

Shenzhen Toby Technology Co., Ltd.



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RF Test Report FCC ID:2BDR5-24T

Report No. : TBR-C-202409-0052-1

Applicant: Videotimes Technology (Hubei) Co., Ltd

Equipment Under Test (EUT)

EUT Name : 2.4GHz Digital Wireless Video Baby Camera

Model No. : HB26

Series Model No. : HB2439,BBM801,HB2438,BBM830,HB2438-2,HB2438TX,VT301,

VT301-2,VT301TX,BG1038,HB2432,BBM831,HB32,HB32TX,BBM813,BBM813TX,HB26-2,HB26TX,VV6026,HB24,BBM814,

HB24-2,HB24TX

Brand Name : ----

Sample ID : HC-C-202409-0052-01-01# HC-C-202409-0052-01-2#

Receipt Date : 2024-09-19

Test Date : 2024-09-19 to 2024-10-21

Issue Date : 2024-10-21

Standards : FCC Part 15, Subpart C 15.247

Test Method : ANSI C63.10:2013

KDB 558074 D01 15.247 Meas Guidance v05r02

Conclusions : PASS

In the configuration tested, the EUT complied with the standards specified above,

Tested By : 24 . show

Reviewed By : Heart Hour

Approved By : WAW SV

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1.0



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Revision History

Report No.	Version	Description	Issued Date
TBR-C-202409-0052-1	Rev.01	Initial issue of report	2024-10-21
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1. General Information about EUT

1.1 Client Information

Applicant : Videotimes Technology (Hubei) Co., Ltd		Videotimes Technology (Hubei) Co., Ltd
Address : B5-1,B5-2, Electronic Information Industry Park, Wuxue, Huanggang, bei, China.		
Manufacturer : Videotimes Technology (Hubei) Co., Ltd		Videotimes Technology (Hubei) Co., Ltd
Address	:	B5-1,B5-2, Electronic Information Industry Park, Wuxue, Huanggang, Hu bei, China.

1.2 General Description of EUT (Equipment Under Test)

EUT Name	1	2.4GHz Digital Wireless Video Baby Camera			
Models No.		HB26,HB2439,BBM801,HB2438,BBM830,HB2438-2,HB2438TX,VT301, VT301-2,VT301TX,BG1038,HB2432,BBM831,HB32,HB32TX, BBM813,BBM813TX,HB26-2,HB26TX,VV6026,HB24,BBM814, HB24-2,HB24TX			
Model Difference	5	All these models are identhe only difference is models	ntical in the same PCB, layout and electrical circuit, del name.		
		Operation Frequency:	2.4G: 2412MHz~2469MHz		
Product		Number of Channel:	58 Channels See Note 2		
Description		Antenna Gain:	1.85dBi Copper Tube Antenna		
		Modulation Type:	GFSK		
Power Rating	: Please see Note(List:3)				
Software Version	:	1.0			
Hardware Version		1.1			

Remark: The adapter and antenna gain from the manufacturer, the verified for the RF conduction test provided by TOBY test lab. The above antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

Note:

(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.





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(2) Channel List:

	Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	
00	2412	20	2432	40	2452	
01	2413	21	2433	41	2453	
02	2414	22	2434	42	2454	
03	2415	23	2435	43	2455	
04	2416	24	2436	44	2456	
05	2417	25	2437	45	2457	
06	2418	26	2438	46	2458	
07	2419	27	2439	47	2459	
08	2420	28	2440	48	2460	
09	2421	29	2441	49	2461	
10	2422	30	2442	50	2462	
11	2423	31	2443	51	2463	
12	2424	32	2444	52	2464	
13	2425	33	2445	53	2465	
14	2426	34	2446	54	2466	
15	2427	35	2447	55	2467	
16	2428	36	2448	56	2468	
17	2429	37	2449	57	2469	
18	2430	38	2450		7 (28)	
19	2431	39	2451			

Note: Test frequencies are lowest channel: 2412MHz, middle channel: 2442MHz and

highest channel: 2469MHz.





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(3) List:

1#	AC Adapter 1# (Model: K05V050100U): Input: 100-240V~50/60Hz, 0.2A Output: 5.0V==1.0A				
2#	AC Adapter 1# (Model: K05E050100U): Input: 100-240V~50/60Hz, 0.2A Output: 5.0V==1.0A				
3#	AC Adapter 1# (Model: A318-050100W-US2): Input: 100-240V~50/60Hz, 0.2A Output: 5.0V==1.0A				
4#	AC Adapter 1# (Model: K05S050100U): Input: 100-240V~50/60Hz, 0.2A Output: 5.0V==1.0A				





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1.3 Block Diagram Showing the Configuration of System Tested

Adapter & TX Mode

Adapter		EUT		
	_			

1.4 Description of Support Units

The EUT has been tested as an independent unit.

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test					
Final Test Mode	Description				
Mode 1	Adapter#1+ TX Mode Channel 00				
Mode 2	Adapter#2+ TX Mode Channel 00				
Mode 3	Adapter#3+ TX Mode Channel 00				
Mode 4	Adapter#4+ TX Mode Channel 00				
	For Radiated Test				
Final Test Mode	Description				
Mode 5	Adapter#1+ TX Mode Channel 00				
Mode 6	Adapter#2+ TX Mode Channel 00				
Mode 7	Adapter#3+ TX Mode Channel 00				
Mode 8	Adapter#4+ TX Mode Channel 00				
Mode 9	TX Mode Channel 00/30/57				
Mode 10	Hopping TX Mode				





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Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate. We have pretested all the test modes above.

According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

TX Mode: GFSK

(2) The EUT is considered a portable unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on X-plane as the normal use. Therefore only the test data of this X-plane was used for radiated emission measurement test.





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1.6 Description of Test Software Setting

During testing channel power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of Bluetooth mode.

Test Software Version	Adjust and control the corresponding transmission frequency through the EUT entity key.				
Frequency	2412MHz	2442MHz	2469MHz		
GFSK	DEF	DEF	DEF		

1.7 Measurement Uncertainty

The reported uncertainty of measurement y \pm U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U _{Lab})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	±3.50 dB ±3.10 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.20 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB





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1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.





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2. Test Summary

Standard Section		-		
FCC	Test Item	Test Sample(s)	Judgment	Rema
FCC 15.207(a)	Conducted Emission	HC-C-202409-0052-01-01#	PASS	N/A
FCC 15.209 & 15.247(d)	Radiated Unwanted Emissions	HC-C-202409-0052-01-01#	PASS	N/A
FCC 15.203	Antenna Requirement	HC-C-202409-0052-01-02#	PASS	N/A
FCC 15.247(a)	99% Occupied Bandwidth & 20dB Bandwidth	HC-C-202409-0052-01-02#	PASS	N/A
FCC 15.247(b)(1)	Peak Output Power	HC-C-202409-0052-01-02#	PASS	N/A
FCC 15.247(a)(1)	Carrier frequency separation	HC-C-202409-0052-01-02#	PASS	N/A
FCC 15.247(a)(1)	Time of occupancy	HC-C-202409-0052-01-02#	PASS	N/A
FCC 15.247(b)(1)	Number of Hopping Frequency	HC-C-202409-0052-01-02#	PASS	N/A
FCC 15.247(d)	Band Edge	HC-C-202409-0052-01-02#	PASS	N/A
FCC 15.207(a)	Conducted Unwanted Emissions	HC-C-202409-0052-01-02#	PASS	N/A
FCC 15.205	Emissions in Restricted Bands	HC-C-202409-0052-01-02#	PASS	N/A

Note: N/A is an abbreviation for Not Applicable.

3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE
Radiation Emission	EZ-EMC	EZ	FA-03A2RE+
RF Conducted Measurement	MTS-8310	MWRFtest	V2.0.0.0
RF Test System	JS1120-3	Tonscend	V3.2.22





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4. Test Equipment and Test Site

Test Site				
No.	Test Site	Manufacturer	Specification	Used
TB-EMCSR001	Shielding Chamber #1	YIHENG	7.5*4.0*3.0 (m)	√
TB-EMCSR002	Shielding Chamber #2	YIHENG	8.0*4.0*3.0 (m)	X
TB-EMCCA001	3m Anechoic Chamber #A	ETS	9.0*6.0*6.0 (m)	X
TB-EMCCB002	3m Anechoic Chamber #B	YIHENG	9.0*6.0*6.0 (m)	√

Conducted Emissio	n Test				
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jun. 17, 2024	Jun. 16, 2025
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jun. 17, 2024	Jun. 16, 2025
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jun. 17, 2024	Jun. 16, 2025
LISN	Rohde & Schwarz	ENV216	101131	Jun. 17, 2024	Jun. 16, 2025
Radiation Emission	Test(B Site)				
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 29, 2024	Aug. 28, 2025
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 17, 2024	Jun. 16, 2025
EMI Test Receiver	Rohde & Schwarz	ESU-8	100472/008	Feb. 23, 2024	Feb.22, 2025
Bilog Antenna	SCHWARZBECK	VULB 9168	1225	Nov. 13, 2023	Nov. 12, 2025
Horn Antenna	SCHWARZBECK	BBHA 9120 D	2463	Jun. 14, 2024	Jun. 13, 2026
Horn Antenna	SCHWARZBECK	BBHA 9170	1118	Feb. 27, 2024	Feb.26, 2026
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jun. 14, 2024	Jun. 13, 2026
HF Amplifier	Tonscend	TAP9E6343	AP21C806117	Aug. 29, 2024	Aug. 28, 2025
HF Amplifier	Tonscend	TAP051845	AP21C806141	Aug. 29, 2024	Aug. 28, 2025
HF Amplifier	Tonscend	TAP0184050	AP21C806129	Aug. 29, 2024	Aug. 28, 2025
Highpass Filter	CD	HPM-6.4/18G		N/A	N/A
Highpass Filter	CD	HPM-2.8/18G		N/A	N/A
Highpass Filter	XINBO	XBLBQ-HTA67(8-25G)	22052702-1	N/A	N/A
Antenna Cond	ucted Emission		_	_	
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 17, 2024	Jun. 16, 2025
MXA Signal Analyzer	KEYSIGHT	N9020B	MY60110172	Aug. 29, 2024	Aug. 28, 2025
MXA Signal Analyzer	Agilent	N9020A	MY47380425	Aug. 29, 2024	Aug. 28, 2025
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Aug. 29, 2024	Aug. 28, 2025
DE Dower Conser	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Aug. 29, 2024	Aug. 28, 2025
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Aug. 29, 2024	Aug. 28, 2025
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Aug. 29, 2024	Aug. 28, 2025
Temperature and Humidity Chamber	ZhengHang	ZH-QTH-1500	ZH2107264	Jun. 17, 2024	Jun. 16, 2025





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5. Conducted Emission Test

5.1 Test Standard and Limit

5.1.1Test Standard

FCC Part 15.207

5.1.2 Test Limit

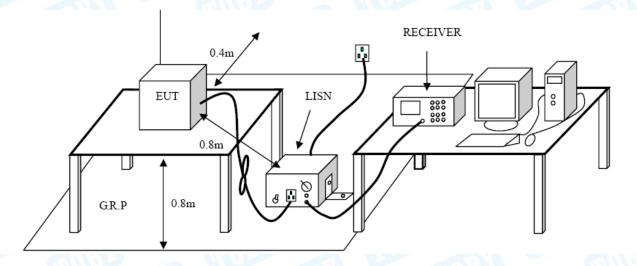
Conducted Emission Test Limit

Fraguency	Maximum RF Line Voltage (dBμV)		
Frequency	Quasi-peak Level	Average Level	
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *	
500kHz~5MHz	56	46	
5MHz~30MHz	60	50	

Notes:

- (1) *Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

5.2 Test Setup







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5.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

5.4 Deviation From Test Standard

No deviation

5.5 EUT Operating Mode

Please refer to the description of test mode.

5.6 Test Data

Please refer to the Attachment A.





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6. Radiated Emission Test

6.1 Test Standard and Limit

6.1.1 Test Standard

FCC Part 15.209 & FCC Part 15.247(d)

6.1.2 Test Limit

Radiated Emission Limit (9 kHz~1000MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Radiated Emission Limit (Above 1000MHz)

Frequency (MHz)	Distance Meter	rs(at 3m)
	Peak	Average
Above 1000	74	54

Note:

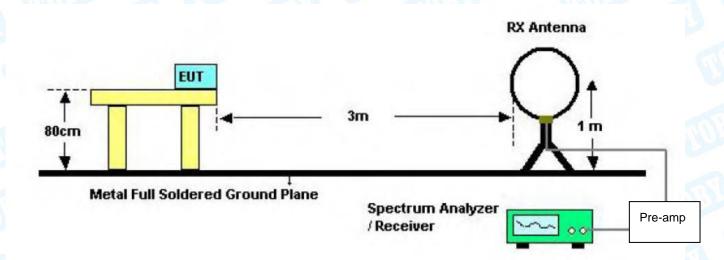
- (1) The tighter limit applies at the band edges.
- (2) Emission Level (dBuV/m)=20log Emission Level (uV/m)



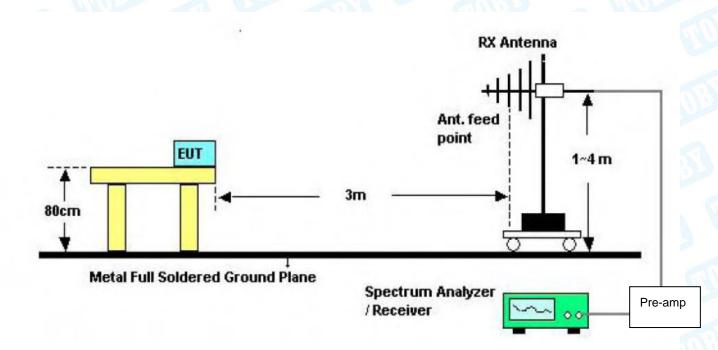


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6.2 Test Setup



Below 30MHz Test Setup



Below 1000MHz Test Setup







Antenna tower

Horn antenna

Spectrum analyzer

Turntable 1.5m A 30cm

Pre-amp

Above 1GHz Test Setup

6.3 Test Procedure

- (1) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency Below 1GHz. The EUT was placed on a rotating 0.8m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.





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6.4 Deviation From Test Standard

No deviation

6.5 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

6.6 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Please refer to the Attachment B.





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7. Restricted Bands and Band-edge test

7.1 Test Standard and Limit

7.1.1 Test Standard

FCC Part 15.205 & FCC Part 15.247(d)

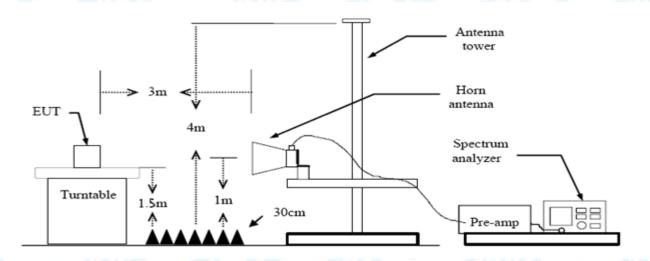
7 1 2 Test Limit

F	Radiated measurement		
Restricted Frequency	Distance Meters(at 3m)		
Band (MHz)	Peak (dBuV/m)	Average (dBuV/m)	
2310 ~2390	74	54	
2483.5 ~2500	74	54	
C	onducted measurement		
Charles of A	Peak (dBm) _{see 7.3 e)}	Average (dBm) see 7.3 e	
2310 ~2390	-41.20	-21.20	
2483.5 ~2500	-41.20	-21.20	

Note: According the ANSI C63.10 11.12.2 antenna-port conducted measurements may also be used as an alternative to radiated measurements for determining compliance in the restricted frequency bands requirements. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test forcabinet/case emissions is required.

7.2 Test Setup

Radiated measurement

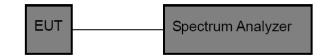


Conducted measurement





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7.3 Test Procedure

---Radiated measurement

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Below 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

---Conducted measurement

- a) Measure the conducted output power (in dBm) using the detector specified by the appropriate regulatory agency (see 11.12.2.3 through 11.12.2.5 for guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
- b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP (see 11.12.2.6 for guidance on determining the applicable antenna gain).
- c) Add the appropriate maximum ground reflection factor to the EIRP (6 dB for frequencies ≤30 MHz; 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive; and 0 dB for frequencies > 1000 MHz).
- d) For MIMO devices, measure the power of each chain and sum the EIRP of all chains in linear terms (i.e., watts and mW).
- e) Convert the resultant EIRP to an equivalen t electric field strength using the following





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relationship:

 $E = EIRP-20 \log d + 104.8$

where

E is the electric field strength in dBuV/m

EIRP is the equivalent isotropically radiated power in dBm

d is the specified measurement distance in m

- f) Compare the resultant electric field strength level with the applicable regulatory limit.
- g) Perform the radiated spurious emission test.

7.4 Deviation From Test Standard

No deviation

7.5 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

7.6 Test Data

Please refer to the Attachment C.





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8. Number of Hopping Channel

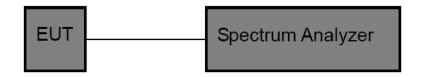
8.1 Test Standard and Limit

8.1.1 Test Standard FCC Part 15.247 (a)(1)

8.1.2 Test Limit

Section	Test Item	Limit
15.247	Number of Hopping Channel	>15

8.2 Test Setup



8.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: RBW=100 KHz, VBW=100 KHz, Sweep time= Auto.

8.4 Deviation From Test Standard

No deviation

8.5 EUT Operating Condition

The EUT was set to the Hopping Mode by the Customer.

8.6 Test Data

Please refer to the Attachment D.





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9. Average Time of Occupancy

9.1 Test Standard and Limit

9.1.1 Test Standard

FCC Part 15.247 (a)(1)

9.1.2 Test Limit

Test Item	Limit
Average Time of Occupancy	0.4 sec

9.2 Test Setup



9.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: RBW=100KHz, VBW=300KHz.
- (3) Use video trigger with the trigger level set to enable triggering only on full pulses.
- (4) Sweep Time is more than once pulse time.
- (5) Set the center frequency on any frequency would be measure and set the frequency span to zero.
- (6) Measure the maximum time duration of one single pulse.
- (7) Set the EUT for packet transmitting.
- (8) Measure the maximum time duration of one single pulse.

9.4 EUT Operating Condition

The average time of occupancy on any channel within the Period can be calculated with formulas:

The Dwell Time = Burst Width * Total Hops. The detailed calculations are showed as follows:

The duration for dwell time calculation: 0.4 [s] * hopping number = 0.4 [s] * 20 [ch] = 8.0 [s*ch];

The burst width, which is directly measured, refers to the duration on one channel hop.

The maximum number of hopping channels in 8.0s = 3*(8.0/0.24) = 100

The lowest, middle and highest channels are selected to perform testing to record the dwell time of each occupation measured in this channel, which is called Pulse Time here.

The EUT was set to the Hopping Mode by the Customer.

9.4 Deviation From Test Standard

No deviation

9.5 Test Data

Please refer to the Attachment E.





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10. Channel Separation and Bandwidth Test

10.1 Test Standard and Limit

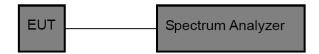
10.1.1 Test Standard

FCC Part 15.247

10.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Bandwidth	<=1 MHz (20dB bandwidth)	2400~2483.5
Channel Separation	>25KHz or >two-thirds of the 20 dB bandwidth Which is greater	2400~2483.5

10.2 Test Setup



10.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:

Channel Separation: RBW=100 kHz, VBW=100 kHz.

Bandwidth: RBW=30 kHz, VBW=100 kHz.

- (3) The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
 - (4) Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:30 kHz, and Video Bandwidth:100 kHz. Sweep Time set auto.

10.4 Deviation From Test Standard

No deviation

10.5 EUT Operating Condition

The EUT was set to the Hopping Mode for Channel Separation Test and continuously transmitting for the Bandwidth Test.

10.6 Test Data

Please refer to the Attachment F.





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11. Peak Output Power Test

11.1 Test Standard and Limit

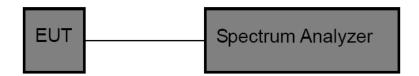
11.1.1 Test Standard

FCC Part 15.247 (b) (1)

11.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Peak Output Power	Hopping Channels>75 Power<1W(30dBm) Other <125 mW(21dBm)	2400~2483.5

11.2 Test Setup



11.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:

Peak Detector: RBW=1 MHz, VBW=3 MHz for bandwidth less than 1MHz. RBW=3 MHz, VBW=3 MHz for bandwidth more than 1MHz.

11.4 Deviation From Test Standard

No deviation

11.5 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.

11.6 Test Data

Please refer to the Attachment G.





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12. Antenna Requirement

12.1 Standard Requirement

12.1.1 Standard

FCC Part 15.203

12.1.2 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 shall be considered sufficient to comply with the provisions of this Section. 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.

12.2 Deviation From Test Standard

No deviation

12.3 Antenna Connected Construction

The gains of the antenna used for transmitting is 1.85dBi, and the antenna connector is de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

12.4 Result

The EUT antenna is a Copper Tube Antenna. It complies with the standard requirement.

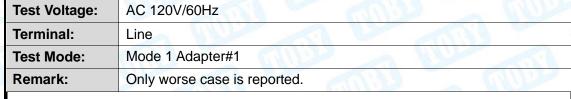
Antenna Type	
⊠Permanent attached antenna	13
Unique connector antenna	
☐Professional installation antenna	8

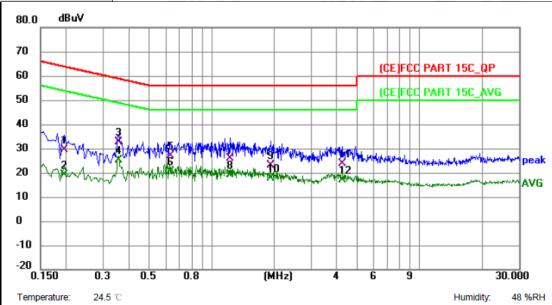




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Attachment A-- Conducted Emission Test Data





No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	0.195	19.77	9.53	29.30	63.83	-34.53	QP
2	0.195	9.61	9.53	19.14	53.83	-34.69	AVG
3	0.357	23.29	9.46	32.75	58.80	-26.05	QP
4 *	0.357	15.71	9.46	25.17	48.80	-23.63	AVG
5	0.636	17.48	9.48	26.96	56.00	-29.04	QP
6	0.636	10.89	9.48	20.37	46.00	-25.63	AVG
7	1.234	16.10	9.65	25.75	56.00	-30.25	QP
8	1.234	9.55	9.65	19.20	46.00	-26.80	AVG
9	1.923	13.47	9.59	23.06	56.00	-32.94	QP
10	1.923	7.94	9.59	17.53	46.00	-28.47	AVG
11	4.258	14.29	9.55	23.84	56.00	-32.16	QP
12	4.258	7.35	9.55	16.90	46.00	-29.10	AVG

Remark:

- 1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
- 2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)





Test Voltage:

AC 120V/60Hz

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7	Terminal:	Neutral			737		MAN
	Test Mode:	Mode 1 Adapte	er#1			TRUS.	
	Remark:	Only worse ca	se is reported				
	80.0 dBuV						
	70			(1)	ÇEJFÇC PAF	RT 15C QP	
ÿ	60	+			CEJFCC PAF		
g d	50	+++++		<u> </u>		_	
To the second	40 J.M.n.						
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Ī	20	Ly Commence Stranger Harrison	HALL SHE THE SHE WAS A SHE	Ť 0	***********	<u></u>	AVG
	10						
	0						
3	-10 -20						
	0.150 0.3	0.5 0.8	(MHz)	4 6	9	- 3	30.000
	Temperature: 24.5 °C					Humidity:	48 %RH
		Readin	g Correct	Measure-			
1		req. Level	Factor	ment	Limit	Over	
		MHz dBuV	dB	dBuV	dBuV	dB	Detector
	1 0	.150 22.38	9.56	31.94	66.00	-34.06	QP
	2 0.	.150 11.35	9.56	20.91	56.00	-35.09	AVG
1	3 0.	.352 15.72	9.47	25.19	58.92	-33.73	QP
	4 0.	.352 9.59	9.47	19.06	48.92	-29.86	AVG
	5 0.	.663 11.42	9.48	20.90	56.00	-35.10	QP
	6 0.	.663 7.25	9.48	16.73	46.00	-29.27	AVG

9.48

9.48

9.51

9.51

9.79

9.79

22.34

17.17

21.39

16.07

20.93

15.38

56.00 -33.66

46.00 -28.83

56.00 -34.61

46.00 -29.93

60.00 -39.07

50.00 -34.62

QP

AVG

QP

AVG

AVG

QP

Remark:

7

8

9

10

11

12

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

12.86

7.69

11.88

6.56

11.14

5.59

1.369

1.369

4.051

4.051

18.416

18.416

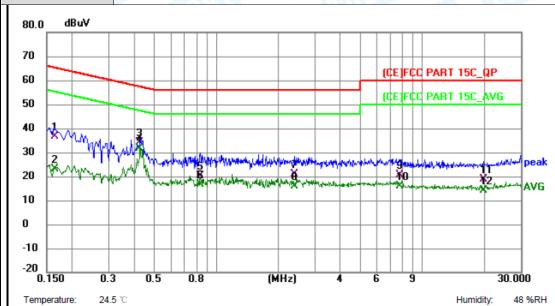
2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV))







V	Test Voltage:	AC 120V/60Hz
	Terminal:	Line
	Test Mode:	Mode 2 Adapter#2
	Remark:	Only worse case is reported.



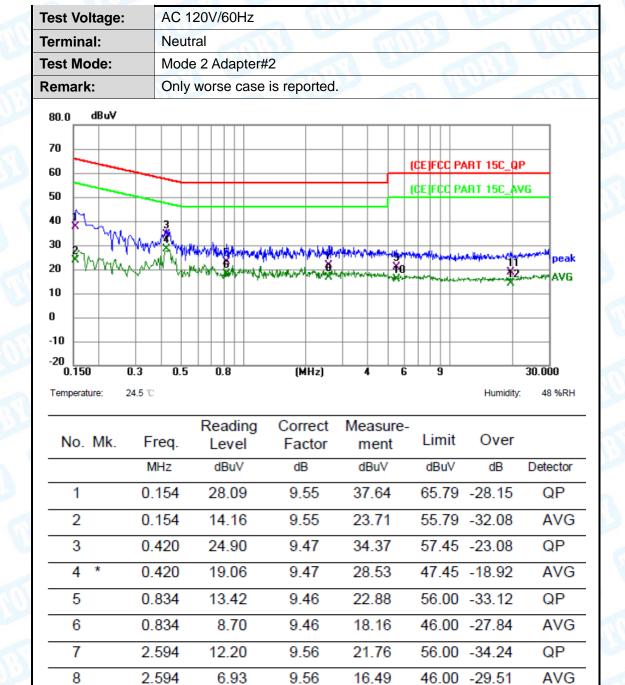
No. M	k. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	0.164	26.98	9.56	36.54	65.26	-28.72	QP
2	0.164	13.45	9.56	23.01	55.26	-32.25	AVG
3	0.424	24.55	9.46	34.01	57.37	-23.36	QP
4 *	0.424	22.00	9.46	31.46	47.37	-15.91	AVG
5	0.839	10.77	9.50	20.27	56.00	-35.73	QP
6	0.839	7.13	9.50	16.63	46.00	-29.37	AVG
7	2.386	11.46	9.59	21.05	56.00	-34.95	QP
8	2.386	6.34	9.59	15.93	46.00	-30.07	AVG
9	7.760	11.00	9.64	20.64	60.00	-39.36	QP
10	7.760	6.18	9.64	15.82	50.00	-34.18	AVG
11	19.905	8.78	9.89	18.67	60.00	-41.33	QP
12	19.905	4.25	9.89	14.14	50.00	-35.86	AVG
6 7 8 9 10	0.839 2.386 2.386 7.760 7.760 19.905	7.13 11.46 6.34 11.00 6.18 8.78	9.50 9.59 9.59 9.64 9.64 9.89	16.63 21.05 15.93 20.64 15.82 18.67	46.00 56.00 46.00 60.00 50.00	-29.37 -34.95 -30.07 -39.36 -34.18 -41.33	AVO QP AVO QP AVO

- 1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
- 2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)





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20.74

15.76

18.69

14.10

60.00

-39.26

50.00 -34.24

60.00 -41.31

50.00 -35.90

9.55

9.55

9.80

9.80

Remark:

9

10

11

12

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

11.19

6.21

8.89

4.30

5.500

5.500

19.541

19.541

2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)



QP

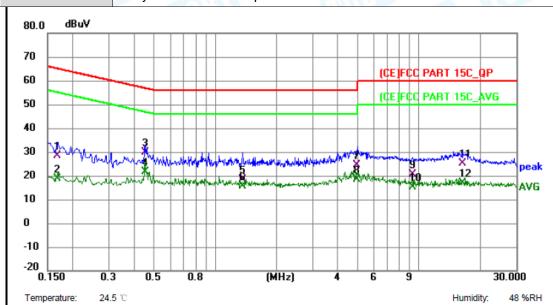
AVG QΡ

AVG





Test Voltage:	AC 120V/60Hz
Terminal:	Line
Test Mode:	Mode 3 Adapter#3
Remark:	Only worse case is reported.



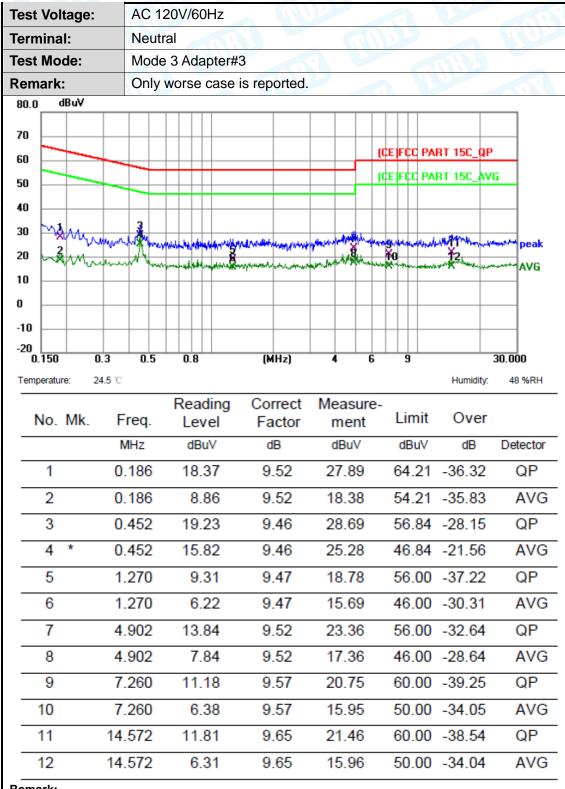
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.168	18.82	9.56	28.38	65.06	-36.68	QP
2		0.168	9.08	9.56	18.64	55.06	-36.42	AVG
3		0.452	20.47	9.47	29.94	56.84	-26.90	QP
4	*	0.452	12.10	9.47	21.57	46.84	-25.27	AVG
5		1.361	8.82	9.63	18.45	56.00	-37.55	QP
6		1.361	5.83	9.63	15.46	46.00	-30.54	AVG
7		4.956	14.96	9.59	24.55	56.00	-31.45	QP
8		4.956	8.78	9.59	18.37	46.00	-27.63	AVG
9		9.285	10.76	9.61	20.37	60.00	-39.63	QP
10		9.285	5.69	9.61	15.30	50.00	-34.70	AVG
11		16.431	15.26	9.75	25.01	60.00	-34.99	QP
12		16.431	7.34	9.75	17.09	50.00	-32.91	AVG

- 1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
- 2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)





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Remark:

- 1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
- 2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)

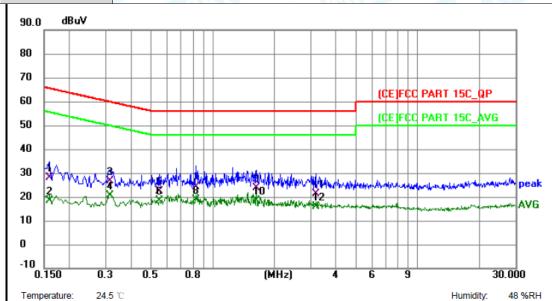






age: 34 01 67

V	Test Voltage:	AC 120V/60Hz
	Terminal:	Line
	Test Mode:	Mode 4 Adapter#4
	Remark:	Only worse case is reported.



No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	0.159	18.31	9.58	27.89	65.52	-37.63	QP
2	0.159	8.80	9.58	18.38	55.52	-37.14	AVG
3	0.313	17.29	9.49	26.78	59.89	-33.11	QP
4	0.313	11.09	9.49	20.58	49.89	-29.31	AVG
5	0.546	12.91	9.47	22.38	56.00	-33.62	QP
6	0.546	8.78	9.47	18.25	46.00	-27.75	AVG
7	0.830	14.66	9.50	24.16	56.00	-31.84	QP
8 *	0.830	9.39	9.50	18.89	46.00	-27.11	AVG
9	1.636	14.09	9.61	23.70	56.00	-32.30	QP
10	1.636	8.70	9.61	18.31	46.00	-27.69	AVG
11	3.173	11.81	9.55	21.36	56.00	-34.64	QP
12	3.173	6.45	9.55	16.00	46.00	-30.00	AVG

Remark

- 1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
- 2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)





Test V	'olta	ige:		AC 1	120 V/	יווטט								William .		1	111
Termiı	nal:			Neu	tral		THE			6					1		
Test M	lod	e:		Mod	e 4 A	dapt	er#4		M	16				MA			
Remark: Only			Only worse case is reported.														
90.0	dB	uV													_		_
80																	
70																	
60											(CEJ	FCC I	PART 1	5C_Q	Р	
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40				\top	+	\Box											
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40																ì	I
-10 L 0.15	50	0.	3	0.5	0.	.8		(MHz)		4	6		9			30.00] 00
			. 3 i.5 °C	0.5	0.	.8		(MHz)		4	6		9	Hu	umidity] 00 8 %RH
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0.15		24	l.5 ℃	0.5 eq.	Rea		_		: Mea		re-	Liı	9 mit	Ov			
0.15	ature:	24	l.5 ℃	eq.	Re:	adin	_	orrect	Mea m	asuı	re-				er		8 %RH
0.15	ature:	24	Fre	eq.	Rea Le	adin evel	F	orrect actor	Mea m	asui	re-	dE	mit BuV	Ov	er	y: 48	8 %RH
0.15	ature:	: 24 //k.	Fr MI 0.3	eq.	Rea Le di	adin evel BuV	F	orrect actor dB	Mea m dE	asui nent BuV	re-	dE 59	mit BuV	Ov	er 3	Detection	8 %RH
No.15	ature:	: 24 //k.	Fro Mi 0.3	eq. Hz	Rea Le dd 24	adin evel BuV 4.79	F	orrect actor dB 9.47	Mea m dE 34	asur nent BuV	re-	dE 59	mit BuV	Ov dE -25.6	er 3 66	Detection	ctor P VG
No. 15	ature:	: 24 //k.	Erc MH 0.3 0.7	eq. Hz 312	Re: Le di 24	adin evel BuV 1.79 7.33	F	orrect actor dB 9.47	Mea de 34 26	asur nent BuV 1.26	re-	59 49 56	mit 3uV .92 .92	Ov dE -25.6	rer 8 66 12	Detection Q	ctor P VG
No	ature:	: 24 //k.	End MH 0.3 0.7 0.7	eq. Hz 312 312 704	Res dd 24 17 17	adin evel BuV 4.79 7.33	F	orrect actor dB 9.47 9.47	Mea m dE 34 26 27	asur nent 8uV 1.26 3.80	re-	59 49 56 46	mit .92 .92 .00	Ov dE -25.6 -23.7 -28.8	rer 66 12 81	Detection Q	ctor P VG P VG
No. 15	2 *	: 24 //k.	0.3 0.3 0.7 0.7	eq. Hz 312 312 704 704	Rea Le dd 24 17 17 11	adin BuV 1.79 7.33 7.72 1.50	F	9.47 9.47 9.47 9.47 9.47	Mea m dE 34 26 27 20	asur nent 1.26 3.80 7.19 0.97	re-	59 49 56 46	mit 1.92 1.92 1.00	Ov dE -25.6 -23.7 -28.8 -25.0 -29.3	rer 3 666 112 81 03	Detection Q Q A' Q	ctor P VG P VG
No 15 1 2 3 4 5 6	1 1 2 * 3 3 4 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	: 24 //k.	Ero MH 0.3 0.7 0.7 1.4	eq. Hz 312 312 704 704 H33	Rea Le dd 24 17 17 11 17	adin BuV 1.79 7.33 7.72 1.50 7.19	F	9.47 9.47 9.47 9.47 9.48	Mea m dE 34 26 27 20 26	asur nent 3.26 3.80 7.19 3.67	re-	59 49 56 46 46	mit 1.92 1.92 1.00 1.00 1.00	Ov dE -25.6 -23.7 -28.8 -25.0 -29.3 -25.9	er 3 666 12 81 03 333 998	Detection Q Q A' Q Q A'	ctor P VG P VG
No. 15	1 1 2 * 3 3 4 5 5 6 7	: 24 //k.	End MH 0.3 0.7 0.7 1.4 2.3	eq. Hz 312 312 704 704 H33 H33	Rea Le dr 24 17 17 11 17 10	adin BuV 1.79 7.33 7.72 1.50 7.19 0.54	F	9.47 9.47 9.47 9.47 9.48 9.48	Mea m dE 34 26 27 20 26 20 24	asur nent 3.26 3.80 7.19 3.67 3.67	re-	59 49 56 46 56 46	mit 1.92 1.92 1.00 1.00 1.00	Ov dE -25.6 -23.7 -28.8 -25.0 -29.3 -25.9	rer 3 66 12 81 03 33 98	Detect Q A' Q A' Q	ctor P VG P VG
No. 15	1 2 * 3 3 4 5 5 7 3 3 3 3 4 5 5 7 7 3 3 3 3 3 4 5 5 7 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	: 24 //k.	From MH 0.3 0.7 0.7 1.4 1.4 2.3 2.3	eq. Hz 312 312 704 433 433 350 350	Rea Le di 24 17 17 11 17 10	adin evel BuV 7.33 7.72 1.50 7.19 0.54 1.86	F	9.47 9.47 9.47 9.48 9.48 9.54	Mea m dE 34 26 27 20 26 20 24	asuranti BuV 1.26 3.80 7.19 0.97 1.67 1.40 7.90	re-	59 56 46 56 46 56	mit .92 .92 .00 .00 .00	Ov dE -25.6 -23.7 -28.8 -25.0 -25.9 -31.6 -28.7	rer 3 666 12 81 03 33 33 60	Detect Q A' Q A' Q A' Q	ctor P VG P VG P VG
No. 15 No. 15 No. 15 No. 15 No. 17 No. 17	1	: 24 //k.	From MH 0.3 0.3 0.7 0.7 1.4 1.4 2.3 2.8	eq. Hz 312 312 704 433 433 350 350	Rea Le di 24 17 17 11 17 10 14 8 13	adin evel BuV 7.33 7.72 1.50 7.19 0.54 4.86 3.36	F	9.47 9.47 9.47 9.48 9.48 9.54 9.54	26 20 24 17 23	asunent BuV 1.26 3.80 7.19 0.97 1.02 1.40 7.90	re-	dE 59 49 56 46 56 46 56	mit .92 .92 .00 .00 .00 .00	Ov dE -25.6 -23.7 -28.8 -25.0 -25.9 -31.6 -32.8	rer 3 666 112 881 003 333 98 600 110	Detect Q A' Q A' Q A' Q	ctor P VG P VG P VG P VG
No.15 Tempera No.15 1 2 3 4 5 6 7 8 9 10	1 2 * 3 3 4 5 5 6 6 7 7 3 3 9 9 9 9 9	. 24	From MH 0.3 0.3 0.7 0.7 1.4 2.3 2.8 2.8	eq. Hz 312 312 704 433 433 350 350 395	Rea Le di 24 17 17 11 17 10 14 8 13 7	adin BuV 14.79 7.33 7.72 1.50 7.19 0.54 1.86 3.36 3.63	F	9.47 9.47 9.47 9.48 9.54 9.54 9.54	26 20 24 17 23	asunent BuV 1.26 3.80 7.19 0.97 1.40 7.90 3.17	re-	59 49 56 46 56 46 56 46	mit .92 .92 .00 .00 .00 .00 .00	Ov dE -25.6 -23.7 -28.8 -25.0 -29.3 -31.6 -32.8 -28.8	rer 3 666 112 881 003 333 600 110 83	Detect Q A' Q A' Q A' Q A'	ctor P VG P VG P VG P VG
No. 15 No. 15 No. 15 No. 15 No. 17 No. 17	1 2 * 3 3 4 5 5 6 6 7 7 3 3 9 9 9 9 9	. 24	From MH 0.3 0.3 0.7 0.7 1.4 1.4 2.3 2.8	eq. Hz 312 312 704 433 433 350 350 395	Rea Le di 24 17 17 11 17 10 14 8 13 7	adin evel BuV 7.33 7.72 1.50 7.19 0.54 4.86 3.36	F	9.47 9.47 9.47 9.48 9.48 9.54 9.54	26 20 24 17 23	asunent BuV 1.26 3.80 7.19 0.97 1.02 1.40 7.90	re-	59 49 56 46 56 46 56 46	mit .92 .92 .00 .00 .00 .00 .00	Ov dE -25.6 -23.7 -28.8 -25.0 -25.9 -31.6 -32.8	rer 3 666 112 881 003 333 600 110 83	Detect Q A' Q A' Q A' Q A'	ctor P VG P VG P VG P VG

- Remark:

 1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
- 2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)







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Attachment B-- Radiated Emission Test Data

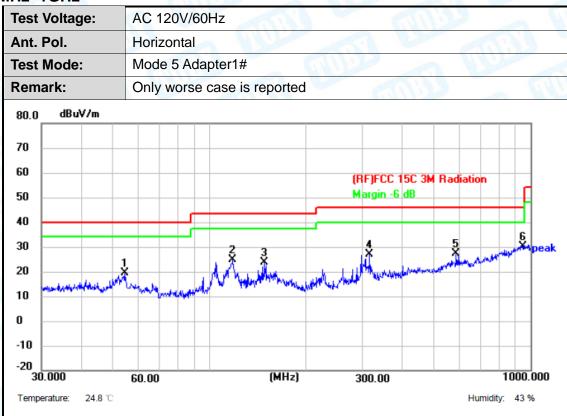
9KHz~30MHz

From 9KHz to 30MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB

below the permissible value has no need to be reported.

30MHz~1GHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	54.4516	43.69	-24.25	19.44	40.00	-20.56	peak	Р
2	118.1862	48.50	-23.64	24.86	43.50	-18.64	peak	Р
3	148.4410	44.98	-21.07	23.91	43.50	-19.59	peak	Р
4	315.4808	47.57	-20.55	27.02	46.00	-18.98	peak	Р
5	586.8437	41.64	-14.24	27.40	46.00	-18.60	peak	Р
6 *	948.7610	37.63	-7.36	30.27	46.00	-15.73	peak	Р

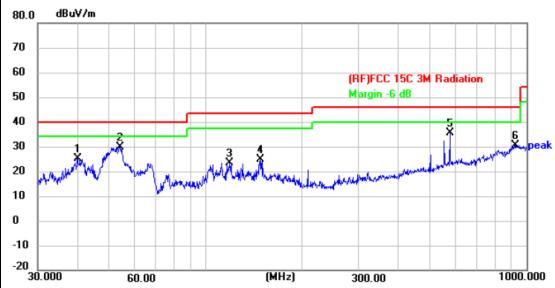
- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dB μ V/m)-Limit QPK(dB μ V/m)





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	Test Voltage:	AC 120V/60Hz
1	Ant. Pol.	Vertical
	Test Mode:	Mode 5 Adapter1#
	Remark:	Only worse case is reported



Temperature: 24.8 °C Humidity: 43 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	39.9942	48.45	-23.37	25.08	40.00	-14.92	peak	Р
2 *	54.0711	54.39	-24.50	29.89	40.00	-10.11	peak	Р
3	119.0180	46.96	-23.48	23.48	43.50	-20.02	peak	Р
4	148.4410	45.80	-21.07	24.73	43.50	-18.77	peak	Р
5	576.6443	49.91	-14.24	35.67	46.00	-10.33	peak	Р
6	925.7563	37.90	-7.36	30.54	46.00	-15.46	peak	Р

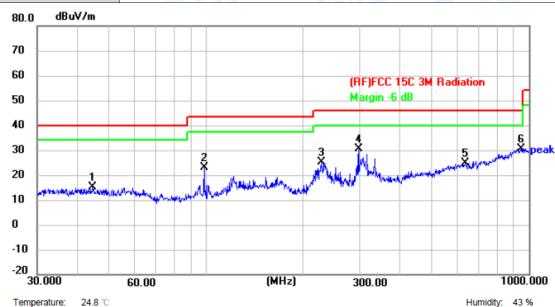
- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dB μ V/m)-Limit QPK(dB μ V/m)





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7	Test Voltage:	AC 120V/60Hz	Million
	Ant. Pol.	Horizontal	
8	Test Mode:	Mode 6 Adapter2#	
	Remark:	Only worse case is reported	Million



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	44.5868	38.99	-23.79	15.20	40.00	-24.80	peak	Р
2	98.8326	48.99	-26.07	22.92	43.50	-20.58	peak	Р
3	227.6906	49.82	-24.61	25.21	46.00	-20.79	peak	Р
4 *	297.2241	52.01	-21.31	30.70	46.00	-15.30	peak	Р
5	636.1340	38.22	-13.31	24.91	46.00	-21.09	peak	Р
6	948.7610	37.96	-7.36	30.60	46.00	-15.40	peak	Р

- Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dB μ V/m)-Limit QPK(dB μ V/m)







Test Volta	ge: AC	120V/60Hz	Z	MAIN				100
Ant. Pol.	Ve	rtical					A WY	White the same of
Test Mode	e: Mo	de 6 Adapte	er2#		C. Carrie			
Remark:	On	ly worse ca	se is report	ed				1
80.0 dB	uV/m							
70								
60					(RF)FCC 15C		ition	4
50					Margin -6 dB			Ħ
40				_			6	4
30	1 X	2 X	2		5 X		- Andrian K	м реа
20	1		3 Columbia Holyman	4	J. Holosophy and all a light	A STATE OF THE PERSON NAMED IN	***	4
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0	6	0.00	Ny Arab	4Hz)	300.00		100	0.000
-10 -20	6 24.8 °C	D. 00	Ny Arab	THE PARTY	**		100 Humidity: 4	
0 -10 -20 30.000 Temperature:		0.00 Reading (dBuV)	Ny Arab	(Hz)	**	Margin		3 %
0 -10 -20 30.000 Temperature:	24.8 °C requency	Reading	Factor	(Hz)	300.00 Limit	Margin	Humidity: 43	3 %
0 -10 -20 30.000 Temperature:	24.8 °C requency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	300.00 Limit (dBuV/m)	Margin (dB)	Humidity: 43	9 % P/F
0 -10 -20 30.000 Temperature:	requency (MHz) 51.4807	Reading (dBuV) 50.11	Factor (dB/m)	Level (dBuV/m) 25.67	300.00 Limit (dBuV/m) 40.00	Margin (dB)	Detector peak	P/F
0 -10 -20 30.000 Temperature: No. Find the second	24.8 °C requency (MHz) 51.4807 67.4382	Reading (dBuV) 50.11 54.28	Factor (dB/m) -24.44 -26.08	Level (dBuV/m) 25.67 28.20	300.00 Limit (dBuV/m) 40.00 40.00	Margin (dB) -14.33	Detector peak peak	P/F
0 -10 -20 30.000 Temperature: No. Find the second	24.8 °C requency (MHz) 51.4807 67.4382 02.7192	Reading (dBuV) 50.11 54.28 46.19	Factor (dB/m) -24.44 -26.08 -25.20	Level (dBuV/m) 25.67 28.20 20.99	300.00 Limit (dBuV/m) 40.00 40.00 43.50	Margin (dB) -14.33 -11.80 -22.51	Detector peak peak peak	P/F P

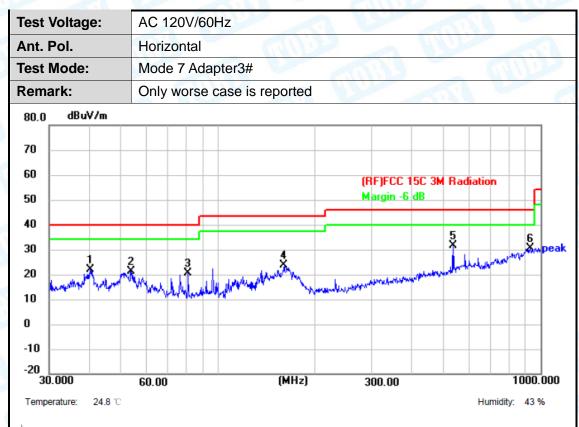
- Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
 Margin (dB) = QuasiPeak (dBμV/m)-Limit QPK(dBμV/m)







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No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	40.2757	45.57	-23.55	22.02	40.00	-17.98	peak	Р
2	53.8818	45.83	-24.53	21.30	40.00	-18.70	peak	Р
3	80.9275	47.82	-27.37	20.45	40.00	-19.55	peak	Р
4	160.9089	45.25	-21.64	23.61	43.50	-19.89	peak	Р
5 *	537.5891	46.73	-15.15	31.58	46.00	-14.42	peak	Р
6	932.2715	38.18	-7.64	30.54	46.00	-15.46	peak	Р

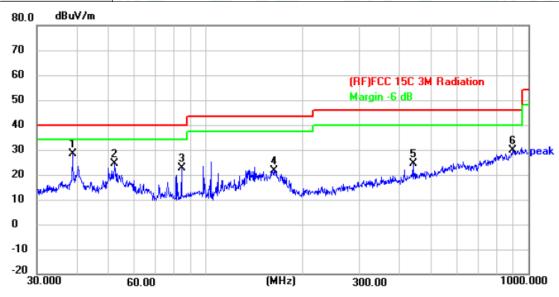
- Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dB μ V/m)-Limit QPK(dB μ V/m)







Test Voltage: AC 120V/60Hz Vertical Ant. Pol. **Test Mode:** Mode 7 Adapter3# Remark: Only worse case is reported



Temperature:	24.8 ℃	Humidity: 43 %
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No	ο.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	*	38.7518	51.97	-23.65	28.32	40.00	-11.68	peak	Р
2		52.2079	49.00	-24.49	24.51	40.00	-15.49	peak	Р
3		84.4054	49.80	-27.29	22.51	40.00	-17.49	peak	Р
4		162.6106	43.76	-21.98	21.78	43.50	-21.72	peak	Р
5		440.1963	42.46	-17.97	24.49	46.00	-21.51	peak	Р
6		893.8567	38.12	-8.36	29.76	46.00	-16.24	peak	Р

- Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dB μ V/m)-Limit QPK(dB μ V/m)





Test Voltage:	AC 120V/60H	z		WUP?
Ant. Pol.	Horizontal	A LINE		
Test Mode:	Mode 8 Adapt	er4#		A VIV
Remark:	Only worse ca	se is reported		THE
80.0 dBuV/m				
70				
60			(RF)FCC 15C 3M	Badiation
50			Margin -6 dB	
40				
30				6
20	1 2		4 5	pea hand when the pear
10	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	my have many the same of the s	KALL STREET	
0				
-10				
-20 30.000	60.00	(MHz)	300.00	1000.000
Temperature: 24.8 %	С			Humidity: 43 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	53.8817	43.28	-24.53	18.75	40.00	-21.25	peak	Р
2	84.9993	43.30	-27.10	16.20	40.00	-23.80	peak	Р
3	178.1323	37.47	-22.97	14.50	43.50	-29.00	peak	Р
4	268.4852	39.77	-22.24	17.53	46.00	-28.47	peak	Р
5	435.5898	38.23	-17.38	20.85	46.00	-25.15	peak	Р
6 *	636.1340	38.20	-13.31	24.89	46.00	-21.11	peak	Р

- Remark:
 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dBµV/m)-Limit QPK(dBµV/m)







Test Vo	oltage:	ge: AC 120V/60Hz								
Ant. Po	ol.	Vert	ical	NEW.				J W	Mil	5
Test M	ode:	Mod	e 8 Adapte	er4#						
Remar	k:	Only	worse cas	se is report	ed		The same			
80.0	dBuV/m								_	
70										
60										
50						(RF)FCC 15C Margin -6 dB	3M Radia	tion	Ч	
									Ħ	
40									٦.	
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10 o		60.1	00	, Loyal Maria Tara Tara	Hz)	300.00		100	0.000	
10 0 -10 -20		60.0	00	, Linjaffert for "	Hz)	300.00		1000 Humidity: 43		
10		ncy	Reading (dBuV)	Factor (dB/m)	Level	300.00 Limit (dBuV/m)	Margin			
10 0 -10 -20 30.00	Freque	ncy z)	Reading	Factor	Level	Limit	Margin	Humidity: 43	3 %	T
10 0 -10 -20 30.00 Temperat	Freque	ncy z) 20	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Humidity: 43 Detector	P/F	
10 0 -10 -20 30.00 Temperat	Freque (MHz	ncy z) 20 40	Reading (dBuV) 46.22	Factor (dB/m)	Level (dBuV/m) 21.84	Limit (dBuV/m) 40.00	Margin (dB) -18.16	Detector peak	P/F	
10 0 -10 -20 30.00 Temperat	Freque (MHz 50.94;	ncy z) 20 40	Reading (dBuV) 46.22 51.63	Factor (dB/m) -24.38 -24.94	Level (dBuV/m) 21.84 26.69	Limit (dBuV/m) 40.00 40.00	Margin (dB) -18.16 -13.31	Detector peak peak	P/F P	
10 0 -10 -20 30.00 Temperat	Freque (MHz 50.942 66.034	ncy 2) 20 40 850	Reading (dBuV) 46.22 51.63 46.68	Factor (dB/m) -24.38 -24.94 -22.00	Level (dBuV/m) 21.84 26.69 24.68	Limit (dBuV/m) 40.00 40.00 43.50	Margin (dB) -18.16 -13.31 -18.82	Detector peak peak peak	P/F P P	

- Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dB μ V/m)-Limit QPK(dB μ V/m)





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Above 1GHz (Only worse case is reported)

Temperature:	24.6℃	Relative Humidity:	53%
Test Voltage:	AC 120V		A A HULL
Ant. Pol.	Horizontal		133
Test Mode:	TX GFSK Mode 2412MHz		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	9644.500	48.22	5.21	53.43	74.00	-20.57	peak	Р
2	12067.000	44.99	6.55	51.54	74.00	-22.46	peak	Р

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB μ V/m)-Limit PK/AVG(dB μ V/m)
- 4. The tests evaluated1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.

		RIVAR D. A. C.	A CONTRACTOR OF THE PARTY OF TH
Temperature:	24.6℃	Relative Humidity:	53%
Test Voltage:	AC 120V	D A W	
Ant. Pol.	Vertical		
Test Mode:	TX GFSK Mode 2412MHz		The state of the s
	•		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3626.500	60.33	-10.93	49.40	74.00	-24.60	peak	Р
2	9644.500	52.67	5.21	57.88	74.00	-16.12	peak	Р
3 *	9644.500	46.85	5.21	52.06	54.00	-1.94	AVG	Р

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. Peak/AVG (dBµV/m)= Corr. (dB/m)+ Read Level (dBµV)
- 3. Margin (dB) = Peak/AVG (dB μ V/m)-Limit PK/AVG(dB μ V/m)
- 4. The tests evaluated1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.





Report No.: TBR-C-202409-0052-1

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			Control of the Contro	
ť	Temperature:	24.6℃	Relative Humidity:	53%
V	Test Voltage:	AC 120V	WW TO THE	A A A A A
	Ant. Pol.	Horizontal		7:33
f	Test Mode:	TX GFSK Mode 2442MHz	W A	

No.	Frequency (MHz)	Reading (dBuV)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1 *	9772.000	47.75	5.15	52.90	74.00	-21.10	peak	Р
2	14846.500	40.43	10.07	50.50	74.00	-23.50	peak	Р

Remark:

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB μ V/m)-Limit PK/AVG(dB μ V/m)
- 4. The tests evaluated1-26.5GHz,The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.

Temperature:	24.6℃	Relative Humidity:	53%
Test Voltage:	AC 120V	TU	0
Ant. Pol.	Vertical	William .	
Test Mode:	TX GFSK Mode 2442MHz		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3652.000	54.42	-10.24	44.18	74.00	-29.82	peak	Р
2	9772.000	50.68	5.15	55.83	74.00	-18.17	peak	Р
3 *	9772.000	45.30	5.15	50.45	54.00	-3.55	AVG	Р

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. Peak/AVG (dBµV/m)= Corr. (dB/m)+ Read Level (dBµV)
- 3. Margin (dB) = Peak/AVG (dB μ V/m)-Limit PK/AVG(dB μ V/m)
- 4. The tests evaluated1-26.5GHz,The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.





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Temperature:	24.6℃	Relative Humidity:	53%
Test Voltage:	AC 120V		A A A A A A A A A A A A A A A A A A A
Ant. Pol.	Horizontal		
Test Mode:	TX GFSK Mode 2469MHz		

No.	Frequency (MHz)	Reading (dBuV)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1 *	9415.000	45.78	5.76	51.54	74.00	-22.46	peak	Р
2	10945.000	43.35	5.58	48.93	74.00	-25.07	peak	Р

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB μ V/m)-Limit PK/AVG(dB μ V/m)
- 4. The tests evaluated1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.

Temperature:	24.6℃	Relative Humidity:	53%
Test Voltage:	AC 120V		
Ant. Pol.	Vertical	10	
Test Mode:	TX GFSK Mode 2469MHz		THU

No.	Frequency (MHz)	Reading (dBuV)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1 *	9874.000	47.54	4.79	52.33	74.00	-21.67	peak	Р
2	12806.500	41.45	7.23	48.68	74.00	-25.32	peak	Р

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB μ V/m)-Limit PK/AVG(dB μ V/m)
- 4. The tests evaluated1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.

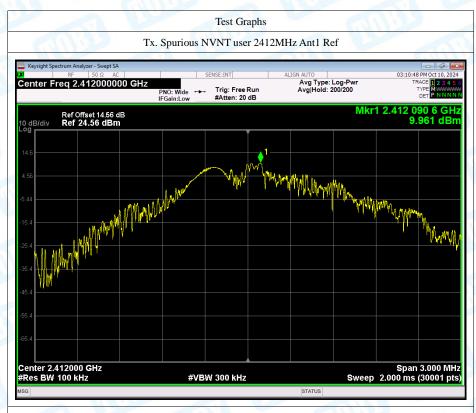




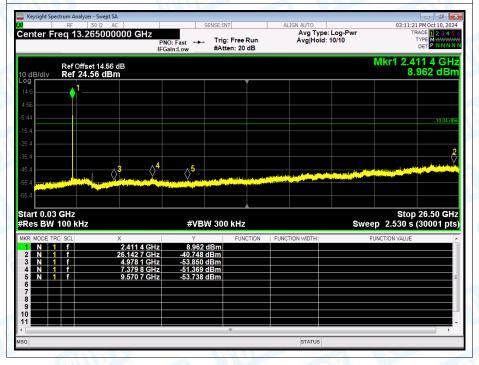
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Conducted Emission Test Data

Condition	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	2412	-50.71	-20	Pass
NVNT	2442	-50	-20	Pass
NVNT	2469	-49.74	-20	Pass



Tx. Spurious NVNT user 2412MHz Ant1 Emission



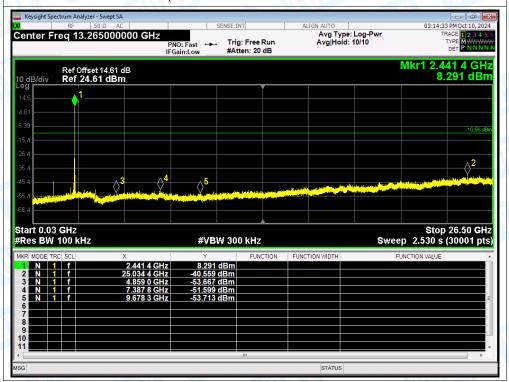




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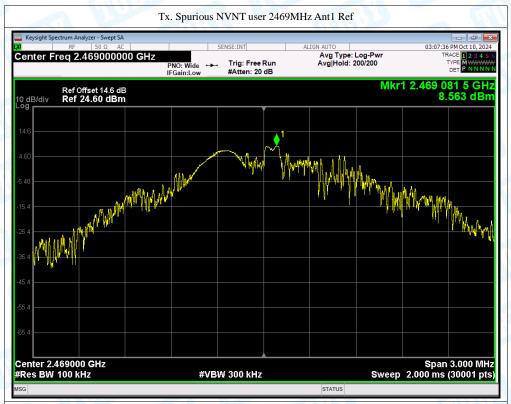
Tx. Spurious NVNT user 2442MHz Ant1 Emission



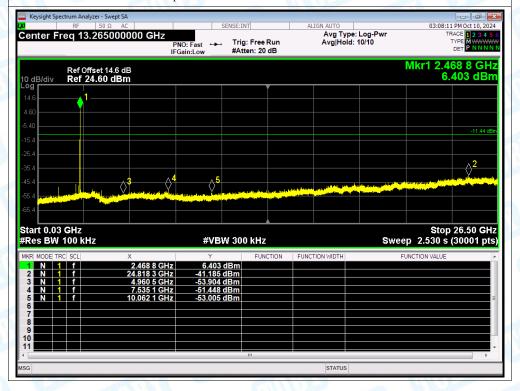




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Tx. Spurious NVNT user 2469MHz Ant1 Emission





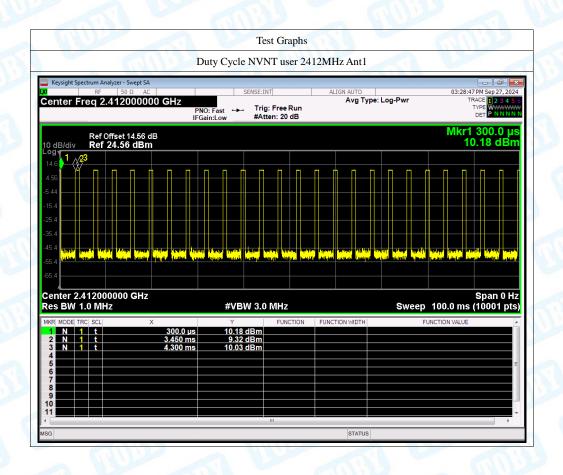




Attachment C-- Restricted Bands Requirement Test Data

1. Duty Cycle

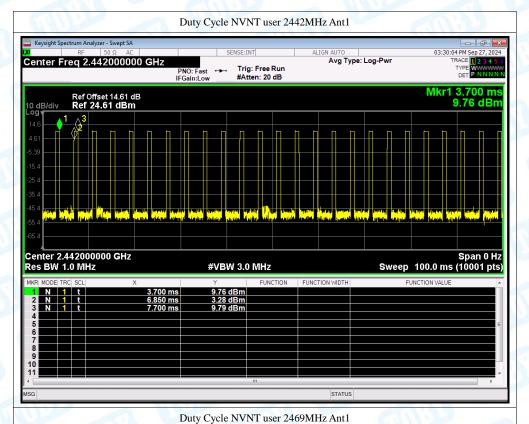
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	user	2412	Ant1	21.25	6.73	1.18
NVNT	user	2442	Ant1	21.25	6.73	1.18
NVNT	user	2469	Ant1	21.25	6.73	1.18







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| Ref Offset 14.6 dB | Ref 24.60 dBm | Ref 24.

STATUS





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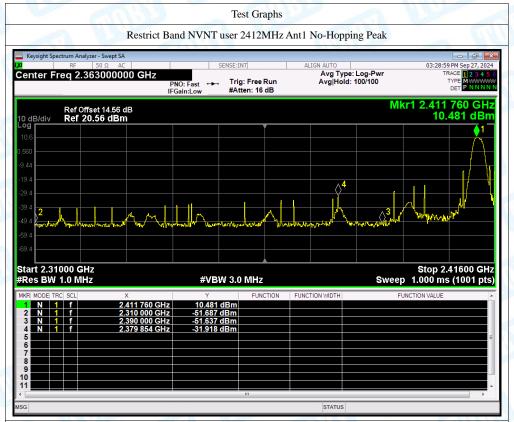
2.Restricted Bands Test Data

Condition	Frequency	Antenna	Hopping	Spur Freq	Power	Gain	Duty	E	Detector	Limit	Verdict
	(MHz)		Mode	(MHz)	(dBm)	(dBi)	Factor	(dBuV/m)		(dBuV/m)	
							(dB)				
NVNT	2412	Ant1	No-Hopping	2310	-51.69	2	-	45.57	Peak	74	Pass
NVNT	2412	Ant1	No-Hopping	2310	-60.47	2	6.73	43.52	Average	54	Pass
NVNT	2412	Ant1	No-Hopping	2379.854	-31.92	2	0	65.34	Peak	74	Pass
NVNT	2412	Ant1	No-Hopping	2379.96	-51.79	2	6.73	52.2	Average	54	Pass
NVNT	2412	Ant1	No-Hopping	2390	-51.64	2	3\- \	45.62	Peak	74	Pass
NVNT	2412	Ant1	No-Hopping	2390	-59.22	2	6.73	44.77	Average	54	Pass
NVNT	2469	Ant1	No-Hopping	2483.5	-49.62	2	-	47.64	Peak	74	Pass
NVNT	2469	Ant1	No-Hopping	2483.5	-58.81	2	6.73	45.18	Average	54	Pass
NVNT	2469	Ant1	No-Hopping	2484.005	-32.19	2	-	65.07	Peak	74	Pass
NVNT	2469	Ant1	No-Hopping	2485.825	-55.27	2	6.73	48.72	Average	54	Pass
NVNT	2469	Ant1	No-Hopping	2500	-52.45	2	410	44.81	Peak	74	Pass
NVNT	2469	Ant1	No-Hopping	2500	-59.58	2	6.73	44.41	Average	54	Pass

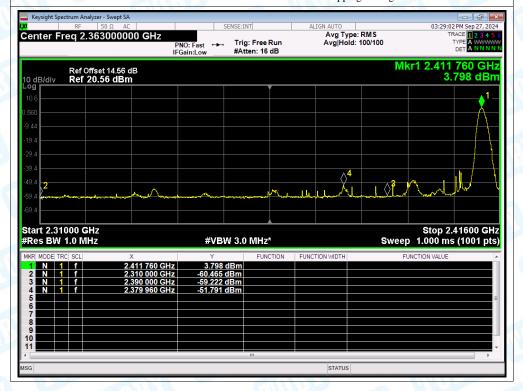




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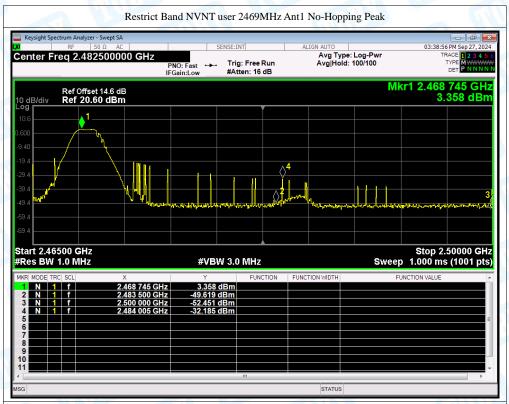
Restrict Band NVNT user 2412MHz Ant1 No-Hopping Average



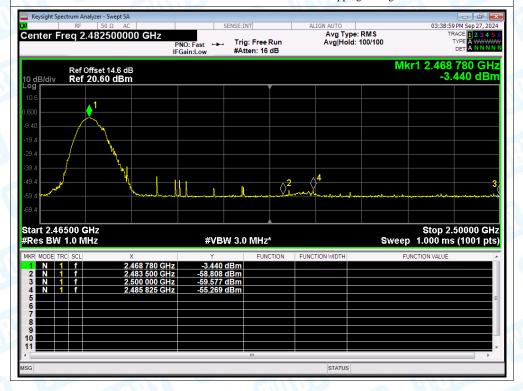




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Restrict Band NVNT user 2469MHz Ant1 No-Hopping Average



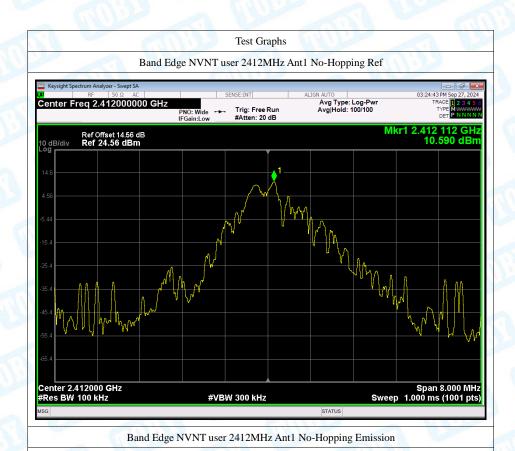






(1) Band Edge

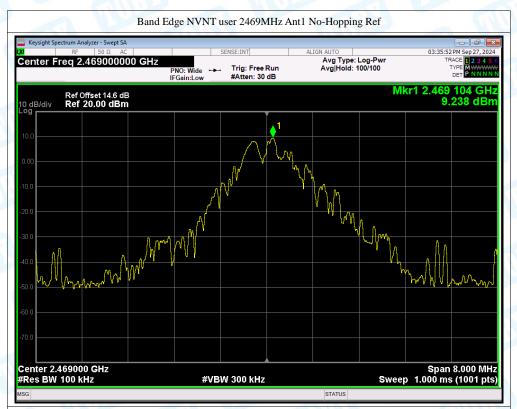
Condition	Frequency (MHz)	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	2412	No-Hopping	-56.22	-20	Pass
NVNT	2469	No-Hopping	-51.66	-20	Pass



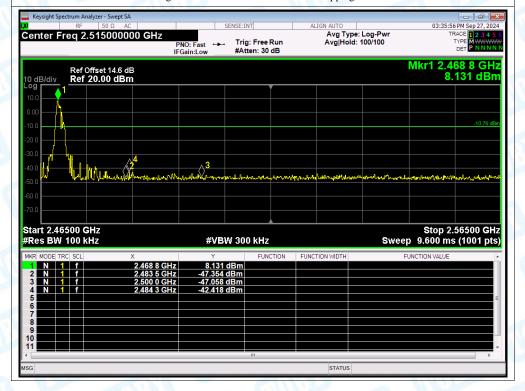




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Band Edge NVNT user 2469MHz Ant1 No-Hopping Emission





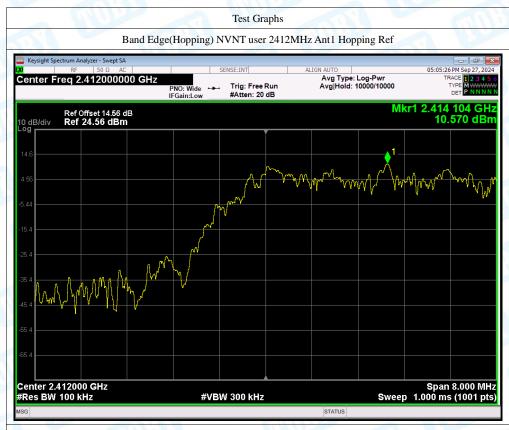




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(2) Band Edge(Hopping)

Condition	Frequency (MHz)	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	2412	Hopping	-52.85	-20	Pass
NVNT	2469	Hopping	-50.81	-20	Pass



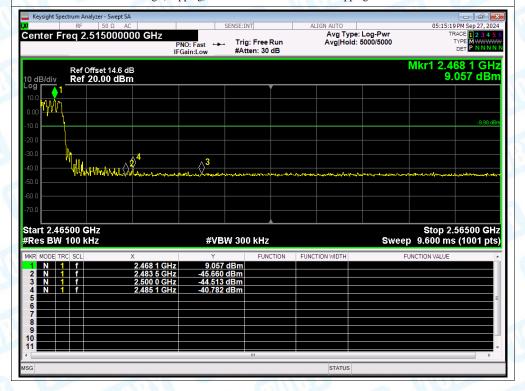




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Band Edge(Hopping) NVNT user 2469MHz Ant1 Hopping Emission



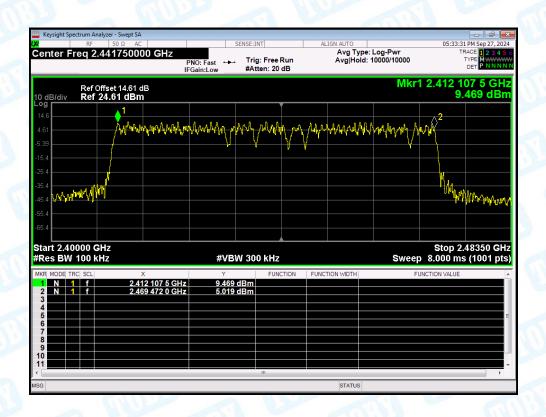






Attachment D-- Number of Hopping Channel Test Data

Condition	Hopping Number	Limit	Verdict	
NVNT	58	15	Pass	









Attachment E-- Average Time of Occupancy Test Data

Temperature:	24.6℃		Relative Humidity:	52%
Test Voltage:	AC 120V	U de la constante de la consta		

Test Mode: Hopping Mode (GFSK)

Test	Channel	Reading	Total hops	Test Result	Limit	Result
Mode	(MHz)	Time (ms)		(ms)	(ms)	Nesuit
GFSK	2442	4	10	40	400	PASS

The Dwell Time = Burst Width * Total Hops. The detailed calculations are showed as follows:

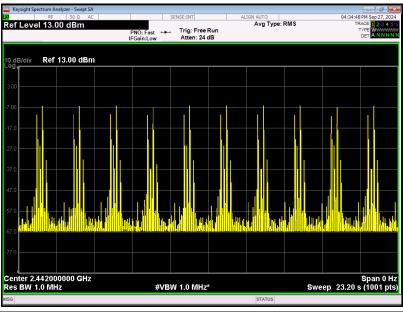
The duration for dwell time calculation: 0.4 [s] * hopping number = 0.4 [s] * 58 [ch] =23.2[s*ch];

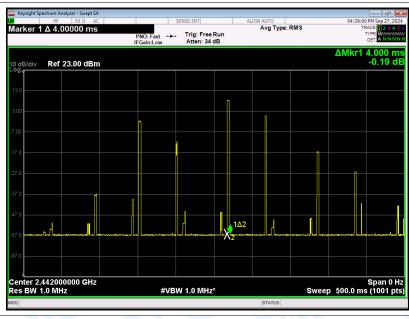
The burst width, which is directly measured, refers to the duration on one channel hop.

The maximum number of hopping channels in 23.2s is 10

Reading Time=4 ms

GFSK Hopping Mode











Attachment F-- Channel Separation and Bandwidth Test

Data

Bandwidth Test Data:

	Condition	Francisco (MIII-)	-20 dB Bandwidth	2/3 *-20 dB Bandwidth (MHz)	
	Condition	Frequency (MHz)	(MHz)		
	NVNT	2412	1.3	0.866	
63.7	NVNT	2442	1.3	0.866	
13.	NVNT	2469	1.4	0.933	







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Condition	Frequency (MHz)	99% OBW (MHz)
NVNT	2412	1.705
NVNT	2442	1.711
NVNT	2469	1.661









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Channel Separation Test data:

Condition	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	2442.084	2443.100	1.016	0.933	Pass









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Attachment G-- Peak Output Power Test Data

Condition	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	2412	10.512	21	Pass
NVNT	2442	10.112	21	Pass
NVNT	2469	9.311	21	Pass

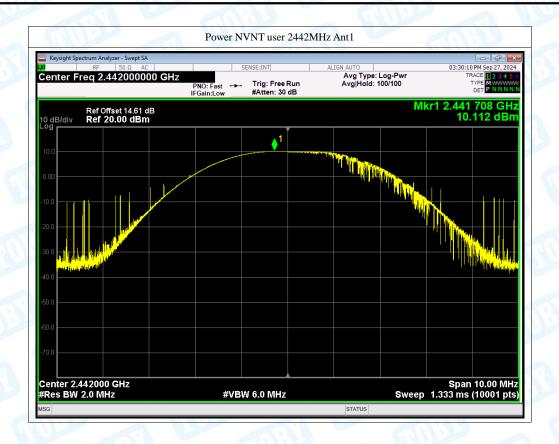


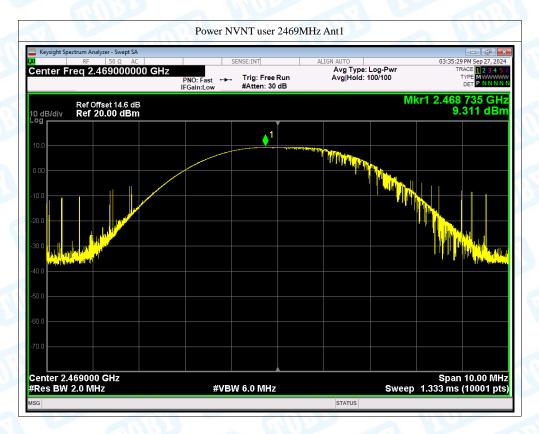






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----END OF THE REPORT----

