

Shenzhen HTT Technology Co., Ltd.

Report No.: HTT202202056F01

TEST Report

Applicant: Shenzhen Daping Computer CO., LTD

Address of Applicant: 405 Room, Floor 4, Xuming Science Park,

1193 Guanguang Road, Guihua Community, Guanlan Street, Longhua District, Shenzhen

Manufacturer: Shenzhen Daping Computer CO., LTD

Address of 405 Room, Floor 4, Xuming Science Park, Manufacturer: 1193 Guanguang Road, Guihua Community,

Guanlan Street, Longhua District, Shenzhen

Equipment Under Test (EUT)

Product Name: Bluetooth temperature and humidity sensor

Model No.: DP-BT001

Series model: DP-BT002, DP-BT003, DP-BT004, DP-BT005, DP-BT006

Trade Mark: N/A

FCC ID: 2AYOK-DP-BT001

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: Feb.11,2022

Date of Test: Feb.11,2022~Feb.20,2022

Date of report issued: Feb.20,2022

Test Result: PASS *

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



1. Version

Version No.	Date	Description
00	Feb.20,2022	Original

Tested/ Prepared By	Ervin Xu	Date:	Feb.20,2022
	Project Engineer	_	
Check By:	Bruce Zhu	Date:	Feb.20,2022
	Reviewer		
Approved By :	Kevin Yang	Date:	Feb.20,2022
	Authorized Signature	_	



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3. Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	N/A
Maximum peak conducted output power	15.247 (b)(3)	Pass
Channel Bandwidth	15.247 (a)(2)	Pass
Power Spectral Density	15.247 (e)	Pass
Band Edge	15.247(d)	Pass
Spurious Emission	15.205/15.209	Pass

Remarks:

- 1. Pass: The EUT complies with the essential requirements in the standard.
- 2. Test according to ANSI C63.10:2013

Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes		
Radiated Emission	30~1000MHz	3.45 dB	(1)		
Radiated Emission 1~6GHz 3.54 dB					
Radiated Emission 6~40GHz 5.38 dB			(1)		
Conducted Disturbance 0.15~30MHz 2.66 dB (1)					
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.					



4. General Information

4.1. General Description of EUT

Product Name:	Bluetooth temperature and humidity sensor
Model No.:	DP-BT001
Series model:	DP-BT002, DP-BT003, DP-BT004, DP-BT005, DP-BT006
Test sample(s) ID:	HTT202202056-1(Engineer sample) HTT202202056-2(Normal sample)
Operation frequency	2402~2480 MHz
Number of Channels	40
Modulation Type	GFSK
Channel separation	2MHz
Antenna Type:	PCB Antenna
Antenna Gain:	0.89dBi
Power Supply:	DC 3.0V/1000mAh Form Battery



Channel	Frequency(MHz)	Channel	Frequency(MHz)
0	2402	20	2442
1	2404	21	2444
2	2406	22	2446
3	2408	23	2448
4	2410	24	2450
5	2412	25	2452
6	2414	26	2454
7	2416	27	2456
8	2418	28	2458
9	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2402MHz
The middle channel	2440MHz
The Highest channel	2480MHz



4.2. Test mode

Transmitting mode Keep the EUT in continuously transmitting mode.

Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.

4.3. Description of Support Units

None.

4.4. Deviation from Standards

None.

4.5. Abnormalities from Standard Conditions

None.

4.6. Test Facility

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

FCC-Registration No.: 779513 Designation Number: CN1319

Shenzhen HTT Technology Co.,Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA-Lab Cert. No.: 6435.01

Shenzhen HTT Technology Co.,Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

4.7. Test Location

All tests were performed at:

Shenzhen HTT Technology Co.,Ltd.

1F, Building B, Huafeng International Robotics Industrial Park, Hangcheng Road, Nanchang Community, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China

Tel: 0755-23595200 Fax: 0755-23595201

4.8. Additional Instructions

Test Software	Special AT test command provided by manufacturer to Keep the EUT in continuously transmitting mode and hopping mode
Power level setup	Default



5. Test Instruments list

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Item	Test Equipment	Manufacturer	Model No.	Inventory	Cal.Date	Cal.Due date
				No.	(mm-dd-yy)	(mm-dd-yy)
1	3m Semi- Anechoic Chamber	Shenzhen C.R.T technology co., LTD	9*6*6	HTT-E028	Aug. 10 2020	Aug. 09 2024
2	Control Room	Shenzhen C.R.T technology co., LTD	4.8*3.5*3.0	HTT-E030	Aug. 10 2020	Aug. 09 2024
3	EMI Test Receiver	Rohde&Schwar	ESCI7	HTT-E022	May 21 2021	May 20 2022
4	Spectrum Analyzer	Rohde&Schwar	FSP	HTT-E037	May 21 2021	May 20 2022
5	Coaxial Cable	ZDecl	ZT26-NJ-NJ-0.6M	HTT-E018	May 21 2021	May 20 2022
6	Coaxial Cable	ZDecl	ZT26-NJ-SMAJ-2M	HTT-E019	May 21 2021	May 20 2022
7	Coaxial Cable	ZDecl	ZT26-NJ-SMAJ-0.6M	HTT-E020	May 21 2021	May 20 2022
8	Coaxial Cable	ZDecl	ZT26-NJ-SMAJ-8.5M	HTT-E021	May 21 2021	May 20 2022
9	Composite logarithmic antenna	Schwarzbeck	VULB 9168	HTT-E017	Aug. 22 2021	Aug. 21 2022
10	Horn Antenna	Schwarzbeck	BBHA9120D	HTT-E016	Aug. 22 2021	Aug. 21 2022
11	Loop Antenna	Zhinan	ZN30900C	HTT-E039	Aug. 22 2021	Aug. 21 2022
12	Horn Antenna	Beijing Hangwei Dayang	OBH100400	HTT-E040	Aug. 22 2021	Aug. 21 2022
13	low frequency Amplifier	Sonoma Instrument	310	HTT-E015	May 21 2021	May 20 2022
14	high-frequency Amplifier	HP	8449B	HTT-E014	May 21 2021	May 20 2022
15	Variable frequency power supply	Shenzhen Anbiao Instrument Co., Ltd	ANB-10VA	HTT-082	May 21 2021	May 20 2022
16	EMI Test Receiver	Rohde & Schwarz	ESCS30	HTT-E004	May 21 2021	May 20 2022
17	Artificial Mains	Rohde & Schwarz	ESH3-Z5	HTT-E006	May 21 2021	May 20 2022
18	Artificial Mains	Rohde & Schwarz	ENV-216	HTT-E038	May 21 2021	May 20 2022
19	Cable Line	Robinson	Z302S-NJ-BNCJ-1.5M	HTT-E001	May 21 2021	May 20 2022
20	Attenuator	Robinson	6810.17A	HTT-E007	May 21 2021	May 20 2022
21	Variable frequency power supply	Shenzhen Yanghong Electric Co., Ltd	YF-650 (5KVA)	HTT-E032	May 21 2021	May 20 2022
22	Control Room	Shenzhen C.R.T technology co., LTD	8*4*3.5	HTT-E029	May 21 2021	May 20 2022
23	DC power supply	Agilent	E3632A	HTT-E023	May 21 2021	May 20 2022
24	EMI Test Receiver	Agilent	N9020A	HTT-E024	May 21 2021	May 20 2022
25	Analog signal generator	Agilent	N5181A	HTT-E025	May 21 2021	May 20 2022
26	Vector signal generator	Agilent	N5182A	HTT-E026	May 21 2021	May 20 2022
27	Power sensor	Keysight	U2021XA	HTT-E027	May 21 2021	May 20 2022
28	Temperature and humidity meter	Shenzhen Anbiao Instrument Co., Ltd	TH10R	HTT-074	May 21 2021	May 20 2022
29	Radiated Emission Test Software	Farad	EZ-EMC	N/A	N/A	N/A
30	Conducted Emission Test Software	Farad	EZ-EMC	N/A	N/A	N/A
31	RF Test Software	panshanrf	TST	N/A	N/A	N/A



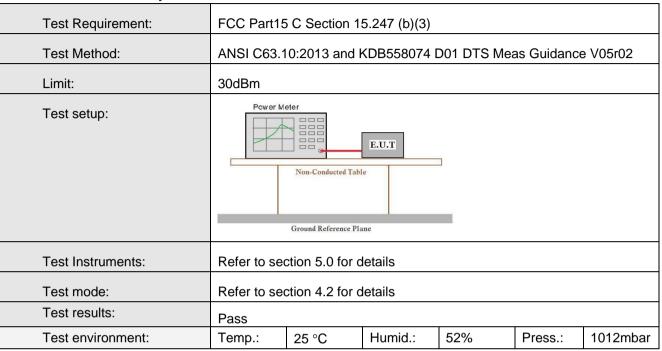
6. Test results and Measurement Data

6.1. Conducted Emissions

Test voltage: AC 120V, 60Hz					
Test Frequency Range: Class / Severity: Class B Receiver setup: Limit: Frequency range (MHz) Quasi-peak Average 0.15-0.5 66 to 56° 56 to 46° 0.5-5 56 46 5-30 60 50 *Decreases with the logarithm of the frequency. Test setup: Reference Plane LISN Fequipment LUSN Fequip	Test Requirement:	FCC Part15 C Section 15.207	•		
Class / Severity: Class B Receiver setup: RBW=9KHz, VBW=30KHz, Sweep time=auto Limit: Frequency range (MHz) Quasi-peak Average 0.15-0.5 66 to 56° 56 to 46° 0.5-5 56 46 5-30 60 50 *Decreases with the logarithm of the frequency. Reference Plane LISN Filter Ac power Filter Ac power Full Equipment E.U.T Test stable/insulation plane Filter Ac power Filter Ac power LISN Libra Procedure: 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.S.N.). This provides a 500hm/50UH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50UH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. Test Instruments: Refer to section 4.2 for details Test environment: Temp.: 25 °C Humid.: 52% Press.: 1012mba	Test Method:	ANSI C63.10:2013			
Receiver setup: RBW=9KHz, VBW=30KHz, Sweep time=auto Limit: Frequency range (MHz) Quasi-peak Average 0.15-0.5 66 to 56* 56 to 46* 5-30 60 50 *Decreases with the logarithm of the frequency. Test setup: Reference Plane LISN AUX E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a line impedance a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. Test Instruments: Refer to section 5.0 for details Test environment: Temp.: 25 °C Humid.: 52% Press.: 1012mba Test voltage: AC 120V, 60Hz	Test Frequency Range:	150KHz to 30MHz			
Limit: Frequency range (MHz)	Class / Severity:	Class B			
Test setup: Test setup: Quasi-peak	Receiver setup:	RBW=9KHz, VBW=30KHz, S	weep time=auto		
Test procedure: 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. Test Instruments: Refer to section 5.0 for details Test environment: Test environment: Temp.: 25 °C Humid.: 52% Press.: 1012mba	Limit:	Faces and an area (MILE)	Limit	(dBuV)	
Test setup: Test setup: Reference Plane LISN		Frequency range (MHZ)	Quasi-peak	Ave	rage
Test setup: Reference Plane					
* Decreases with the logarithm of the frequency. Reference Plane LISN Aux Equipment Filter Ac power Receiver Test table/Insulation plane Receiver 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. Test Instruments: Refer to section 5.0 for details Test mode: Refer to section 4.2 for details Test environment: Temp.: 25 °C Humid.: 52% Press.: 1012mba					
Test setup: Reference Plane					50
Test procedure: 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. Test Instruments: Refer to section 4.2 for details Test environment: Test environment: Temp.: 25 °C Humid.: 52% Press.: 1012mba	Toot ootup:				
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. Test Instruments: Refer to section 5.0 for details Test mode: Refer to section 4.2 for details Test environment: Temp.: 25 °C Humid.: 52% Press.: 1012mba AC 120V, 60Hz		AUX Equipment E.U.T Test table/Insulation plane Remark E.U.T. Equipment Under Test LISN. Line Impedence Stabilization Network Test table height=0.8m 1. The E.U.T and simulators a line impedance stabilization	EMI Receiver	main power This provide	sa
Test mode: Refer to section 4.2 for details Test environment: Temp.: 25 °C Humid.: 52% Press.: 1012mba Test voltage: AC 120V, 60Hz		 The peripheral devices are LISN that provides a 50ohr termination. (Please refer t photographs). Both sides of A.C. line are interference. In order to fine positions of equipment and 	also connected to the m/50uH coupling imposite the block diagram checked for maximud the maximum emist all of the interface of	me main power pedance with of the test se m conducted ssion, the rela- cables must be	er through a 50ohm etup and detup and ative be changed
Test mode: Refer to section 4.2 for details Test environment: Temp.: 25 °C Humid.: 52% Press.: 1012mba Test voltage: AC 120V, 60Hz	Test Instruments:	Refer to section 5.0 for details			
Test voltage: AC 120V, 60Hz		Refer to section 4.2 for details			
	Test environment:	Temp.: 25 °C Hur	nid.: 52%	Press.:	1012mbar
	Test voltage:	AC 120V, 60Hz	<u> </u>	1	1
Test results: N/A	Test results:	N/A			



6.2. Conducted Output Power

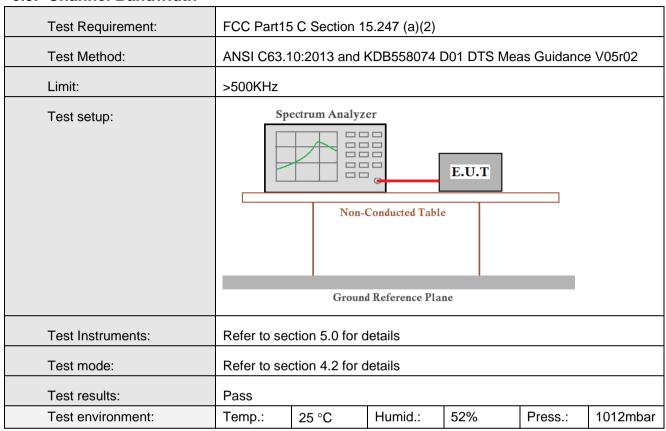


Measurement Data

Test channel	Peak Output Power (dBm)	Limit(dBm)	Result
Lowest	-6.45		
Middle	-6.82	30.00	Pass
Highest	-7.15		



6.3. Channel Bandwidth

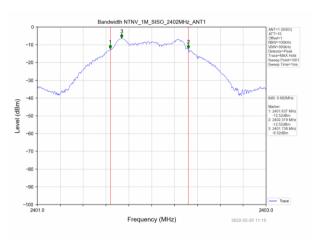


Measurement Data

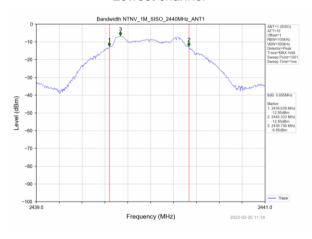
Test channel	Channel Bandwidth (MHz)	Limit(KHz)	Result
Lowest	0.682		
Middle	0.695	>500	Pass
Highest	0.702		



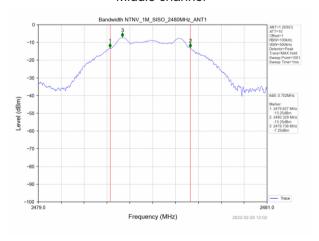
Test plot as follows:



Lowest channel



Middle channel



Highest channel



6.4. Power Spectral Density

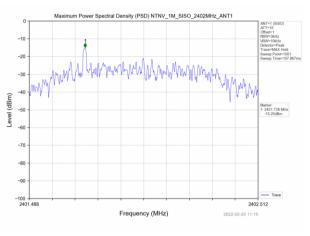
Test Requirement:	FCC Part15 C Section 15.247 (e)							
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V05r02							
Limit:	8dBm/3kHz							
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane							
Test Instruments:	Refer to section 5.0 for details							
Test mode:	Refer to section 4.2 for details							
Test results:	Pass							
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1012mbar							

Measurement Data

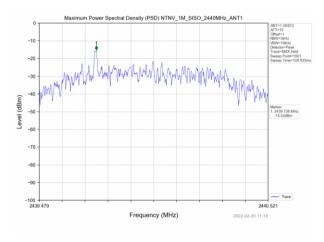
Test channel	Power Spectral Density (dBm/3kHz)	Limit(dBm/3kHz)	Result		
Lowest	-15.25				
Middle	-15.52	8.00	Pass		
Highest	-15.70				



Test plot as follows:



Lowest channel



Middle channel



Highest channel

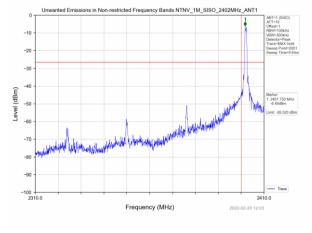


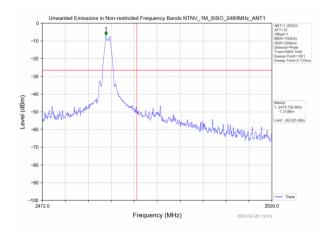
6.5. Band edges

6.5.1 Conducted Emission Method

0.5.1 Conducted Linisaion Metrica									
Test Requirement:	FCC Part15	FCC Part15 C Section 15.247 (d)							
Test Method:	ANSI C63.1	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V05r02							
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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.								
Test setup:	Sp	-							
Test Instruments:	Refer to see	ction 5.0 for d	letails						
Test mode:	Refer to see	ction 4.2 for d	letails						
Test results:	Pass								
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar			

Test plot as follows:





Lowest channel

Highest channel



6.5.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205								
Test Method:	ANSI C63.10								
Test Frequency Range:	All of the res 2500MHz) d	strict bands		only the wo	orst band's (2	2310MHz to			
Test site:	Measuremer								
Receiver setup:	Frequency Detector RBW VBW Value								
		Pas		1Hz 3MH		Peak			
	Above 1GF	IZ RM		1Hz 3MH		verage			
Limit:	Fre	quency	Limit (dBuV/m @3		/alue			
	Abox	/e 1GHz		54.00	Αν	verage			
Test setup:	Abov	/e IGIIZ		74.00	F	Peak			
	Turn Table (150 cn > s)								
Test Procedure:	1 The FUT	was placed				ro obovo			
	 The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then reported in a data sheet. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test 								
Test Instruments:	Refer to sec	e mode is re tion 5.0 for d		·					
Test mode:	Refer to sec	tion 4.2 for c	letails						
Test results:	Pass								
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar			



Measurement Data

Operation Mode: GFSK TX Low channel(2402MHz)

Horizontal (Worst case)

	(-,						
Frequency	Meter Reading	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m) (dB)		Type
2390	60.11	26.20	5.72	33.30	58.73	74	-15.27	peak
2390	43.21	26.20	5.72	33.30	41.83	54	-12.17	AVG

Vertical:

Frequency	Meter Reading	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m) (dB)		Туре
2390	58.41	26.20	5.72	33.30	57.03	57.03 74		peak
2390	46.51	26.20	5.72	33.30	45.13	54	-8.87	AVG

Operation Mode: GFSK TX High channel (2480MHz)

Horizontal (Worst case)

		. (110.0100	0,						
	Fraguesia M	Motor Booding	Antenna		Preamp	Emission Level	Limits	Morgin	
	Frequency	Meter Reading	Factor	Cable Loss	Factor	Emission Level	Limits	Margin	Detector
	(MHz)	(dBµV)	(dB/m)	(dB) (dB) (dBµV/m)		(dBµV/m)	(dB)	Type	
	(1011 12)	(αΒμν)	(ub/III)	(ub)	(GD)	(αΒμν/Π)	(ασμν/π)	(GD)	
	2483.5	56.74	28.60	6.97	32.70	59.61	74	-14.39	peak
	2400.0	00.74	20.00	0.07	02.70	00.01		14.00	Pour
	2483.5	41.51	28.60	6.97	32.70	44.38	54	-9.62	AVG
- 1	2400.0	+1.51	20.00	0.57	32.70	77.50	37	-3.02	7,10

Vertical:

Frequency	Meter Reading	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Type
2483.5	56.48	28.60	6.97	32.70	59.35	74	-14.65	peak
2483.5	41.20	28.60	6.97	32.70	44.07	54	-9.93	AVG

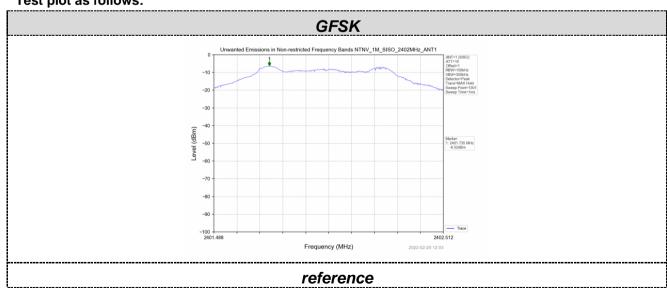


6.6. Spurious Emission

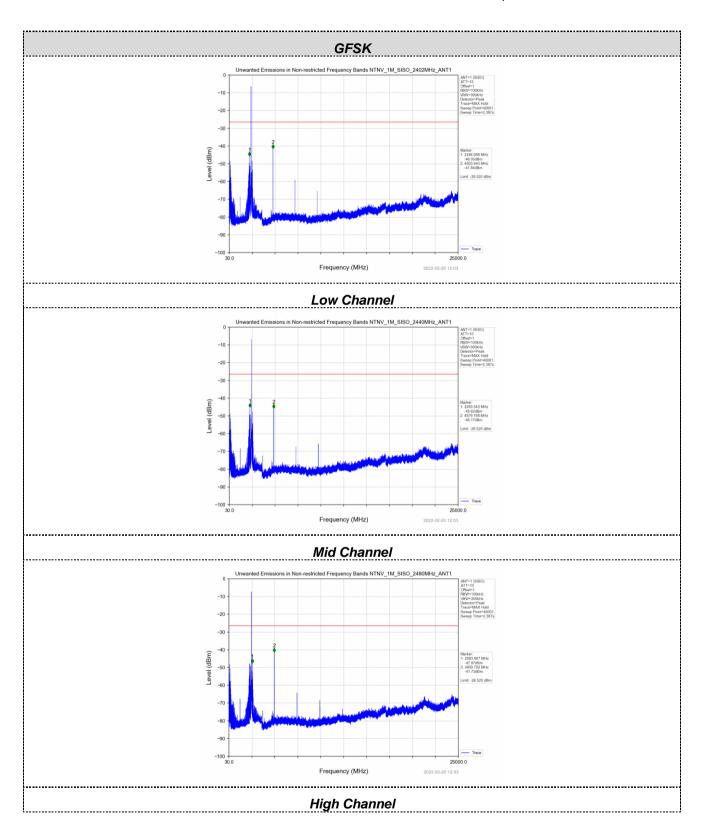
6.6.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)							
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V05r02							
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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.							
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane							
Test Instruments:	Refer to section 5.0 for details							
Test mode:	Refer to section 4.2 for details							
Test results:	Pass							
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1012mbar							

Test plot as follows:









6.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209								
Test Method:	ANSI C63.10:2013								
Test Frequency Range:	9kHz to 25GHz								
Test site:	Measurement Distance: 3m								
Receiver setup:	Frequency		Detector	RB\	W	VBW	Value Value		
	9KHz-150KHz	Qι	ıasi-peak	200Hz		600Hz	z Quasi-peak		
	150KHz-30MHz	Qı	ıasi-peak	9KF	Ηz	30KH:	z Quasi-peak		
	30MHz-1GHz	Q	ıasi-peak	120K	Ήz	300KH	Iz Quasi-peak		
	Above 1GHz		Peak	1MH	Ηz	3MHz	z Peak		
	Above 10112		Peak	1MF	Ηz	10Hz	. Average		
Limit:	Frequency		Limit (u\	//m)	>	'alue	Measurement Distance		
	0.009MHz-0.490M	lHz	2400/F(k	(Hz)		QP	300m		
	0.490MHz-1.705M	lHz	24000/F(KHz)		QP	30m		
	1.705MHz-30MH	lz	30			QP	30m		
	30MHz-88MHz		100	(QP			
	88MHz-216MHz		150			QP			
	216MHz-960MH		200			QP	3m		
	960MHz-1GHz		500		QP				
	Above 1GHz		500		Average				
			5000 I			Peak			
Test setup:	For radiated emission	ns fr	om 9kHz to	30MH	Z				
	For radiated emissions from 9kHz to 30MHz Som Tum Table Tum Table Tum Table Tum Table Tum Table Receiver Tum Table Receiver Tum Table Tum								



For radiated emissions from 30MHz to1GHz Test Antenna ... 4m > EUT. Turn Table < 80cm Tum Table+ Receiver-Preamplifier. For radiated emissions above 1GHz < 3m > Test Antenna+ < 1m 4m > EUT Turn Tables <150cn> Preamplifier+ Receiver+ Test Procedure: The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. Refer to section 5.0 for details Test Instruments: Refer to section 4.2 for details Test mode:



Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

Measurement data:

Remark:

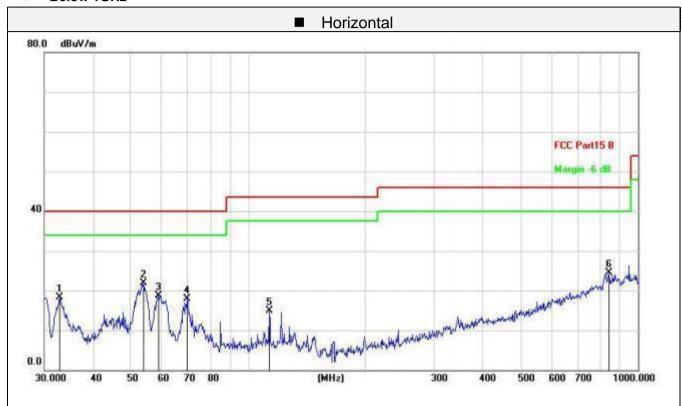
Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

■ 9kHz~30MHz

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

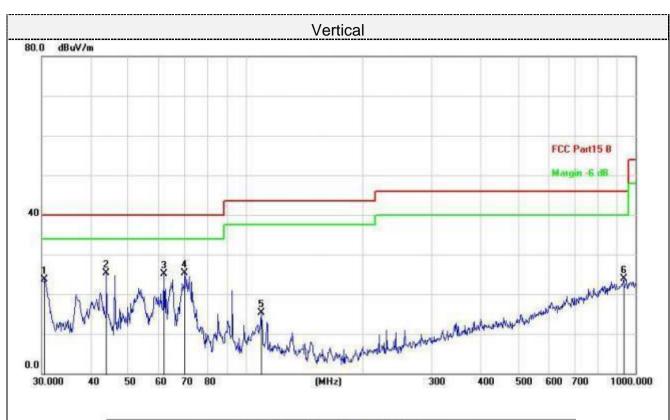


■ Below 1GHz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		32.8637	36.56	-18.29	18.27	40.00	-21.73	QP
2	*	53.8818	39.43	-17.55	21.88	40.00	-18.12	QP
3		59.0251	36.81	-18.03	18.78	40.00	-21.22	QP
4		69.8448	37.92	-19.94	17.98	40.00	-22.02	QP
5		113.3161	35.15	-20.18	14.97	43.50	-28.53	QP
6		842.1295	30.64	-6.14	24.50	46.00	-21.50	QP





Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
	30.5305	42.17	-18.54	23.63	40.00	-16.37	QP
	43.9658	42.66	-17.42	25.24	40.00	-14.76	QP
	61.7781	43.66	-18.46	25.20	40.00	-14.80	QP
*	69.8450	45.32	-19.94	25.38	40.00	-14.62	QP
ě	109.7960	36.18	-20.89	15.29	43.50	-28.21	QP
500	932.2714	28.87	-4.94	23.93	46.00	-22.07	QP
		MHz 30.5305 43.9658 61.7781 * 69.8450 109.7960	Mk. Freq. Level MHz dBuV 30.5305 42.17 43.9658 42.66 61.7781 43.66 * 69.8450 45.32 109.7960 36.18	Mk. Freq. Level Factor MHz dBuV dB 30.5305 42.17 -18.54 43.9658 42.66 -17.42 61.7781 43.66 -18.46 * 69.8450 45.32 -19.94 109.7960 36.18 -20.89	Mk. Freq. Level Factor ment MHz dBuV dB dBuV/m 30.5305 42.17 -18.54 23.63 43.9658 42.66 -17.42 25.24 61.7781 43.66 -18.46 25.20 * 69.8450 45.32 -19.94 25.38 109.7960 36.18 -20.89 15.29	Mk. Freq. Level Factor ment Limit MHz dBuV dB dBuV/m dB/m 30.5305 42.17 -18.54 23.63 40.00 43.9658 42.66 -17.42 25.24 40.00 61.7781 43.66 -18.46 25.20 40.00 * 69.8450 45.32 -19.94 25.38 40.00 109.7960 36.18 -20.89 15.29 43.50	Mk. Freq. Level Factor ment Limit Over MHz dBuV dB dBuV/m dB/m dB 30.5305 42.17 -18.54 23.63 40.00 -16.37 43.9658 42.66 -17.42 25.24 40.00 -14.76 61.7781 43.66 -18.46 25.20 40.00 -14.80 * 69.8450 45.32 -19.94 25.38 40.00 -14.62 109.7960 36.18 -20.89 15.29 43.50 -28.21

Final Level =Receiver Read level + Correct Factor



■ 1GHz-25GHz

CH Low (2402MHz)

Horizontal:

		Antenna		Preamp				
Frequency	Meter Reading	Factor	Cable Loss	Factor	Emission Level	Limits	Margin	
								Detector
(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4804	51.20	31.40	8.18	32.10	58.68	74.00	-15.32	peak
1001	01.20	01.10	0.10	02.10	00.00	7 1.00	10.02	pour
4804	36.41	31.40	8.18	32.10	43.89	54.00	-10.11	AVG
7206	42.85	35.80	10.83	31.40	58.08	74.00	-15.92	peak
7206	30.84	35.80	10.83	31.40	46.07	54.00	-7.93	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

Vertical:

Frequency Mete	r Reading	Factor	Cabla Laga					
		i actor	Cable Loss	Factor	Emission Level	Limits	Margin	
(MHz) (d	dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
	52.38	31.40	8.18	32.10	59.86	74.00	-14.14	peak
4804	36.12	31.40	8.18	32.10	43.60	54.00	-10.40	AVG
7206	44.10	35.80	10.83	31.40	59.33	74.00	-14.67	peak
7206	28.51	35.80	10.83	31.40	43.74	54.00	-10.26	AVG
						-		



CH Middle (2440MHz)

Horizontal:

		Antenna		Preamp				
Frequency	Meter Reading	Factor	Cable Loss	Factor	Emission Level	Limits	Margin	
, , , , , , , , , , , , , , , , , , ,	Ĭ							Detector
(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4880	51.41	31.40	9.17	32.10	59.88	74.00	-14.12	peak
4880	36.12	31.40	9.17	32.10	44.59	54.00	-9.41	AVG
7320	43.51	35.80	10.83	31.40	58.74	74.00	-15.26	peak
7320	28.84	35.80	10.83	31.40	44.07	54.00	-9.93	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

Vertical:

		Antenna		Preamp				
Frequency	Meter Reading	Factor	Cable Loss	Factor	Emission Level	Limits	Margin	
								Detector
(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Type
4880	49.71	31.40	9.17	32.10	58.18	74.00	-15.82	peak
4880	36.12	31.40	9.17	32.10	44.59	54.00	-9.41	AVG
7320	44.96	35.80	10.83	31.40	60.19	74.00	-13.81	peak
								<u>'</u>
7320	27.01	35.80	10.83	31.40	42.24	54.00	-11.76	AVG
			I	I	1		1	
Pomark: Facto	or – Antenna Fac	tor + Cable Los	e – Pre-amplifie	•				



CH High (2480MHz)

Horizontal:

		Antenna		Preamp				
Frequency	Meter Reading	Factor	Cable Loss	Factor	Emission Level	Limits	Margin	
								Detector
(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4960	48.52	31.40	9.17	32.10	56.99	74.00	-17.01	peak
4960	37.14	31.40	9.17	32.10	45.61	54.00	-8.39	AVG
7440	45.12	35.80	10.83	31.40	60.35	74.00	-13.65	peak
7440	27.46	35.80	10.83	31.40	42.69	54.00	-11.31	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

Vertical:

Meter Reading	Factor	Cable Loss	Гостоя	1			
			Factor	Emission Level	Limits	Margin	
							Detector
(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
51 95	31 40	0.17	32 10	60.32	74.00	-13 68	peak
31.03	31.40	9.17	32.10	00.32	74.00	-13.00	peak
36.84	31.40	9.17	32.10	45.31	54.00	-8.69	AVG
46.51	35.80	10.83	31.40	61.74	74.00	-12.26	peak
28.77	35.80	10.83	31.40	44.00	54.00	-10.00	AVG
	51.85 36.84 46.51 28.77	51.85 31.40 36.84 31.40 46.51 35.80 28.77 35.80	51.85 31.40 9.17 36.84 31.40 9.17 46.51 35.80 10.83 28.77 35.80 10.83	51.85 31.40 9.17 32.10 36.84 31.40 9.17 32.10 46.51 35.80 10.83 31.40 28.77 35.80 10.83 31.40	51.85 31.40 9.17 32.10 60.32 36.84 31.40 9.17 32.10 45.31 46.51 35.80 10.83 31.40 61.74 28.77 35.80 10.83 31.40 44.00	51.85 31.40 9.17 32.10 60.32 74.00 36.84 31.40 9.17 32.10 45.31 54.00 46.51 35.80 10.83 31.40 61.74 74.00 28.77 35.80 10.83 31.40 44.00 54.00	51.85 31.40 9.17 32.10 60.32 74.00 -13.68 36.84 31.40 9.17 32.10 45.31 54.00 -8.69 46.51 35.80 10.83 31.40 61.74 74.00 -12.26 28.77 35.80 10.83 31.40 44.00 54.00 -10.00

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Data of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed.



7. Test Setup Photo

Reference to the appendix I for details.

8. EUT Constructional Details

Reference to the appendix II for details.

