

TEST REPORT

Applicant:	Guoguang Electric Co., Ltd.
Address of Applicant:	No.8 Jinghu Road, Xinhua Street, Huadu Reg, Guangzhou, China
Manufacturer:	Vifa Denmark A/S
Address of Manufacturer:	Mariendalsvej 2A, 8800 Viborg, Denmark
Product name:	Portable Wireless Speaker
Model:	VIFA070
Rating(s):	Input: 5Vdc 2A Battery: 7.2Vdc, 2600mAh
Trademark:	vifa
FCC register number:	935596
FCC ID:	2AAP8-VIFANORDIC3
Standards:	FCC Part15 subpart B: 2017
Date of Receipt:	2017-05-08
Date of Test:	2017-05-08~2017-06-20
Date of Issue:	2017-06-20
Test Result	Pass*

^{*} In the configuration tested, the test item complied with the standards specified above.

Authorized for issue by: Test by: Seriewed by: Jun.20, 2017 Galen Xiao Project Engineer Date Name/Position Reviewed by: Jun.20, 2017 Pauler Li Project Manager Project Manager Name/Position Signature Date Name/Position Signature





Testing Laboratory information:

Testing Laboratory Name: I-Test Laboratory

Address 1-2 floor, South Block, Building A2, No 3 Keyan Lu, Science City,

Guangzhou, Guangdong Province, P.R. China

Report. No. 17050545-2

 Testing location
 : Same as above

 Tel.
 : 0086-20-32209330

 Fax
 : 0086-20-62824387

 E-mail
 : itl@i-testlab.com

Possible test case verdicts:

test case does not apply to the test object...: N/A
test object does meet the requirement.......: P (Pass)
test object does not meet the requirement ... F (Fail)

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report would be invalid test report without all the signatures of testing technician and approver. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

General product information:

The EUT contain two grills both wool-grill and metal-grill. And there are different colors, All tests were performed on the EUT with metal-grill.



Test Summary:

The following standards have been applied to ensure the product conforms with the protection requirements of the council directive FCC part 15B.

Electromagnetic Emissions										
Test Item	Test Standard	Test Method	Class/Severity	Result						
Conducted Emission(0.15-30MHz)	FCC part 15.107	ANSI C63.4:2014	Class B	PASS						
Radiated Emission(30-1000MHz)	FCC part 15.109	ANSI C63.4:2014	Class B	PASS						
Radiated Emission above 1GHz	FCC part 15.109	ANSI C63.4:2014	Class B	PASS						

Test Location:

All the tests were performed in I-Test Laboratory. Which is located at 1-2 floor, South Block, Building A2, No 3 Keyan Lu, Science City, Guangzhou, Guangdong Province, P.R. China

Tel: 0086-20-32209330, Fax: 0086-20-62824387

No test is subcontracted



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Section 1 General Information and Equipment Used

1.1 Client Information

Applicant: Guoguang Electric Co., Ltd.

Address of Applicant: No.8 Jinghu Road, Xinhua Street, Huadu Reg, Guangzhou, China

1.2 EUT General and Technical Descriptions

EUT Name: Portable Wireless Speaker

EUT Model: VIFA070
EUT Trademark: vifa
Input Voltage: 5Vdc

Frequency: /

Input Power/Current: 2A

Output rated: 7.2Vdc 2600mAh (For battery)

Power Cable Description: 1m USB cable

Other Cables Description:

I/O Ports: USB, AUX IN

Function(s) Description: /
Accessories information: /
Highest operating frequency: /

1.3 Support Equipment(s) and Test Configuration

1.3.1 Details of Support Equipment(s)

Description	Manufacturer	Model No.	Connection	Working state
iPod	apple	A1509	1	Normal
Computer	Lenovo	ThinkPad Edge E431	1	Normal

1.3.2 Working State of EUT

Power Supply of EUT: 120V~ 60Hz

EUT Status: 1kHz audio signal playing by computer



1.4 Equipment Used during Test

Conducted Emission									
No.	Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due			
ITL-102	EMI Test receiver	R&S	ESCI	100910	2017/06/17	2018/06/17			
ITL-103	Two-line v-network	R&S	ENV216	100120	2017/06/17	2018/06/17			
ITL-101	Shielded Room	ETS•Lindgren	8*4*3	CT09010	2015/03/09	2018/03/09			

Radiated Er	Radiated Emission									
No.	Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due				
ITL-100	Semi-Anechoic chamber	ETS•Lindgren	FACT3 2.0	CT09015	2016/11/02	2019/11/02				
ITL-154	EMI test receiver 9kHz to 26.5GHz	R&S	ESR26	101257	2017/01/20	2018/01/20				
ITL-105	Biconilog Antenna	ETS•Lindgren	3142D	00108096	2015/01/24	2018/01/24				
ITL-116	Pre Amplifier	HP	8447F	3113A05905	2017/01/20	2018/01/20				
ITL-117	Wideband Amplifier Super Ultra	Mini-circuits	ZVA-183-S +	469101134	2017/01/20	2018/01/20				
ITL-110	Horn Antenna	A-INFOMW	JXTXLB-1 0180-N	J20310906121 33	2015/01/24	2018/01/24				

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Section 2 Emission Test Results

2.1 Conducted Emission at Mains Terminals, 150 kHz to 30MHz

Test Requirement: FCC part 15.107
Test Method: ANSI C63.4:2014
Test Voltage: 120V AC, 60Hz
Test Date: 2017-05-15

Frequency Range: 150 kHz to 30MHz

Detector: Peak for pre-scan

Quasi-Peak and Average at frequency with maximum peak

Report. No. 17050545-2

(9 kHz resolution bandwidth)

Uncertainty: 2Uc(V) = 2.3dB

Class / Limit: Class B

Frequency range	Class B Limits dB (μV)				
MHz	Quasi-peak	Average			
0.15 to 0.50	66 to 56	56 to 46			
0.50 to 5	56	46			
5 to 30	60	50			

NOTE 1 :The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

NOTE 2: The lower limit is applicable at the transition frequency.

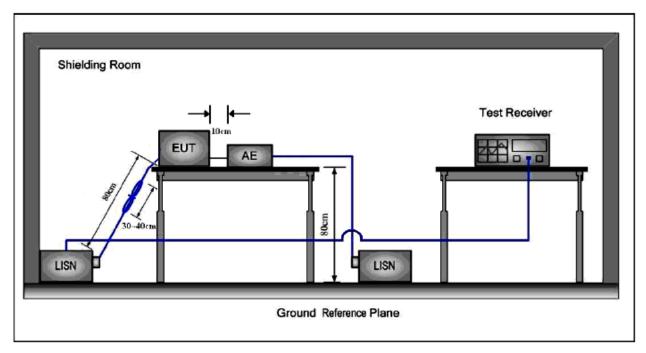
2.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C Humidity: 51 % RH Atmospheric Pressure: 101 kPa

EUT Operation: 1kHz audio signal playing by computer.

2.1.2 Test Setup and Procedure



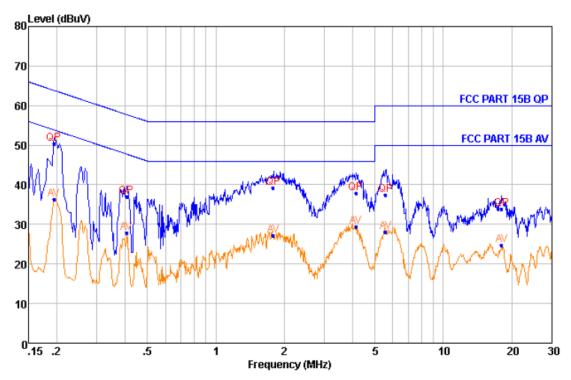
- 1. The mains terminal disturbance voltage test was conducted in a shielded room.
- 2. The EUT was connected to nominal power supply through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu H + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
- 4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

2.1.3 Measurement Data

Pre-scan was performed with peak detected on both live and neutral cable. Quasi-peak & average measurements were performed at the frequencies which maximum peak emission level was detected. Please see the attached Quasi-peak and Average test results.



Model: VIFA070 Live Line: Peak Scan: Level (dBµV)



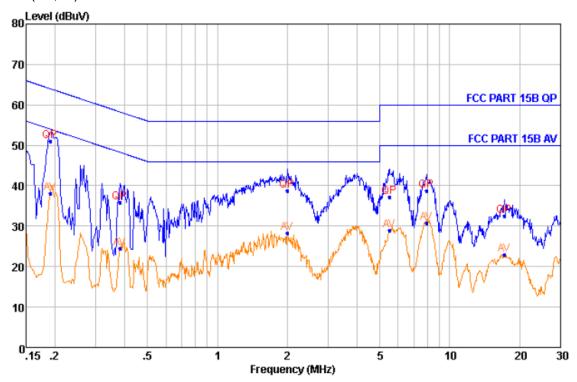
Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBu∀	Margin dB
							40.40
1	0.194	50.41	QP	9.37	0.21	63.84	-13.43
2	0.194	36.30	Average	9.37	0.21	53.84	-17.54
3	0.405	37.10	QP	9.36	0.26	57.74	-20.64
4	0.405	27.84	Average	9.36	0.26	47.74	-19.90
5	1.787	39.28	QP	9.39	0.34	56.00	-16.72
6	1.787	27.28	Average	9.39	0.34	46.00	-18.72
7	4.125	37.88	QP	9.42	0.39	56.00	-18.12
8	4.125	29.33	Average	9.42	0.39	46.00	-16.67
9	5.581	37.33	QP	9.45	0.40	60.00	-22.67
10	5.581	28.08	Average	9.45	0.40	50.00	-21.92
11	18.000	33.88	QP	9.82	0.47	60.00	-26.12
12	18.000	24.72	Average	9.82	0.47	50.00	-25.28



Neutral Line:

Peak Scan: Level (dB μ V)



Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBu∀	Margin dB
1	0.190	51.04	QP	9.37	0.21	64.02	-12.98
2	0.190	38.17	Average	9.37	0.21	54.02	-15.85
3	0.380	35.87	QP	9.36	0.25	58.27	-22.40
4	0.380	24.58	Average	9.36	0.25	48.27	-23.69
5	2.000	38.85	QP	9.39	0.35	56.00	-17.15
6	2.000	28.29	Average	9.39	0.35	46.00	-17.71
7	5.495	37.13	QP	9.44	0.40	60.00	-22.87
8	5.495	28.99	Average	9.44	0.40	50.00	-21.01
9	7.935	38.79	QP	9.50	0.42	60.00	-21.21
10	7.935	30.79	Average	9.50	0.42	50.00	-19.21
11	17.159	32.63	QP	9.78	0.47	60.00	-27.37
12	17.159	22.99	Average	9.78	0.47	50.00	-27.01



2.2 Radiated Emissions, 30MHz to 1GHz

Test Requirement: FCC part 15.109
Test Method: ANSI C63.4:2014
Test Voltage: 120V AC, 60Hz
Test Date: 2017-06-15
Frequency Range: 30MHz to 1GHz

Measurement Distance 3m

Detector: Peak for pre-scan

Quasi-Peak if maximised peak within 6dB of limit

Report. No. 17050545-2

(120 kHz resolution bandwidth)

Uncertainty: 2Uc(V) = 3.35dB

Class / Limit: Class B

Frequency range	Quasi-peak limits
MHz	dB (μV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
960 to 1000	54
At transitional frequencies the lower limit applies	

2.2.1 E.U.T. Operation

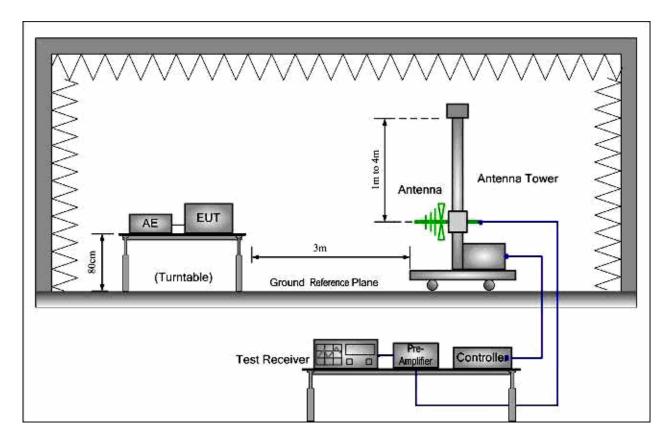
Operating Environment:

Temperature: 24.0 °C Humidity: 50 % RH Atmospheric Pressure: 101 kPa

EUT Operation: 1kHz audio signal playing by computer.



2.2.2 Test Setup and Procedure



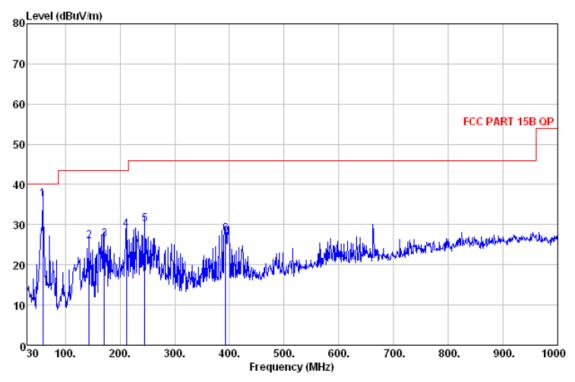
- The radiated emissions test was conducted in a semi-anechoic chamber.
- 2. Biconical and log periodic antenna was used for the frequency range from 30MHz to 1GHz
- 3. The EUT was connected to nominal power supply through a mains power outlet which was bonded to the ground reference plane; The mains cables were draped to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
- 4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT.
- 5. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

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2.2.3 Measurement Data

Model: VIFA070 Horizontal: Peak scan Level (dBμV/m)



Quasi-peak measurement

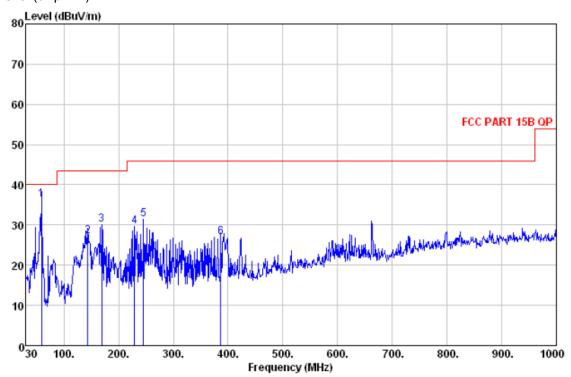
No. Freq MHz	Read Level dBuV	Antenna Factor dB	Cable Loss dB	Preamp Factor dB	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Pol/Phase	Remark
1 59.100	56.87	6.89	0.88	28.23	36.41	40.00	-3.59	HORIZONTAL	QP
2 143.490	45.51	7.33	1.43	28.34	25.93	43.50	-17.57	HORIZONTAL	QP
3 171.620	44.80	8.27	1.57	28.38	26.26	43.50	-17.24	HORIZONTAL	QP
4 211.390	45.23	9.27	1.76	27.54	28.72	43.50	-14.78	HORIZONTAL	QP
5 245.340	44.26	11.13	1.91	27.25	30.05	46.00	-15.95	HORIZONTAL	QP
6 392.780	37.99	15.58	2.42	28.26	27.73	46.00	-18.27	HORIZONTAL	QP

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor



Vertical:

Peak scan Level (dBµV/m)



Quasi-peak measurement

No. Freq MHz	Read Level dBuV	Antenna Factor dB	Cable Loss dB	Preamp Factor dB	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Pol/Phase	Remark
1 59.100	56.81	6.89	0.88	28.23	36.35	40.00	-3.65	VERTICAL	QP
2 143.490	46.70	7.33	1.43	28.34	27.12	43.50	-16.38	VERTICAL	QP
3 168.710	48.82	8.09	1.55	28.45	30.01	43.50	-13.49	VERTICAL	QP
4 228.850	44.47	10.83	1.83	27.53	29.60	46.00	-16.40	VERTICAL	QP
5 245.340	45.72	11.13	1.91	27.25	31.51	46.00	-14.49	VERTICAL	QP
6 386.960	37.59	15.38	2.40	28.30	27.07	46.00	-18.93	VERTICAL	QP

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

2.3 Radiated Emissions above 1 GHz

Test Requirement: FCC part 15.109
Test Method: ANSI C63.4:2014
Test Voltage: 120V AC, 60Hz
Test Date: 2017-06-15
Frequency Range: 1GHz to 18GHz

Measurement Distance 3m

Detector: Peak for pre-scan

Quasi-Peak if maximised peak within 6dB of limit

Report. No. 17050545-2

(120 kHz resolution bandwidth)

Uncertainty: 2Uc(V) = 3.37dB

Class / Limit: Class B

Frequency range	Peak limits	AV limits
GHz	dB (μV/m)	dB (μV/m)
1 to 18	74	54

2.3.1 E.U.T. Operation

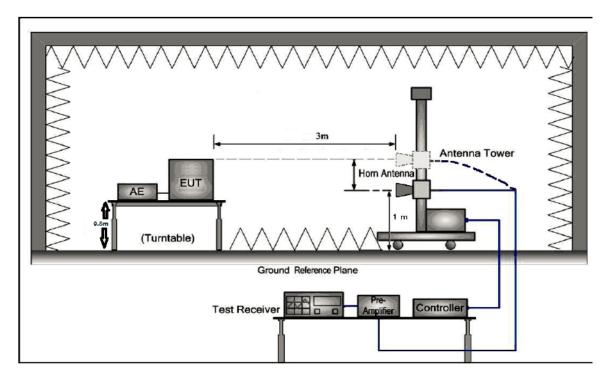
Operating Environment:

Temperature: 24°C Humidity: 52 % RH Atmospheric Pressure: 101 kPa

EUT Operation: 1kHz audio signal playing by computer.



2.3.2Test Setup and Procedure



- 1. The radiated emissions test was conducted in a fully-anechoic chamber.
- 2. Horn antenna was used for the frequency above 1GHz
- 3. The EUT was connected to nominal power supply through a mains power outlet which was bonded to the ground reference plane; The mains cables were draped to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
- 4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum plots of the EUT.
- 5. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.



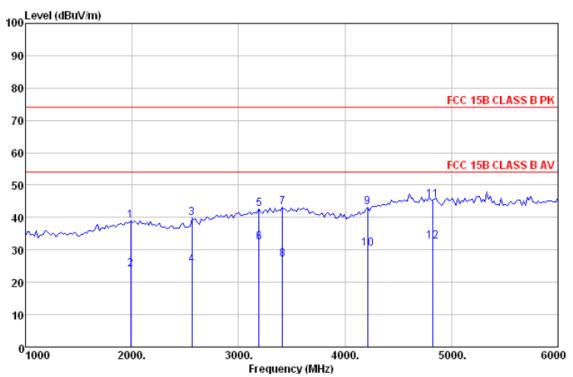
For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.



2.3.3 Measurement Data

Model: VIFA070 Horizontal: Peak scan Level (dBμV/m)



Quasi-peak measurement

32564.000 32.76 28.13 6.71 27.81 39.79 74.00 -34.21 HORIZONTAL Peak 42564.000 18.38 28.13 6.71 27.81 25.41 74.00 -48.59 HORIZONTAL Peak 53193.000 32.57 30.36 7.58 27.84 42.67 74.00 -31.33 HORIZONTAL Peak 63193.000 22.16 30.36 7.58 27.84 32.26 54.00 -21.74 HORIZONTAL Average 73414.000 31.93 31.11 7.88 27.83 43.09 74.00 -30.91 HORIZONTAL Peak 83414.000 15.93 31.11 7.88 27.83 27.09 54.00 -26.91 HORIZONTAL Average 94213.000 30.89 31.03 8.87 27.73 43.06 74.00 -30.94 HORIZONTAL Peak 104213.000 18.29 31.03 8.87 27.73 30.46 54.00 -23.54 HORIZONTAL Average 114825.000 30.20 33.36 9.60 27.62 45.54 74.00 -28.46 HORIZONTAL Peak	No. Freq MHz	Read Level dBuV	Antenna Factor dB	Cable Loss dB	Preamp Factor dB	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Pol/Phase	Remark
-124825 HHI -17 2H -33 3K - 4 KH -27 K2 - 32 54 - 54 HH -21 4K - HOKIZONTAL Average	21986.000 32564.000 42564.000 53193.000 63193.000 73414.000 83414.000 94213.000	17. 89 32. 76 18. 38 32. 57 22. 16 31. 93 15. 93 30. 89 18. 29	28. 00 28. 13 28. 13 30. 36 30. 36 31. 11 31. 11 31. 03 31. 03	5.82 6.71 6.71 7.58 7.58 7.88 7.88 8.87 8.87	27.69 27.81 27.81 27.84 27.84 27.83 27.83 27.73 27.73	24. 02 39. 79 25. 41 42. 67 32. 26 43. 09 27. 09 43. 06 30. 46	54.00 74.00 74.00 74.00 54.00 54.00 54.00 74.00 54.00	-29.98 -34.21 -48.59 -31.33 -21.74 -30.91 -26.91 -30.94 -23.54	HORIZONTAL	Average Peak Peak Peak Average Peak Average Average Average Average

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

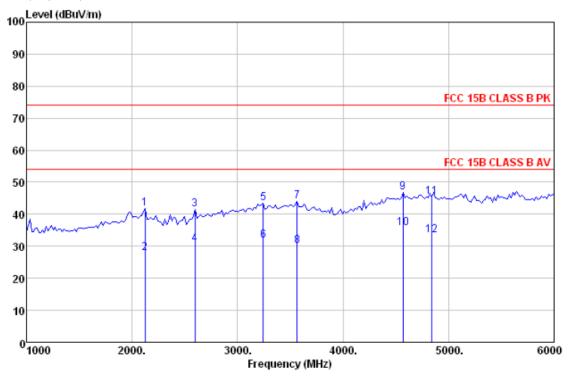
Note: The frequencies on which the transmitter part of the EUT is intended to operate shall be excluded from radiated emission measurements

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Peak scan Level (dBµV/m)



Quasi-peak measurement

No. Freq MHz	Read Level dBuV	Antenna Factor dB	Cable Loss dB	Preamp Factor dB	Level dBuV/m	Limit Line dBuV/m	O v er Limit dB	Pol/Phase	Remark
12122.000 22122.000 32598.000 42598.000 53244.000 73567.000 94570.000 104570.000 114842.000	35. 51 21. 54 34. 34 23. 32 33. 25 21. 33 32. 72 18. 72 31. 91 20. 95 30. 09 18. 09	28. 05 28. 05 28. 25 28. 25 30. 53 30. 53 31. 15 31. 15 33. 16 33. 16 33. 37	6. 03 6. 03 6. 76 6. 76 7. 65 7. 65 8. 07 8. 07 9. 31 9. 31 9. 62 9. 62	27. 72 27. 72 27. 81 27. 81 27. 84 27. 84 27. 82 27. 82 27. 67 27. 67 27. 62 27. 62	41.87 27.90 41.54 30.52 43.59 31.67 44.12 30.12 46.71 35.75 45.46 33.46	74. 00 54. 00 74. 00 54. 00 74. 00 54. 00 74. 00 54. 00 74. 00 54. 00 74. 00 54. 00	-32. 13 -26. 10 -32. 46 -23. 48 -30. 41 -22. 33 -29. 88 -27. 29 -18. 25 -28. 54 -20. 54	VERTICAL	Peak Average Peak Average Peak Average Peak Average Peak Average Peak Average Average Average

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

Note: The frequencies on which the transmitter part of the EUT is intended to operate shall be excluded from radiated emission measurements

END OF THE TEST REPORT