

Report No.: KSCR211200030801

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1 Cover Page

RF REPORT

Application No.: KSCR2112000308AT **FCC ID**: 2ADTD-D1503001

Applicant:Hangzhou Hikvision Digital Technology Co.,Ltd.Address of Applicant:No. 555, Qianmo Road, Binjiang District,HangzhouManufacturer:Hangzhou Hikvision Digital Technology Co.,Ltd.Address of Manufacturer:No. 555, Qianmo Road, Binjiang District,Hangzhou

Factory: 1.Hangzhou Hikvision Electronics Co., Ltd. 2.Hangzhou Hikvision Technology Co., Ltd.

3.CHONGQING HIKVISION TECHNOLOGY CO.,LTD.

Address of Factory: 1.No.299, Qiushi Road, Tonglu Economic Development Zone, Tonglu

County, Hangzhou, Zhejiang

2.No.700 Dongliu Road, Binjiang District, Hangzhou 310052, China 3. No. 118, Haikang Road, Area C, Jiangiao Industrial Park, Dadukou

District, Chongqing, 401325, China

Equipment Under Test (EUT):

EUT Name: Wireless Emergency Button

Model No.: DS-PDEB1-EG2-WB(B),DS-PDEB2-EG2-WB(B),DS-PDEB1-EG2-

WBUHK(B), DS-PDEB1-EG2-WBCKV(B), DS-PDEB1-EG2-WBUVS(B),

DS-PDEB1-EG2-WBKVO(B), DS-PDEB1-EG2-WBHUN(B),

DS-PDEB2-EG2-WBUHK(B),DS-PDEB2-EG2-WBCKV(B),DS-PDEB2-

EG2-WBUVS(B), DS-PDEB2-EG2-WBKVO(B),

DS-PDEB2-EG2-WBHUN(B)¤

Please refer to section 2 of this report which indicates which model was

actually tested and which were electrically identical.

Standard(s): 47 CFR Part 15, Subpart C 15.231

Date of Receipt: 2021-12-13

Date of Test: 2021-12-14 to 2021-12-28

Date of Issue: 2021-12-29

Test Result: Pass*

Eric Lin Laboratory Manager

Tosa Si



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



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Revision Record						
Version Description Date Remark						
Original	2021-12-29	1				
	Description	Description Date				

Authorized for issue by:		
	Damon zhou	
	Damon Zhou / Project Engineer	
	Eria Li	
	Eric Lin / Reviewer	



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2 Test Summary

Radio Spectrum Technical Requirement						
Item Standard Method Requirement Result						
Antenna Requirement	47 CFR Part 15, Subpart C 15.231	N/A	47 CFR Part 15, Subpart C 15.203	Pass		

N/A: Not applicable

ltem	Standard	Method	Requirement	Result
20dB Bandwidth	47 CFR Part 15, Subpart C 15.231	ANSI C63.10 (2013) Section 6.9	47 CFR Part 15, Subpart C 15.231(c)	Pass
Dwell Time (15.231(a))	47 CFR Part 15, Subpart C 15.231	ANSI C63.10 (2013) Section 7.8.4	47 CFR Part 15, Subpart C 15.231(a)	Pass
Field Strength of the Fundamental Signal (15.231(b))	47 CFR Part 15, Subpart C 15.231	ANSI C63.10 (2013) Section 6.5	47 CFR Part 15, Subpart C 15.231 (b)	Pass
Radiated Emissions	47 CFR Part 15, Subpart C 15.231	ANSI C63.10 (2013) Section 6.4&6.5&6.6	47 CFR Part 15, Subpart C 15.209 15.231(b)	Pass

Declaration of EUT Family Grouping:

Note: There are series models mentioned in this report, and they are the identical in electrical and electronic characters. Only the model DS-PDEB1-EG2-WB(B) and DS-PDEB2-EG2-WB(B) were tested since their differences were the appearance, number and position of the button.



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4 General Information

4.1 General Description of E.U.T.

Power supply:	DC 3V by CR2450 battery
Test voltage:	DC 3V

4.2 Technical Specifications:

Modulation Type	FSK
Number of Channels	7
Channel Spacing	100KHz
Operation Frequency	433.0MHz to 433.6MHz
Antenna Type	Spring Antenna

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	ThinkPad X100e	1
SecureCRT	VanDyke	V 6.2.0	1
Serial port adapter plate	1	Test Plate 3	1

4.4 Measurement Uncertainty

	mode aromone on cortainty						
No.	Item	Measurement Uncertainty					
1	Radio Frequency	±8.4 x 10-8					
2	Timeout	±2s					
4	Occupied Bandwidth	±3%					
8	DE Dedicted newer	±4.6dB (Below 1GHz)					
8	RF Radiated power	±4.1dB (Above 1GHz)					
		±4.2dB (Below 30MHz)					
9	Radiated Spurious emission test	±4.4dB (30MHz-1GHz)					
9		±4.8dB (1GHz-18GHz)					
		±5.2dB (Above 18GHz)					
10	Temperature test	±1°C					
11	Humidity test	±3%					
12	Supply voltages	±1.5%					
13	Time	±3%					

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



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4.5 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• CNAS (No. CNAS L4354)

CNAS has accredited Compliance Certification Services (Kunshan) Inc. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

A2LA (Certificate No. 2541.01)

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

• FCC (Designation Number: CN1172)

Compliance Certification Services Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

• ISED (CAB identifier: CN0072)

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

CAB Identifier: CN0072.
• VCCI (Member No.: 1938)

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.



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5 Equipments Used during Test

Item	Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal. Due Date
	enducted Test					24 240 2410
1	Spectrum Analyzer	Agilent	E4446A	MY44020154	04/16/2021	04/15/2022
2	Spectrum Analyzer	Keysight	N9020A	MY55370209	10/11/2021	10/10/2022
3	Spectrum Analyzer	Keysight	N9010A	MY56480443	02/01/2021	01/31/2022
4	Signal Generator	Agilent	N5182A	MY50142015	08/27/2021	08/26/2022
5	Radio Communication Test Station	Anritsu	MT8000A	6262012849	N/A	N/A
6	Radio Communication Analyzer	Anritsu	MT8821C	6201692222	N/A	N/A
7	Universal Radio Communication Tester	R&S	CMW500	159275	10/12/2021	10/11/2022
8	Universal Radio Communication Tester	R&S	CMW500	167239	04/16/2021	04/15/2022
9	Power Meter	Anritsu	ML2495A	1445010	04/15/2021	04/14/2022
				KUS2001M001		
10	Switcher	CCSRF	FY562	-3	10/12/2021	10/11/2022
11	AC Power Source	EXTECH	6605	1570106	N.C.R	N.C.R
12	DC Power Supply	Aglient	E3632A	MY50340053	N.C.R	N.C.R
13	6dB Attenuator	Mini-Circuits	NAT-6-2W	15542-1	N.C.R	N.C.R
14	Power Divider	AISI	IOWOPE2068	PE2068	N.C.R	N.C.R
15	Filter	MICRO-TRONICS	BRM50701	5	N.C.R	N.C.R
16	Conducted test cable	/	RF01-RF04	1	04/15/2021	04/14/2022
17	Software	BST	TST-PASS	N/A	N/A	N/A
18	Temp. / Humidity Chamber	TERCHY	MHK-120AK	X30109	04/15/2021	04/14/2022
19	Thermometer	Anymetre	TH603	CCS007	10/14/2021	10/13/2022
RF Ra	adiated Test					
1	Spectrum Analyzer	R&S	FSV40	101493	10/11/2021	10/10/2022
2	Signal Generator	Agilent	E8257C	MY43321570	10/18/2021	10/17/2022
3	Loop Antenna	Schwarzbeck	HXYZ9170	9170-108	02/22/2021	02/21/2022
4	Bilog Antenna	TESEQ	CBL 6112D	35403	06/21/2021	06/20/2023
5	Bilog Antenna	SCHWARZBECK	VULB9160	9160-3342	04/13/2021	04/12/2023
6	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	267	10/26/2020	10/25/2022
7	Horn-antenna(1-18GHz)	ETS-LINDGREN	3117	00143290	02/22/2021	02/21/2023
8	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	BBHA9170171	02/22/2021	02/21/2022
9	Pre-Amplifier(30MHz~18GHz)	LNA	/	/	04/15/2021	04/14/2022
10	Amplifier(18~40GHz)	COM-POWER	PAM-840A	461332	10/18/2021	10/17/2022
11	Low Pass Filter	MICRO-TRONICS	VLFX-950	RV142900829	N.C.R	N.C.R
12	High Pass Filter	Mini-Circuits	VHF-1200	15542	N.C.R	N.C.R
13	Filter (5450MHz~5770 MHz)	MICRO-TRONICS	BRC50704-01	2	N.C.R	N.C.R
14	Filter (5690 MHz~5930 MHz)	MICRO-TRONICS	BRC50705-01	4	N.C.R	N.C.R
15	Filter (5150 MHz~5350 MHz)	MICRO-TRONICS	BRC50703-01	2	N.C.R	N.C.R
16	Filter (885 MHz~915 MHz)	MICRO-TRONICS	BRM14698	1	N.C.R	N.C.R
17	Filter (815 MHz~860 MHz)	MICRO-TRONICS	BRM14697	1	N.C.R	N.C.R
18	Filter (1745 MHz~1910 MHz)	MICRO-TRONICS	BRM14700	1	N.C.R	N.C.R
19	Filter (1922 MHz~1977 MHz)	MICRO-TRONICS	BRM50715	1	N.C.R	N.C.R
20	Filter (2550 MHz)	MICRO-TRONICS	HPM13362	5	N.C.R	N.C.R
21	Filter (1532 MHz~1845 MHz)	MICRO-TRONICS	BRM50713	1	N.C.R	N.C.R
22	Filter (2.4GHz)	MICRO-TRONICS	BRM50701	5	N.C.R	N.C.R
23	RE test cable	/	RE01-RE04	1	04/15/2021	04/14/2022
24	Software	Faratronic	EZ_EMC-v 3A1	N/A	N/A	N/A
				· · · · · · · · · · · · · · · · · · ·	L	



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6 Test results and Measurement Data

6.1 Antenna Requirement

15.203 Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

There is Spring antenna and no consideration of replacement.

Antenna location: Refer to Appendix (Internal Photos)



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6.2 Spurious Emissions

Test frequency range: 9KHz - 5GHz

Test Site: Measurement Distance: 3m

Receiver Setup:

Limit:

RBW VBW Frequency Detector Remark 0.009MHz-0.015MHz Quasi-peak 200Hz 1KHz Quasi-peak 0.015MHz-30MHz Quasi-peak 9kHz 30KHz Quasi-peak 120 kHz 300KHz Quasi-peak 30MHz-1GHz Quasi-peak 1MHz 3MHz Peak Peak Above 1GHz Average Peak 1MHz 10Hz Field strength Limit Measurement Frequency Remark (Spurious Emissions) (microvolt/meter) (dBuV/m) distance (m) 0.009MHz-0.490MHz 2400/F(kHz) 300 Quasi-peak 0.490MHz-1.705MHz 24000/F(kHz) 30 Quasi-peak 1.705MHz-30MHz 30 30 Quasi-peak 30MHz-88MHz 100 40 0 Quasi-peak 3 3 88MHz-216MHz 150 43.5 Quasi-peak 216MHz-960MHz 200 46.0 Quasi-peak 3 960MHz-1GHz 500 54.0 Quasi-peak 3 54.0 Average 3 500 Above 1GHz 74.0 Peak 3 Limit (dBuV/m @3m) Frequency Remark Average Value 80.83 433.09 - 434.61MHz 100.83 Peak Value

Limit: (Field strength of the fundamental signal)

Test Procedure:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- The radiation measurements are performed in X, Y, Z axis positioning. And



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found the Z axis positioning which it is worse case, only the test worst case mode is recorded in the report.

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

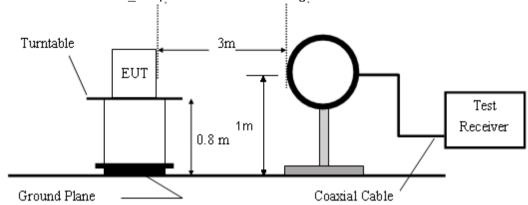


Figure 1. Blow 30MHz radiated emissions test configuration

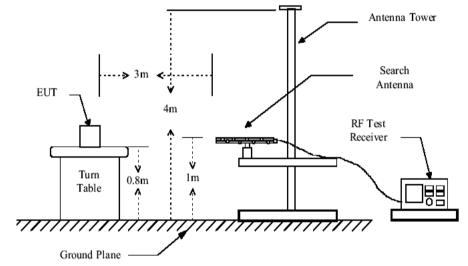


Figure 2. 30MHz to 1GHz radiated emissions test configuration



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Antenna Tower

Horn Antenna

Spectrum
Analyzer

Turn
Table

Amplifier

Figure 3. Above 1GHz radiated emissions test configuration

Test Results: Pass

6.2.2 Field Strength of the Fundamental Signal

DS-PDEB1-EG2-WB(B)

Freq. (MHz)	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
	92.24	100.83	-8.59	Peak	Vertical
422.2	93.40	100.83	-7.43	Peak	Horizontal
433.3	78.57	80.83	-2.26	AVG	Vertical
	79.73	80.83	-1.10	AVG	Horizontal



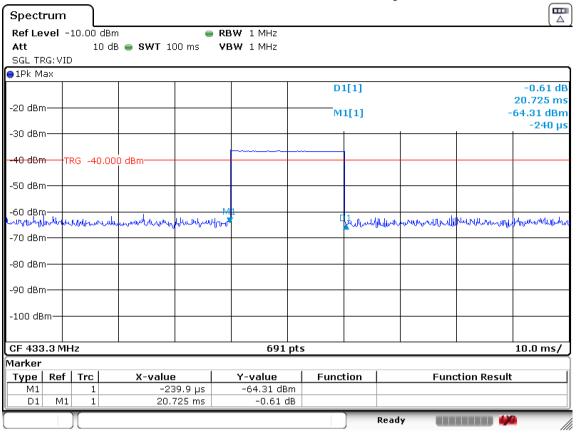
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Remark:

- 1. If the Peak value below the AV Limit, the AV test doesn't perform for this submission.
- 2. Average level=Peak level+Duty Cycle Factor
- 3. Duty Cycle Factor = 20log(Duty Cycle) = 20log(20.725/100) = -13.67dB



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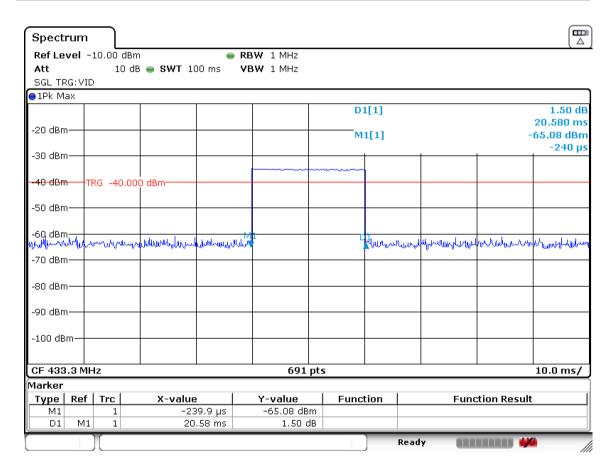


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DS-PDEB2-EG2-WB(B)

20.222227						
Freq. (MHz)	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization	
400.0	91.37	100.83	-9.46	Peak	Vertical	
	93.35	100.83	-7.48	Peak	Horizontal	
433.3	77.64	80.83	-3.19	AVG	Vertical	
	79.62	80.83	-1.21	AVG	Horizontal	



Remark:

- 4. If the Peak value below the AV Limit, the AV test doesn't perform for this submission.
- 5. Average level=Peak level+Duty Cycle Factor
- 6. Duty Cycle Factor = 20log(Duty Cycle) = 20log(20.58/100) = -13.73dB



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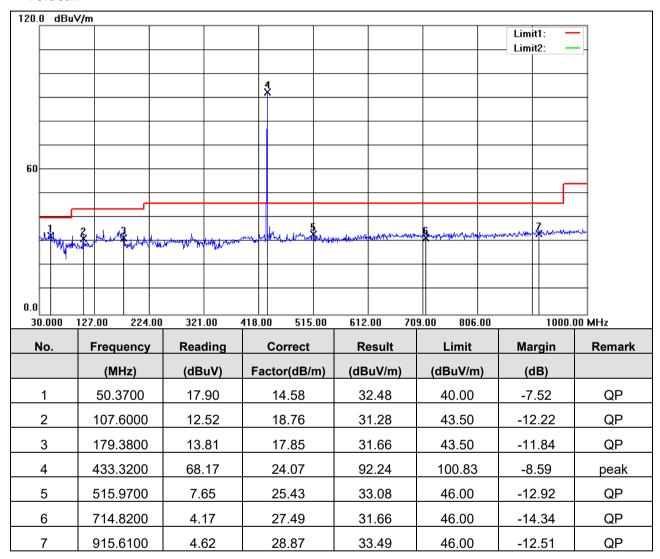
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6.2.3 Spurious Emissions

Below 1GHz DS-PDEB1-EG2-WB(B)

Vertical:





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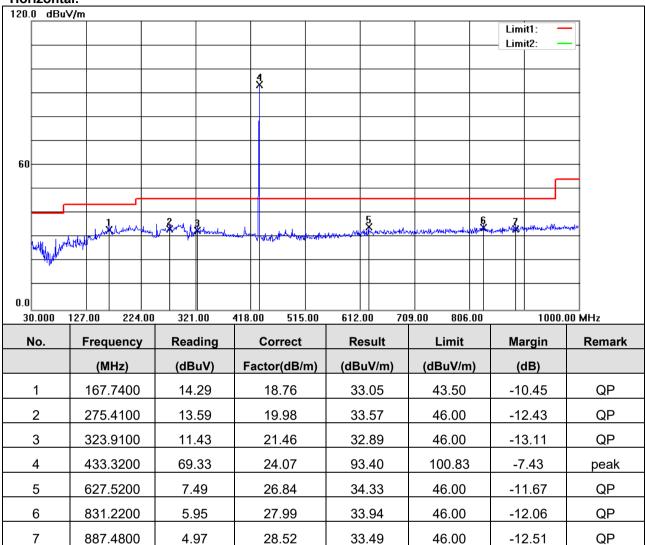
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Horizontal:





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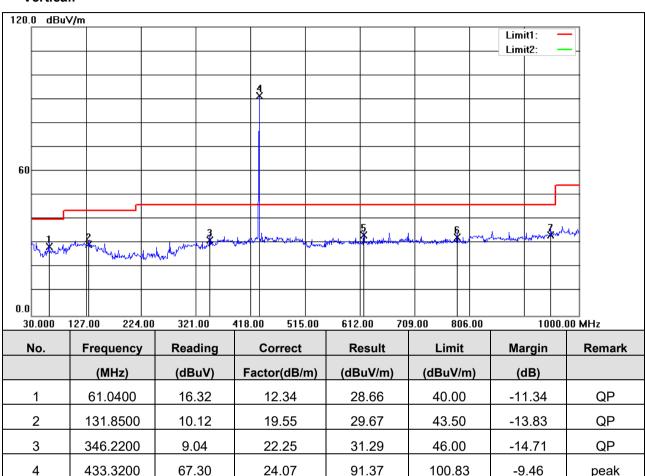


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DS-PDEB2-EG2-WB(B)

Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	61.0400	16.32	12.34	28.66	40.00	-11.34	QP
2	131.8500	10.12	19.55	29.67	43.50	-13.83	QP
3	346.2200	9.04	22.25	31.29	46.00	-14.71	QP
4	433.3200	67.30	24.07	91.37	100.83	-9.46	peak
5	618.7900	6.84	26.74	33.58	46.00	-12.42	QP
6	784.6600	4.82	27.72	32.54	46.00	-13.46	QP
7	950.5300	4.19	29.30	33.49	46.00	-12.51	QP



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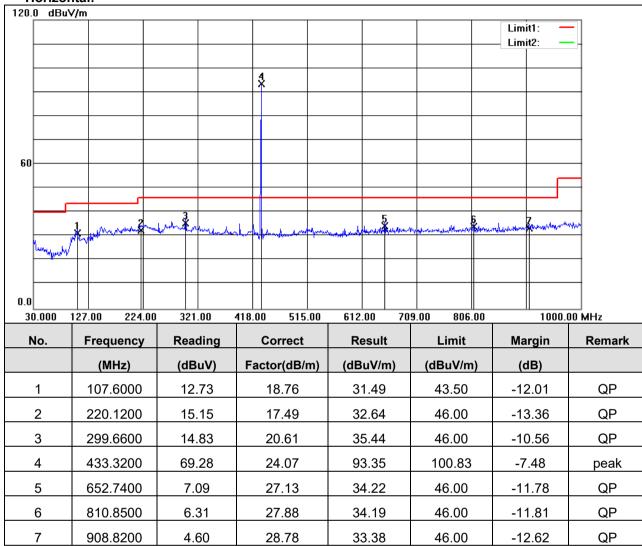
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Horizontal:





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Above 1GHz

DS-PDEB1-EG2-WB(B)

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	polarization
1	1455.000	55.20	-17.75	37.45	54.00	-16.55	peak	Vertical
2	1725.000	56.45	-17.17	39.28	54.00	-14.72	peak	Vertical
3	1945.000	56.29	-16.80	39.49	54.00	-14.51	peak	Vertical
4	1330.000	55.98	-18.32	37.66	54.00	-16.34	peak	Horizontal
5	2085.000	55.76	-16.35	39.41	54.00	-14.59	peak	Horizontal
6	2685.000	53.33	-14.20	39.13	54.00	-14.87	peak	Horizontal

DS-PDEB2-EG2-WB(B)

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	polarization
1	2809.000	43.65	-6.37	37.28	54.00	-16.72	peak	Vertical
2	3979.000	45.87	-4.01	41.86	54.00	-12.14	peak	Vertical
3	5203.000	44.57	-1.60	42.97	54.00	-11.03	peak	Vertical
4	2341.000	48.33	-7.45	40.88	54.00	-13.12	peak	Horizontal
5	3295.000	47.04	-5.32	41.72	54.00	-12.28	peak	Horizontal
6	5185.000	45.84	-1.64	44.20	54.00	-9.80	peak	Horizontal

Remark:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
 - Final Test Level =Receiver Reading Level +Antenna Factor + Cable Factor Preamplifier Factor
- 2) If Peak Result comply with AV limit, AV Result is deemed to comply with QP limit
- 3) No any other emissions level which are attenuated less than 20dB below the limit. According to 15.31(o), the amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part. Hence there no other emissions have been reported.



Test Report Form Version: Rev01

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6.3 20dB Bandwidth

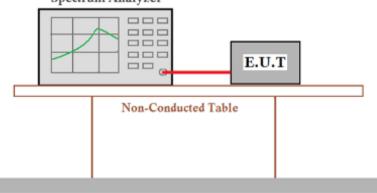
E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

Test Setup: Spectrum Analyzer



Ground Reference Plane

Limit: The bandwidth of the emission shall be no wider than 0.25% of the center frequency

for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

Test Results: Pass



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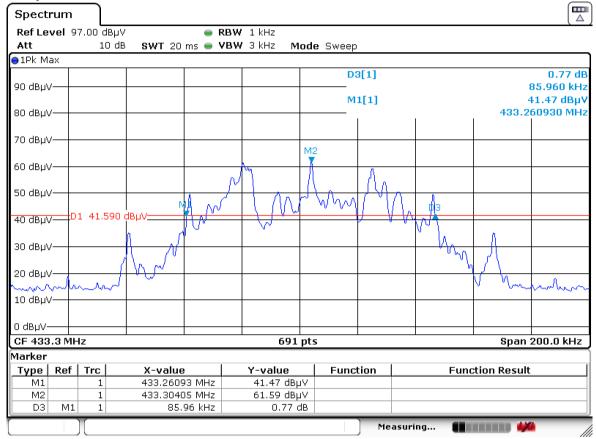
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DS-PDEB1-EG2-WB(B)

Measurement Data:

Frequency(MHz)	20dB bandwidth (kHz)	Limit (kHz)	Results
433.3	85.96	1083	Pass

Test plot as follows:





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6.4 Dwell Time

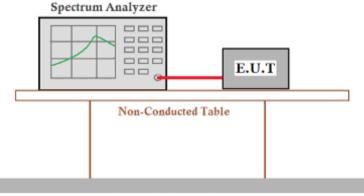
E.U.T. Operation

Operating Environment:

Temperature: 22 °C % RH Atmospheric Pressure: 1020 mbar Humidity: 50

Test mode a:TX mode_Keep the EUT in transmitting with modulation mode.

Test Setup:



Ground Reference Plane

Limit: 15.231 (a): Not more than 5 seconds

Test Results: Pass

Measurement Data:

DS-PDEB1-EG2-WB(B)

Test item	Limit (s)	Results	
Transmission Duration	≤ 5s	Pass	



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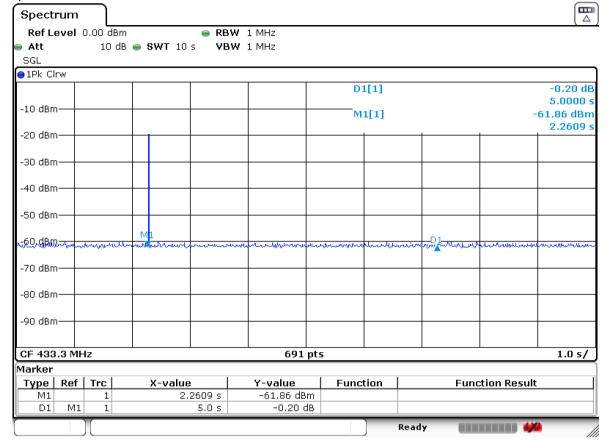
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Test plot as follows:





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7 Test Setup Photographs

Refer to the < Test Setup photos-FCC>.

8 EUT Constructional Details

Refer to the < External Photos > & <Internal Photos >.

-- End of the Report--



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