

FCC Test Report

Product Name	Medical Panel PC
Model No.	POCi-W24C-ULT5
FCC ID	RFHPOCIW24C001

Applicant	IEI Integration Corp.
Address	No. 29, Zhongxing Rd., Xizhi Dist., New Taipei City 221, Taiwan

Date of Receipt	Nov. 10, 2021
Issued Date	Jan. 17, 2022
Report No.	21B0444R-RFUSOTHV03-A
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

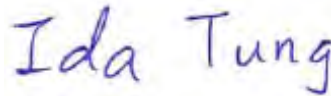
Issued Date: Jan. 17, 2022

Report No.: 21B0444R-RFUSOTHV03-A



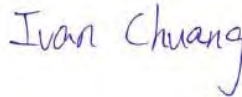
Product Name	Medical Panel PC
Applicant	IEI Integration Corp.
Address	No. 29, Zhongxing Rd., Xizhi Dist., New Taipei City 221, Taiwan
Manufacturer	IEI Integration Corp.
Model No.	POCi-W24C-ULT5
FCC ID.	RFHPOCIW24C001
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 120V / 60Hz
Trade Name	iEi
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By :



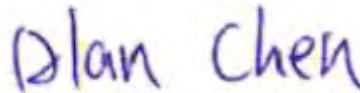
(Project Specialist / Ida Tung)

Tested By :



(Senior Engineer / Ivan Chuang)

Approved By :



(Senior Engineer / Alan Chen)

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	5
1.1. EUT Description.....	5
1.2. Tested System Details.....	6
1.3. Configuration of tested System	6
1.4. EUT Exercise Software	7
1.5. Test Facility	8
1.6. List of Test Equipment	9
1.7. Uncertainty	10
2. Conducted Emission.....	11
2.1. Test Setup	11
2.2. Limits	11
2.3. Test Procedure	12
2.4. Test Result of Conducted Emission.....	13
3. Radiated Emission.....	14
3.1. Test Setup	14
3.2. Limits	15
3.3. Test Procedure	16
3.4. Test Result of Radiated Emission.....	17
4. Band Edge	20
4.1. Test Setup	20
4.2. Limits	20
4.3. Test Procedure	21
4.4. Test Result of Band Edge	22
5. Frequency Tolerance	23
5.1. Test Setup	23
5.2. Limits	23
5.3. Test Procedure	23
5.4. Test Result of Frequency Stability.....	24
6. EMI Reduction Method During Compliance Testing	26
Appendix 1: EUT Test Photographs	
Appendix 2: Product Photos-Please refer to the file: 21B0444R-Product Photos-FCC	

Revision History

Report No.	Version	Description	Issued Date
21B0444R-RFUSOTHV03-A	V1.0	Initial issue of report.	2022-01-17

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Medical Panel PC
Trade Name	iEi
Model No.	POCi-W24C-ULT5
FCC ID	RFHPOCIW24C001
Frequency Range	13.56MHz
Modulation	ASK
Antenna Type	Loop Antenna
Power Adapter	MFR: FSP, M/N: FSP150M-ABA Input: AC 100-240V~, 2-0.85A, 50-60Hz Output: 19V=7.89A Cable Out: Non-shielded, 1.2m, with two ferrite cores bonded. Power Cord: Non-shielded, 1.8m
Contain Module	Intel / AX210NGW

Frequency of Each Channel:

Channel	Frequency
Channel 1:	13.56 MHz

Note:

1. This device is a Medical Panel PC with a built-in 13.56MHz transceiver.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.225.
3. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit
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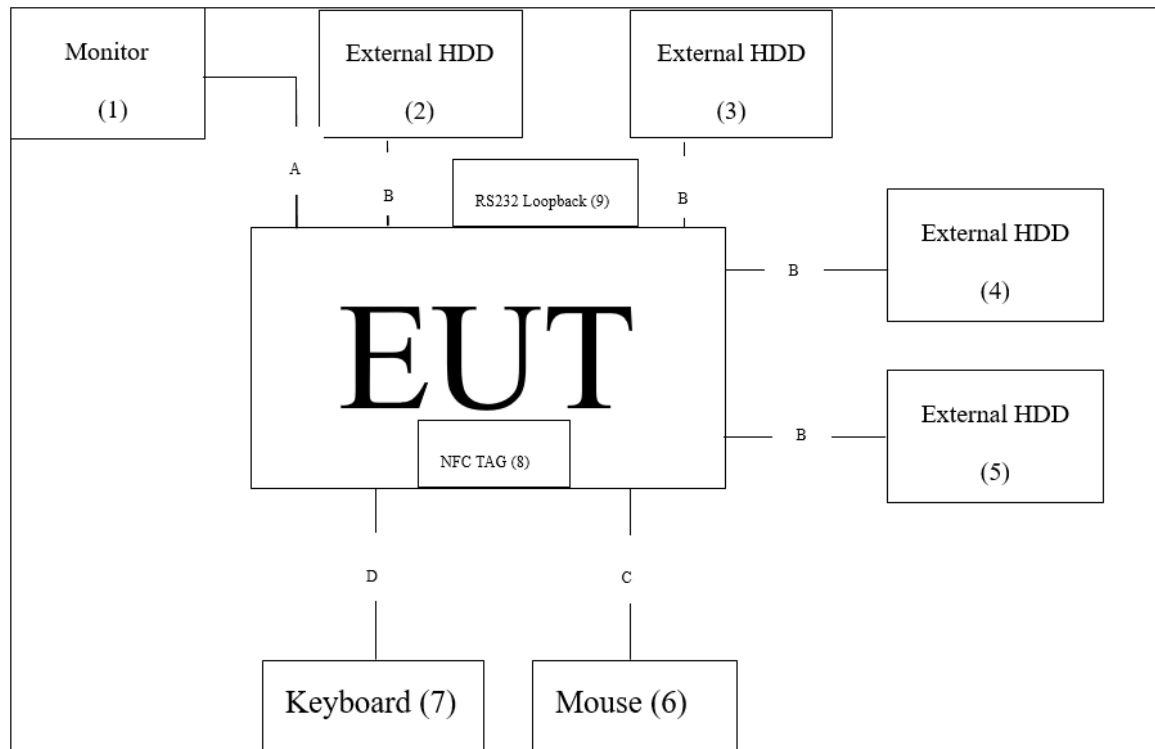
1.2. Tested System Details

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	Monitor	ASUS	VS229HA	F4LMQS135395	Non-shielded, 1.8m
2	External HDD	Transcend	TS1TSJ25H3B	F21786-0125	N/A
3	External HDD	Transcend	TS1TSJ25H3B	F21786-0019	N/A
4	External HDD	Transcend	TS1TSJ25H3B	F21786-0005	N/A
5	External HDD	Transcend	TS1TSJ25H3B	F21786-0103	N/A
6	Mouse	Logitech	U0026	N/A	N/A
7	Keyboard	Logitech	K120	N/A	N/A
8	NFC TAG	ASUS	N/A	N/A	Non-shielded, 0.8m
9	RS232 Loopback	DEKRA	N/A	N/A	Non-shielded, 0.8m

Signal Cable Type		Signal cable Description
A	HDMI Cable	Shielded, 1.8m
B	USB Cable	Shielded, 0.5m, four PCS.
C	Mouse Cable	Non-shielded, 1.8m
D	Keyboard Cable	Non-shielded, 1.5m

1.3. Configuration of tested System



1.4. EUT Exercise Software

1. Setup the EUT as shown in Section 1.3
2. Turn on the power of all equipment.
3. Using tag to trigger NFC continuous transmission.
4. 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	21.5 °C
	Humidity (%RH)	10~90 %	65.5 %
Radiated Emission	Temperature (°C)	10~40 °C	20.0 °C
	Humidity (%RH)	10~90 %	63.0 %
Conductive	Temperature (°C)	10~40 °C	23.0 °C
	Humidity (%RH)	10~90 %	55.0 %

USA : FCC Registration Number: TW0033

Canada : IC Registration Number: 26930

Site Description : Accredited by TAF
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd
Address : No. 5-22, Ruishukeng Linkou District, New Taipei City,
24451, Taiwan
Performed Location : No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City
333411, Taiwan, R.O.C.
Phone number : +886-3-275-7255
Fax number : +866-3-327-8031
Email address : info.tw@dekra.com
Website : <http://www.dekra.com.tw>

1.6. List of Test Equipment

For Conduction measurements /SH1

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	EMI Test Receiver	R&S	ESR7	101601	2021/06/19	2022/06/18
X	Two-Line V-Network	R&S	ENV216	101306	2021/04/08	2022/04/07
X	Two-Line V-Network	R&S	ENV216	101307	2021/05/04	2022/05/03
X	Coaxial Cable	DEKRA	RG400_BNC	RF001	2021/05/24	2022/05/23

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 : AUDIX e3 V9

For Conducted measurements /SH2

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Spectrum Analyzer	R&S	FSV30	103466	2020/12/28	2021/12/27
X	Peak Power Analyzer	KEYSIGHT	8900B	MY51000539	2021/06/07	2022/06/06
X	Power Sensor	KEYSIGHT	N1923A	MY59240002	2021/05/17	2022/05/16
X	Power Sensor	KEYSIGHT	N1923A	MY59240003	2021/05/17	2022/05/16

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 Conduction Test System V9.0.5.

For Radiated measurements /966-1

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Loop Antenna	AMETEK	HLA6121	56736	2021/04/14	2022/04/13
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-675	2021/08/11	2022/08/10
	Horn Antenna	ETS-Lindgren	3117	00201259	2021/11/09	2022/11/08
	Horn Antenna	Com-Power	AH-1840	101101	2020/11/19	2021/11/18
X	Pre-Amplifier	EMCI	EMC001330	980254	2021/01/20	2022/01/19
	Pre-Amplifier	EMCI	EMC051835SE	980312	2021/02/24	2022/02/23
	Pre-Amplifier	EMCI	EMC05820SE	980362	2021/08/24	2022/08/23
	Pre-Amplifier	EMCI	EMC184045SE	980369	2021/04/27	2022/04/26
	Filter	MICRO TRONICS	BRM50702	G251	2021/09/16	2022/09/15
	Filter	MICRO TRONICS	BRM50716	G188	2021/09/16	2022/09/15
X	EMI Test Receiver	R&S	ESR	102792	2020/12/15	2021/12/14
X	Spectrum Analyzer	R&S	FSV3044	101115	2021/01/28	2022/01/27
X	Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2021/06/25	2022/06/24
	Coaxial Cable	SUHNER,SGH	HA800,SGH18, SUCOFLEX106, EMC106	GD20110222-8, 2021003-8, 25450/6,151113	2021/03/03	2022/03/02

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 : AUDIX e3 V9

1.7. Uncertainty

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

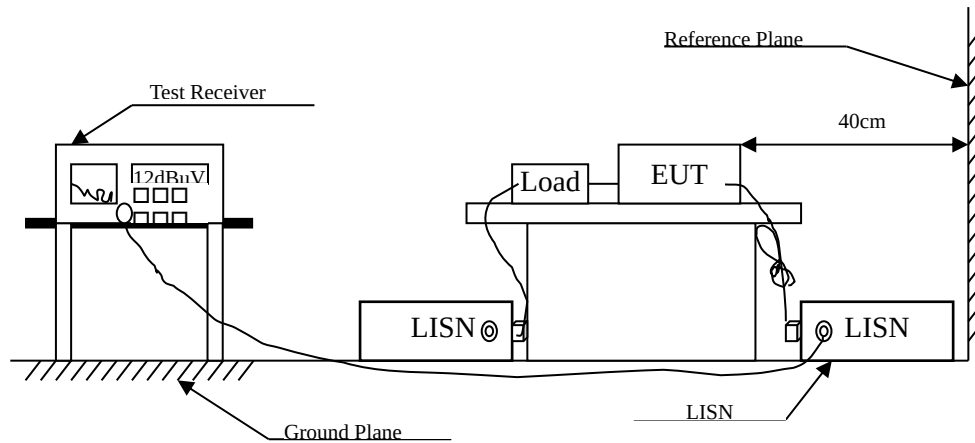
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

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	± 3.42 dB	
Radiated Emission	Under 1GHz ± 4.06 dB	Above 1GHz ± 3.73 dB
Band Edge	Under 1GHz ± 4.06 dB	Above 1GHz ± 3.73 dB
Frequency Tolerance	± 682.83 Hz	

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56 ^(註)	56-46 ^(註)
0.50-5.0	56	46
5.0 - 30	60	50

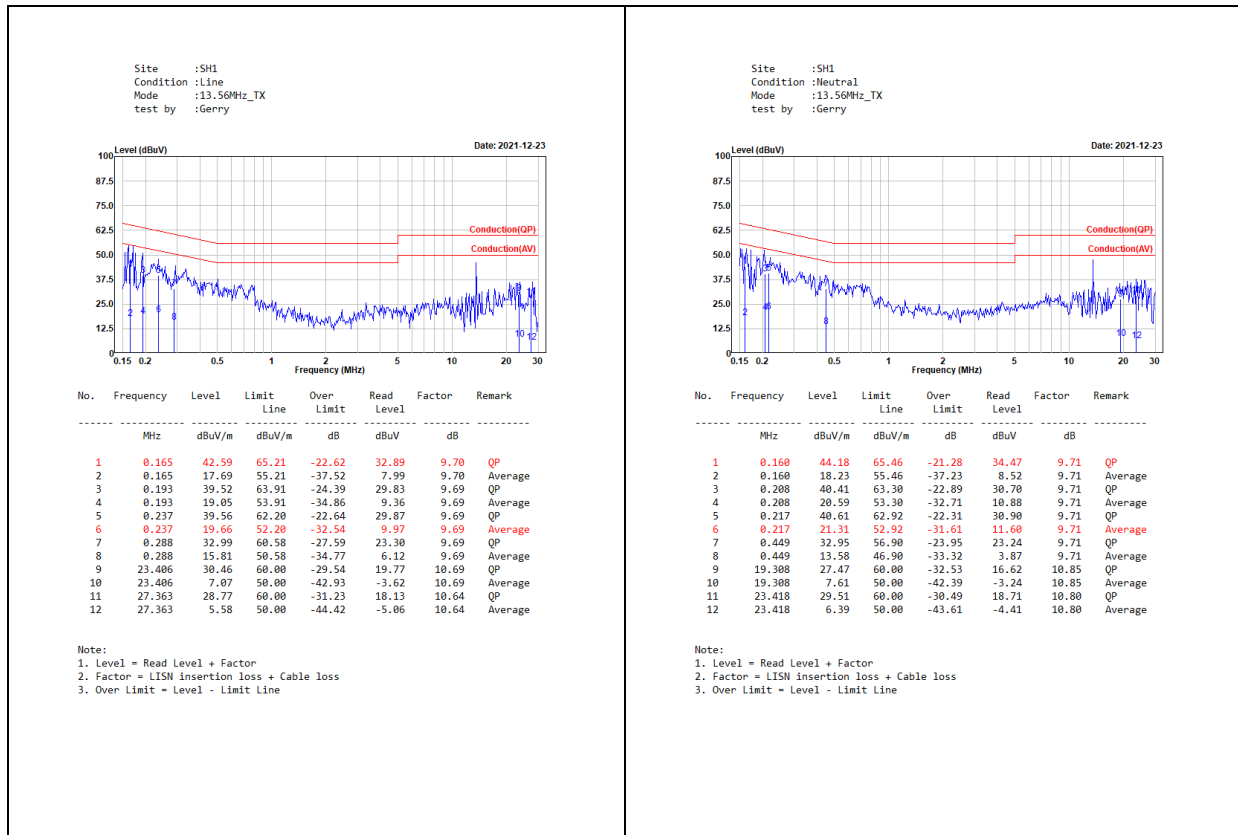
2.3. Test Procedure

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.

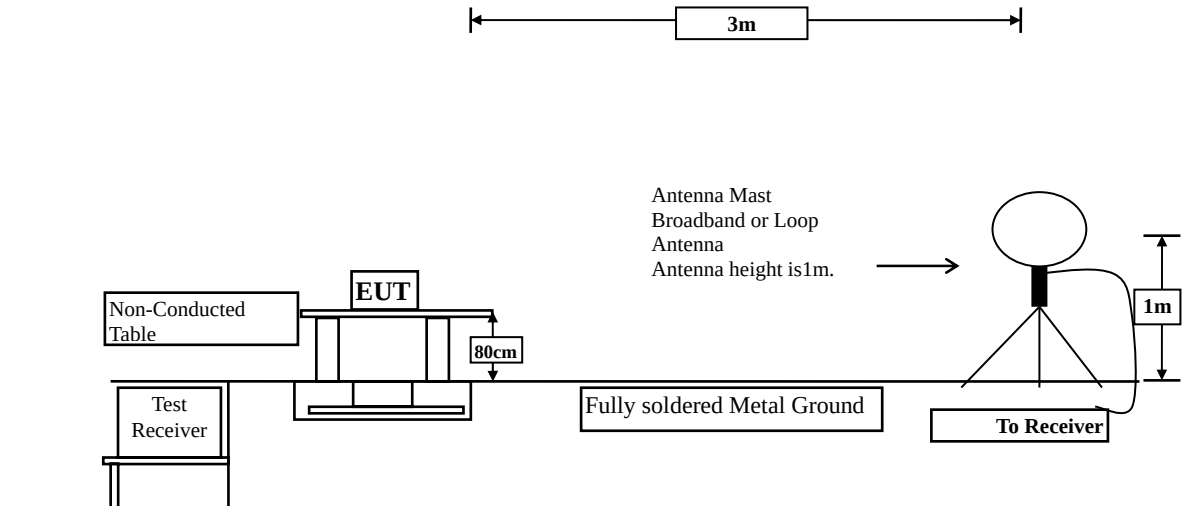
2.4. Test Result of Conducted Emission



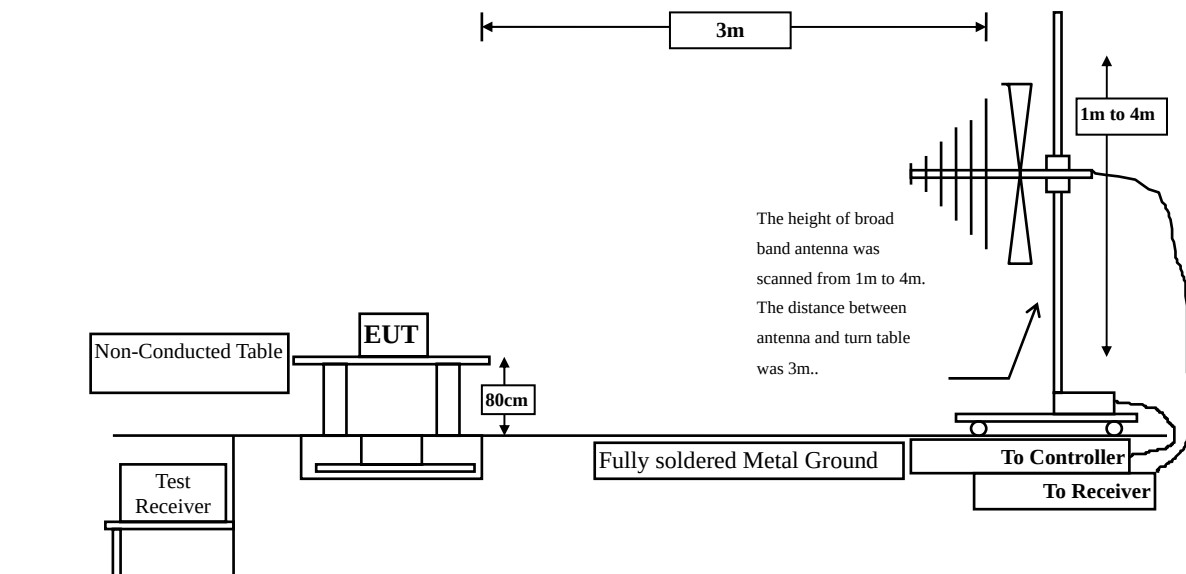
3. Radiated Emission

3.1. Test Setup

Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



3.2. Limits

➤ Fundamental electric field strength Limit

FCC Part 15 Subpart C Paragraph 15.225 Limits				
Fundamental Frequency MHz	Field strength of fundamental			
	uV/m	Distance (meter)	dBuV/m	Distance (meter)
13.553 – 13.567	15848	30	124	3
13.410 – 13.553 and 13.567 – 13.710	334	30	90.47	3
13.110 – 13.410 and 13.710 – 14.010	106	30	80.50	3
Outside of the 13.110 – 14.010	See 15.209 Limits			

Remarks :

1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. 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. The emission limit in this paragraph is based on measurement instrumentation employing an quasi-peak detector.

➤ Spurious electric field strength Limit

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

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

Fundamental electric field strength:

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum electric field strength.

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

The antenna which is 1 meter above ground. All X-axis, Y-axis and Z-axis polarization of the antenna are set on measurement.

Spurious electric field strength:

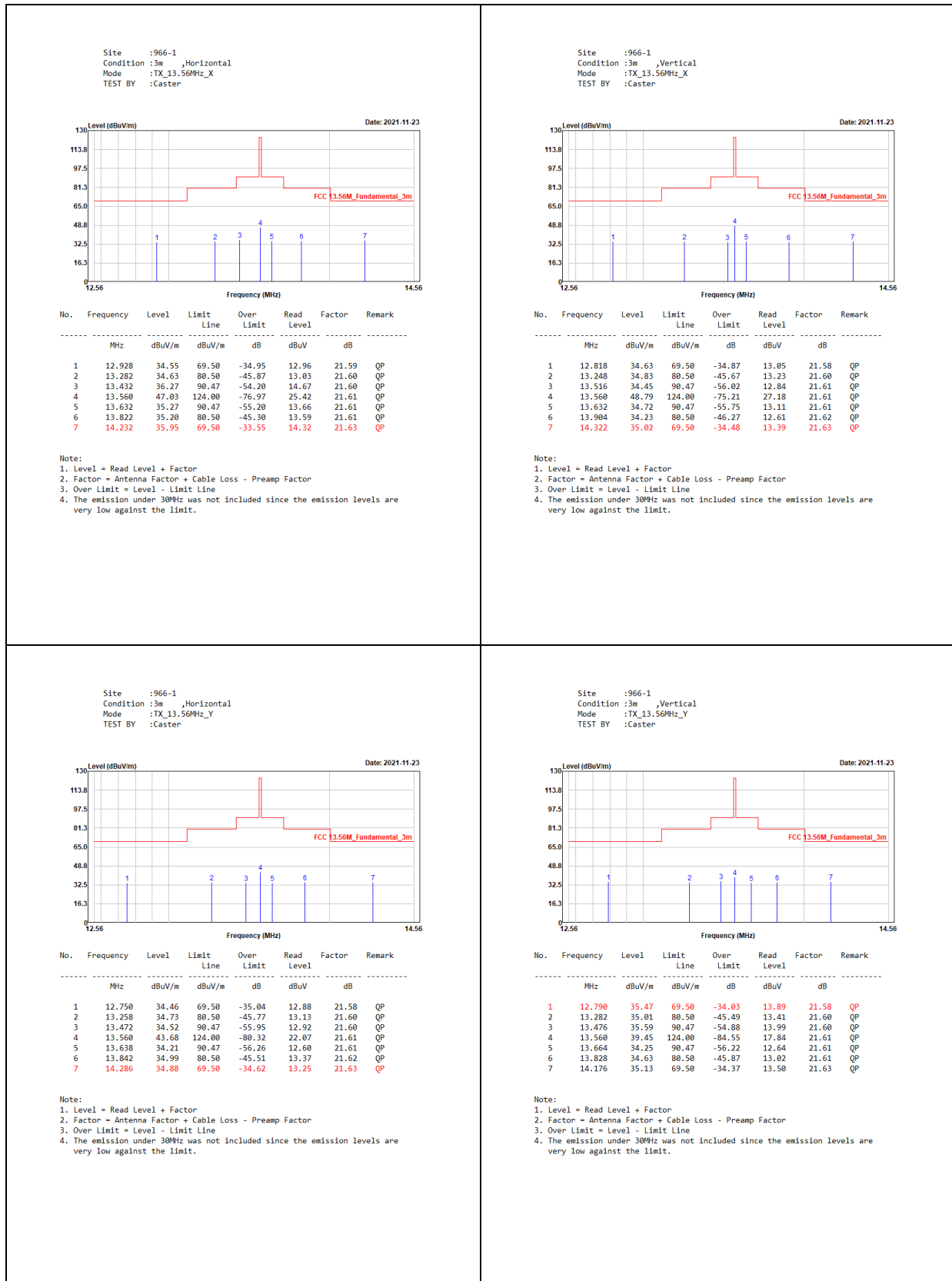
The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

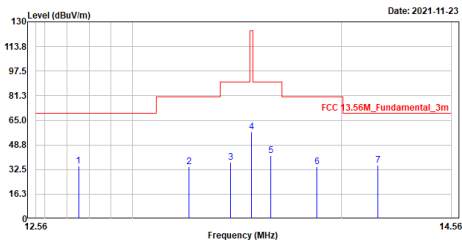
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth below 30MHz setting on the field strength meter is 9kHz and above 30MHz is 120kHz. The frequency range from 9kHz to 10th harmonics is checked.

3.4. Test Result of Radiated Emission



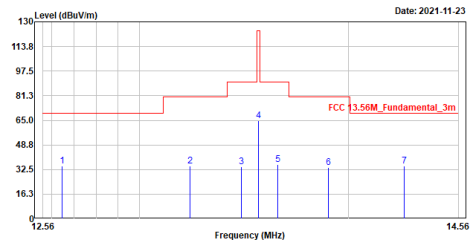
Site :966-1
Condition :3m ,Horizontal
Mode :TX 13.56MHz_Z
TEST BY :Caster



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	12.752	34.98	69.50	-34.52	13.40	21.58	QP
2	13.264	34.56	80.50	-45.94	12.96	21.60	QP
3	13.460	37.48	90.47	-52.99	15.88	21.60	QP
4	13.560	57.44	124.00	-66.56	35.83	21.61	QP
5	13.656	41.80	90.47	-48.67	20.19	21.61	QP
6	13.880	34.56	80.50	-45.94	12.94	21.62	QP
7	14.184	35.08	69.50	-34.42	13.45	21.63	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

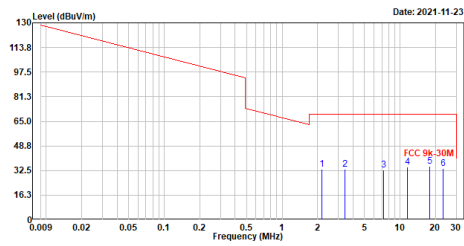
Site :966-1
Condition :3m ,Vertical
Mode :TX 13.56MHz_Z
TEST BY :Caster



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	12.646	34.97	69.50	-34.53	13.39	21.58	QP
2	13.234	34.78	80.50	-45.72	13.18	21.60	QP
3	13.480	34.29	90.47	-56.18	12.69	21.60	QP
4	13.560	64.94	124.00	-59.06	43.33	21.61	QP
5	13.654	35.66	90.47	-54.81	14.05	21.61	QP
6	13.902	33.90	80.50	-46.60	12.28	21.62	QP
7	14.284	34.97	69.50	-34.53	13.34	21.63	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

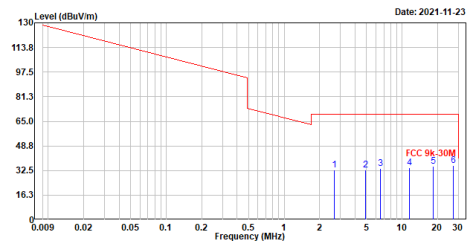
Site :966-1
Condition :3m ,Horizontal
Mode :TX_9K-30MHz
TEST BY :Caster



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	Limit	Level	dB	
1	2.184	33.19	69.50	-36.31	13.19	20.00	QP
2	3.412	33.13	69.50	-36.37	13.27	19.86	QP
3	7.255	32.93	69.50	-36.57	12.20	20.73	QP
4	11.613	34.76	69.50	-34.74	13.21	21.55	QP
5	17.851	35.29	69.50	-34.21	13.55	21.74	QP
6	23.141	34.04	69.50	-35.46	12.18	21.86	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

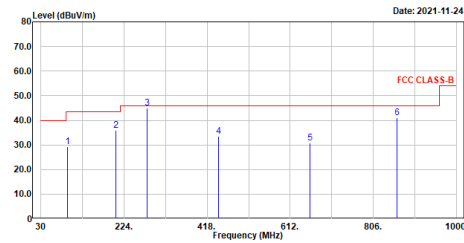
Site :966-1
Condition :3m ,Vertical
Mode :TX_9K-30MHz
TEST BY :Caster



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	Limit	Level	dB	
1	2.653	32.83	69.50	-36.67	12.94	19.89	QP
2	4.915	33.11	69.50	-36.39	13.02	20.09	QP
3	6.529	33.98	69.50	-35.52	13.45	20.53	QP
4	11.519	34.20	69.50	-35.30	12.65	21.55	QP
5	18.291	35.34	69.50	-34.16	13.59	21.75	QP
6	27.217	35.59	69.50	-33.91	13.65	21.94	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

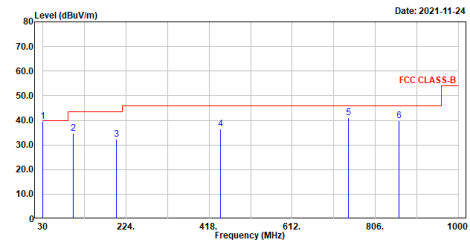
Site :966-1
Condition :3m ,HORIZONTAL
Mode :TX_30MHz-1G
TEST BY :Caster



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	Limit	Level	dB	
1	93.050	29.33	43.50	-14.17	46.92	-17.59	QP
2	204.600	36.07	43.50	-7.43	50.54	-14.47	QP
3	277.350	45.03	46.00	-0.97	56.78	-11.75	QP
4	445.160	33.45	46.00	-12.55	41.00	-7.55	QP
5	658.560	30.80	46.00	-15.20	34.36	-3.56	QP
6	862.260	41.01	46.00	-4.99	42.29	-1.28	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Site :966-1
Condition :3m ,VERTICAL
Mode :TX_30MHz-1G
TEST BY :Caster



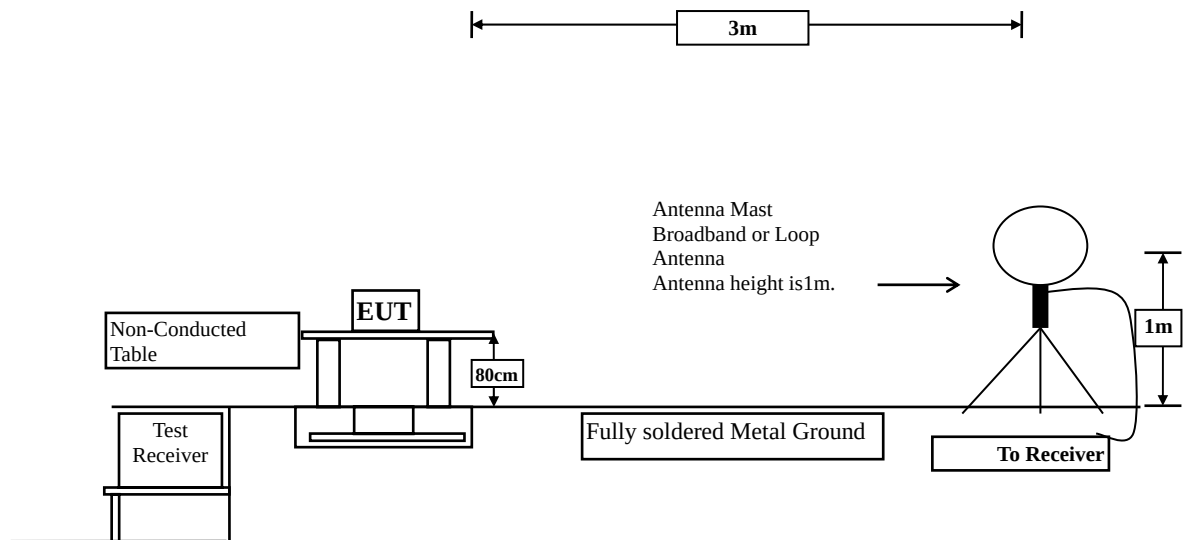
No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	Limit	Level	dB	
1	30.000	39.56	40.00	-0.44	52.96	-13.40	QP
2	100.810	34.85	43.50	-8.65	51.18	-16.33	QP
3	201.690	32.29	43.50	-11.21	46.83	-14.54	QP
4	445.160	36.49	46.00	-9.51	44.04	-7.55	QP
5	742.950	40.97	46.00	-5.03	43.17	-2.20	QP
6	861.290	39.74	46.00	-6.26	41.04	-1.30	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

4. Band Edge

4.1. Test Setup

Radiated Emission Under 30MHz



4.2. Limits

The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in Section 15.209. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209

4.3. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

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.

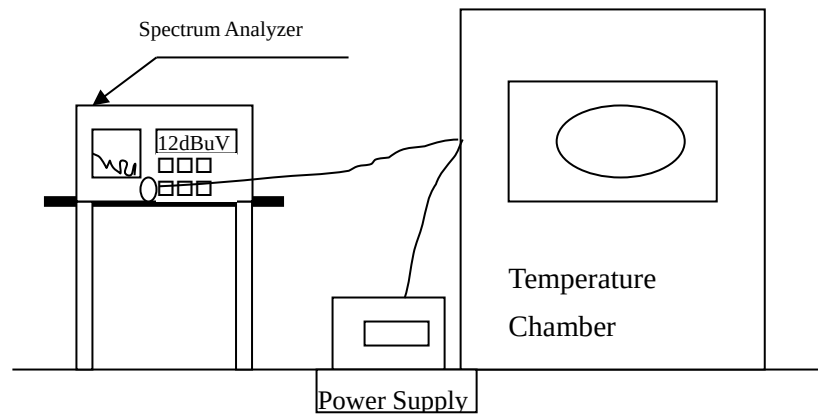
The bandwidth below 30MHz setting on the field strength meter is 9kHz and above 30MHz is 120kHz.

4.4. Test Result of Band Edge



5. Frequency Tolerance

5.1. Test Setup



5.2. Limits

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency.

5.3. Test Procedure

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to $+ 50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

5.4. Test Result of Frequency Stability

Product : Medical Panel PC
 Test Item : Frequency Tolerance
 Test Mode : Mode 1: Transmit
 Test date : 2021/12/13

Temperature (°C)	Voltage (V)	Observe Time	Declared Frequency (MHz)	Read Frequency (MHz)	Tolerance (%)	Limit (%)
20	120	start	13.56	13.56072	0.005310	±0.01 %
		2mins	13.56	13.56072	0.005310	
		5mins	13.56	13.56072	0.005310	
		10mins	13.56	13.56072	0.005310	
20	121.2	start	13.56	13.56072	0.005310	±0.01 %
		2mins	13.56	13.56072	0.005310	
		5mins	13.56	13.56072	0.005310	
		10mins	13.56	13.56072	0.005310	
20	108	start	13.56	13.56072	0.005310	±0.01 %
		2mins	13.56	13.56072	0.005310	
		5mins	13.56	13.56072	0.005310	
		10mins	13.56	13.56072	0.005310	
50	120	start	13.56	13.56061	0.004484	±0.01 %
		2mins	13.56	13.56061	0.004484	
		5mins	13.56	13.56061	0.004484	
		10mins	13.56	13.56061	0.004484	
40	120	start	13.56	13.56061	0.004484	±0.01 %
		2mins	13.56	13.56061	0.004484	
		5mins	13.56	13.56061	0.004484	
		10mins	13.56	13.56061	0.004484	
30	120	start	13.56	13.56064	0.004698	±0.01 %
		2mins	13.56	13.56064	0.004698	
		5mins	13.56	13.56061	0.004484	
		10mins	13.56	13.56061	0.004484	

10	120	start	13.56	13.56051	0.003761	± 0.01 %
		2mins	13.56	13.56051	0.003761	
		5mins	13.56	13.56064	0.004720	
		10mins	13.56	13.56064	0.004720	
0	120	start	13.56	13.56072	0.005310	± 0.01 %
		2mins	13.56	13.56072	0.005310	
		5mins	13.56	13.56072	0.005310	
		10mins	13.56	13.56072	0.005310	
-10	120	start	13.56	13.56061	0.004499	± 0.01 %
		2mins	13.56	13.56061	0.004499	
		5mins	13.56	13.56061	0.004499	
		10mins	13.56	13.56061	0.004499	
-20	120	start	13.56	13.56064	0.004720	± 0.01 %
		2mins	13.56	13.56064	0.004720	
		5mins	13.56	13.56064	0.004720	
		10mins	13.56	13.56064	0.004720	

6. EMI Reduction Method During Compliance Testing

No modification was made during testing.