59	37.48	46.00	-8.52	36.68	0.80	Peak	---	---		
5	712.59	36.82	46.00	-9.18	34.96	1.86	Peak	---	---		
6	950.21	37.25	46.00	-8.75	30.95	6.30	Peak	---	---		
<p>Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m) *Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m). Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.</p>											

Test Mode	Mode 3: BT EDR 8DPSK CH78 + NFC										
Polarization	Vertical										
Test By :Brad Wu			Temperature(°C):26			Humidity(%) :63					
											
	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn		
	MHz	level	dBuV/m	dB	reading	dB/m		High	Table		
		dBuV/m			dBuV			cm	deg		
1	85.41	30.26	40.00	-9.74	44.83	-14.57	Peak	---	---		
2	388.54	38.51	46.00	-7.49	43.94	-5.43	Peak	---	---		
3	486.62	41.27	46.00	-4.73	44.22	-2.95	Peak	---	---		
4	656.48	37.65	46.00	-8.35	36.85	0.80	Peak	---	---		
5	800.21	35.44	46.00	-10.56	31.81	3.63	Peak	---	---		
6	950.08	44.12	46.00	-1.88	37.82	6.30	QP	100	279		
<p>Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m) *Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m). Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.</p>											

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

Linkou

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Kwei Shan

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Kwei Shan Site II

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd
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