

Shenzhen Toby Technology Co., Ltd.



Report No.: TBR-C-202404-0276-21 Page: 1 of 44

RF Test Report FCC ID: 2A2GJ-HRI-3621

Report No.	: TBR-C-202	404-0276-21		
Applicant	: Heltec Auto	Heltec Automation Technology Co., Ltd		
Equipment Under T	t (EUT)			
EUT Name	: Sensor Hub	B		
Model No.	: HRI-3621			
Series Model No.		HRI-3623, HRI-362X, HRI-3621S, HRI-3621G, HRI- I-3622S, HRI-3622G, HRI-3622R, HRU-1000, HRU-3601		
Brand Name	: Heltec Auto	mation		
Sample ID	: HC-C-2024	04-0276-01-02-1#&HC-C-202404-0276-01-02-2#		
Receipt Date	: 2024-06-13	TOP A LUCE TO A		
Test Date	: 2024-06-13	2024-06-13 to 2024-07-25		
Issue Date	: 2024-07-27	2024-07-27		
Standards	: FCC Part 1	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	on tested, the EUT complied with the standards specified above.		
Tested By	: Mike	Yan Mike Yan Loca		
Reviewed By	: Mike : Jaile : INAN	Wade by		
Approved By	: INKN	SV E.S		

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.

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Contents

CO	NTENTS	2
1.	GENERAL INFORMATION ABOUT EUT	5
	1.1 Client Information	5
	1.2 General Description of EUT (Equipment Under Test)	
	1.3 Block Diagram Showing the Configuration of System Tested	7
	1.4 Description of Support Units	7
	1.5 Description of Test Mode	8
	1.6 Description of Test Software Setting	9
	1.7 Measurement Uncertainty	
	1.8 Test Facility	
2.	TEST SUMMARY	11
3.	TEST SOFTWARE	11
4.	TEST EQUIPMENT AND TEST SITE	12
5.	CONDUCTED EMISSION TEST	14
	5.1 Test Standard and Limit	14
	5.2 Test Setup	
	5.3 Test Procedure	14
	5.4 Deviation From Test Standard	15
	5.5 EUT Operating Mode	15
	5.6 Test Data	15
6.	RADIATED AND CONDUCTED UNWANTED EMISSIONS	16
	6.1 Test Standard and Limit	
	6.2 Test Setup	
	6.3 Test Procedure	19
	6.4 Deviation From Test Standard	
	6.5 EUT Operating Mode	20
	6.6 Test Data	20
7.	RESTRICTED BANDS REQUIREMENT	21
	7.1 Test Standard and Limit	21
	7.2 Test Setup	21
	7.3 Test Procedure	

TOBY Part of the Category

Report No.: TBR-C-202404-0276-21 Page: 3 of 44

	7.4 Deviation From Test Standard	23
	7.5 EUT Operating Mode	23
	7.6 Test Data	
8.	BANDWIDTH TEST	24
	8.1 Test Standard and Limit	24
	8.2 Test Setup	24
	8.3 Test Procedure	
	8.4 Deviation From Test Standard	25
	8.5 EUT Operating Mode	25
	8.6 Test Data	
9.	MAXIMUM CONDUCTED OUTPUT POWER	
	9.1 Test Standard and Limit	
	9.2 Test Setup	26
	9.3 Test Procedure	
	9.4 Deviation From Test Standard	26
	9.5 EUT Operating Mode	
	9.6 Test Data	
10.	POWER SPECTRAL DENSITY	27
	10.1 Test Standard and Limit	27
	10.2 Test Setup	
	10.3 Test Procedure	
	10.4 Deviation From Test Standard	27
	10.5 Antenna Connected Construction	
	10.6 Test Data	27
11.	ANTENNA REQUIREMENT	
	11.1 Test Standard and Limit	
	11.2 Deviation From Test Standard	
	11.3 Antenna Connected Construction	
	11.4 Test Data	
ATT	ACHMENT A CONDUCTED EMISSION TEST DATA	
ATT	ACHMENT B UNWANTED EMISSIONS DATA	





Report No.: TBR-C-202404-0276-21 Page: 4 of 44

Revision History

Report No.	Version	Description	Issued Date
TBR-C-202404-0276-21	Rev.01	Initial issue of report	2024-07-27
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1. General Information about EUT

1.1 Client Information

Applicant		Heltec Automation Technology Co., Ltd	
Address	:	f, No.54,56,58, Zirui North Street, Gaoxin District, Chengdu, china.	
Manufacturer		Heltec Automation Technology Co., Ltd	
Address		1f, No.54,56,58, Zirui North Street, Gaoxin District, Chengdu, China.	

1.2 General Description of EUT (Equipment Under Test)

EUT Name		Sensor Hub		
Models No.		HRI-3621, HRI-3622, HRI-3623, HRI-362X, HRI-3621S, HRI- 3621G, HRI-3621R, HRI-3622S, HRI-3622G, HRI-3622R, HRU- 1000, HRU-1001, HRU-3601		
Model Different			lentical in the same PCB, layout and nly difference is Different sales areas,	
		Operation Frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz	
Product		Number of Channel:	802.11b/g/n(HT20):11 channels 802.11n(HT40): 7 channels	
Description		Antenna Gain:	2.0dBi Phosphorus Cu Antenna	
		Modulation Type:	802.11b: DSSS (DQPSK, DBPSK, CCK) 802.11g: OFDM (BPSK, QPSK,16QAM, 64QAM) 802.11n: OFDM (BPSK, QPSK,16QAM, 64QAM)	
Denne Detine		USB INPUT: DC 5V/1A		
Power Rating		DC 3.7V 900mAh 3.33Wh Rechargeable Li-ion battery		
Software Version		HRI-3621.V1.0		
Hardware Version		HRI-3621.V1.0		
Remark:	_			

Remark:

(1)The antenna gain provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.

- (2)For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (3) 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.

(4)Channel List:

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

Note: CH 01~CH 11 for 802.11b/g/n(HT20)

CH 03~CH 09 for 802.11n(HT40)



1.3 Block Diagram Showing the Configuration of System Tested

Conducted Test

	EUT ADAPTER
01	
Radiated Test	TOPP TOPP TOPP
	FUT ADAPTER

1.4 Description of Support Units

		Equipment Inform	nation	
Name	Model	FCC ID/SDOC	Manufacturer	Used "√"
Adapter			HUAWEI	V
	(Cable Information		
Number	Shielded Type	Ferrite Core	Length	Note
Cable 1	Yes	NO	0.5M	Accessory

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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 Emission Test				
Final Test Mode Description				
Mode 1 TX b Mode Channel 01				
For Radiated and RF Conducted Test				
Final Test Mode	Description			
Mode 2	TX Mode b Mode Channel 01/06/11			
Mode 3 TX Mode g Mode Channel 01/06/11				
Mode 4 TX Mode n(HT20) Mode Channel 01/06/11				
Mode 5 TX Mode n(HT40) Mode Channel 03/06/09				

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.

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:

802.11b Mode: CCK

802.11g Mode: OFDM

802.11n (HT20) Mode: MCS 0

802.11n (HT40) Mode: MCS 0

- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a Mobile unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. 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 RF setting.

	Test Software:	ESP RF Test Tool		
Test Mode: Continuously transmitting				
Mode	Data Rate	Channel	Parameters	
anu	CCK/ 1Mbps	01	30	
802.11b	CCK/ 1Mbps	06	30	
	CCK/ 1Mbps	11	30	
	OFDM/ 6Mbps	01	28	
802.11g	OFDM/ 6Mbps	06	27	
	OFDM/ 6Mbps	11	27	
1 Juli	MCS 0	01	22	
802.11n(HT20)	MCS 0	06	22	
	MCS 0	11	22	
	MCS 0	03	21	
802.11n(HT40)	MCS 0	06	21	
	MCS 0	09	21	

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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
Test item	Falameters	(U _{Lab})
	Level Accuracy:	±3.50 dB
Conducted Emission	9kHz~150kHz	
anB1	150kHz to 30MHz	±3.10 dB
Dedicted Emission	Level Accuracy:	
Radiated Emission	9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy:	
Radiated Emission	30MHz to 1000 MHz	±4.50 dB
Dedicted Emission	Level Accuracy:	±4.20 dB
Radiated Emission	Above 1000MHz	±4.20 UD

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.





2. Test Summary

Standard Section					
FCC	- Test Item	Test Sample(s)	Judgment	Remark	
FCC 15.207(a)	Conducted Emission	HC-C-202404-0276-01-02-1#	PASS	N/A	
FCC 15.209 & 15.247(d)	Radiated Unwanted Emissions	HC-C-202404-0276-01-02-1#	PASS	N/A	
FCC 15.203	Antenna Requirement	HC-C-202404-0276-01-02-2#	PASS	N/A	
FCC 15.247(a)(2)	6dB Bandwidth	HC-C-202404-0276-01-02-2#	PASS	N/A	
	99% Occupied bandwidth	HC-C-202404-0276-01-02-2#	PASS	N/A	
FCC 15.247(b)(3)	Maximum conducted output power and E.I.R.P	HC-C-202404-0276-01-02-2#	PASS	N/A	
FCC 15.247(e)	Power Spectral Density	HC-C-202404-0276-01-02-2#	PASS	N/A	
FCC 15.247(d)	Band Edge Measurements	HC-C-202404-0276-01-02-2#	PASS	N/A	
FCC 15.207	Conducted Unwanted Emissions	HC-C-202404-0276-01-02-2#	PASS	N/A	
FCC 15.247(d)	Emissions in Restricted Bands	HC-C-202404-0276-01-02-2#	PASS	N/A	
	On Time and Duty Cycle	HC-C-202404-0276-01-02-2#		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	Tonscend	V3.2.22

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)	\checkmark
TB-EMCSR002	Shielding Chamber #2	YIHENG	8.0*4.0*3.0 (m)	Х
TB-EMCCA001	3m Anechoic Chamber #A	ETS	9.0*6.0*6.0 (m)	Х
TB-EMCCB002	3m Anechoic Chamber #B	YIHENG	9.0*6.0*6.0 (m)	

Conducted Emissi	on 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 Emissio	n Test (B Site)				
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 30, 2023	Aug. 29, 2024
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. 30, 2023	Aug. 29, 2024
HF Amplifier	Tonscend	TAP051845	AP21C806141	Aug. 30, 2023	Aug. 29, 2024
HF Amplifier	Tonscend	TAP0184050	AP21C806129	Aug. 30, 2023	Aug. 29, 2024
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 Conducte	ed 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. 30, 2023	Aug. 29, 2024
MXA Signal Analyzer	Agilent	N9020A	MY47380425	Aug. 30, 2023	Aug. 29, 2024
Vector Signal Generator	Agilent	N5182A	MY50141294	Aug. 30, 2023	Aug. 29, 2024
Analog Signal Generator	Agilent	N5181A	MY48180463	Aug. 30, 2023	Aug. 29, 2024
Vector Signal Generator	KEYSIGHT	N5182B	MY59101429	Aug. 30, 2023	Aug. 29, 2024
Analog Signal Generator	KEYSIGHT	N5173B	MY61252685	Aug. 30, 2023	Aug. 29, 2024





Report No.: TBR-C-202404-0276-21 Page: 13 of 44

	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO26	Aug. 30, 2023	Aug. 29, 2024
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO29	Aug. 30, 2023	Aug. 29, 2024
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO31	Aug. 30, 2023	Aug. 29, 2024
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO33	Aug. 30, 2023	Aug. 29, 2024
RF Control Unit	Tonsced	JS0806-1	21C8060380	N/A	N/A
RF Control Unit	Tonsced	JS0806-2	21F8060439	Aug. 30, 2023	Aug. 29, 2024
Power Control Box	Tonsced	JS0806-4ADC	21C8060387	N/A	N/A



5. Conducted Emission Test

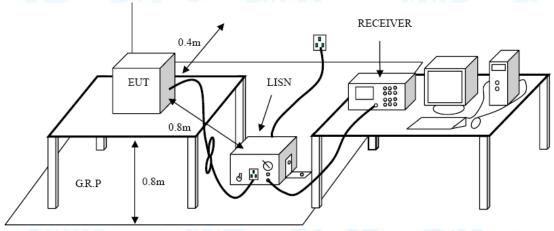
- 5.1 Test Standard and Limit
 - 5.1.1 Test Standard
 - FCC Part 15.207
 - 5.1.2 Test Limit

Eroguopov	Maximum RF Line Voltage (dB μ V)		
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



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 9 kHz, 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 inside test report.



6. Radiated and Conducted Unwanted Emissions

- 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

General field strength limits at frequencies Below 30MHz			
Frequency	Field Strength	Measurement Distance	
(MHz)	(microvolt/meter)**	(meters)	
0.009~0.490	2400/F(KHz)	300	
0.490~1.705	24000/F(KHz)	30	
1.705~30.0	30	30	

Note: 1, The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

General field strength limits at frequencies above 30 MHz			
Frequency Field strength Measurement Dist			
(MHz)	(µV/m at 3 m)	(meters)	
30~88	100	3	
88~216	150	3	
216~960	200	3	
Above 960	500	3	

General field strength limits at frequencies Above 1000MHz			
Frequency	Distance of 3m (dBuV/m)		
(MHz)	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)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power

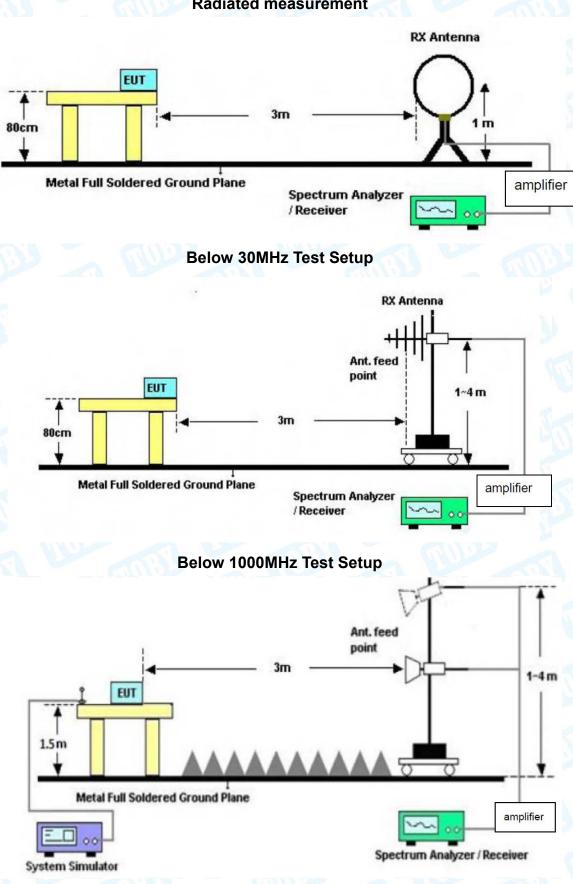




limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.



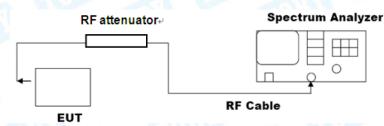
6.2 Test Setup



Radiated measurement



Above 1GHz Test Setup Conducted measurement



6.3 Test Procedure

---Radiated measurement

• 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.

• 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.

• The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

• 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.

● 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.

● Testing frequency range 30MHz-1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection. Testing frequency range 9KHz-150Hz the measuring instrument use VBW=200Hz with Quasi-peak detection. Testing frequency range 9KHz-30MHz the measuring instrument use VBW=9kHz with Quasi-peak detection.

● 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.

• For the actual test configuration, please see the test setup photo.





--- Conducted measurement

•Reference level measurement

Establish a reference level by using the following procedure:

a) Set instrument center frequency to DTS channel center frequency.

- b) Set the span to≥1.5 times the DTS bandwidth.
- c) Set the RBW = 100 kHz.
- d) Set the VBW≥[3*RBW].
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

Emission level measurement

Establish an emission level by using the following procedure:

- a) Set the center frequency and span to encompass frequency range to be measured.
- b) Set the RBW = 100 kHz.
- c) Set the VBW≥[3*RBW].
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

6.4 Deviation From Test Standard

No deviation

6.5 EUT Operating Mode

Please refer to the description of test mode.

6.6 Test Data

Radiated measurement please refer to the Attachment B inside test report. Conducted measurement please refer to the external appendix report of 2.4G Wi-Fi.





7. Restricted Bands Requirement

- 7.1 Test Standard and Limit
 - 7.1.1 Test Standard

FCC Part 15.205 & FCC Part 15.247(d)

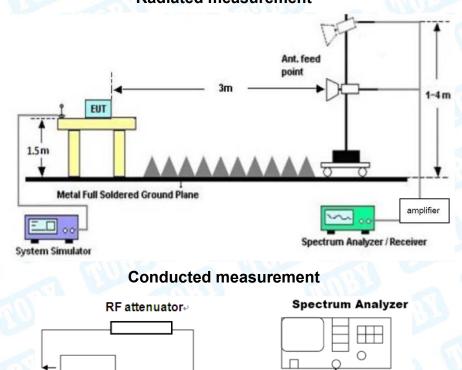
EUT

7.1.2 Test Limit

Restricted Frequency	Distance Meters(at 3m)		
Band (MHz)	Peak (dBuV/m)	Average (dBuV/m)	
2310 ~2390	74	54	
2483.5 ~2500	74	54	
	Peak (dBm)see 7.3 e)	Average (dBm) see 7.3 e)	
2310 ~2390	-21.20	-41.20	
2483.5 ~2500	-21.20	-41.20	

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

RF Cable



7.3 Test Procedure

---Radiated measurement

• 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.

• The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

• 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.

The Peak Value and average value both need to comply with applicable limit above 1 GHz.

● 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.

• 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

 ${\leq}30$ 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 equivalent electric field strength using the following relationship:







$E = \text{EIRP-20} \log d + 104.8$

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 Mode

Please refer to the description of test mode.

7.6 Test Data

Remark: The test uses antenna-port conducted measurements as an alternative to radiated measurements for determining compliance in the restricted frequency bands requirements.



8. Bandwidth Test

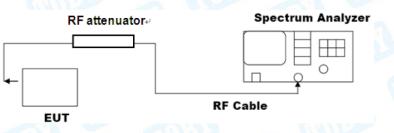
- 8.1 Test Standard and Limit
 - 8.1.1 Test Standard

FCC Part 15.205 & FCC Part 15.247(d)

8.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)	
-6dB bandwidth	>=500 KHz	2400~2483.5	
(DTS bandwidth)	>=300 KHZ	2400~2403.3	
99% occupied bandwidth		2400~2483.5	

8.2 Test Setup



8.3 Test Procedure

- ---DTS bandwidth
- The steps for the first option are as follows:
- a) Set RBW = 100 kHz.
- b) Set the VBW≥[3*RBW].
- c) Detector = peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

---occupied bandwidth

• The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times





the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

d) Step a) through step c) might require iteration to adjust within the specified range.
e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the lower frequency as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

 h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

8.4 Deviation From Test Standard

No deviation

8.5 EUT Operating Mode

Please refer to the description of test mode.

8.6 Test Data





9. Maximum conducted output power

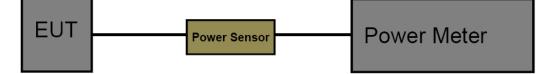
- 9.1 Test Standard and Limit
 - 9.1.1 Test Standard

FCC Part 15.247(b)(3)

9.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Maximum conducted	not exceed 1 W or 30dBm	2400~2483.5
output power		2400 2400.0

9.2 Test Setup



9.3 Test Procedure

● The EUT was connected to RF power meter via a broadband power sensor as show the block above. The power sensor video bandwidth is greater than or equal to the DTS bandwidth of the equipment.

9.4 Deviation From Test Standard

No deviation

9.5 EUT Operating Mode

Please refer to the description of test mode.

9.6 Test Data



10. Power Spectral Density

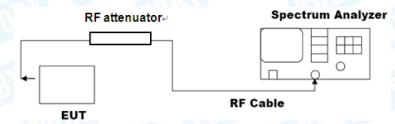
- 10.1 Test Standard and Limit
 - 10.1.1 Test Standard

FCC Part 15.247(e)

10.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5

10.2 Test Setup



10.3 Test Procedure

• The following procedure shall be used if maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to 3 kHz≤RBW≤100 kHz.
- d) Set the VBW ≥[3*RBW].
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.

i) Use the peak marker function to determine the maximum amplitude level within the RBW.

j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

- 10.4 Deviation From Test Standard
 - No deviation
- 10.5 Antenna Connected Construction

Please refer to the description of test mode.

10.6 Test Data





11. Antenna Requirement

11.1 Test Standard and Limit

11.1.1 Test Standard

FCC Part 15.203

11.1.2 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.

11.2 Deviation From Test Standard No deviation

11.3 Antenna Connected Construction

The gains of the antenna used for transmitting is 2.0dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

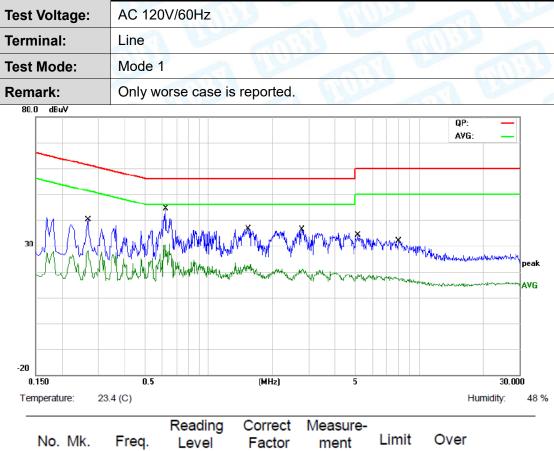
11.4 Test Data

The EUT antenna is a Phosphorus Cu Antenna. It complies with the standard requirement.

Antenna Type					
No.	Permanent attached antenna				
(mB)	Unique connector antenna				
	Professional installation antenna				



Attachment A-- Conducted Emission Test Data



No.	Mk.	Freq.	Level	Factor	ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2660	25.35	9.76	35.11	61.24	-26.13	QP
2		0.2660	14.05	9.76	23.81	51.24	-27.43	AVG
3	*	0.6260	28.66	9.92	38.58	56.00	-17.42	QP
4		0.6260	15.43	9.92	25.35	46.00	-20.65	AVG
5		1.5380	19.54	9.94	29.48	56.00	-26.52	QP
6		1.5380	8.09	9.94	18.03	46.00	-27.97	AVG
7		2.7700	19.21	10.11	29.32	56.00	-26.68	QP
8		2.7700	8.14	10.11	18.25	46.00	-27.75	AVG
9		5.1299	18.05	9.52	27.57	60.00	-32.43	QP
10		5.1299	7.55	9.52	17.07	50.00	-32.93	AVG
11		7.9779	14.24	9.84	24.08	60.00	-35.92	QP
12		7.9779	6.57	9.84	16.41	50.00	-33.59	AVG

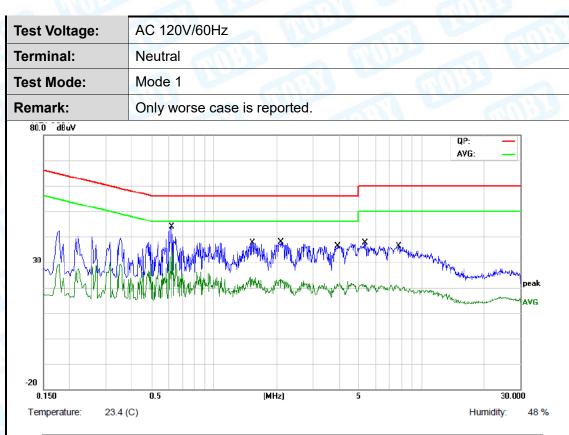
Remark:

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

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







1 * 2 3 4	MHz						
2 3 4		dBuV	dB	dBuV	dBuV	dB	Detector
3 4	0.6220	28.31	9.93	38.24	56.00	-17.76	QP
4	0.6220	15.50	9.93	25.43	46.00	-20.57	AVG
-	1.5339	19.31	9.75	29.06	56.00	-26.94	QP
-	1.5339	8.26	9.75	18.01	46.00	-27.99	AVG
5	2.1099	19.31	9.70	29.01	56.00	-26.99	QP
6	2.1099	8.20	9.70	17.90	46.00	-28.10	AVG
7	3.9580	18.55	9.91	28.46	56.00	-27.54	QP
8	3.9580	8.26	9.91	18.17	46.00	-27.83	AVG
9	5.3539	15.82	9.85	25.67	60.00	-34.33	QP
10	5.3539	6.99	9.85	16.84	50.00	-33.16	AVG
11	7.7699	14.05	9.96	24.01	60.00	-35.99	QP
12							AVG

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

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





Attachment B-- Unwanted Emissions Data

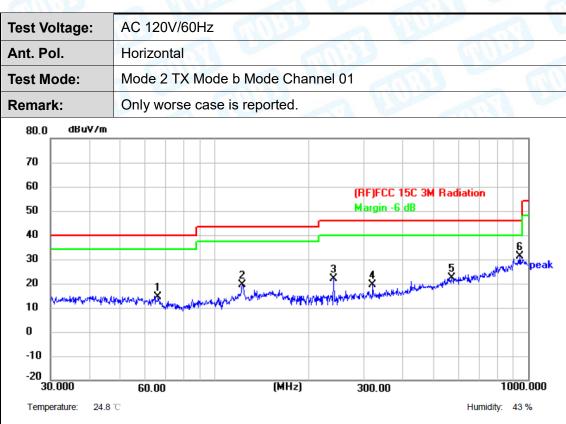
---Radiated Unwanted Emissions

9 KHz~30 MHz

From 9 KHz to 30 MHz: 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 (dBu∀)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	66.0341	39.24	-24.94	14.30	40.00	-25.70	peak	Р
2	122.8340	42.89	-23.44	19.45	43.50	-24.05	peak	Р
3	239.9873	45.81	-23.92	21.89	46.00	-24.11	peak	Р
4	319.9370	39.51	-20.18	19.33	46.00	-26.67	peak	Р
5	570.6100	36.55	-14.28	22.27	46.00	-23.73	peak	Р
6 *	938.8325	38.61	-7.47	31.14	46.00	-14.86	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 (dB μ V/m)-Limit QPK(dB μ V/m)





Test V	oltage:	AC 120V/60Hz							
Ant. Pol. Vertical									
lest M	ode:	Mode 2 TX Mod	de b Mode Chann	nel 01					
Remai	·k:	Only worse cas	e is reported.		GIN				
80.0	dBu¥/m								
 70 60 50 40 30 20 10 0 	Manapaga Kanapaga Kan Kanapaga Kanapaga Kanap		2 2 2 2 2 2 2 3 3 2 2 3 3 3 3 3 3 3 3 3	(RF)FCC 15C 3 Margin -6 dB	M Radiation				
-10 -20 30. Tempe	000 rature: 24.8 °C	60.00	(MHz)	300.00	1000.000 Humidity: 43 %				

No.	Frequency (MHz)	Reading (dBu∀)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	56.7917	41.79	-24.28	17.51	40.00	-22.49	peak	Р
2	116.5400	40.68	-24.19	16.49	43.50	-27.01	peak	Р
3	159.7844	43.29	-21.40	21.89	43.50	-21.61	peak	Р
4	239.9873	48.65	-23.92	24.73	46.00	-21.27	peak	Р
5	360.4476	45.86	-19.93	25.93	46.00	-20.07	peak	Р
6 *	480.5276	43.85	-17.13	26.72	46.00	-19.28	peak	Ρ

- 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)

Above 1GHz

Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V		E
Ant. Pol.	Horizontal	and a	The second
Test Mode:	TX B Mode 2412MHz	mill'	

No.	Frequency (MHz)			Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	10613.500	46.46	-0.84	45.62	74.00	-28.38	peak	Ρ
2	12857.500	43.57	1.71	45.28	74.00	-28.72	peak	Ρ

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 (dBµV/m)-Limit PK/AVG(dBµV/m)

4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.

5. No report for the emission which below the prescribed limit.

6. The peak value<average limit, So only show the peak value.

Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V		COLON T
Ant. Pol.	Vertical	The second	Con
Test Mode:	TX B Mode 2412MHz	TUP	

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)			Detector	P/F
1	10078.000	47.14	-2.07	45.07	74.00	-28.93	peak	Р
2 *	13316.500	43.42	2.03	45.45	74.00	-28.55	peak	Ρ

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 (dBµV/m)-Limit PK/AVG(dBµV/m)

- 5. No report for the emission which below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.





Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	TUP-	200
Ant. Pol.	Horizontal		1055
Test Mode:	TX B Mode 2437MHz	The second second	

No.	Frequency (MHz)	Reading (dBu∀)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	P/F
1	10690.000	46.26	-0.65	45.61	74.00	-28.39	peak	Р
2 *	13444.000	44.01	2.14	46.15	74.00	-27.85	peak	Ρ

- 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 (dBµV/m)-Limit PK/AVG(dBµV/m)

4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.

5. No report for the emission which below the prescribed limit.

6. The peak value<average limit, So only show the peak value.

Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2437MHz	The second se	

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1	9695.500	46.58	-3.36	43.22	74.00	-30.78	peak	Ρ
2 *	13367.500	43.94	2.07	46.01	74.00	-27.99	peak	Ρ

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 (dBµV/m)-Limit PK/AVG(dBµV/m)

- 5. No report for the emission which below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.





Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	aue	
Ant. Pol.	Horizontal		1000
Test Mode:	TX B Mode 2462MHz	1 and 1	60130

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	10027.000	47.51	-2.18	45.33	74.00	-28.67	peak	Ρ
2	12526.000	43.22	1.62	44.84	74.00	-29.16	peak	Ρ

- 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 (dBµV/m)-Limit PK/AVG(dBµV/m)

4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.

5. No report for the emission which below the prescribed limit.

6. The peak value<average limit, So only show the peak value.

	E IIII		
Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V		113
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 246	2MHz	

No.	Frequency (MHz)	Reading (dBu∀)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	8038.000	52.10	-7.28	44.82	74.00	-29.18	peak	Р
2 *	11735.500	44.90	1.08	45.98	74.00	-28.02	peak	Ρ

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 (dBµV/m)-Limit PK/AVG(dBµV/m)

- 5. No report for the emission which below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.





Temperature:	23.5 ℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	TUP	
Ant. Pol.	Horizontal		1000
Test Mode:	TX G Mode 2412MHz		Cillion in

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	10460.500	47.00	-1.19	45.81	74.00	-28.19	peak	Р
2 *	14132.500	43.96	2.75	46.71	74.00	-27.29	peak	Ρ

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 evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.

5. No report for the emission which below the prescribed limit.

6. The peak value < average limit, So only show the peak value.

Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical	0000	
Test Mode:	TX G Mode 2412MHz	m B	

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)	Limit (dBuV/m)		Detector	P/F
1	10180.000	46.03	-1.83	44.20	74.00	-29.80	peak	Ρ
2 *	13342.000	44.39	2.06	46.45	74.00	-27.55	peak	Ρ

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 (dBµV/m)-Limit PK/AVG(dBµV/m)

- 5. No report for the emission which below the prescribed limit.
- 6. The peak value<average limit, So only show the peak value.





Temperature:	23.5 ℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	AUG -	200
Ant. Pol.	Horizontal		000
Test Mode:	TX G Mode 2437MHz		Cinno I

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1	10588.000	45.86	-0.89	44.97	74.00	-29.03	peak	Ρ
2 *	12424.000	43.85	1.58	45.43	74.00	-28.57	peak	Ρ

- 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 (dBµV/m)-Limit PK/AVG(dBµV/m)

4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.

5. No report for the emission which below the prescribed limit.

6. The peak value<average limit, So only show the peak value.

Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	The state	Le DE
Ant. Pol.	Vertical	and and a	
Test Mode:	TX G Mode 2437MHz		TO SE T

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1	8114.500	50.72	-7.18	43.54	74.00	-30.46	peak	Ρ
2 *	11735.500	44.66	1.08	45.74	74.00	-28.26	peak	Ρ

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)

- 5. No report for the emission which below the prescribed limit.
- 6. The peak value<average limit, So only show the peak value.



Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	The states	
Ant. Pol.	Horizontal	AL C	000
Test Mode:	TX G Mode 2462MHz		

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	8624.500	50.30	-6.45	43.85	74.00	-30.15	peak	Ρ
2 *	11965.000	44.60	1.40	46.00	74.00	-28.00	peak	Ρ

- 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 (dBµV/m)-Limit PK/AVG(dBµV/m)

4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.

5. No report for the emission which below the prescribed limit.

6. The peak value<average limit, So only show the peak value.

Temperature:	23.5 ℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	The state	L'ANDE
Ant. Pol.	Vertical	and and	
Test Mode:	TX G Mode 2462MHz		n con

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)			Detector	P/F
1	12118.000	44.88	1.49	46.37	74.00	-27.63	peak	Ρ
2 *	12857.500	45.03	1.71	46.74	74.00	-27.26	peak	Ρ

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 (dBµV/m)-Limit PK/AVG(dBµV/m)
- 4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
- 5. No report for the emission which below the prescribed limit.
- 6. The peak value<average limit, So only show the peak value.





Temperature:	23.5 ℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V		2
Ant. Pol.	Horizontal		1000
Test Mode:	TX n(HT20) Mode	2412MHz	603

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1	8854.000	49.62	-6.13	43.49	74.00	-30.51	peak	Ρ
2 *	12169.000	43.65	1.50	45.15	74.00	-28.85	peak	Ρ

- 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 (dBµV/m)-Limit PK/AVG(dBµV/m)

4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.

5. No report for the emission which below the prescribed limit.

6. The peak value<average limit, So only show the peak value.

Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	TUL A	Le DE
Ant. Pol.	Vertical	muse	
Test Mode:	TX n(HT20) Mode 2412M	Hz	1000

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1	10817.500	46.28	-0.36	45.92	74.00	-28.08	peak	Ρ
2 *	14795.500	42.88	3.45	46.33	74.00	-27.67	peak	Ρ

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 (dBµV/m)-Limit PK/AVG(dBµV/m)
- 4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
- 5. No report for the emission which below the prescribed limit.
- 6. The peak value<average limit, So only show the peak value.



Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		mous -
Test Mode:	TX n(HT20) Mod	e 2437MHz	

No.	Frequency (MHz)	Reading (dBu∀)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	10817.500	45.79	-0.36	45.43	74.00	-28.57	peak	Ρ
2 *	13036.000	44.25	1.78	46.03	74.00	-27.97	peak	Ρ

- 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 (dBµV/m)-Limit PK/AVG(dBµV/m)

4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.

5. No report for the emission which below the prescribed limit.

6. The peak value<average limit, So only show the peak value.

Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	TUL T	Le le
Ant. Pol.	Vertical	muer	
Test Mode:	TX n(HT20) Mode 2437M	Hz	1000

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1 *	10435.000	46.75	-1.25	45.50	74.00	-28.50	peak	Ρ
2	13189.000	43.17	1.92	45.09	74.00	-28.91	peak	Ρ

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 (dBµV/m)-Limit PK/AVG(dBµV/m)
- 4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
- 5. No report for the emission which below the prescribed limit.
- 6. The peak value<average limit, So only show the peak value.





23.5 ℃	Relative Humidity:	49%
DC 3.7V		
Horizontal		1000
TX n(HT20) Mod	le 2462MHz	
	DC 3.7V Horizontal	DC 3.7V

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1	7834.000	51.61	-7.54	44.07	74.00	-29.93	peak	Ρ
2 *	11965.000	44.52	1.40	45.92	74.00	-28.08	peak	Ρ

- 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 evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.

5. No report for the emission which below the prescribed limit.

6. The peak value<average limit, So only show the peak value.

Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	TU'L A	E C
Ant. Pol.	Vertical	TO DE	
Test Mode:	TX n(HT20) Mode 2462M	Hz	n com

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	11353.000	45.28	0.54	45.82	74.00	-28.18	peak	Ρ
2 *	14285.500	43.32	2.91	46.23	74.00	-27.77	peak	Ρ

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 (dBµV/m)-Limit PK/AVG(dBµV/m)
- 4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
- 5. No report for the emission which below the prescribed limit.
- 6. The peak value<average limit, So only show the peak value.



Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V		200
Ant. Pol.	Horizontal		1000
Test Mode:	TX n(HT40) Mode	2422MHz	6113J

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1	11276.500	45.21	0.45	45.66	74.00	-28.34	peak	Р
2 *	14948.500	42.57	3.60	46.17	74.00	-27.83	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 evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.

5. No report for the emission which below the prescribed limit.

6. The peak value<average limit, So only show the peak value.

Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	TU A	Le le
Ant. Pol.	Vertical	mul	
Test Mode:	TX n(HT40) Mode 2422M	Hz	1000

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1	8650.000	50.11	-6.41	43.70	74.00	-30.30	peak	Ρ
2 *	13418.500	43.66	2.12	45.78	74.00	-28.22	peak	Ρ

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 (dBµV/m)-Limit PK/AVG(dBµV/m)
- 4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
- 5. No report for the emission which below the prescribed limit.
- 6. The peak value<average limit, So only show the peak value.



Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	TUDE	200
Ant. Pol.	Horizontal		055
Test Mode:	TX n(HT40) Mode 2437	'MHz	Con Bu

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	10894.000	46.16	-0.19	45.97	74.00	-28.03	peak	Ρ
2 *	14387.500	43.28	3.02	46.30	74.00	-27.70	peak	Ρ

- 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 (dBµV/m)-Limit PK/AVG(dBµV/m)

4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.

5. No report for the emission which below the prescribed limit.

6. The peak value<average limit, So only show the peak value.

Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	TU'L A	
Ant. Pol.	Vertical	TO DE	
Test Mode:	TX n(HT40) Mode 2437M	Hz	

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1	9848.500	46.95	-2.80	44.15	74.00	-29.85	peak	Ρ
2 *	13546.000	43.98	2.22	46.20	74.00	-27.80	peak	Ρ

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 (dBµV/m)-Limit PK/AVG(dBµV/m)
- 4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
- 5. No report for the emission which below the prescribed limit.
- 6. The peak value<average limit, So only show the peak value.



Temperature:	23.5 ℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		0000
Test Mode:	TX n(HT40) Mod	de 2452MHz	

No.	Frequency (MHz)	Reading (dBu∀)		Level (dBuV/m)		Margin (dB)	Detector	P/F
1	12092.500	44.03	1.48	45.51	74.00	-28.49	peak	Р
2 *	14846.500	43.29	3.50	46.79	74.00	-27.21	peak	Ρ

- 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 evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.

5. No report for the emission which below the prescribed limit.

6. The peak value<average limit, So only show the peak value.

Temperature:	23.5℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V	TU'L A	
Ant. Pol.	Vertical	TO DE	
Test Mode:	TX n(HT40) Mode 2452M	Hz	

No.	Frequency (MHz)	Reading (dBu∀)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	10664.500	46.52	-0.72	45.80	74.00	-28.20	peak	Ρ
2	12475.000	43.41	1.59	45.00	74.00	-29.00	peak	Ρ

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 (dBµV/m)-Limit PK/AVG(dBµV/m)

4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.

- 5. No report for the emission which below the prescribed limit.
- 6. The peak value $<\!$ average limit, So only show the peak value.

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

