



FCC RADIO TEST REPORT

FCC ID:2AGQG-NC880

Product : 2.4G wireless module

Trade Name : N/A

Model Name : NC880

Serial Model : N/A

Report No. : NTEK-2015NT11113092F

Prepared for

ShenZhen NanCheng Technology CO.,LTD.
Room 810-811 XinTian Building NO.5055 SongBai Road GuangMing
ShenZhen China

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.
1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street
Bao'an District, Shenzhen P.R. China
Tel.: +86-0755-61156588 Fax.: +86-0755-61156599
Website:www.ntek.org.cn

TEST RESULT CERTIFICATION

Applicant's name ShenZhen NanCheng Technology CO.,LTD.
Address..... Room 810-811 XinTian Building NO.5055 SongBai Road GuangMing
 ShenZhen China

Manufacture's Name.. ShenZhen NanCheng Technology CO.,LTD.
Address..... Room 810-811 XinTian Building NO.5055 SongBai Road GuangMing
 ShenZhen China

Product description

Product name 2.4G wireless module

Model and/or type NC880
 reference

Serial Model N/A

Standards FCC Part15.247: 01 Oct. 2015

Test procedure ANSI C63.10-2013 ; ANSI C63.4-2014 & KDB 558074 D01 v03r03

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of NTEK, this document may be altered or revised by NTEK, personnel only, and shall be noted in the revision of the document.

Date of Test

Date (s) of performance of tests.....: 11 Nov. 2015 ~23 Nov. 2015

Date of Issue: 23 Nov. 2015

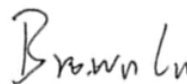
Test Result.....: **Pass**

Testing Engineer :



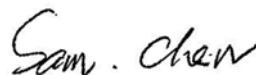
(Allen Liu)

Technical Manager :



(Brown Lu)

Authorized Signatory :



(Sam Chen)

Table of Contents

	Page
1 . SUMMARY OF TEST RESULTS	5
1.1 TEST FACILITY	6
1.2 MEASUREMENT UNCERTAINTY	6
2 . GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF EUT	7
2.2 DESCRIPTION OF TEST MODES	9
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	10
2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)	11
2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS	12
3 . EMC EMISSION TEST	13
3.1 CONDUCTED EMISSION MEASUREMENT	13
3.1.1 POWER LINE CONDUCTED EMISSION LIMITS	13
3.1.2 TEST PROCEDURE	14
3.1.3 DEVIATION FROM TEST STANDARD	14
3.1.4 TEST SETUP	14
3.1.5 EUT OPERATING CONDITIONS	14
3.1.6 TEST RESULTS	15
3.2 RADIATED EMISSION MEASUREMENT	17
3.2.1 RADIATED EMISSION LIMITS	17
3.2.2 TEST PROCEDURE	18
3.2.3 DEVIATION FROM TEST STANDARD	18
3.2.4 TEST SETUP	19
3.2.5 EUT OPERATING CONDITIONS	20
3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)	21
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)	22
3.2.8 TEST RESULTS (ABOVE 1000 MHZ)	24
4 . POWER SPECTRAL DENSITY TEST	25
4.1 APPLIED PROCEDURES / LIMIT	25
4.1.1 TEST PROCEDURE	25
4.1.2 DEVIATION FROM STANDARD	25
4.1.3 TEST SETUP	25
4.1.4 EUT OPERATION CONDITIONS	25
4.1.5 TEST RESULTS	26
5 . BANDWIDTH TEST	28
5.1 APPLIED PROCEDURES / LIMIT	28
5.1.1 TEST PROCEDURE	28

Table of Contents

	Page
TEST SETUP	28
5.1.2 EUT OPERATION CONDITIONS	28
5.1.3 TEST RESULTS	29
6 . PEAK OUTPUT POWER TEST	31
6.1 APPLIED PROCEDURES / LIMIT	31
6.1.1 TEST PROCEDURE	31
6.1.2 DEVIATION FROM STANDARD	31
6.1.3 TEST SETUP	31
6.1.4 EUT OPERATION CONDITIONS	31
6.1.5 TEST RESULTS	32
7 . 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE	33
7.1 DEVIATION FROM STANDARD	33
7.2 TEST SETUP	33
7.3 EUT OPERATION CONDITIONS	33
7.4 TEST RESULTS	34
8 . ANTENNA REQUIREMENT	36
8.1 STANDARD REQUIREMENT	36
8.2 EUT ANTENNA	36
9 . EUT TEST PHOTO	37
APPENDIX-PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS	

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	N/A	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Power Spectral Density	PASS	
15.205	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd

Add.:1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.

FCC Registration No.:238937; IC Registration No.:9270A-1

CNAS Registration No.:L5516

1.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	2.4G wireless module	
Trade Name	N/A	
Model Name	NC880	
Serial Model	N/A	
Model Difference	N/A	
Product Description	The EUT is a 2.4G wireless module	
	Operation Frequency:	2405~2480MHz
	Modulation Type:	O-QPSK
	Number Of Channel	16CH
	Antenna Designation:	Please see Note 3.
	Antenna Gain (dBi)	1.5dBi
Channel List	Please refer to the Note 2.	
Ratings	DC 5V	
Adapter	N/A	
Battery	N/A	
Connecting I/O Port(s)	Please refer to the User's Manual	

Note:

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

2.

Channel	Frequency (MHz)
01	2405
02	2410
03	2415
04	2420
05	2425
06	2430
07	2435
08	2440
09	2445
10	2450
11	2455
12	2460
13	2465
14	2470
15	2475
16	2480

3.

Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A	N/A	N/A	PCB Antenna	N/A	1.5	Zigbee Antenna

2.2 DESCRIPTION OF TEST MODES

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 above was evaluated respectively.

Pretest Mode	Description
Mode 1	CH01
Mode 2	CH08
Mode 3	CH16
Mode 4	keeping tx mode

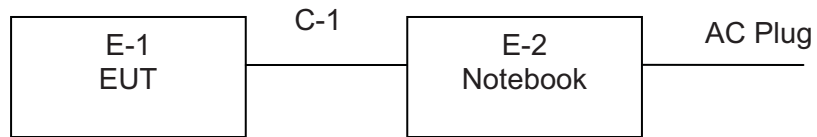
For Conducted Emission	
Final Test Mode	Description
Mode 4	keeping tx mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH01
Mode 2	CH08
Mode 3	CH16
Mode 4	keeping tx mode

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	2.4G wireless module	Hipstreet	NC880	N/A	EUT
E-2	Notebook	Lenove	Thinkpad Edge E430	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	0.3m	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2015.07.06	2016.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2015.07.06	2016.07.05	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2015.07.06	2016.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2015.07.06	2016.07.05	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2015.07.06	2016.07.05	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2015.07.06	2016.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2015.07.06	2016.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2015.07.06	2016.07.05	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2015.07.06	2016.07.05	1 year
10	Power Meter	R&S	NRVS	100696	2015.07.06	2016.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2015.07.06	2016.07.05	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2015.07.06	2016.07.05	1 year
2	LISN	R&S	ENV216	101313	2015.07.06	2016.07.05	1 year
3	LISN	EMCO	3816/2	00042990	2015.07.06	2016.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2015.07.06	2016.07.05	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2015.07.06	2016.07.05	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2015.07.06	2016.07.05	1 year

1	Attenuation	MCE	24-10-34	BN9258	2015.07.06	2016.07.05	1 year
---	-------------	-----	----------	--------	------------	------------	--------

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

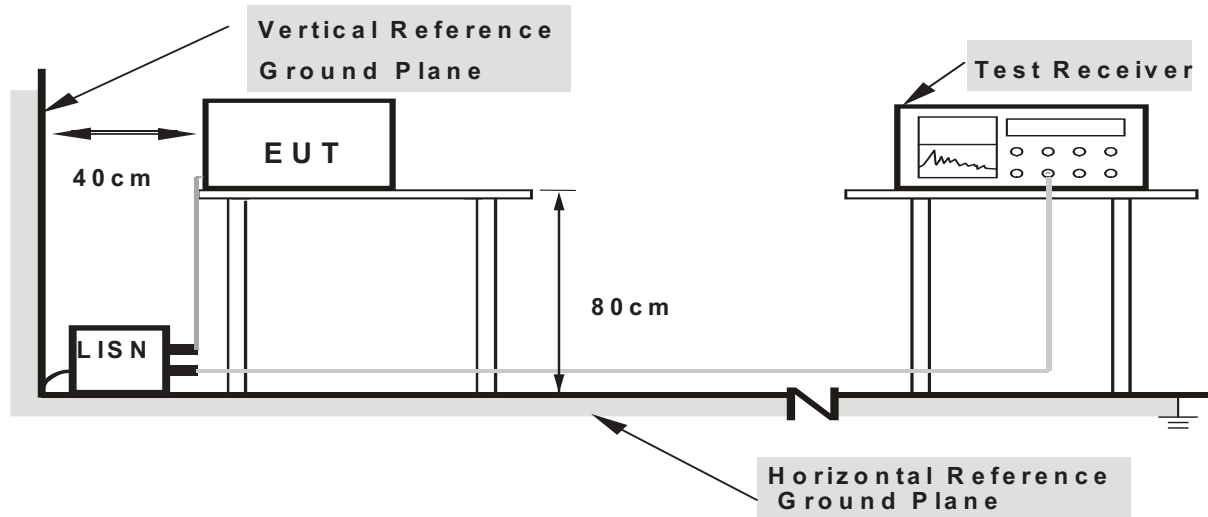
3.1.2 TEST PROCEDURE

- 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.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN .

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

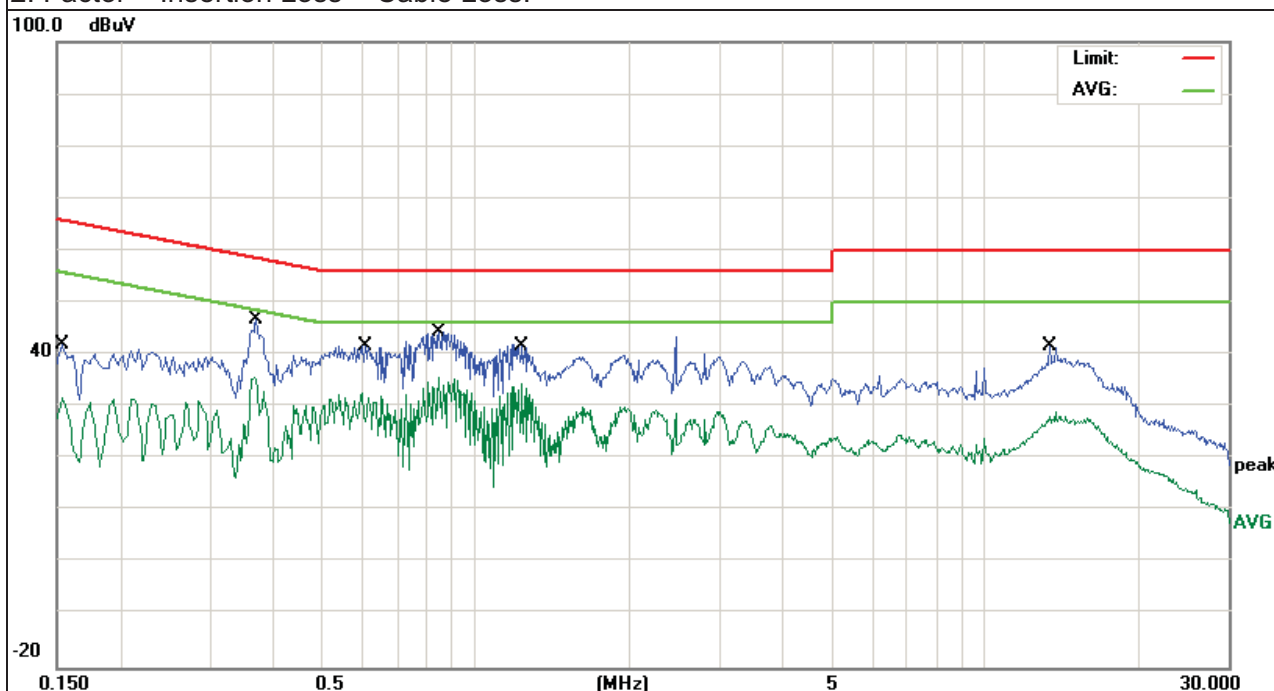
3.1.6 TEST RESULTS

EUT :	2.4G wireless module	Model Name :	NC880
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5V from PC adapter AC 120V	Test Mode :	Mode 4

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1539	32.45	9.63	42.08	65.78	-23.70	QP
0.1539	22.01	9.63	31.64	55.78	-24.14	AVG
0.3700	37.41	9.47	46.88	58.50	-11.62	QP
0.3700	26.09	9.47	35.56	48.50	-12.94	AVG
0.5980	31.97	9.77	41.74	56.00	-14.26	QP
0.5980	22.90	9.77	32.67	46.00	-13.33	AVG
0.8460	34.63	9.76	44.39	56.00	-11.61	QP
0.8460	25.97	9.76	35.73	46.00	-10.27	AVG
1.2300	32.21	9.71	41.92	56.00	-14.08	QP
1.2300	24.71	9.71	34.42	46.00	-11.58	AVG
13.3819	31.98	9.77	41.75	60.00	-18.25	QP
13.3819	19.14	9.77	28.91	50.00	-21.09	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

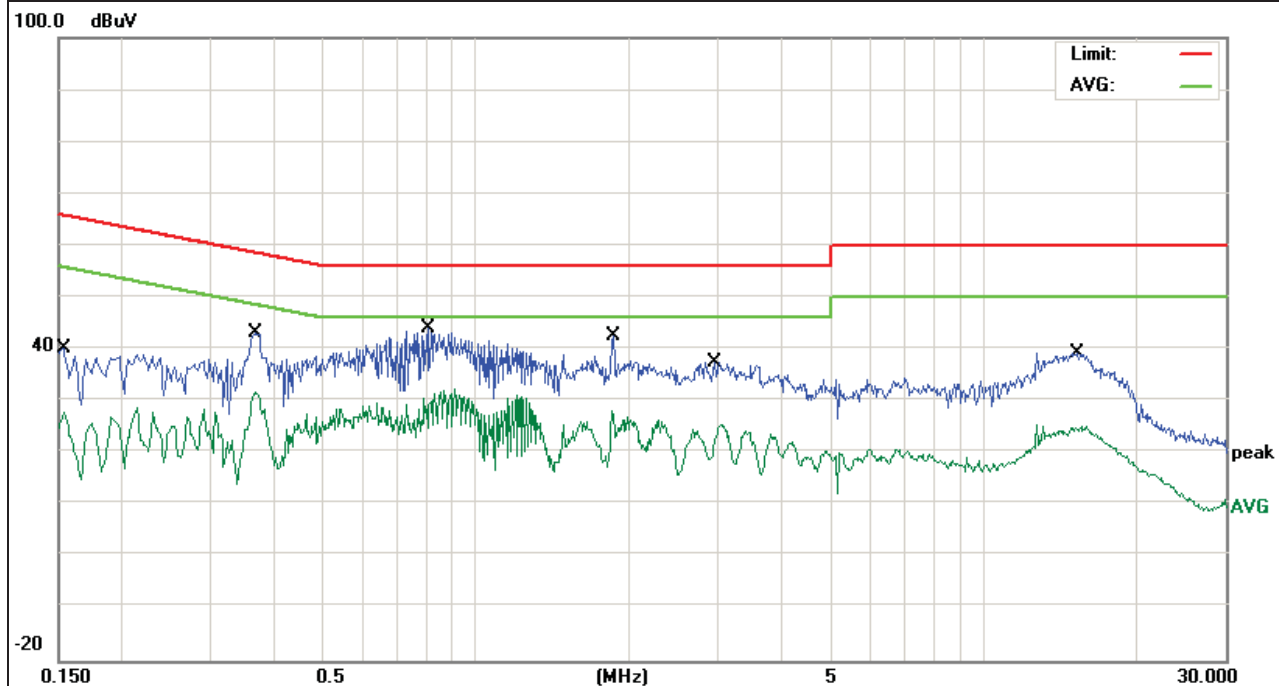


EUT :	2.4G wireless module	Model Name :	NC880
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5V from PC adapter AC 120V	Test Mode :	Mode 4

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.1539	30.64	9.60	40.24	65.78	-25.54	QP
0.1539	18.22	9.60	27.82	55.78	-27.96	AVG
0.3660	33.61	9.63	43.24	58.59	-15.35	QP
0.3660	22.00	9.63	31.63	48.59	-16.96	AVG
0.8059	34.32	9.63	43.95	56.00	-12.05	QP
0.8059	22.71	9.63	32.34	46.00	-13.66	AVG
1.8620	33.09	9.55	42.64	56.00	-13.36	QP
1.8620	18.75	9.55	28.30	46.00	-17.70	AVG
2.9580	27.98	9.52	37.50	56.00	-18.50	QP
2.9580	15.97	9.52	25.49	46.00	-20.51	AVG
15.2299	29.61	9.76	39.37	60.00	-20.63	QP
15.2299	15.46	9.76	25.22	50.00	-24.78	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
The frequency spectrum from 30 MHz to 25 GHz was investigated.	
All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=1MHz VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector.	

3.2.2 TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. 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.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

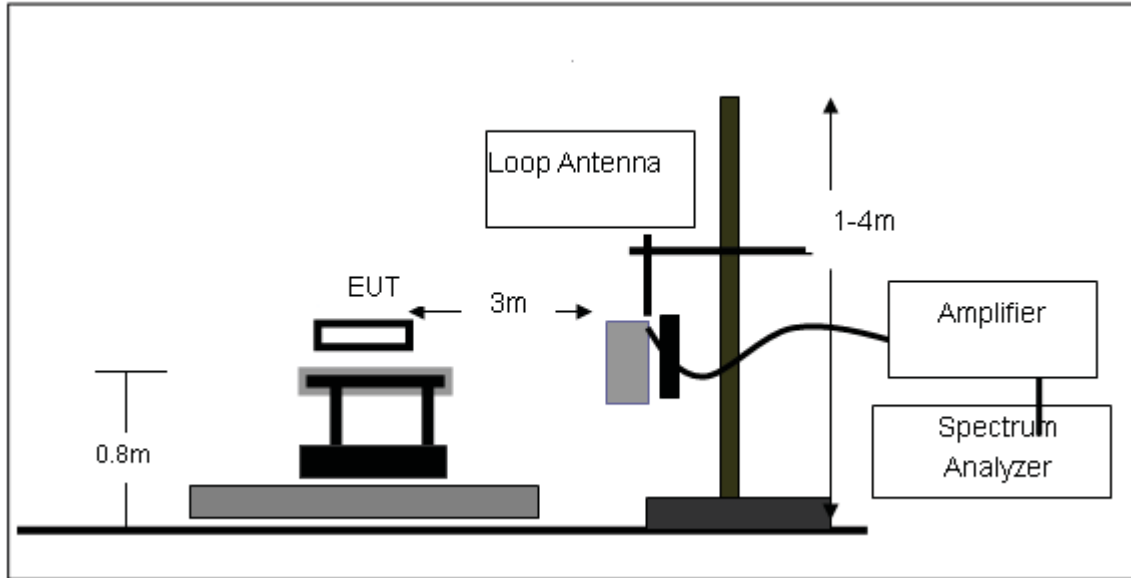
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

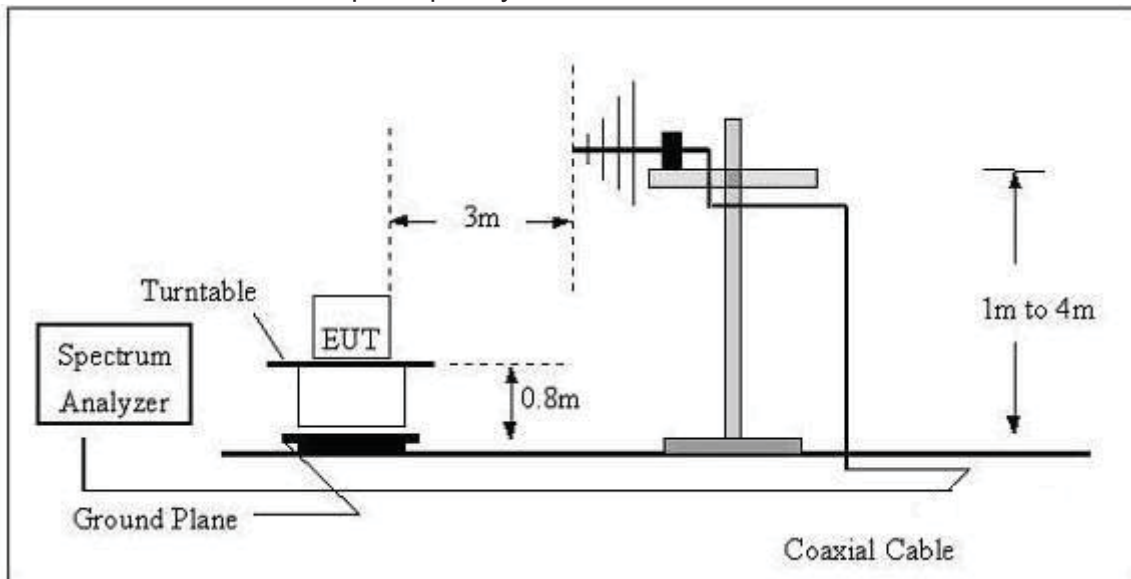
No deviation

3.2.4 TEST SETUP

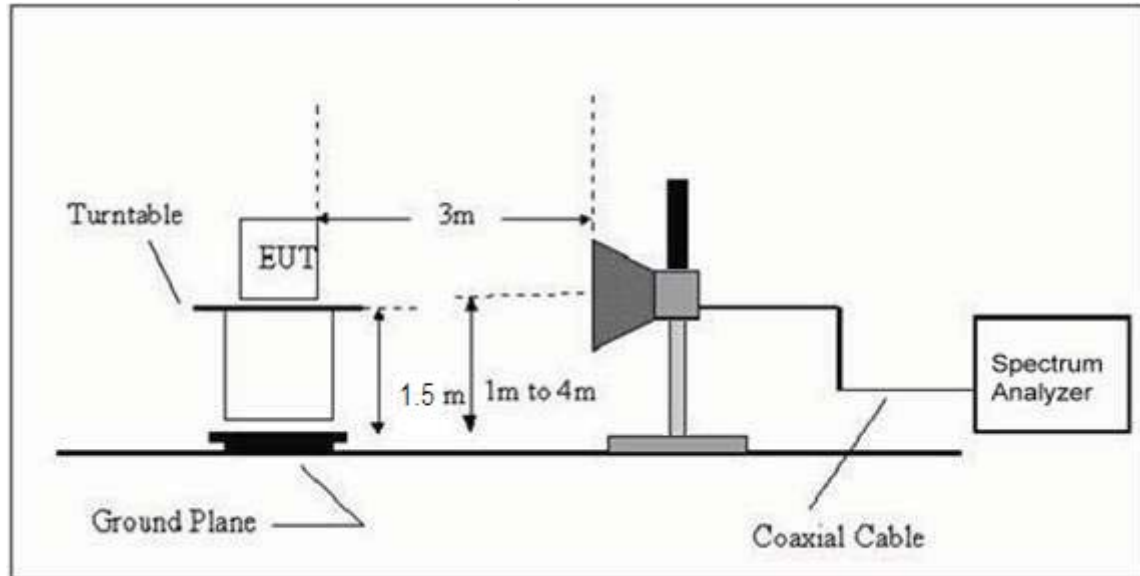
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz

**3.2.5 EUT OPERATING CONDITIONS**

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT:	2.4G wireless module	Model Name. :	NC880
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 5.0V
Test Mode :	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	N/A
--	--	--	--	N/A

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance/test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

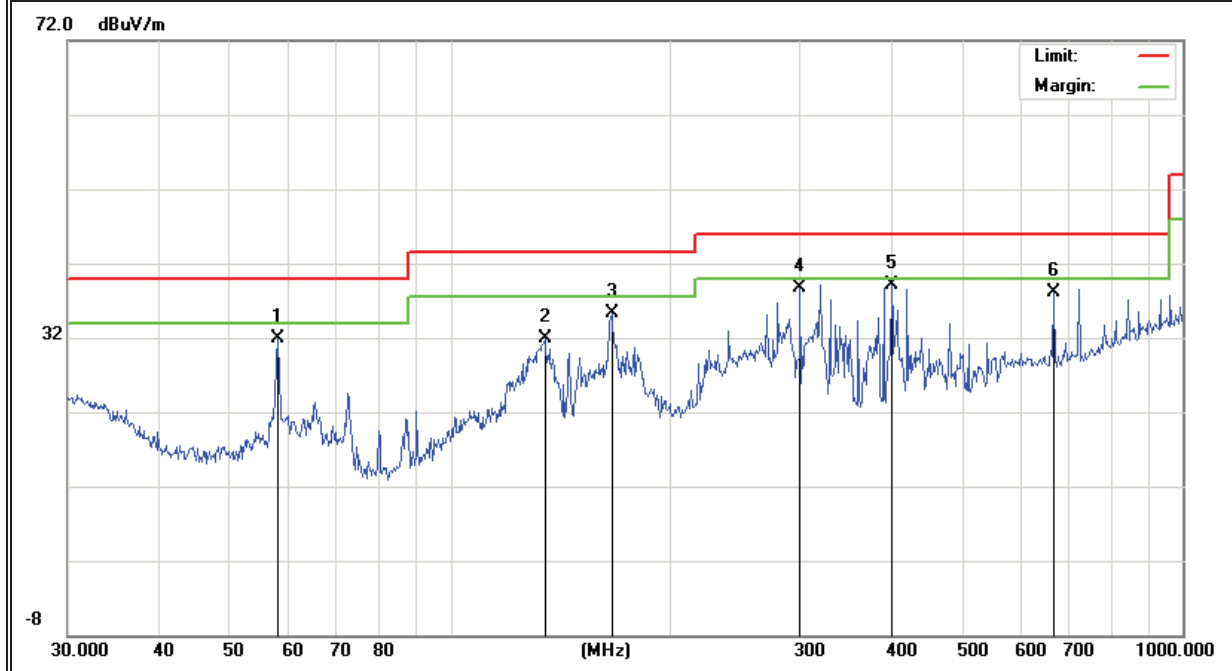
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

EUT :	2.4G wireless module	Model Name :	NC880
Temperature :	20 °C	Relative Humidity :	48%
Pressure:	1010 hPa	Test Voltage :	DC 5.0V
Test Mode :	TX-Low CH		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	57.9992	23.55	8.40	31.95	40.00	-8.05	QP
V	134.5592	20.31	11.67	31.98	43.50	-11.52	QP
V	166.0680	24.86	10.53	35.39	43.50	-8.11	QP
V	300.3672	24.57	14.16	38.73	46.00	-7.27	QP
V	400.4318	20.81	18.32	39.13	46.00	-6.87	QP
V	665.8034	14.17	23.85	38.02	46.00	-7.98	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	57.9992	25.42	8.40	33.82	40.00	-6.18	QP
H	59.8588	26.20	7.87	34.07	40.00	-5.93	QP
H	124.1329	20.80	12.02	32.82	43.50	-10.68	QP
H	134.0882	22.57	11.70	34.27	43.50	-9.23	QP
H	319.9370	22.45	14.98	37.43	46.00	-8.57	QP
H	665.8034	13.27	23.85	37.12	46.00	-8.88	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT :	2.4G wireless module	Model Name :	NC880
Temperature :	20 °C	Relative Humidity :	48%
Pressure:	1010 hPa	Test Voltage :	DC 5.0V
Test Mode :	TX		

Frequency (MHz)	Reading (dBμV)	Factor (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Polar (H/V)
Low Channel (2405 MHz)-Above 1G							
4809.500	49.19	-3.64	52.83	74.00	-21.17	Pk	Vertical
4809.500	35.02	-3.64	38.66	54.00	-15.34	AV	Vertical
7227.390	50.03	-0.95	50.98	74.00	-23.02	Pk	Vertical
7227.390	35.04	-0.95	35.99	54.00	-18.01	AV	Vertical
4809.500	49.17	-3.64	52.81	74.00	-21.19	Pk	Horizontal
4809.500	34.02	-3.64	37.66	54.00	-16.34	AV	Horizontal
7227.390	50.69	-0.95	51.64	74.00	-22.36	Pk	Horizontal
7227.390	35.44	-0.95	36.39	54.00	-17.61	AV	Horizontal
Mid Channel (2440 MHz)-Above 1G							
4883.520	46.67	-3.68	50.35	74.00	-23.65	Pk	Vertical
4883.520	35.32	-3.68	39.00	54.00	-15.00	AV	Vertical
7319.960	49.56	-0.82	50.38	74.00	-23.62	Pk	Vertical
7319.960	34.58	-0.82	35.40	54.00	-18.60	AV	Vertical
4883.520	48.93	-3.68	52.61	74.00	-21.39	Pk	Horizontal
4883.520	35.02	-3.68	38.70	54.00	-15.30	AV	Horizontal
7319.960	48.76	-0.82	49.58	74.00	-24.42	Pk	Horizontal
7319.960	36.01	-0.82	36.83	54.00	-17.17	AV	Horizontal
High Channel (2480MHz)- Above 1G							
4958.680	45.24	-3.59	48.83	74.00	-25.17	Pk	Vertical
4958.680	34.22	-3.59	37.81	54.00	-16.19	AV	Vertical
7451.570	47.13	-0.68	47.81	74.00	-26.19	Pk	Vertical
7451.570	34.25	-0.68	34.93	54.00	-19.07	AV	Vertical
4958.680	48.35	-3.59	51.94	74.00	-22.06	Pk	Horizontal
4958.680	33.78	-3.59	37.37	54.00	-16.63	AV	Horizontal
7451.570	47.56	-0.68	48.24	74.00	-25.76	Pk	Horizontal
7451.570	34.17	-0.68	34.85	54.00	-19.15	AV	Horizontal

Remark: Absolute Level= ReadingLevel- Factor, Margin= Absolute Level - Limit

4. POWER SPECTRAL DENSITY TEST

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

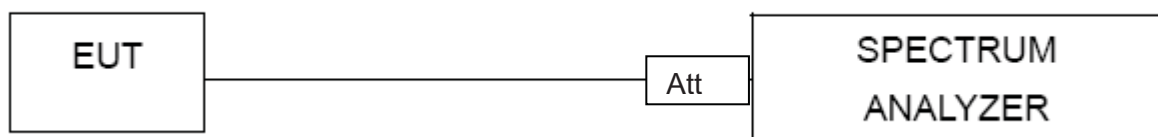
4.1.1 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. 3 kHz \leq Set the RBW \leq 100 kHz.
4. Set the VBW \geq 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

4.1.5 TEST RESULTS

EUT :	2.4G wireless module	Model Name :	NC880
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1015 hPa	Test Voltage :	DC 5.0V
Test Mode :	TX Mode /CH01, CH08, CH16		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2405 MHz	-4.925	8	PASS
2440 MHz	-5.677	8	PASS
2480 MHz	-5.834	8	PASS

TX CH01



TX CH08



TX CH16



5. BANDWIDTH TEST

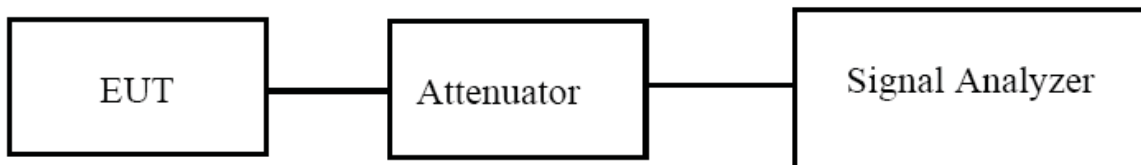
5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

5.1.1 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST SETUP



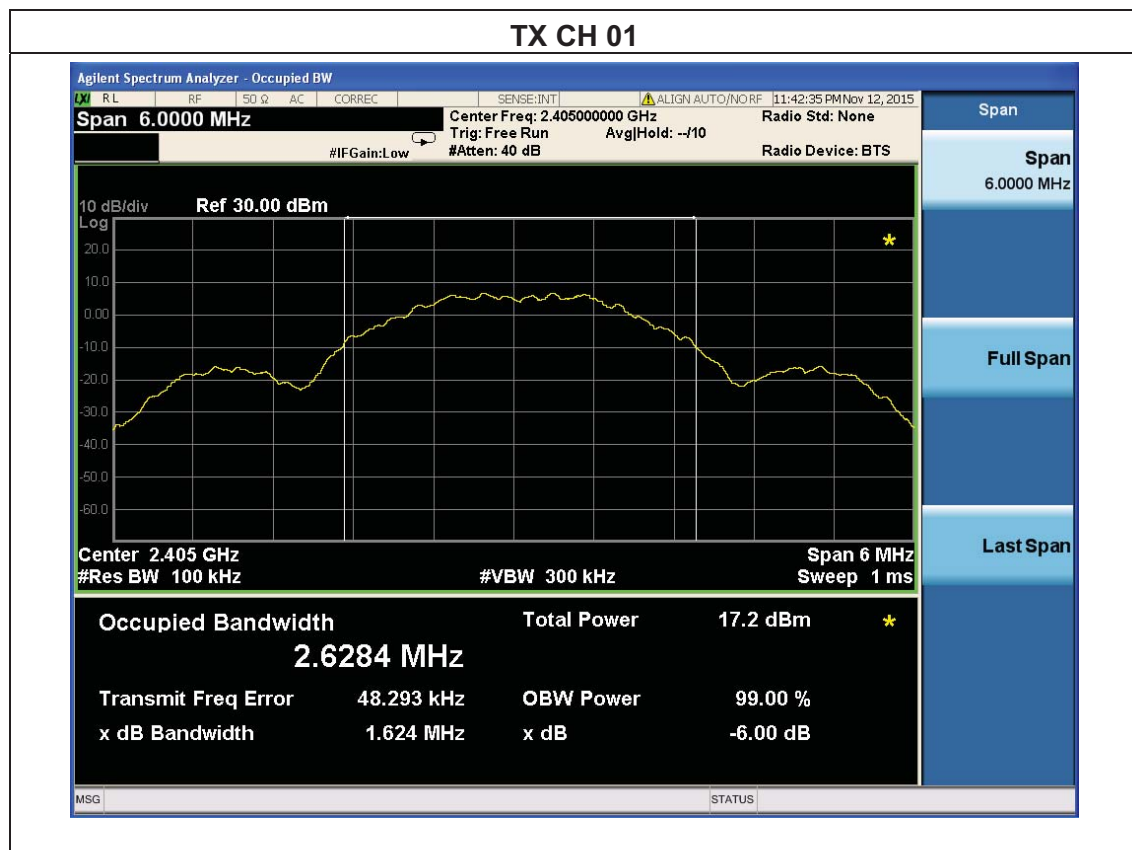
5.1.2 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

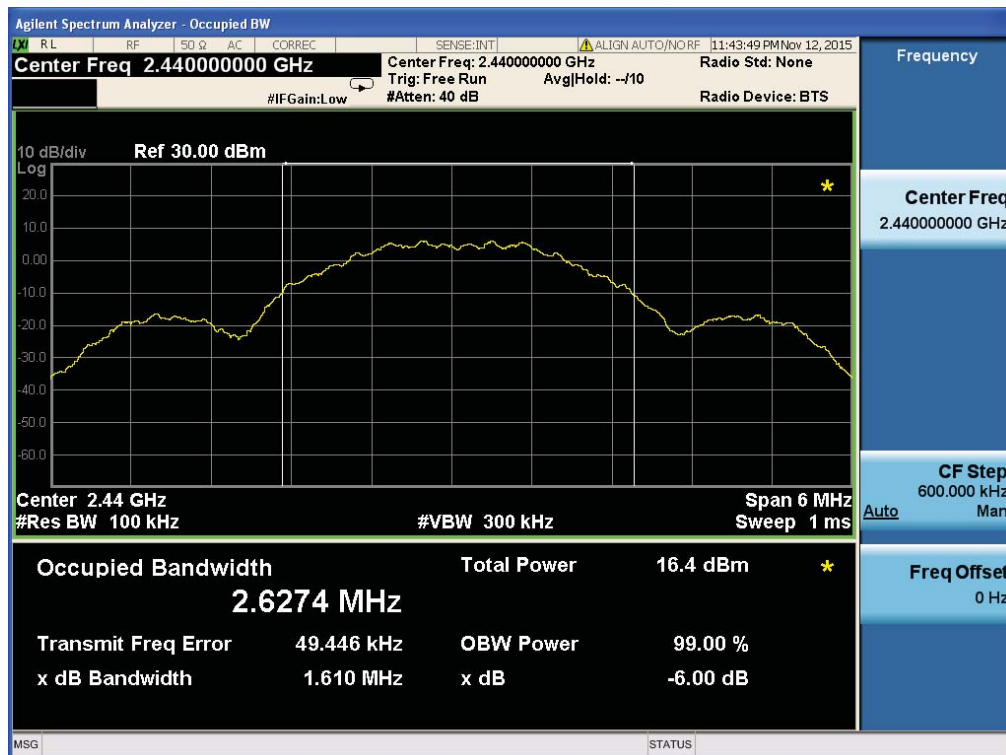
5.1.3 TEST RESULTS

EUT :	2.4G wireless module	Model Name :	NC880
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1012 hPa	Test Voltage :	DC 5.0V
Test Mode :	TX Mode /CH01, CH08, CH16		

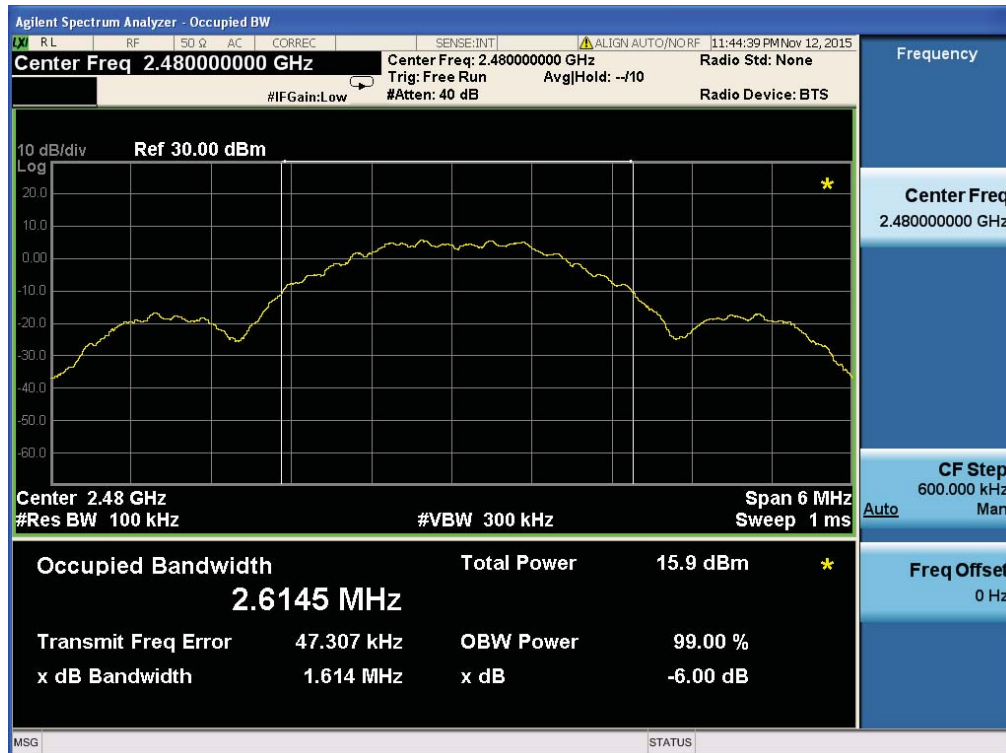
Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2405	1.624	500	Pass
Middle	2440	1.610	500	Pass
High	2480	1.614	500	Pass



TX CH 08



TX CH 16



6. MAXIMUM OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	AV Output Power	1 watt or 30dBm	2400-2483.5	PASS

6.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the Power meter

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

EUT :	2.4G wireless module	Model Name :	NC880
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5.0V
Test Mode :	TX Mode		

Test Channel	Frequency	Maximum Conducted Output Power(AV)	LIMIT
	(MHz)	(dBm)	(dBm)
CH01	2405	11.13	30
CH08	2440	10.05	30
CH16	2480	10.14	30

7. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

APPLICABLE STANDARD

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

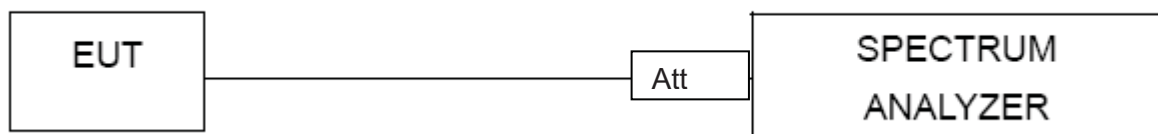
TEST PROCEDURE

- a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b) Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- c) Set RBW to 100 kHz and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- e) Repeat above procedures until all measured frequencies were complete.

7.1 DEVIATION FROM STANDARD

No deviation.

7.2 TEST SETUP



7.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.4 TEST RESULTS

EUT :	2.4G wireless module	Model Name :	NC880
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1012 hPa	Test Voltage :	DC 5.0V

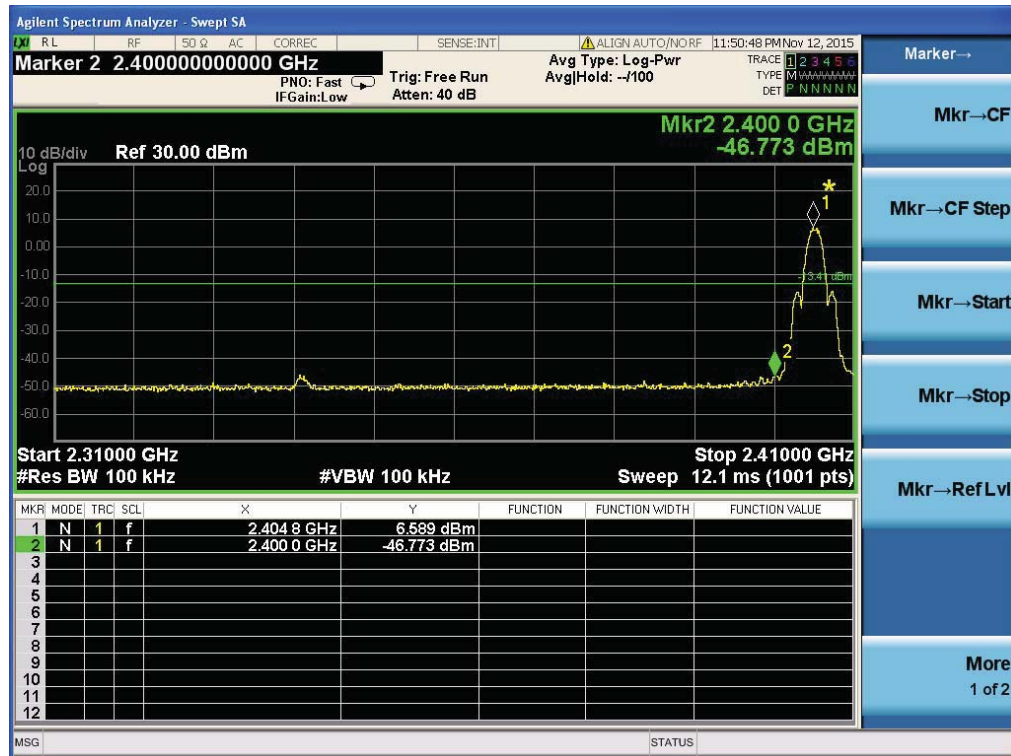
Frequency Band	Delta Peak to band emission (dBc)	> Limit (dBc)	Result
2400	53.36	30	Pass
2483.5	45.81	30	Pass

Radiated band edge:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
2390	44.87	-13.06	31.81	74	-42.19	peak	Vertical
2390	46.02	-13.06	32.96	74	-41.04	peak	Horizontal
2483.5	48.77	-12.78	35.99	74	-38.01	peak	Vertical
2483.5	48.06	-12.78	35.28	74	-38.72	peak	Horizontal

Note: Test method to see chapter 3.2 . When PK value is lower than the Average value limit, average not record.
 Absolute Level= ReadingLevel+Factor, Margin= Absolute Level - Limit

Left Side



Right Side



8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

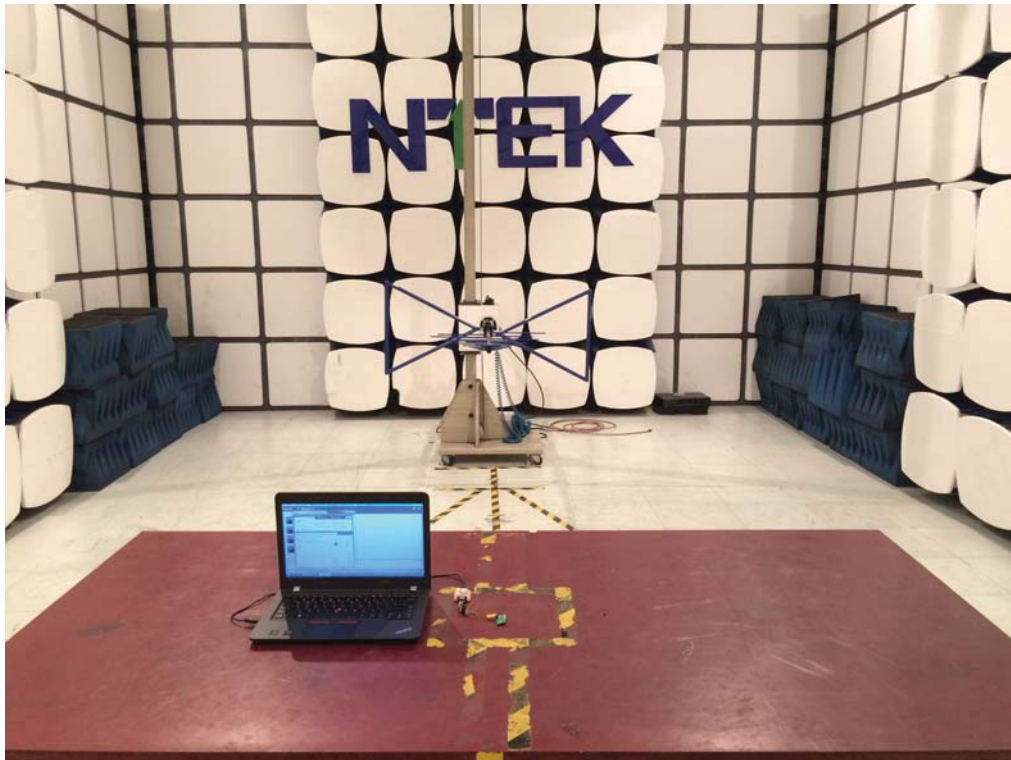
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

8.2 EUT ANTENNA

The EUT antenna is permanent attached antenna. It comply with the standard requirement.

9. EUT TEST PHOTO

Radiated Measurement Photos



Conducted Measurement Photos

