

# FCC Test Report

Product Name	PanaCast 50
Model No.	VSM020

Applicant	GN Audio A/S
Address	Lautrupbjerg 7, 2750 Ballerup, Denmark

Date of Receipt	Dec. 21, 2020
Issued Date	Feb. 17, 2021
Report No.	20C0767R-E3032110101
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

# Test Report

Issued Date: Feb. 17, 2021

Report No.: 20C0767R-E3032110101



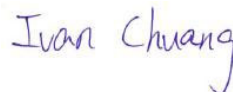
Product Name	PanaCast 50
Applicant	GN Audio A/S
Address	Lautrupbjerg 7, 2750 Ballerup, Denmark
Manufacturer	GN Audio A/S
Model No.	VSM020
FCC ID.	BCE-VSM020
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 120V, 60Hz
Trade Name	Jabra
Applicable Standard	FCC CFR Title 47 Part 15 Subpart B ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By :



( Adm. Specialist / Ida Tung )

Tested By :



( Senior Engineer / Ivan Chuang )

Approved By :



( Director/ Vincent Lin )

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## Revision History

<b>Report No.</b>	<b>Version</b>	<b>Description</b>	<b>Issued Date</b>
20C0767R-E3032110101	V1.0	Initial issue of report.	Feb. 17, 2021

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	PanaCast 50
Trade Name	Jabra
Model No.	VSM020
FCC ID.	BCE-VSM020
Frequency Range	802.11b/g/n-20MHz: 2412-2462MHz, 802.11n40: 2422-2452MHz 802.11a/n-20MHz: 5180-5320MHz, 5500-5720MHz, 5745-5825MHz 802.11n-40MHz: 5190-5310, 5510-5710MHz, 5755-5795MHz 802.11ac-80MHz: 5210-5290MHz, 5530-5690MHz, 5775MHz Bluetooth: 2402 – 2480MHz
Number of Channels	802.11b/g/n-20MHz: 11, 802.11n40: 7CH 802.11a/n-20MHz: 25; 802.11n-40MHz: 12, 802.11ac-80MHz: 6 Bluetooth: V2.1+EDR: 79CH, V5.0: 40CH
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 72.2Mbps 802.11a: 6-54Mbps, 802.11n: up to 150Mbps, 802.11ac-80MHz: up to 433.3Mbps Bluetooth: 1-3Mbps
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11a/g/n/ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) Bluetooth: V2.1+EDR: GFSK(1Mbps) / $\pi$ /4DQPSK(2Mbps) / 8DPSK(3Mbps), V5.0: GFSK(1Mbps,2Mbps)
Antenna Type	PIFA Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
USB Cable	MFR: GN Audio A/S, M/N: Type C cable Shielded, 2m
Power Adapter	MFR: Wang Huei, M/N: WH-231 Input: AC 100-240V~1.5A, 50-60Hz Output: 12.0V $\overline{\text{---}}$ 5.0A, 60W Cable Out: Non-shielded, 2m Power Cord: Non-shielded, 1m
Contain Module	Qualcomm / WCN3980

#### Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	GN Audio A/S	PanaCast 50	PIFA Antenna	4.16dBi for 2.4 GHz -0.46dBi for 5.150-5.250 GHz -0.46dBi for 5.250-5.350 GHz -0.60dBi for 5.470-5.725 GHz 0.01dBi for 5.725~5.85GHz

Note: The antenna of EUT is conform to FCC 15.203.

## Center Frequency of Each Channel (Bluetooth V3.0+HS, V2.1+EDR):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 20:	2422 MHz	Channel 40:	2442 MHz	Channel 60:	2462 MHz
Channel 01:	2403 MHz	Channel 21:	2423 MHz	Channel 41:	2443 MHz	Channel 61:	2463 MHz
Channel 02:	2404 MHz	Channel 22:	2424 MHz	Channel 42:	2444 MHz	Channel 62:	2464 MHz
Channel 03:	2405 MHz	Channel 23:	2425 MHz	Channel 43:	2445 MHz	Channel 63:	2465 MHz
Channel 04:	2406 MHz	Channel 24:	2426 MHz	Channel 44:	2446 MHz	Channel 64:	2466 MHz
Channel 05:	2407 MHz	Channel 25:	2427 MHz	Channel 45:	2447 MHz	Channel 65:	2467 MHz
Channel 06:	2408 MHz	Channel 26:	2428 MHz	Channel 46:	2448 MHz	Channel 66:	2468 MHz
Channel 07:	2409 MHz	Channel 27:	2429 MHz	Channel 47:	2449 MHz	Channel 67:	2469 MHz
Channel 08:	2410 MHz	Channel 28:	2430 MHz	Channel 48:	2450 MHz	Channel 68:	2470 MHz
Channel 09:	2411 MHz	Channel 29:	2431 MHz	Channel 49:	2451 MHz	Channel 69:	2471 MHz
Channel 10:	2412 MHz	Channel 30:	2432 MHz	Channel 50:	2452 MHz	Channel 70:	2472 MHz
Channel 11:	2413 MHz	Channel 31:	2433 MHz	Channel 51:	2453 MHz	Channel 71:	2473 MHz
Channel 12:	2414 MHz	Channel 32:	2434 MHz	Channel 52:	2454 MHz	Channel 72:	2474 MHz
Channel 13:	2415 MHz	Channel 33:	2435 MHz	Channel 53:	2455 MHz	Channel 73:	2475 MHz
Channel 14:	2416 MHz	Channel 34:	2436 MHz	Channel 54:	2456 MHz	Channel 74:	2476 MHz
Channel 15:	2417 MHz	Channel 35:	2437 MHz	Channel 55:	2457 MHz	Channel 75:	2477 MHz
Channel 16:	2418 MHz	Channel 36:	2438 MHz	Channel 56:	2458 MHz	Channel 76:	2478 MHz
Channel 17:	2419 MHz	Channel 37:	2439 MHz	Channel 57:	2459 MHz	Channel 77:	2479 MHz
Channel 18:	2420 MHz	Channel 38:	2440 MHz	Channel 58:	2460 MHz	Channel 78:	2480 MHz
Channel 19:	2421 MHz	Channel 39:	2441 MHz	Channel 59:	2461 MHz		

## Center Frequency of Each Channel (Bluetooth V5.0):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 01:	2404 MHz	Channel 02:	2406 MHz	Channel 03:	2408 MHz
Channel 04:	2410 MHz	Channel 05:	2412 MHz	Channel 06:	2414 MHz	Channel 07:	2416 MHz
Channel 08:	2418 MHz	Channel 09:	2420 MHz	Channel 10:	2422 MHz	Channel 11:	2424 MHz
Channel 12:	2426 MHz	Channel 13:	2428 MHz	Channel 14:	2430 MHz	Channel 15:	2432 MHz
Channel 16:	2434 MHz	Channel 17:	2436 MHz	Channel 18:	2438 MHz	Channel 19:	2440 MHz
Channel 20:	2442 MHz	Channel 21:	2444 MHz	Channel 22:	2446 MHz	Channel 23:	2448 MHz
Channel 24:	2450 MHz	Channel 25:	2452 MHz	Channel 26:	2454 MHz	Channel 27:	2456 MHz
Channel 28:	2458 MHz	Channel 29:	2460 MHz	Channel 30:	2462 MHz	Channel 31:	2464 MHz
Channel 32:	2466 MHz	Channel 33:	2468 MHz	Channel 34:	2470 MHz	Channel 35:	2472 MHz
Channel 36:	2474 MHz	Channel 37:	2476 MHz	Channel 38:	2478 MHz	Channel 39:	2480 MHz

802.11b/g/n-20MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

802.11n-40MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 03:	2422 MHz	Channel 04:	2427 MHz	Channel 05:	2432 MHz	Channel 06:	2437 MHz
Channel 07:	2442 MHz	Channel 08:	2447 MHz	Channel 09:	2452 MHz		

802.11a/n-20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 36:	5180 MHz	Channel 40:	5200 MHz	Channel 44:	5220 MHz	Channel 48:	5240 MHz
Channel 52:	5260 MHz	Channel 56:	5280 MHz	Channel 60:	5300 MHz	Channel 64:	5320 MHz
Channel 100:	5500 MHz	Channel 104:	5520 MHz	Channel 108:	5540 MHz	Channel 112:	5560 MHz
Channel 116:	5580 MHz	Channel 120:	5600 MHz	Channel 124:	5620 MHz	Channel 128:	5640 MHz
Channel 132:	5660 MHz	Channel 136:	5680 MHz	Channel 140:	5700 MHz	Channel 144:	5720 MHz
Channel 149:	5745 MHz	Channel 153:	5765 MHz	Channel 157:	5785 MHz	Channel 161:	5805 MHz
Channel 165:	5825 MHz						

802.11n-40MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 38:	5190 MHz	Channel 46:	5230 MHz	Channel 54:	5270 MHz	Channel 62:	5310 MHz
Channel 102:	5510 MHz	Channel 110:	5550 MHz	Channel 118:	5590 MHz	Channel 126:	5630 MHz
Channel 134:	5670 MHz	Channel 142:	5710 MHz	Channel 151:	5755 MHz	Channel 159:	5795 MHz

802.11ac-80MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 42:	5210 MHz	Channel 58:	5290 MHz	Channel 106:	5530 MHz	Channel 122:	5610 MHz
Channel 138:	5690 MHz	Channel 155:	5775 MHz				

Note:

1. The EUT is a PanaCast 50 with a built-in WLAN (802.11a/b/g/n/ac) with Bluetooth V5.0、V3.0+HS,V2.1+EDR transceiver.
2. Regarding to the operation frequency band, the lowest, middle, and highest frequency are selected to perform the test.
3. This device is a composite device in accordance with Part 15 regulations. The function for the transmitting was measured and made a test report that the report number is 20C0767R-E3032110108, 20C0767R-E3032110113 and 20C0767R-E3032110125, certified under FCC ID: BCE-VSM020.

Test Mode	Mode 1: Receive 802.11n-40BW (2.4GHz Band) Mode 2: Receive - Bluetooth - 3Mbps Mode 3: Receive - Bluetooth - 2Mbps-BLE Mode 4: Receive - 802.11ac-80BW
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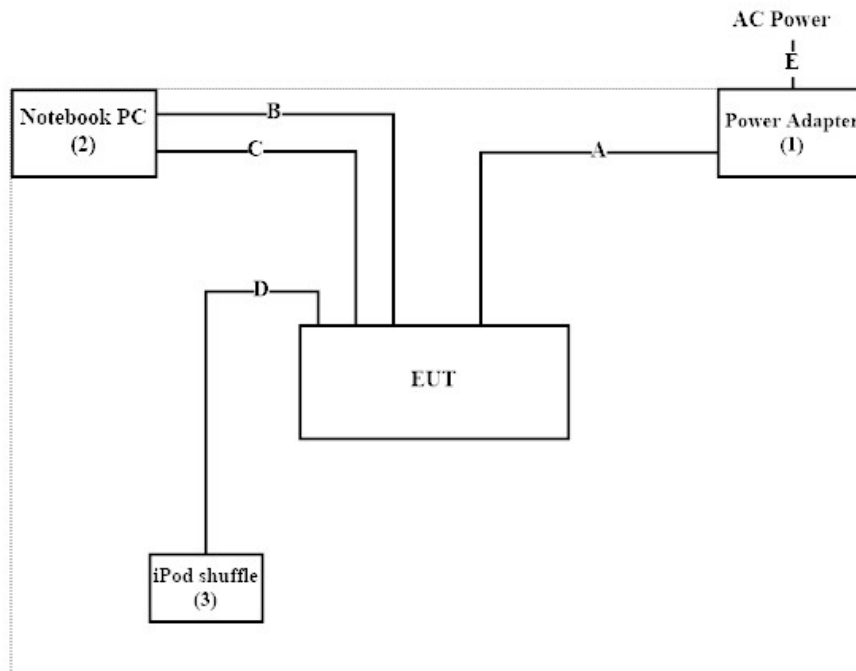
### 1.2. Test System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1 Power Adapter	Wang Huei	WH-231	N/A	N/A
2 Notebook PC	Lenovo	T470	N/A	N/A
3 iPod shuffle	APPLE	A1373	CC4PG9NGF4RY	N/A

Signal Cable Type	Signal cable Description
A Power Cable	Non-shielded, 2m
B USB Cable	Shielded, 2m
C LAN Cable	Non-shielded, 2m
D Audio Cable	Shielded, 1.8m
E Power Cable	Non-shielded, 1m

### 1.3. Configuration of Test System



### 1.4. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.3.
- (2) Execute software “Qualcomm Radio Control Toolkit Version 4.0.00177.0” on the EUT.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Press “OK” to start the continuous Transmit.
- (5) Verify that the EUT works properly.



## 1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	20.0 °C
	Humidity (%RH)	10~90 %	67.6 %
Radiated Emission	Temperature (°C)	10~40 °C	20.1 °C
	Humidity (%RH)	10~90 %	65.5 %

**USA : FCC Registration Number: TW1014**

**Canada : IC Registration Number: 25880**

Site Description : Accredited by TAF  
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd  
Address : No.159, Sec. 2, Wenhua 1st Rd., Linkou Dist.,  
New Taipei City 24457, Taiwan, R.O.C.

Phone number : 886-2-2602-7968  
Fax number : 866-2-2602-3286  
Email address : [info.tw@dekra.com](mailto:info.tw@dekra.com)  
Website : <http://www.dekra.com.tw>

## 1.6. List of Test Item and Equipment

### For Conduction measurements /ASR1

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	EMI Test Receiver	R&S	ESR7	101601	2020.05.28	2021.05.27
X	Two-Line V-Network	R&S	ENV216	101306	2020.03.25	2021.03.24
X	Two-Line V-Network	R&S	ENV216	101307	2020.04.17	2021.04.16
X	Coaxial Cable	DEKRA	RG400_BNC	RF001	2020.05.24	2021.05.23

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Testing System V2.0

### For Radiated measurements /ACB1

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Loop Antenna	AMETEK	HLA6121	49611	2020.03.16	2021.03.15
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-675	2020.07.20	2021.07.19
X	Horn Antenna	ETS-Lindgren	3117	00201366	2020.09.21	2021.09.20
X	Horn Antenna	Com-Power	AH-840	101088	2020.09.11	2021.09.10
X	Pre-Amplifier	EMCI	EMC001330	980301	2020.06.04	2021.06.03
X	Pre-Amplifier	EMCI	EMC051845SE	980632	2020.08.21	2021.08.20
	Pre-Amplifier	EMCI	EMC05820SE	980308	2020.09.18	2021.09.17
X	Pre-Amplifier	EMCI	EMC184045SE	980314	2020.06.10	2021.06.09
	Filter	MICRO TRONICS	BRM50702	G251	2020.09.17	2021.09.16
	Filter	MICRO TRONICS	BRM50716	G188	2020.09.17	2021.09.16
X	EMI Test Receiver	R&S	ESR7	101601	2020.05.21	2021.05.20
X	Spectrum Analyzer	R&S	FSV40	101147	2020.04.20	2021.04.19
X	Coaxial Cable	SUHNER	SUCOFLEX 106	RF002	2020.07.03	2021.07.02
X	Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2020.06.10	2021.06.09

Note:

1. Loop Antenna is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Testing System V2.0

## 1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document, and is described in each test chapter of this report.

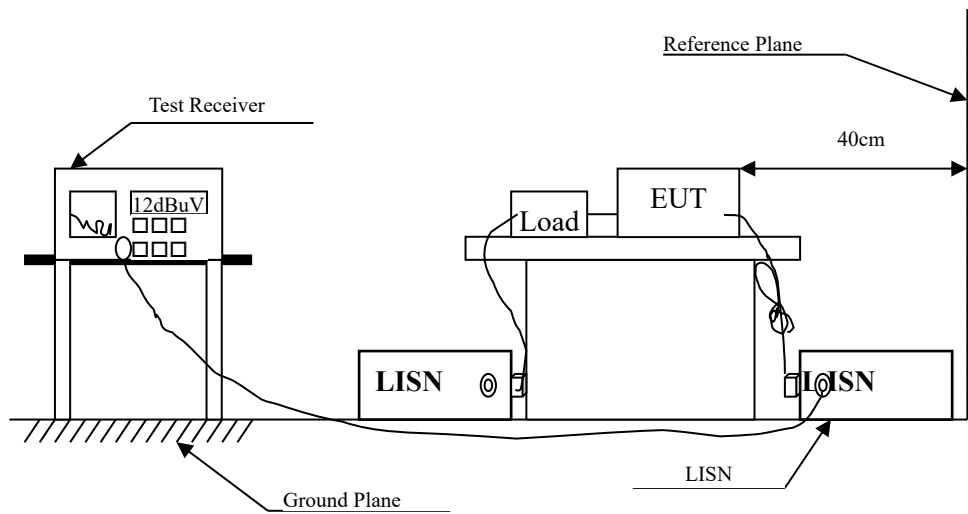
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test item	Uncertainty	
Conducted Emission	$\pm 3.42$ dB	
Radiated Emission	Under 1GHz $\pm 4.06$ dB	Above 1GHz $\pm 3.73$ dB

## 2. Conducted Emission

### 2.1. Test Setup



### 2.2. Limits

FCC Part 15 Subpart B Paragraph 15.107 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

### 2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

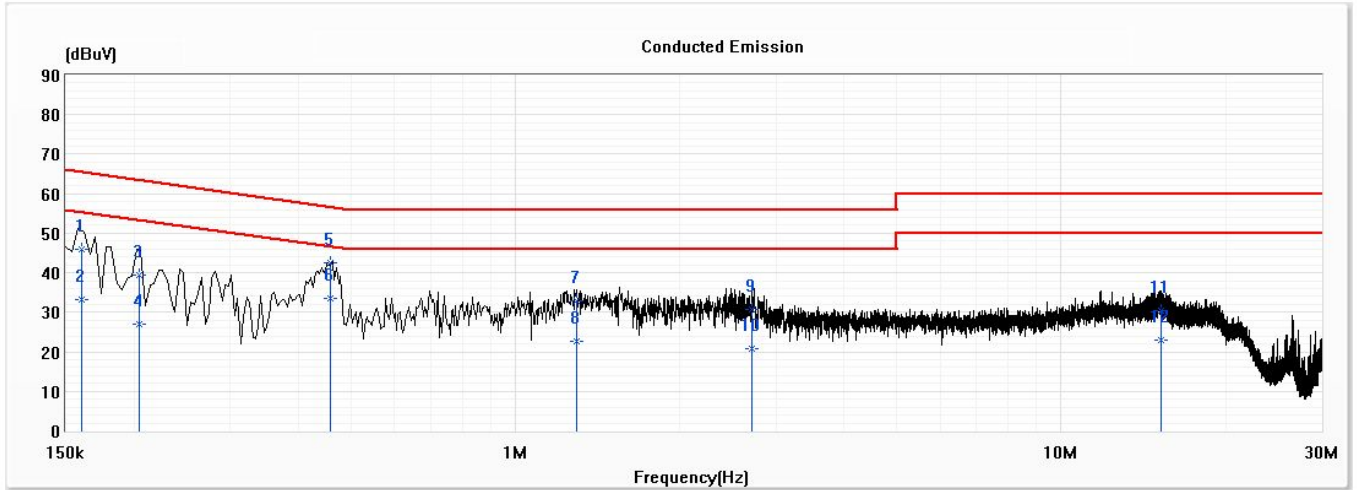
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

## 2.4. Test Result of Conducted Emission

Product : PanaCast 50  
 Test Item : Conducted Emission Test  
 Power Line : L 1  
 Test Mode : Mode 1: Receive 802.11n-40BW (2.4GHz Band) (2437MHz)  
 Test Date : 2021/02/10

L 1



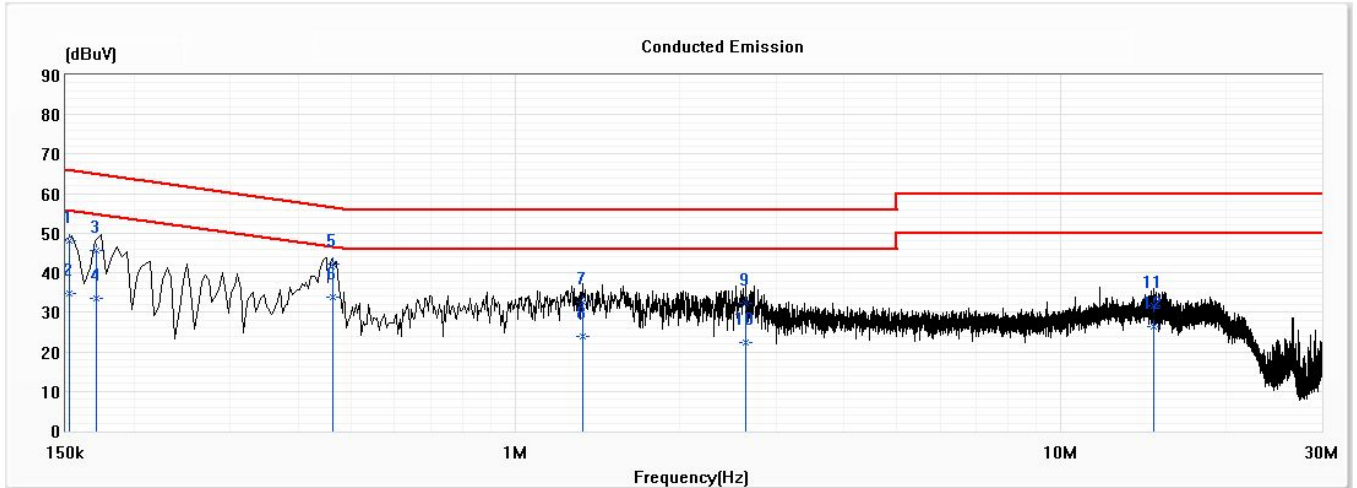
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.161	46.08	65.43	-19.35	36.42	9.66	QP
2	0.161	33.22	55.43	-22.22	23.56	9.66	AV
3	0.204	39.55	63.43	-23.88	29.89	9.65	QP
4	0.204	27.04	53.43	-26.39	17.39	9.65	AV
5	0.458	42.45	56.73	-14.28	32.79	9.66	QP
*6	0.458	33.65	46.73	-13.09	23.99	9.66	AV
7	1.296	32.82	56.00	-23.18	23.12	9.70	QP
8	1.296	22.66	46.00	-23.34	12.97	9.70	AV
9	2.713	30.61	56.00	-25.39	20.87	9.73	QP
10	2.713	20.72	46.00	-25.28	10.98	9.73	AV
11	15.217	30.47	60.00	-29.53	20.52	9.94	QP
12	15.217	22.96	50.00	-27.04	13.01	9.94	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ \* “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : PanaCast 50  
 Test Item : Conducted Emission Test  
 Power Line : N  
 Test Mode : Mode 1: Receive 802.11n-40BW (2.4GHz Band) (2437MHz)  
 Test Date : 2021/02/10

N



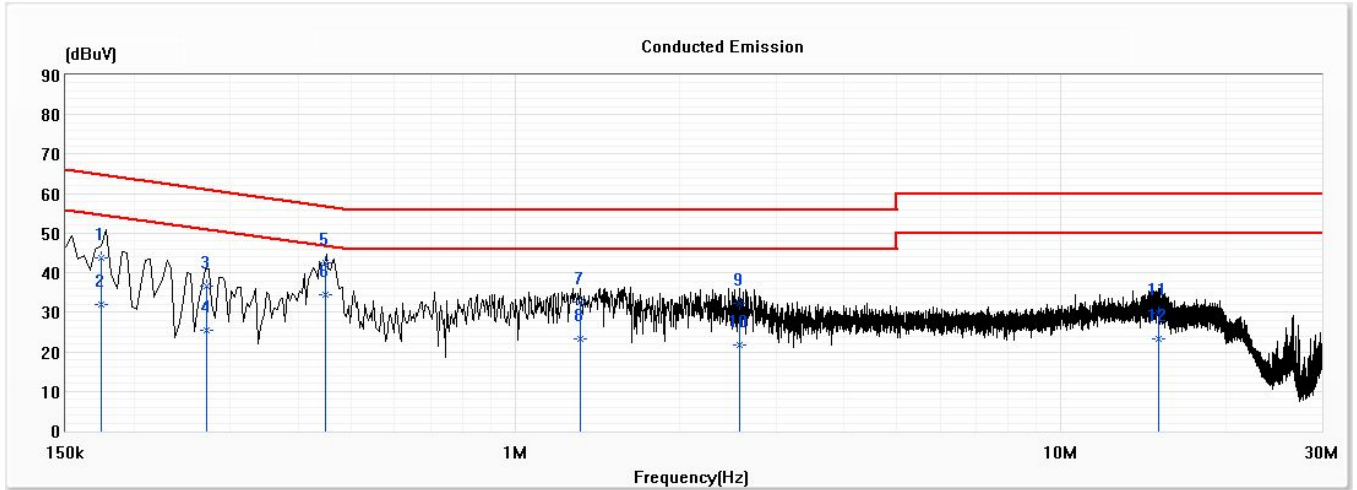
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.152	47.96	65.87	-17.91	38.29	9.67	QP
2	0.152	34.74	55.87	-21.12	25.07	9.67	AV
3	0.171	45.51	64.92	-19.41	35.84	9.67	QP
4	0.171	33.47	54.92	-21.45	23.80	9.67	AV
5	0.462	42.28	56.66	-14.38	32.61	9.67	QP
*6	0.462	33.98	46.66	-12.68	24.31	9.67	AV
7	1.330	32.61	56.00	-23.39	22.90	9.70	QP
8	1.330	23.78	46.00	-22.22	14.07	9.70	AV
9	2.647	32.32	56.00	-23.68	22.57	9.74	QP
10	2.647	22.35	46.00	-23.65	12.60	9.74	AV
11	14.743	31.67	60.00	-28.33	21.68	9.99	QP
12	14.743	26.24	50.00	-23.76	16.25	9.99	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ \* “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : PanaCast 50  
 Test Item : Conducted Emission Test  
 Power Line : L 1  
 Test Mode : Mode 2: Receive - Bluetooth - 3Mbps (2441MHz)  
 Test Date : 2021/02/10

**L 1**



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.174	43.89	64.77	-20.87	34.24	9.66	QP
2	0.174	32.02	54.77	-22.74	22.37	9.66	AV
3	0.271	36.57	61.07	-24.51	26.91	9.65	QP
4	0.271	25.44	51.07	-25.63	15.79	9.65	AV
5	0.448	42.54	56.91	-14.38	32.88	9.66	QP
*6	0.448	34.43	46.91	-12.48	24.77	9.66	AV
7	1.317	32.71	56.00	-23.29	23.01	9.70	QP
8	1.317	23.40	46.00	-22.60	13.70	9.70	AV
9	2.576	32.20	56.00	-23.80	22.47	9.73	QP
10	2.576	21.69	46.00	-24.31	11.95	9.73	AV
11	15.081	29.80	60.00	-30.20	19.86	9.94	QP
12	15.081	23.24	50.00	-26.76	13.29	9.94	AV

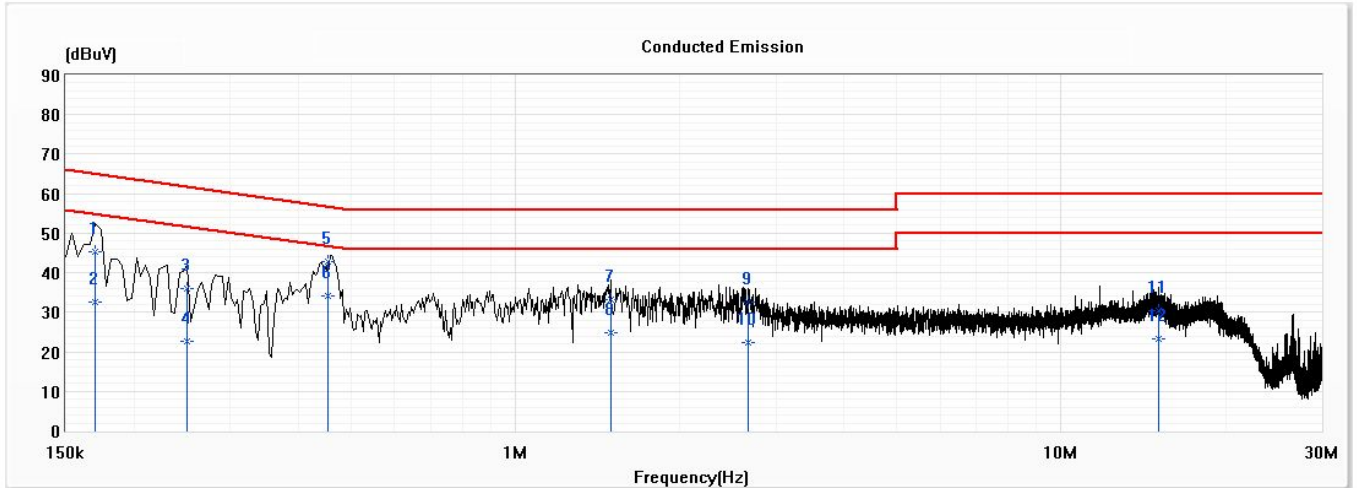
**Note:**

1. All Reading Levels are Quasi-Peak and average value.
2. “ \* “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor



Product : PanaCast 50  
 Test Item : Conducted Emission Test  
 Power Line : N  
 Test Mode : Mode 2: Receive - Bluetooth - 3Mbps (2441MHz)  
 Test Date : 2021/02/10

N



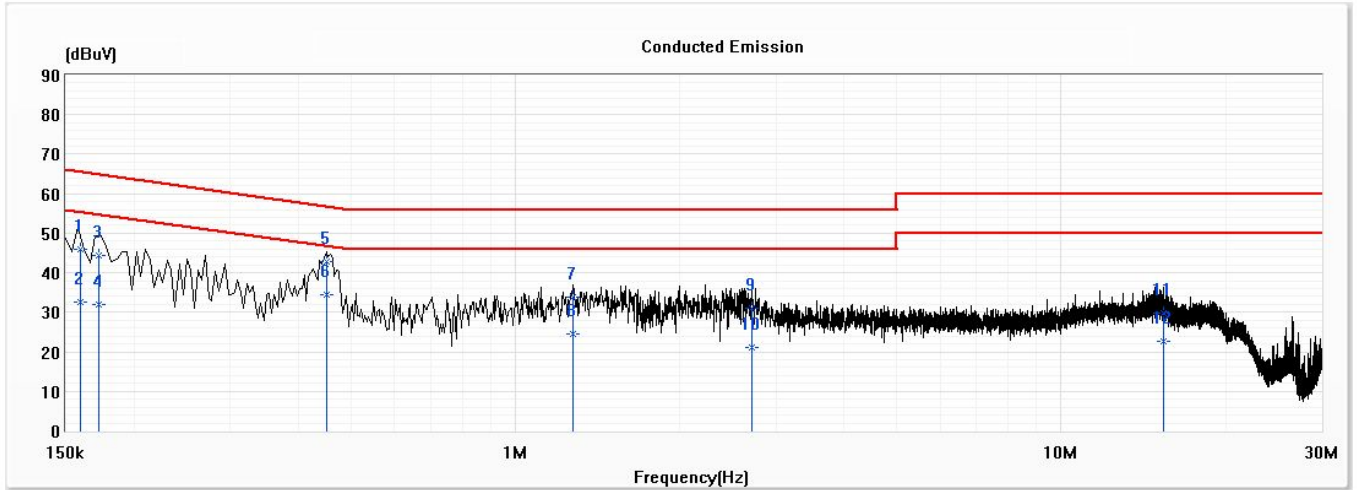
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.170	45.23	64.95	-19.72	35.56	9.67	QP
2	0.170	32.67	54.95	-22.28	23.00	9.67	AV
3	0.250	35.87	61.76	-25.89	26.20	9.67	QP
4	0.250	22.74	51.76	-29.03	13.07	9.67	AV
5	0.454	42.98	56.80	-13.83	33.31	9.67	QP
*6	0.454	34.02	46.80	-12.78	24.35	9.67	AV
7	1.497	33.18	56.00	-22.82	23.47	9.70	QP
8	1.497	24.80	46.00	-21.20	15.09	9.70	AV
9	2.672	32.50	56.00	-23.50	22.75	9.74	QP
10	2.672	22.39	46.00	-23.61	12.65	9.74	AV
11	15.070	30.33	60.00	-29.67	20.33	10.00	QP
12	15.070	23.28	50.00	-26.72	13.29	10.00	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ \* “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : PanaCast 50  
 Test Item : Conducted Emission Test  
 Power Line : L 1  
 Test Mode : Mode 3: Receive - Bluetooth - 2Mbps-BLE (2440MHz)  
 Test Date : 2021/02/10

L 1



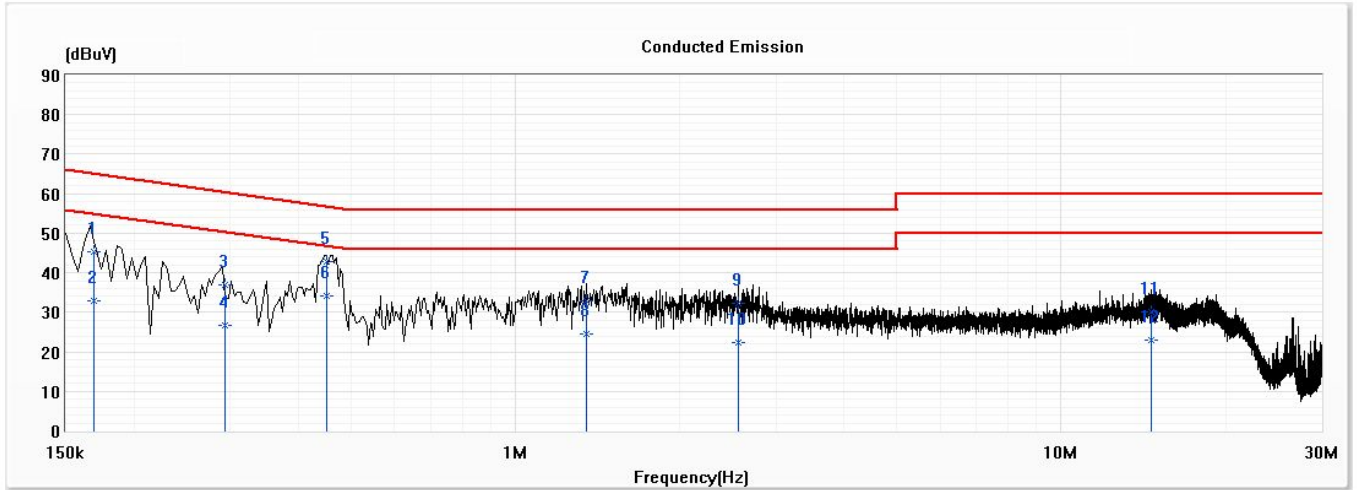
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.160	46.04	65.47	-19.43	36.38	9.66	QP
2	0.160	32.70	55.47	-22.77	23.04	9.66	AV
3	0.172	44.43	64.86	-20.42	34.78	9.66	QP
4	0.172	32.12	54.86	-22.74	22.46	9.66	AV
5	0.450	42.77	56.87	-14.09	33.11	9.66	QP
*6	0.450	34.35	46.87	-12.52	24.69	9.66	AV
7	1.277	33.80	56.00	-22.20	24.11	9.70	QP
8	1.277	24.45	46.00	-21.55	14.75	9.70	AV
9	2.711	31.00	56.00	-25.00	21.27	9.73	QP
10	2.711	21.03	46.00	-24.97	11.29	9.73	AV
11	15.400	29.79	60.00	-30.21	19.84	9.94	QP
12	15.400	22.64	50.00	-27.36	12.69	9.94	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ \* “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : PanaCast 50  
 Test Item : Conducted Emission Test  
 Power Line : N  
 Test Mode : Mode 3: Receive - Bluetooth - 2Mbps-BLE (2440MHz)  
 Test Date : 2021/02/10

N



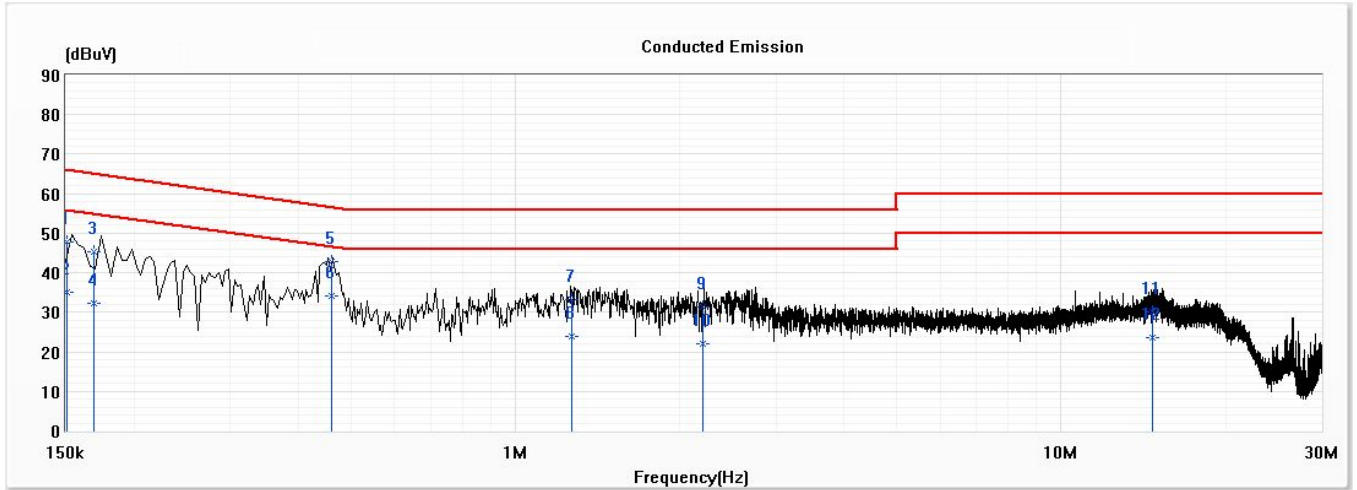
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.169	45.40	65.00	-19.60	35.73	9.67	QP
2	0.169	32.76	55.00	-22.24	23.09	9.67	AV
3	0.293	36.88	60.43	-23.54	27.21	9.67	QP
4	0.293	26.80	50.43	-23.63	17.13	9.67	AV
5	0.451	42.79	56.86	-14.07	33.13	9.67	QP
*6	0.451	34.13	46.86	-12.73	24.46	9.67	AV
7	1.350	32.91	56.00	-23.09	23.21	9.70	QP
8	1.350	24.57	46.00	-21.43	14.87	9.70	AV
9	2.563	32.40	56.00	-23.60	22.65	9.74	QP
10	2.563	22.46	46.00	-23.54	12.72	9.74	AV
11	14.597	30.20	60.00	-29.80	20.21	9.99	QP
12	14.597	22.98	50.00	-27.02	13.00	9.99	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ \* “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : PanaCast 50  
 Test Item : Conducted Emission Test  
 Power Line : L 1  
 Test Mode : Mode 4: Receive - 802.11ac-80BW (5775MHz)  
 Test Date : 2021/02/10

**L 1**



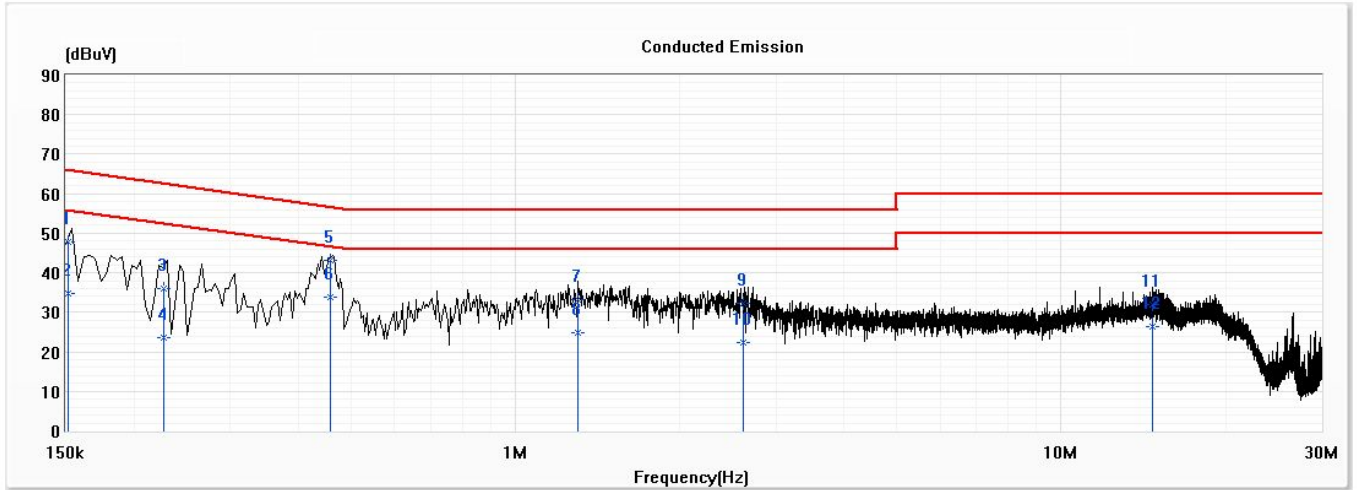
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.151	47.67	65.96	-18.29	38.01	9.66	QP
2	0.151	34.99	55.96	-20.97	25.33	9.66	AV
3	0.169	45.32	64.99	-19.67	35.67	9.66	QP
4	0.169	32.32	54.99	-22.67	22.66	9.66	AV
5	0.460	42.72	56.70	-13.98	33.06	9.66	QP
*6	0.460	34.08	46.70	-12.62	24.42	9.66	AV
7	1.266	33.34	56.00	-22.66	23.64	9.70	QP
8	1.266	23.77	46.00	-22.23	14.07	9.70	AV
9	2.209	31.44	56.00	-24.56	21.71	9.72	QP
10	2.209	22.01	46.00	-23.99	12.28	9.72	AV
11	14.664	30.22	60.00	-29.78	20.27	9.95	QP
12	14.664	23.49	50.00	-26.51	13.55	9.95	AV

**Note:**

1. All Reading Levels are Quasi-Peak and average value.
2. “ \* “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : PanaCast 50  
 Test Item : Conducted Emission Test  
 Power Line : N  
 Test Mode : Mode 4: Receive - 802.11ac-80BW (5775MHz)  
 Test Date : 2021/02/10

N



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.152	47.65	65.91	-18.26	37.98	9.67	QP
2	0.152	34.64	55.91	-21.27	24.97	9.67	AV
3	0.226	36.15	62.59	-26.43	26.48	9.67	QP
4	0.226	23.71	52.59	-28.88	14.04	9.67	AV
5	0.458	43.03	56.73	-13.70	33.36	9.67	QP
*6	0.458	33.75	46.73	-12.98	24.08	9.67	AV
7	1.301	33.27	56.00	-22.73	23.56	9.70	QP
8	1.301	24.68	46.00	-21.32	14.97	9.70	AV
9	2.620	32.14	56.00	-23.86	22.39	9.74	QP
10	2.620	22.47	46.00	-23.53	12.72	9.74	AV
11	14.733	31.94	60.00	-28.06	21.95	9.99	QP
12	14.733	26.26	50.00	-23.74	16.27	9.99	AV

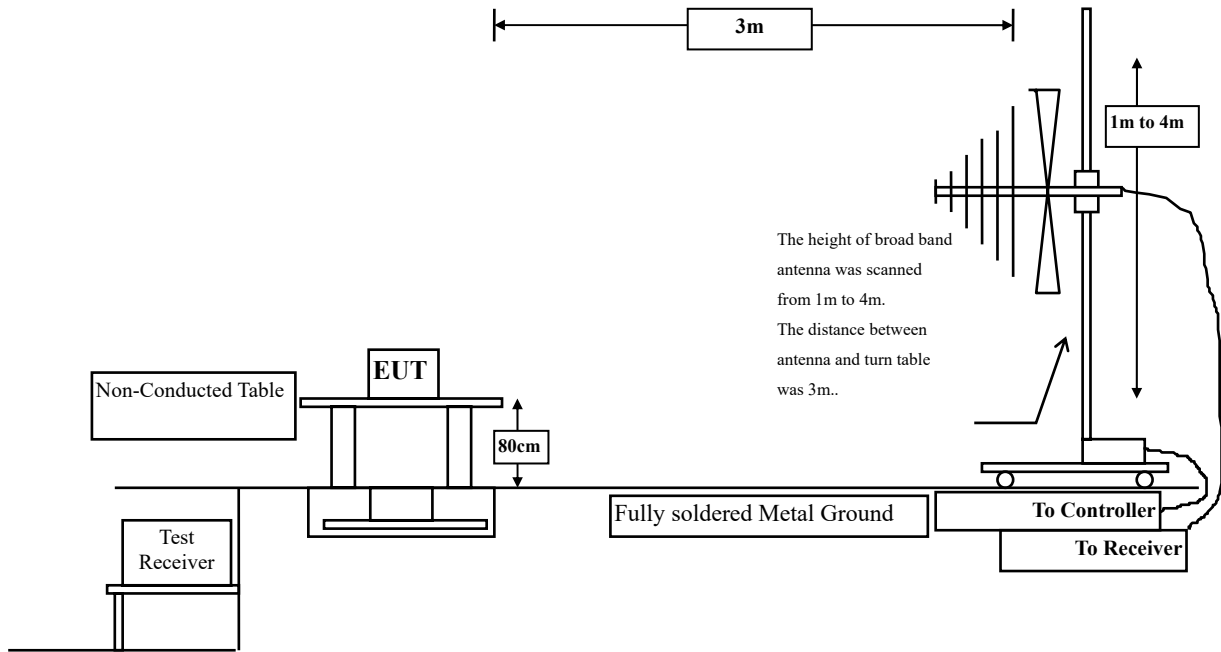
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ \* “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

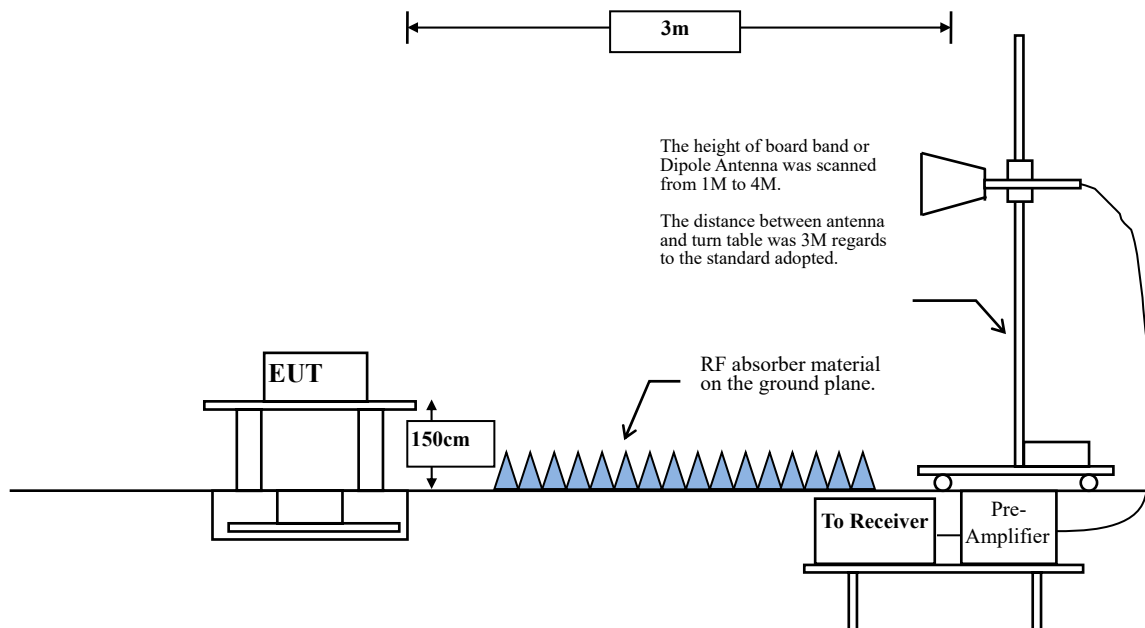
### 3. Radiated Emission

#### 3.1. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



### 3.2. Limits

<b>FCC Part 15 Subpart B Paragraph 15.109 Limits</b>		
Frequency MHz	uV/m @3m	dBuV /m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

- Remarks :
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
  2. In the Above Table, the tighter limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

### 3.3. Test Procedure

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz. Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

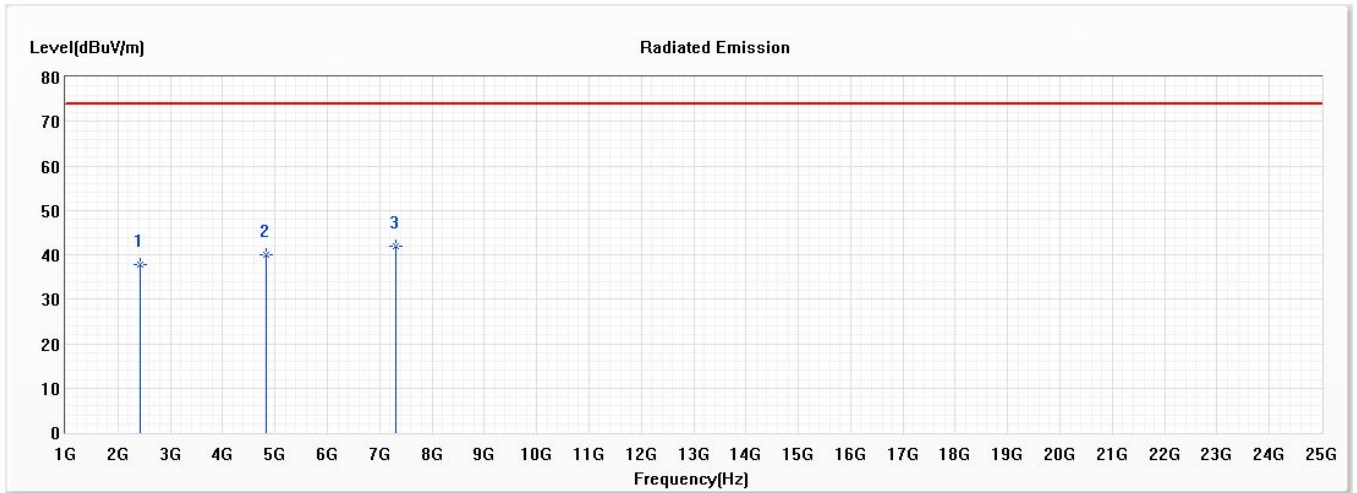
The measurement frequency range from 30MHz - 10th Harmonic of fundamental was investigated.



### 3.4. Test Result of Radiated Emission

Product : PanaCast 50  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 1: Receive 802.11n-40BW (2.4GHz Band) (2437MHz)  
 Test Date : 2021/02/05

#### Horizontal



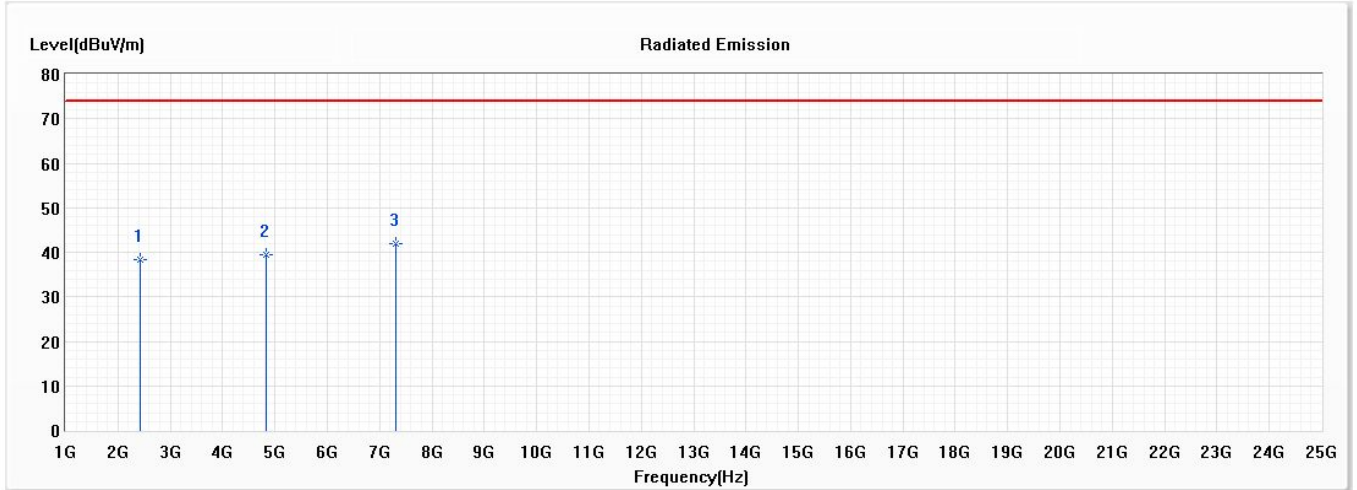
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	2437.000	37.79	74.00	-36.21	53.60	-15.81	PK
2	4824.000	39.87	74.00	-34.13	52.91	-13.04	PK
* 3	7311.000	42.02	74.00	-31.98	53.93	-11.91	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : PanaCast 50  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 1: Receive 802.11n-40BW (2.4GHz Band) (2437MHz)  
 Test Date : 2021/02/05

**Vertical**



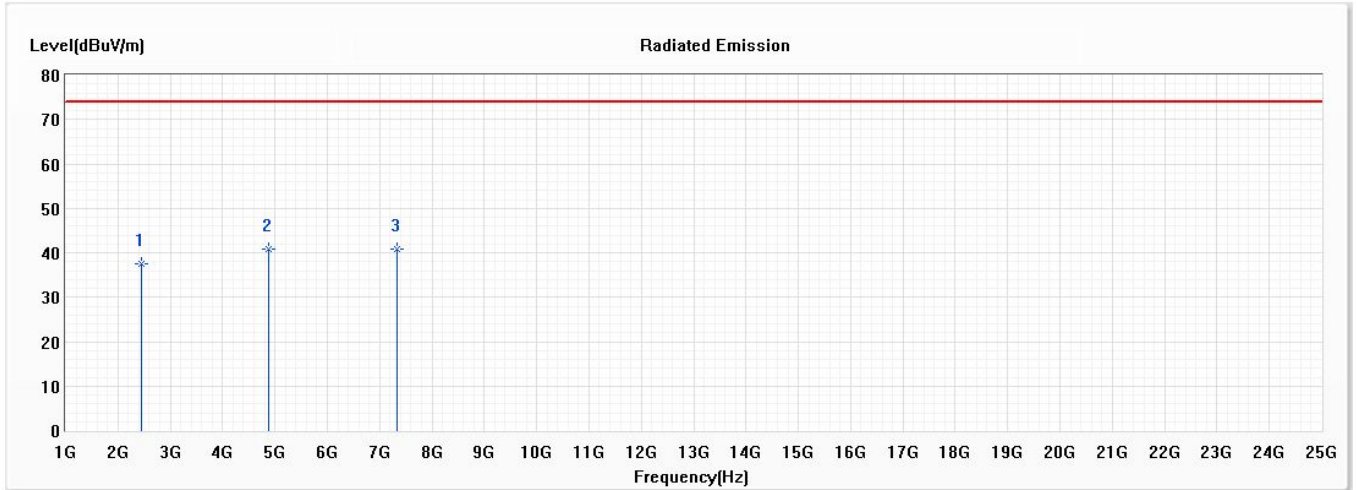
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	2437.000	38.23	74.00	-35.77	54.04	-15.81	PK
2	4824.000	39.42	74.00	-34.58	52.46	-13.04	PK
* 3	7311.000	42.06	74.00	-31.94	53.97	-11.91	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : PanaCast 50  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 2: Receive - Bluetooth - 3Mbps (2441MHz)  
 Test Date : 2021/02/05

**Horizontal**



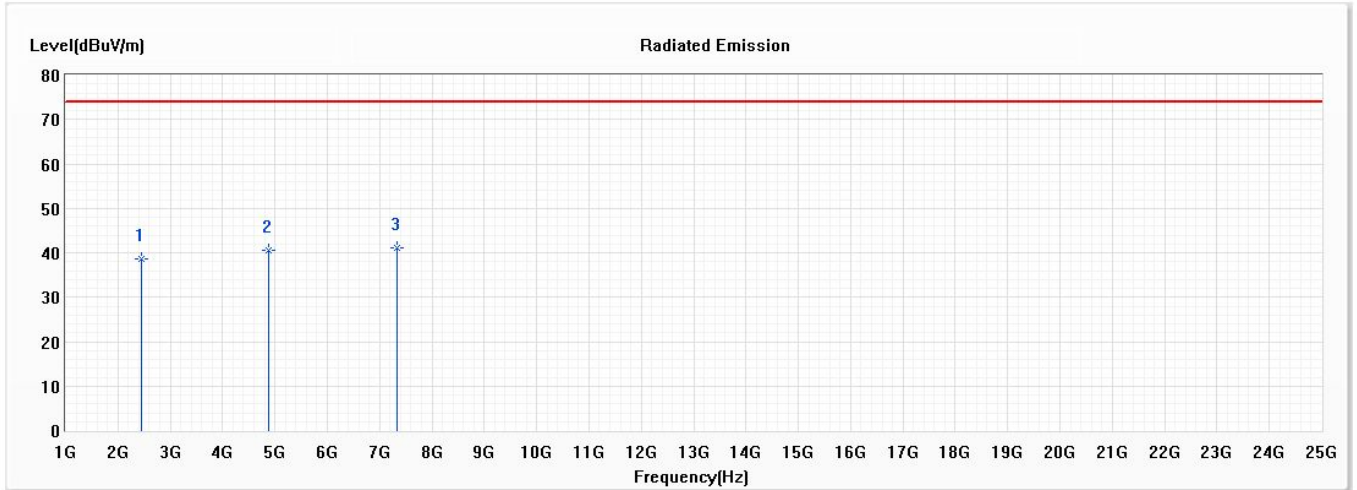
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	2441.000	37.46	74.00	-36.54	53.26	-15.80	PK
2	4882.000	40.73	74.00	-33.27	53.74	-13.01	PK
* 3	7323.000	40.94	74.00	-33.06	52.89	-11.95	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : PanaCast 50  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 2: Receive - Bluetooth - 3Mbps (2441MHz)  
 Test Date : 2021/02/05

**Vertical**



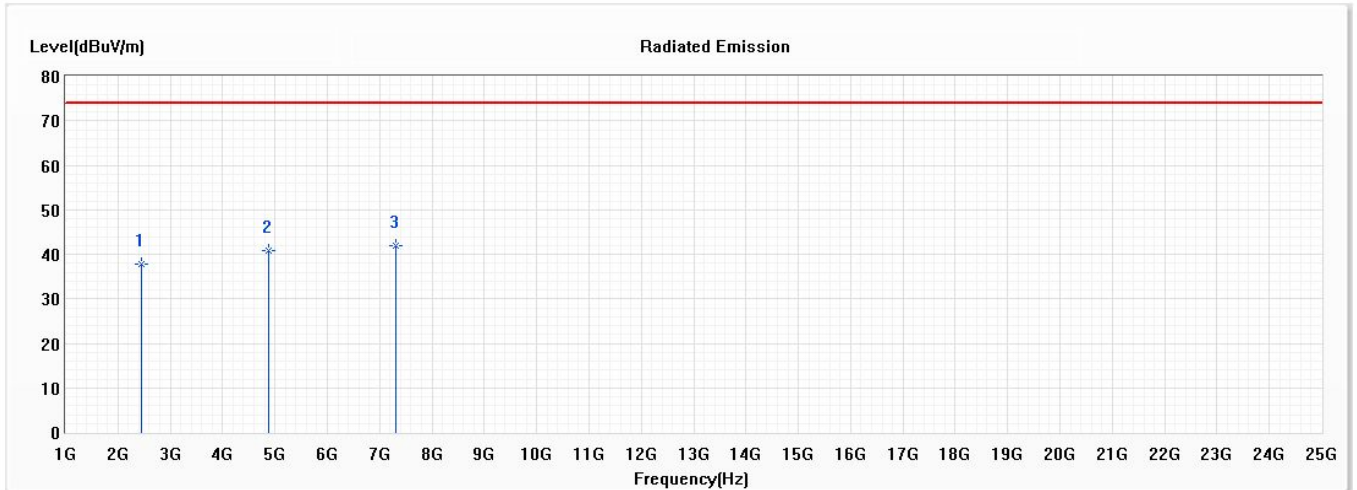
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	2441.000	38.61	74.00	-35.39	54.41	-15.80	PK
2	4882.000	40.51	74.00	-33.49	53.52	-13.01	PK
* 3	7323.000	41.03	74.00	-32.97	52.98	-11.95	PK

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : PanaCast 50  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 3: Receive - Bluetooth - 2Mbps-BLE (2440MHz)  
 Test Date : 2021/02/05

**Horizontal**



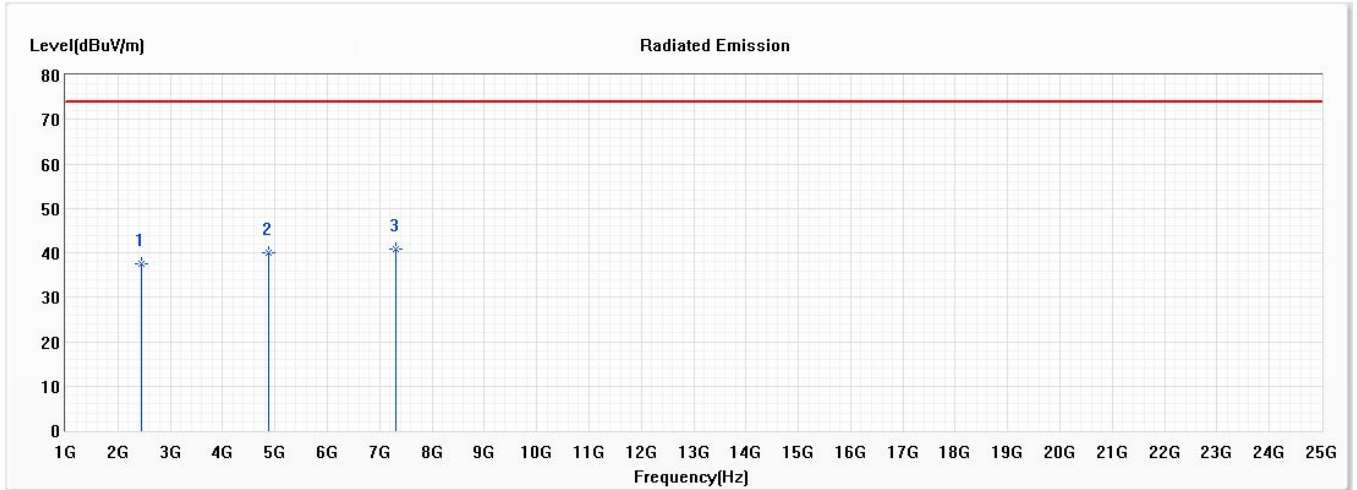
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	2440.000	37.77	74.00	-36.23	53.57	-15.80	PK
2	4880.000	40.83	74.00	-33.17	53.85	-13.02	PK
* 3	7320.000	42.02	74.00	-31.98	53.97	-11.95	PK

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : PanaCast 50  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 3: Receive - Bluetooth - 2Mbps-BLE (2440MHz)  
 Test Date : 2021/02/05

**Vertical**



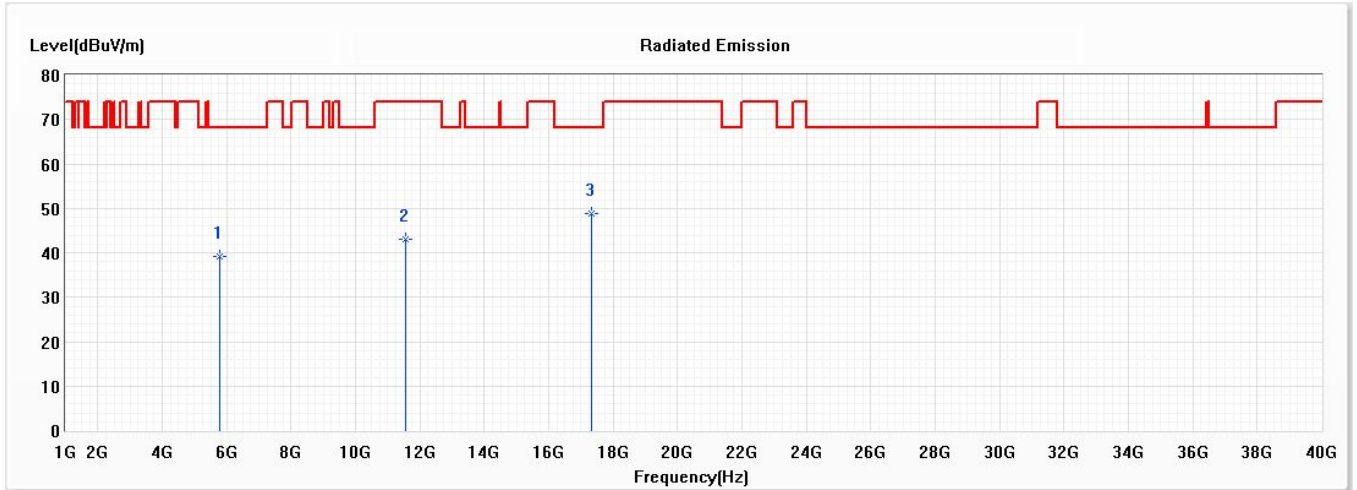
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	2440.000	37.41	74.00	-36.59	53.21	-15.80	PK
2	4880.000	39.89	74.00	-34.11	52.91	-13.02	PK
* 3	7320.000	40.88	74.00	-33.12	52.83	-11.95	PK

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : PanaCast 50  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 4: Receive - 802.11ac-80BW (5775MHz)  
 Test Date : 2021/02/05

**Horizontal**



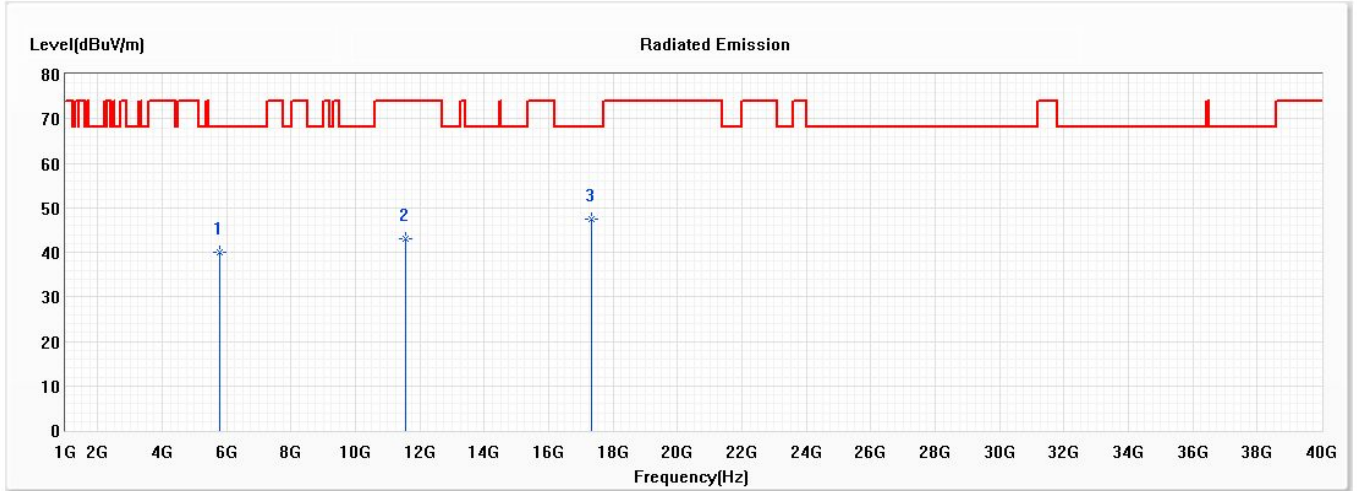
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5775.000	39.25	68.22	-28.97	51.59	-12.34	PK
2	11550.000	43.08	74.00	-30.92	51.54	-8.46	PK
* 3	17325.000	48.71	68.22	-19.51	49.15	-0.44	PK

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : PanaCast 50  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 4: Receive - 802.11ac-80BW (5775MHz)  
 Test Date : 2021/02/05

**Vertical**



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5775.000	40.00	68.22	-28.22	52.34	-12.34	PK
2	11550.000	43.02	74.00	-30.98	51.48	-8.46	PK
* 3	17325.000	47.55	68.22	-20.67	47.99	-0.44	PK

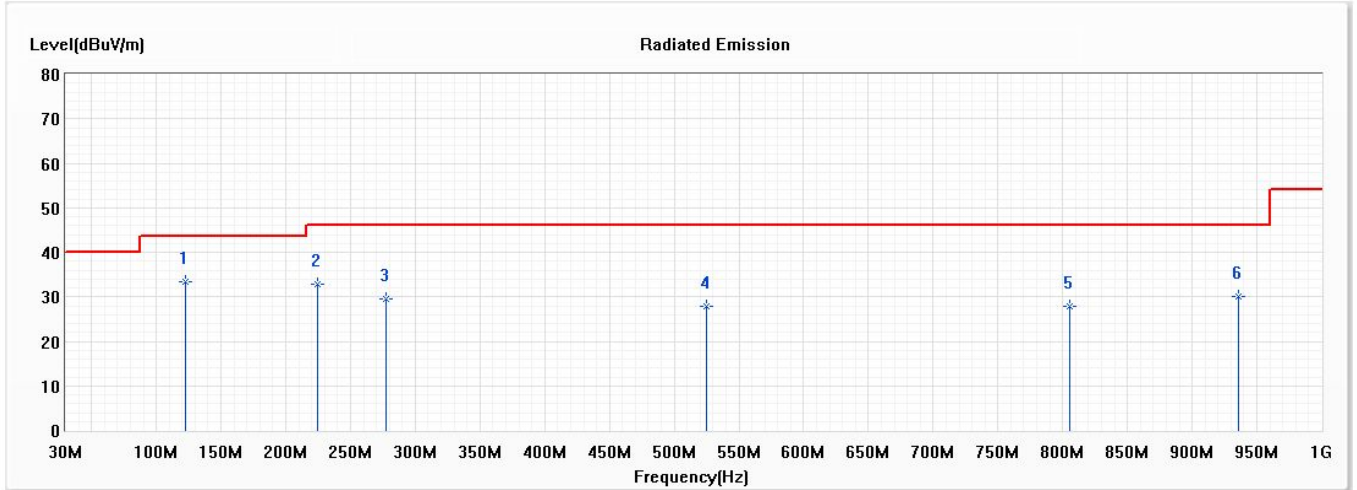
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product : PanaCast 50  
 Test Item : General Radiated Emission  
 Test Mode : Mode 1: Receive 802.11n-40BW (2.4GHz Band) (2437MHz)  
 Test Date : 2021/02/05

**Horizontal**



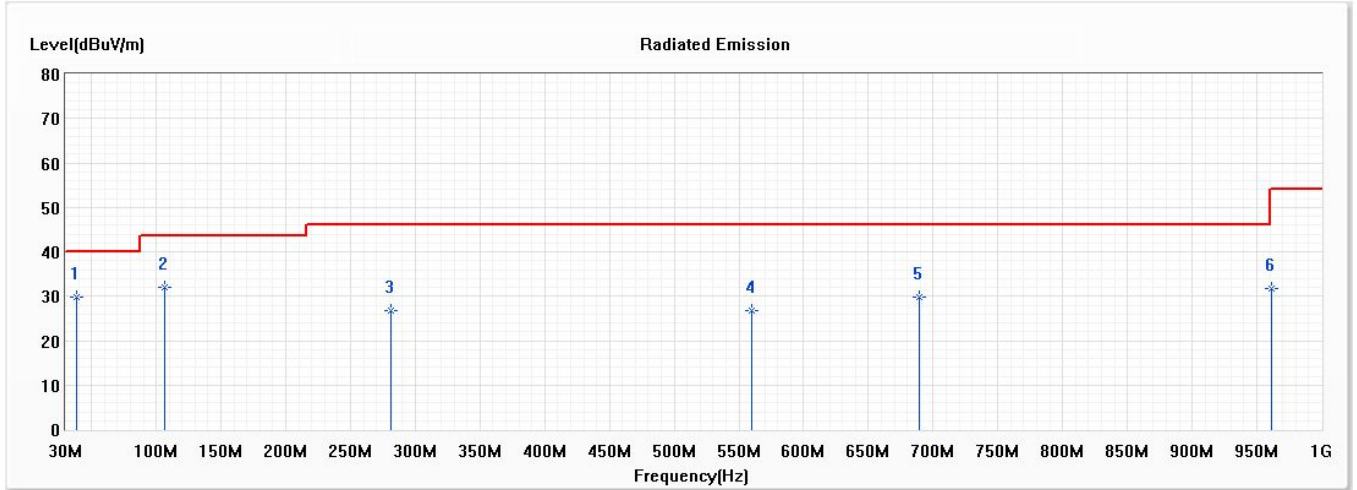
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	122.150	33.43	43.50	-10.07	46.40	-12.97	QP
2	224.970	32.81	46.00	-13.19	45.27	-12.46	QP
3	277.350	29.61	46.00	-16.39	40.10	-10.49	QP
4	524.700	27.73	46.00	-18.27	32.44	-4.71	QP
5	805.030	27.93	46.00	-18.07	28.58	-0.65	QP
6	935.980	30.00	46.00	-16.00	29.02	0.98	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : PanaCast 50  
 Test Item : General Radiated Emission  
 Test Mode : Mode 1: Receive 802.11n-40BW (2.4GHz Band) (2437MHz)  
 Test Date : 2021/02/05

**Vertical**



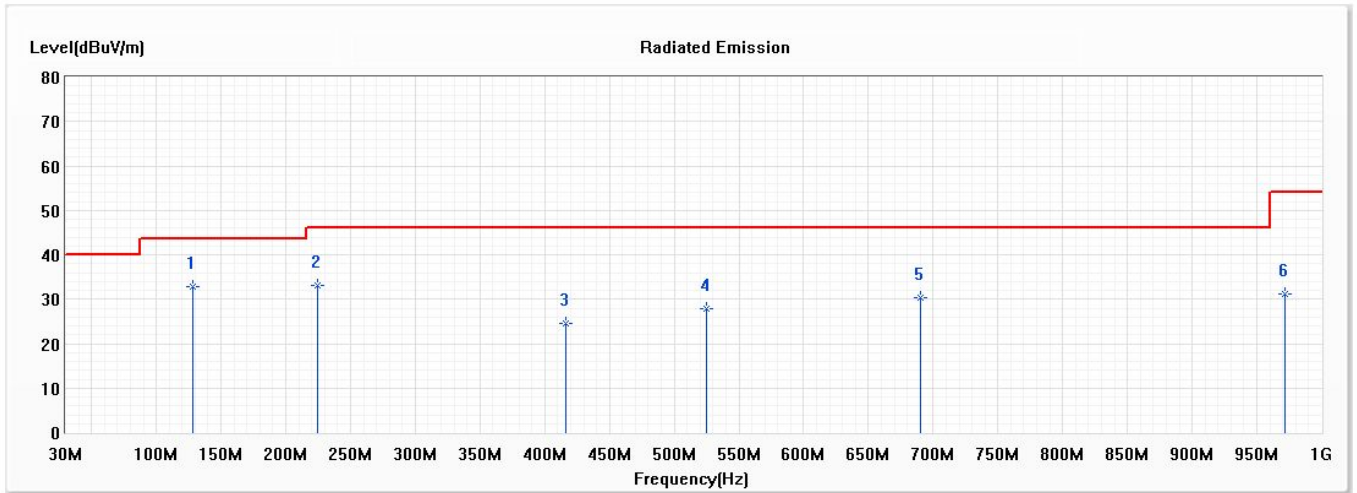
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	38.730	29.84	40.00	-10.16	40.95	-11.11	QP
2	106.630	31.88	43.50	-11.62	46.50	-14.62	QP
3	281.230	26.73	46.00	-19.27	37.08	-10.35	QP
4	559.620	26.70	46.00	-19.30	30.91	-4.21	QP
5	689.600	29.90	46.00	-16.10	32.01	-2.11	QP
6	961.200	31.67	54.00	-22.33	30.35	1.32	QP

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : PanaCast 50  
 Test Item : General Radiated Emission  
 Test Mode : Mode 2: Receive - Bluetooth - 3Mbps (2441MHz)  
 Test Date : 2021/02/05

**Horizontal**



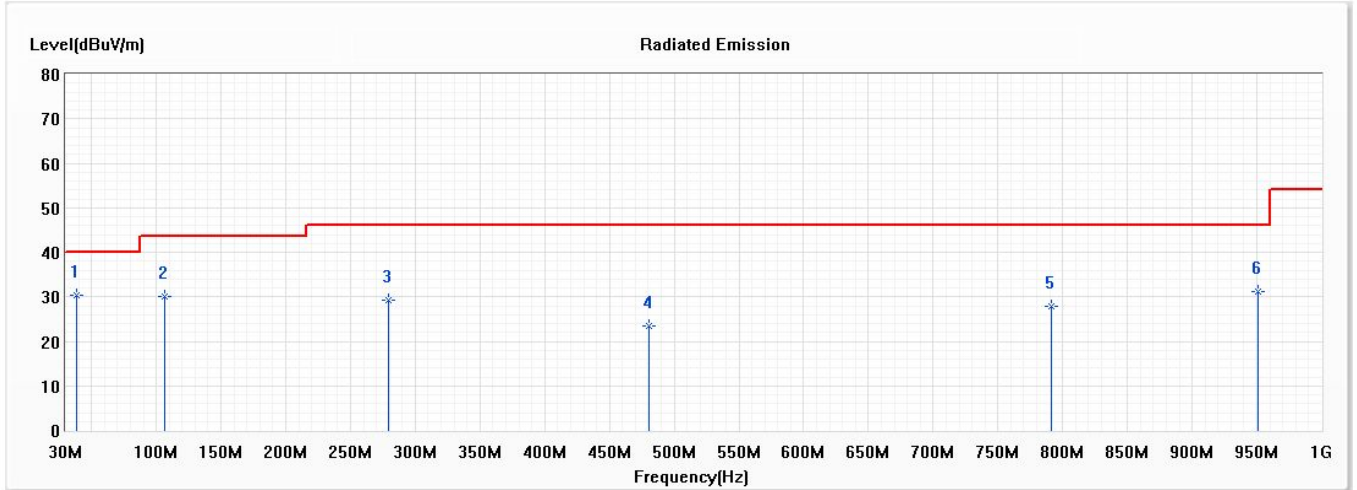
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	127.970	32.75	43.50	-10.75	45.21	-12.46	QP
2	224.970	33.24	46.00	-12.76	45.70	-12.46	QP
3	416.060	24.67	46.00	-21.33	31.75	-7.08	QP
4	524.700	27.84	46.00	-18.16	32.55	-4.71	QP
5	690.570	30.34	46.00	-15.66	32.44	-2.10	QP
6	971.870	31.16	54.00	-22.84	29.68	1.48	QP

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : PanaCast 50  
 Test Item : General Radiated Emission  
 Test Mode : Mode 2: Receive - Bluetooth - 3Mbps (2441MHz)  
 Test Date : 2021/02/05

**Vertical**



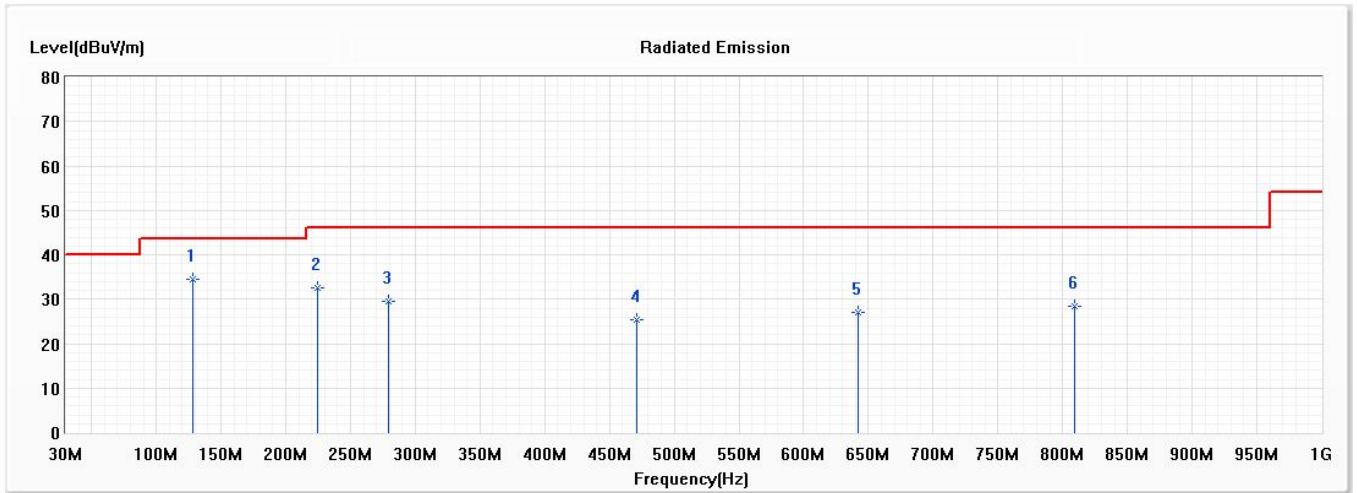
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	38.730	30.30	40.00	-9.70	41.41	-11.11	QP
2	106.630	30.03	43.50	-13.47	44.65	-14.62	QP
3	279.290	29.14	46.00	-16.86	39.54	-10.40	QP
4	480.080	23.56	46.00	-22.44	29.26	-5.70	QP
5	791.450	27.97	46.00	-18.03	28.69	-0.72	QP
6	950.530	31.17	46.00	-14.83	30.05	1.12	QP

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : PanaCast 50  
 Test Item : General Radiated Emission  
 Test Mode : Mode 3: Receive - Bluetooth - 2Mbps-BLE (2440MHz)  
 Test Date : 2021/02/05

**Horizontal**



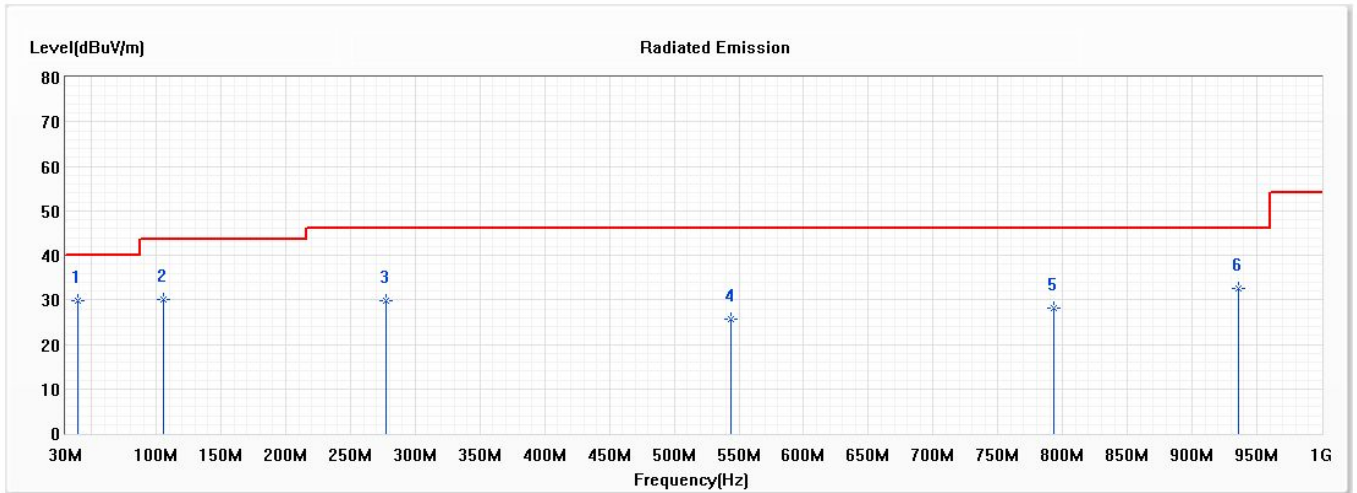
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	127.970	34.38	43.50	-9.12	46.84	-12.46	QP
2	224.970	32.64	46.00	-13.36	45.10	-12.46	QP
3	279.290	29.53	46.00	-16.47	39.93	-10.40	QP
4	471.350	25.44	46.00	-20.56	31.26	-5.82	QP
5	642.070	26.97	46.00	-19.03	29.91	-2.94	QP
6	808.910	28.38	46.00	-17.62	29.02	-0.64	QP

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : PanaCast 50  
 Test Item : General Radiated Emission  
 Test Mode : Mode 3: Receive - Bluetooth - 2Mbps-BLE (2440MHz)  
 Test Date : 2021/02/05

**Vertical**



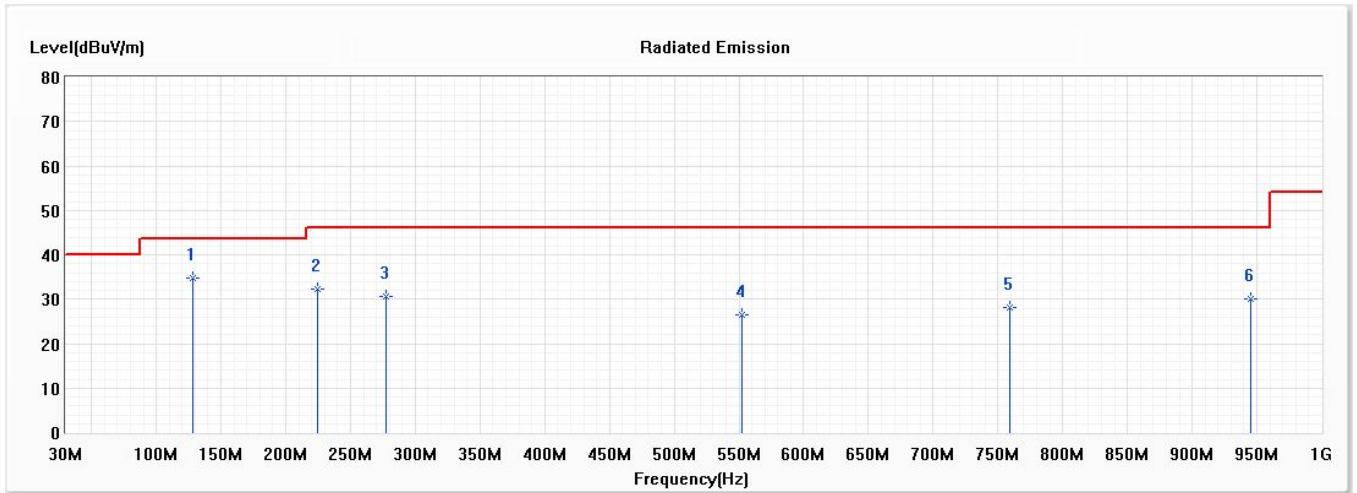
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	39.700	29.75	40.00	-10.25	40.82	-11.07	QP
2	105.660	30.04	43.50	-13.46	44.80	-14.76	QP
3	277.350	29.89	46.00	-16.11	40.38	-10.49	QP
4	544.100	25.70	46.00	-20.30	30.29	-4.59	QP
5	793.390	28.24	46.00	-17.76	28.88	-0.64	QP
6	935.980	32.56	46.00	-13.44	31.58	0.98	QP

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : PanaCast 50  
 Test Item : General Radiated Emission  
 Test Mode : Mode 4: Receive - 802.11ac-80BW (5775MHz)  
 Test Date : 2021/02/05

**Horizontal**



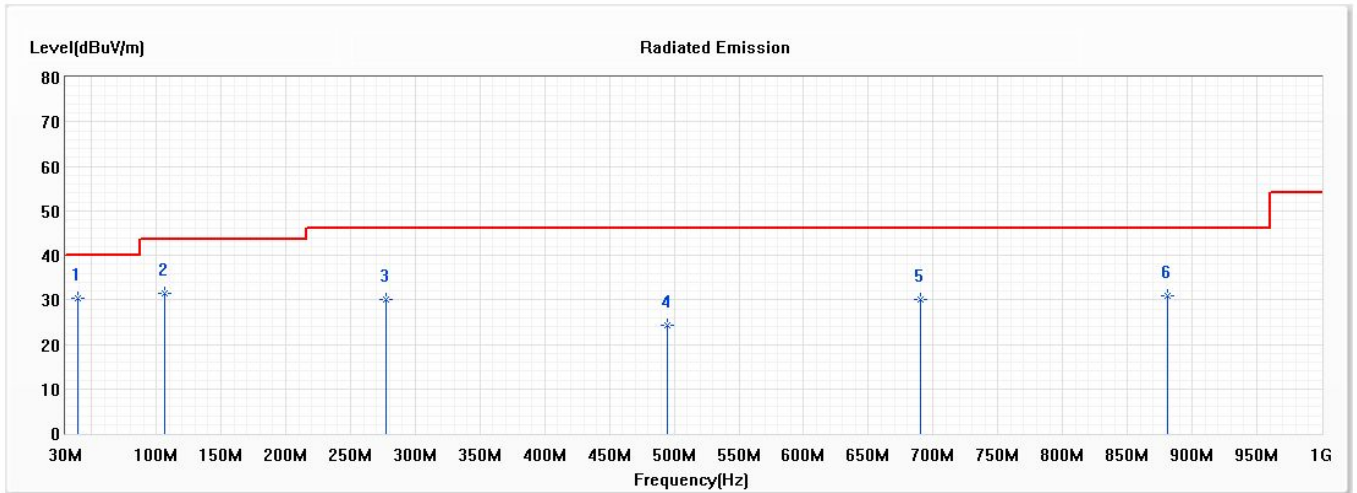
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	127.970	34.88	43.50	-8.62	47.34	-12.46	QP
2	224.970	32.38	46.00	-13.62	44.84	-12.46	QP
3	277.350	30.49	46.00	-15.51	40.98	-10.49	QP
4	551.860	26.58	46.00	-19.42	31.00	-4.42	QP
5	759.440	28.17	46.00	-17.83	29.30	-1.13	QP
6	945.680	30.13	46.00	-15.87	29.03	1.10	QP

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : PanaCast 50  
 Test Item : General Radiated Emission  
 Test Mode : Mode 4: Receive - 802.11ac-80BW (5775MHz)  
 Test Date : 2021/02/05

**Vertical**



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	39.700	30.25	40.00	-9.75	41.32	-11.07	QP
2	106.630	31.36	43.50	-12.14	45.98	-14.62	QP
3	277.350	30.15	46.00	-15.85	40.64	-10.49	QP
4	494.630	24.26	46.00	-21.74	29.72	-5.46	QP
5	690.570	30.02	46.00	-15.98	32.12	-2.10	QP
6	880.690	30.90	46.00	-15.10	30.60	0.30	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.



#### **4. EMI Reduction Method During Compliance Testing**

No modification was made during testing.