

TEST REPORT

Report No.: **BCTC2109437538E**

Applicant: **Nexxt Solutions**

Product Name: **IP CAMERA**

Model/Type Ref.: **NHC-P710**

Tested Date: **2021-09-27 to 2021-10-22**

Issued Date: **2021-10-25**

Shenzhen BCTC Testing Co., Ltd.



FCC ID: X4YHACP710

Product Name: IP CAMERA
Trademark: NEXXT SOLUTIONS
Model/Type Ref.: NHC-P710
NHC-P720, NHC-P730, SC-RIPC-2008, SC-RIPC-2006, SC-RIIPC-3002,
SC-RIPC-3003, SC-RIPC-3005, SC-RIPC-6001, SC-RIPC-6002, SC-RIPC-6006,
SC-RIPC-8001, SC-RIPC-8002, SC-RIPC-8003
Prepared For: Nexxt Solutions
Address: 3505 N.W 107TH AVE. MIAMI, FL 33178
Manufacturer: Sungale Electronics (Shenzhen) Limited
Address: No. 1302, DaHong High-Tech Park, No. 6-18, Xinhe Road, Xinqiao, BaoAn,
Shenzhen 518125, CHINA
Prepared By: Shenzhen BCTC Testing Co., Ltd.
Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei,
Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date: 2021-09-27
Sample tested Date: 2021-09-27 to 2021-10-22
Issue Date: 2021-10-25
Report No.: BCTC2109437538E
Test Standards: FCC Part15.247
ANSI C63.10-2013
Test Results: PASS
Remark: This is WIFI-2.4GHz band radio test report.

Tested by:



Eric Yang/Project Handler

Approved by:



Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

Table Of Content

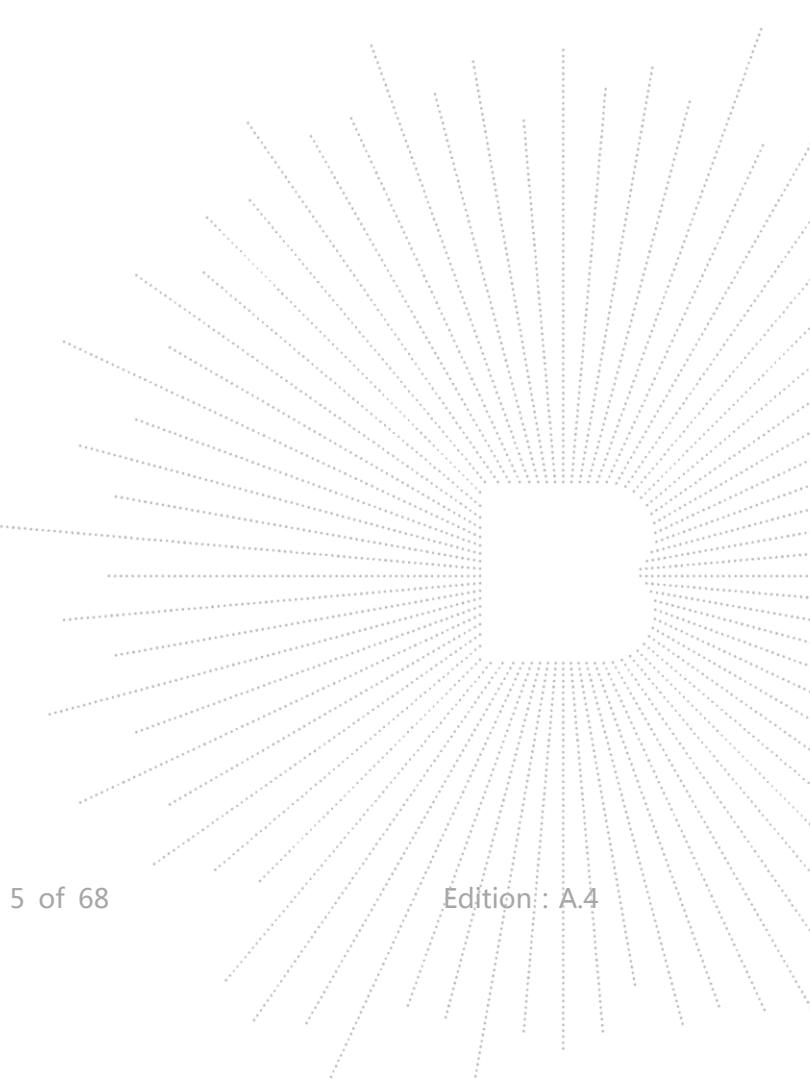
Test Report Declaration	Page
1. Version	5
2. Test Summary	6
3. Measurement Uncertainty	7
4. Product Information And Test Setup	8
4.1 Product Information	8
4.2 Test Setup Configuration	9
4.3 Support Equipment	9
4.4 Channel List	10
4.5 Test Mode	10
5. Test Facility And Test Instrument Used	11
5.1 Test Facility	11
5.2 Test Instrument Used	11
6. Conducted Emissions	13
6.1 Block Diagram Of Test Setup	13
6.2 Limit	13
6.3 Test Procedure	13
6.4 EUT Operating Conditions	13
6.5 Test Result	14
7. Radiated Emissions	16
7.1 Block Diagram Of Test Setup	16
7.2 Limit	17
7.3 Test Procedure	18
7.4 EUT Operating Conditions	19
7.5 Test Result	20
8. Radiated Band Emission Measurement And Restricted Bands Of Operation	27
8.1 Block Diagram Of Test Setup	27
8.2 Limit	27
8.3 Test Procedure	28
8.4 EUT operating Conditions	28
8.5 Test Result	29
9. Power Spectral Density Test	31
9.1 Block Diagram Of Test Setup	31
9.2 Limit	31
9.3 Test Procedure	31
9.4 EUT Operating Conditions	31
9.5 Test Result	32
10. Bandwidth Test	40
10.1 Block Diagram Of Test Setup	40
10.2 Limit	40

10.3	Test Procedure	40
10.4	EUT Operating Conditions	40
10.5	Test Result	41
11.	Peak Output Power Test	49
11.1	Block Diagram Of Test Setup	49
11.2	Limit	49
11.3	Test Procedure	49
11.4	EUT Operating Conditions	49
11.5	Test Result	50
12.	100 KHz Bandwidth Of Frequency Band Edge	51
12.1	Block Diagram Of Test Setup	51
12.2	Limit	51
12.3	Test Procedure	51
12.4	EUT Operating Conditions	51
12.5	Test Result	52
13.	Duty Cycle Of Test Signal	60
13.1	Standard Requirement	60
13.2	Formula	60
13.3	Test Procedure	60
13.4	Test Result	60
14.	Antenna Requirement	63
14.1	Limit	63
14.2	Test Result	63
15.	EUT Photographs	64
16.	EUT Test Setup Photographs	66

(Note: N/A Means Not Applicable)

1. Version

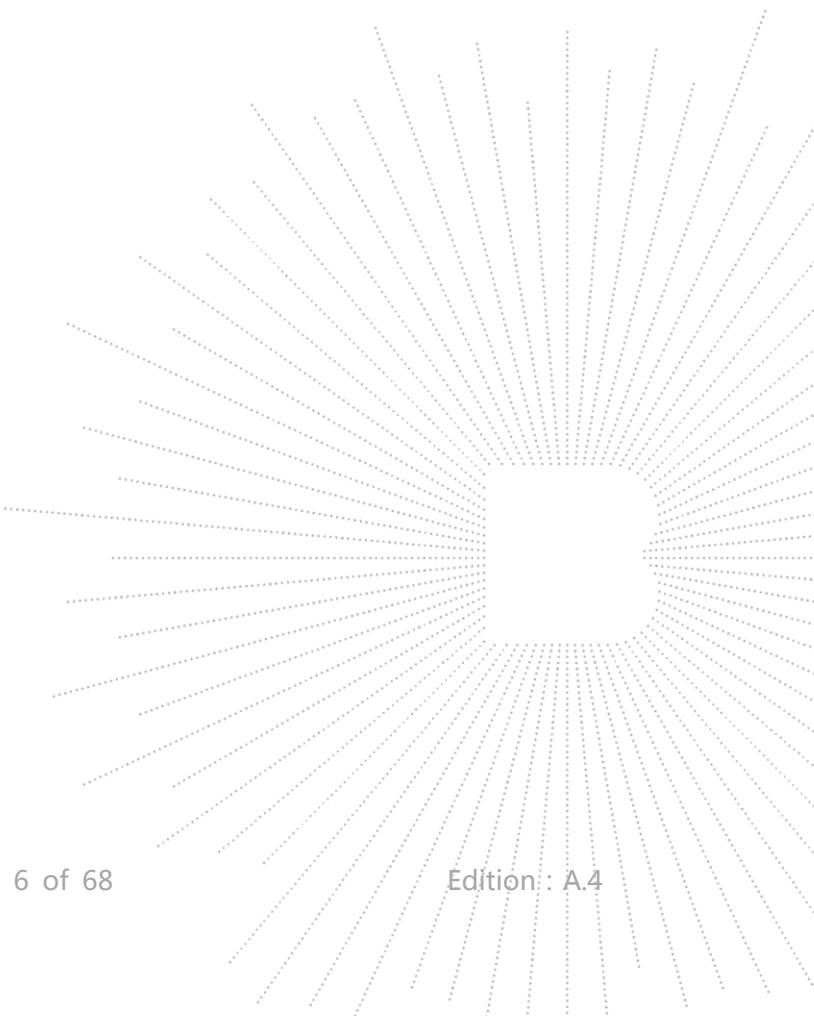
Report No.	Issue Date	Description	Approved
BCTC2109437538E	2021-10-25	Original	Valid



2. Test Summary

The Product has been tested according to the following specifications:

No.	Test Parameter	Clause No	Results
1	Conducted Emission	15.207	PASS
2	6dB Bandwidth	15.247 (a)(2)	PASS
3	Peak Output Power	15.247 (b)	PASS
4	Radiated Spurious Emission	15.247 (d)	PASS
5	Power Spectral Density	15.247 (e)	PASS
6	Restricted Band of Operation	15.205	PASS
7	Band Edge (Out of Band Emissions)	15.247 (d)	PASS
8	Antenna Requirement	15.203	PASS



3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(9kHz-30MHz)	$U=3.7\text{dB}$
2	3m chamber Radiated spurious emission(30MHz-1GHz)	$U=4.3\text{dB}$
3	3m chamber Radiated spurious emission(1GHz-18GHz)	$U=4.5\text{dB}$
4	3m chamber Radiated spurious emission(18GHz-40GHz)	$U=3.34\text{dB}$
5	Conducted Emission(150kHz-30MHz)	$U=3.20\text{dB}$
6	Conducted Adjacent channel power	$U=1.38\text{dB}$
7	Conducted output power uncertainty Above 1G	$U=1.576\text{dB}$
8	Conducted output power uncertainty below 1G	$U=1.28\text{dB}$
9	humidity uncertainty	$U=5.3\%$
10	Temperature uncertainty	$U=0.59^\circ\text{C}$

4. Product Information And Test Setup

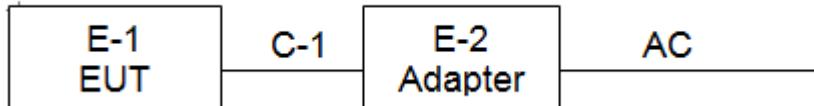
4.1 Product Information

	NHC-P710
Model/Type Ref.:	NHC-P720, NHC-P730, SC-RIPC-2008, SC-RIPC-2006, SC-RIIPC-3002, SC-RIPC-3003, SC-RIPC-3005, SC-RIPC-6001, SC-RIPC-6002, SC-RIPC-6006, SC-RIPC-8001, SC-RIPC-8002, SC-RIPC-8003
Model differences:	All the model are the same circuit and RF module, except model names.
Operation Frequency:	802.11b/g/n20MHz:2412~2462 MHz 802.11n40MHz:2422~2452 MHz
Bit Rate of Transmitter:	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n Up to 150Mbps
Type of Modulation:	WIFI: OFDM/DSSS
Number Of Channel:	802.11b/g/n20MHz:11 CH 802.11n40MHz: 7 CH
Antenna installation:	Internal antenna
Antenna Gain:	1dBi
Ratings:	DC 5V
Adapter:	Model No.: XED-UL050100CU Input: AC 100-240V 50/60Hz 0.2A Output: DC 5V 1A

4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

Conducted Emission/Radiated Spurious Emission:



4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-2	Adapter	N/A	XED-UL050100CU	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.2M	DC cable unshielded

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Channel List

Channel List for 802.11b/g/n(20)					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	02	2417	03	2422
04	2427	05	2432	06	2437
07	2442	08	2447	09	2452
10	2457	11	2462		

Channel List for 802.11n(40)					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
03	2422	04	2427	05	2432
06	2437	07	2442	08	2447
09	2452				

4.5 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 above was evaluated respectively.

Pretest Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n20 CH1/ CH6/ CH11
Mode 4	802.11n40 CH3/ CH6/ CH9
Mode 5	Link Mode

Radiated Emission	
Final Test Mode	Description
Mode 5	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n20 CH1/ CH6/ CH11
Mode 4	802.11n40 CH3/ CH6/ CH9

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850

IC Registered No.: 23583

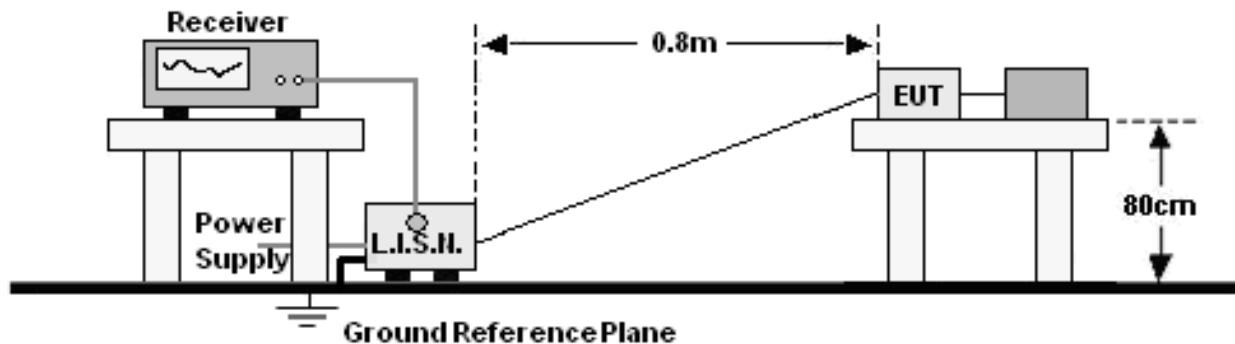
5.2 Test Instrument Used

Conducted emissions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Receiver	R&S	ESR3	102075	May 28, 2021	May 27, 2022
LISN	R&S	ENV216	101375	May 28, 2021	May 27, 2022
ISN	HPX	ISN T800	S1509001	May 28, 2021	May 27, 2022
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\

Radiated emissions Test (966 chamber)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	Jun. 06. 2020	Jun. 05, 2023
Receiver	R&S	ESR3	102075	May 28, 2021	May 27, 2022
Receiver	R&S	ESRP	101154	May 28, 2021	May 27, 2022
Amplifier	SKET	LAPA_01G18 G-45dB	\	May 28, 2021	May 27, 2022
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 28, 2021	May 27, 2022
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	VULB9163-9 42	Jun. 01, 2021	May 31, 2022
Horn Antenna	SCHWARZBECK	BBHA9120D	1541	Jun. 02, 2021	Jun. 01, 2022
Horn Antenna (18GHz-40GHz z)	SCHWARZBECK	BBHA9170	822	May 28, 2021	May 27, 2022
Amplifier (18GHz-40GHz z)	MITEQ	TTA1840-35- HG	2034381	May 28, 2021	May 27, 2022
Loop Antenna (9KHz-30MHz)	SCHWARZBECK	FMZB1519B	014	Jun. 02, 2021	Jun. 01, 2022
RF cables1 (9kHz-30MHz)	Huber+Suhnar	9kHz-30MHz	B1702988-00 08	May 28, 2021	May 27, 2022
RF cables2 (30MHz-1GHz)	Huber+Suhnar	30MHz-1GH z	1486150	May 28, 2021	May 27, 2022
RF cables3 (1GHz-40GHz)	Huber+Suhnar	1GHz-40GHz	1607106	May 28, 2021	May 27, 2022
Power Metter	Keysight	E4419B	\	May 28, 2021	May 27, 2022
Power Sensor (AV)	Keysight	E9 300A	\	May 28, 2021	May 27, 2022
Signal Analyzer 20kHz-26.5GH z	KEYSIGHT	N9020A	MY49100060	May 28, 2021	May 27, 2022
Spectrum Analyzer 9kHz-40GHz	Agilent	FSP40	100363	May 28, 2021	May 27, 2022
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

6. Conducted Emissions

6.1 Block Diagram Of Test Setup



6.2 Limit

FREQUENCY (MHz)	Limit (dBuV)	
	Quas-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Notes:

1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

6.3 Test Procedure

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

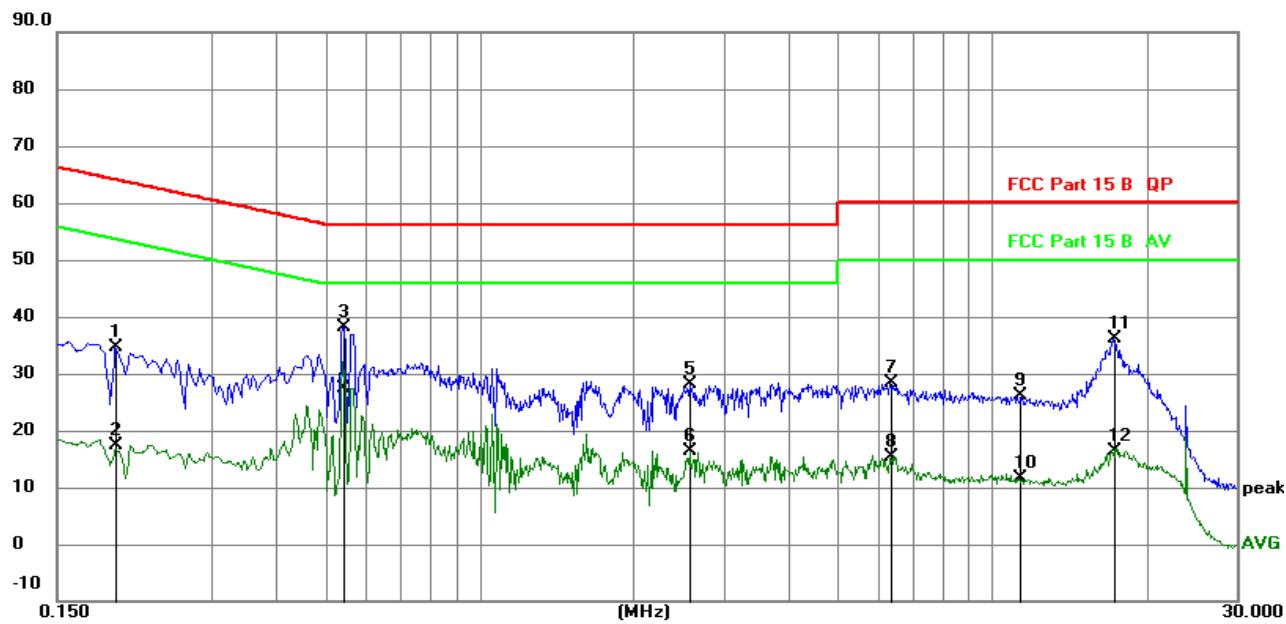
- The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N.).
- The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 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.

6.5 Test Result

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 5

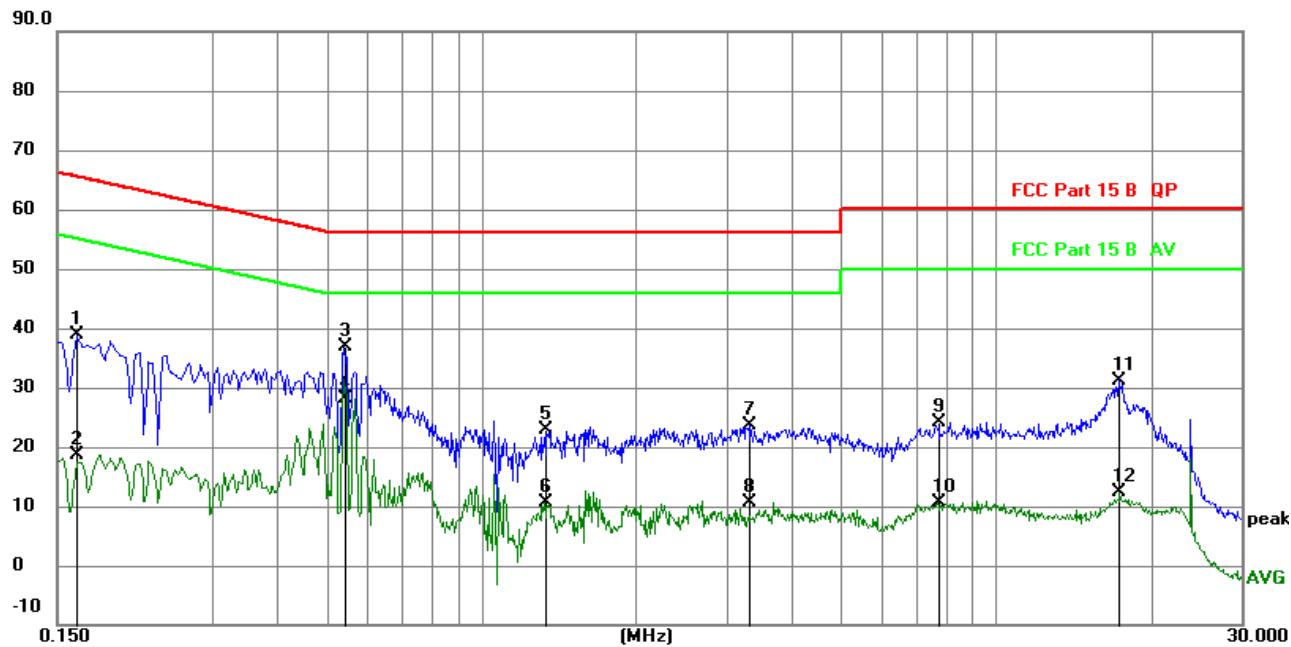


Remark:

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

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level	Factor	ment		dB	Detector
		MHz		dB	dBuV	dBuV		
1		0.1949	24.90	9.61	34.51	63.83	-29.32	QP
2		0.1949	7.77	9.61	17.38	53.83	-36.45	AVG
3 *		0.5415	28.57	9.62	38.19	56.00	-17.81	QP
4		0.5415	17.77	9.62	27.39	46.00	-18.61	AVG
5		2.5800	18.50	9.65	28.15	56.00	-27.85	QP
6		2.5800	6.63	9.65	16.28	46.00	-29.72	AVG
7		6.3465	18.70	9.73	28.43	60.00	-31.57	QP
8		6.3465	5.76	9.73	15.49	50.00	-34.51	AVG
9		11.2605	16.32	9.79	26.11	60.00	-33.89	QP
10		11.2605	1.89	9.79	11.68	50.00	-38.32	AVG
11		17.2275	26.31	9.77	36.08	60.00	-23.92	QP
12		17.2275	6.57	9.77	16.34	50.00	-33.66	AVG

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 5


Remark:

1. All readings are Quasi-Peak and Average values.

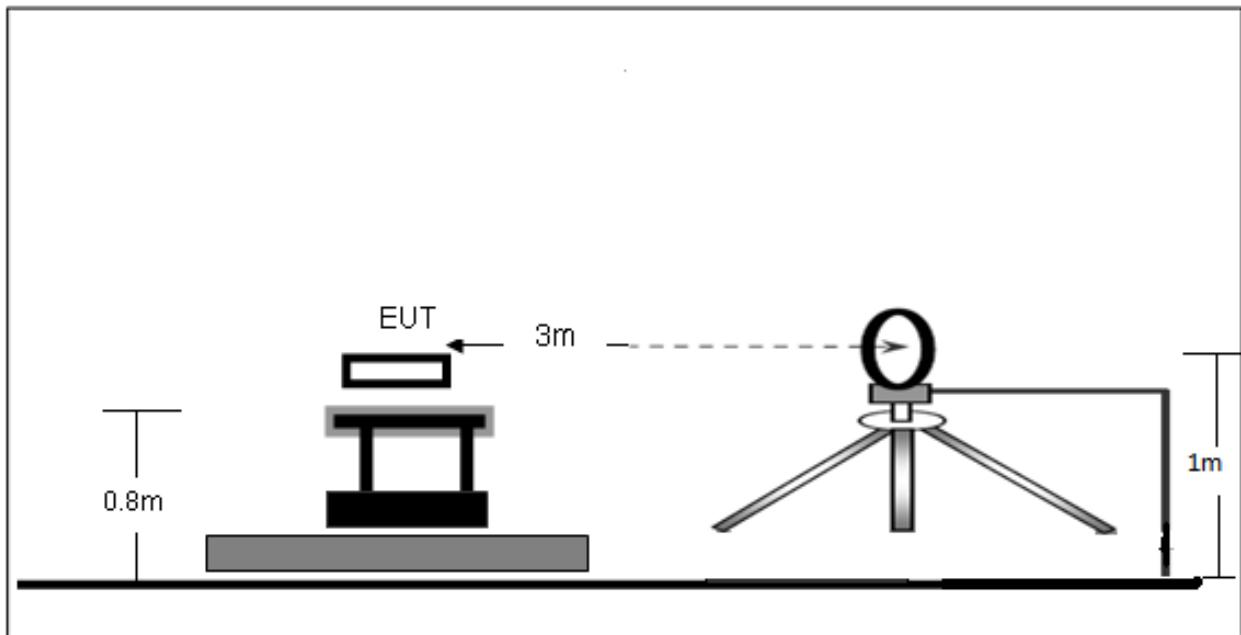
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector
			Level	Factor	ment			
		MHz		dB	dBuV	dBuV	dB	
1		0.1633	29.21	9.61	38.82	65.29	-26.47	QP
2		0.1633	8.93	9.61	18.54	55.29	-36.75	AVG
3		0.5407	27.26	9.62	36.88	56.00	-19.12	QP
4 *		0.5407	18.54	9.62	28.16	46.00	-17.84	AVG
5		1.3238	13.34	9.63	22.97	56.00	-33.03	QP
6		1.3238	0.99	9.63	10.62	46.00	-35.38	AVG
7		3.3105	14.01	9.66	23.67	56.00	-32.33	QP
8		3.3105	1.02	9.66	10.68	46.00	-35.32	AVG
9		7.6870	14.32	9.75	24.07	60.00	-35.93	QP
10		7.6870	0.97	9.75	10.72	50.00	-39.28	AVG
11		17.3826	21.48	9.77	31.25	60.00	-28.75	QP
12		17.3826	2.56	9.77	12.33	50.00	-37.67	AVG

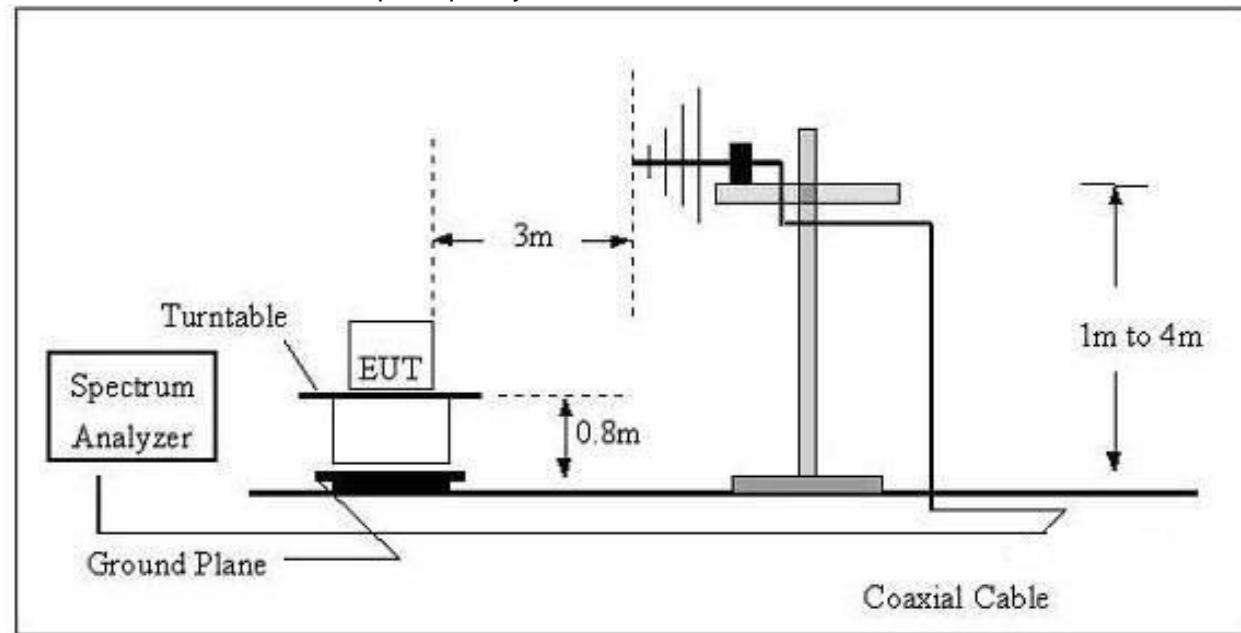
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

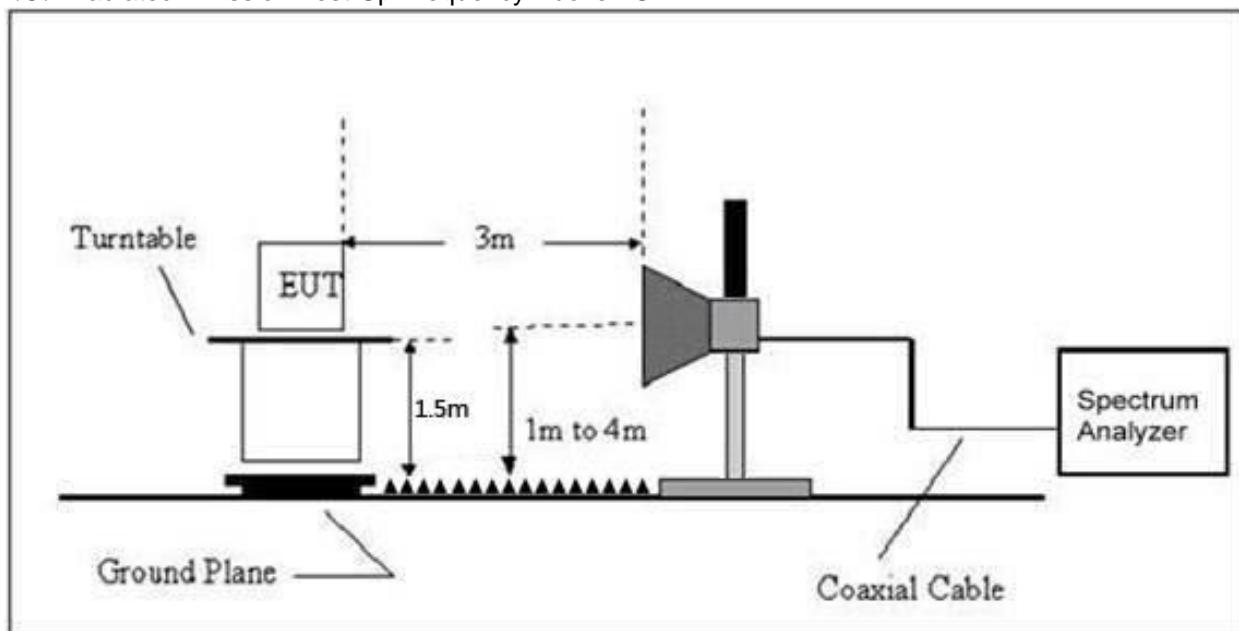
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



7.2 Limit

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.

Frequency (MHz)	Field Strength uV/m	Distance (m)	Field Strength Limit at 3m Distance	
			uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	20log ^{(2400/F(kHz))} + 80
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	20log ^{(24000/F(kHz))} + 40
1.705 ~ 30	30	30	100 * 30	20log ⁽³⁰⁾ + 40
30 ~ 88	100	3	100	20log ⁽¹⁰⁰⁾
88 ~ 216	150	3	150	20log ⁽¹⁵⁰⁾
216 ~ 960	200	3	200	20log ⁽²⁰⁰⁾
Above 960	500	3	500	20log ⁽⁵⁰⁰⁾

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (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).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

7.3 Test Procedure

Receiver Parameter	Setting
Attenuation	Auto
9kHz~150kHz	RBW 200Hz for QP
150kHz~30MHz	RBW 9kHz for QP
30MHz~1000MHz	RBW 120kHz for QP

Spectrum Parameter	Setting
1-25GHz	RBW 1 MHz /VBW 1 MHz for Peak, RBW 1 MHz / VBW 10Hz for Average

Below 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).

h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel.

Note:

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

Above 1GHz test procedure as below:

- a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. 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.
- d. 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.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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.

g. Test the EUT in the lowest channel, the Highest channel.

Note:

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

7.4 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.

7.5 Test Result

Below 30MHz

Temperature:	26°C	Relative Humidity:	24%
Pressure:	101 kPa	Test Voltage :	AC120V/60Hz
Test Mode :	Mode 5	Polarization :	--

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

Note:

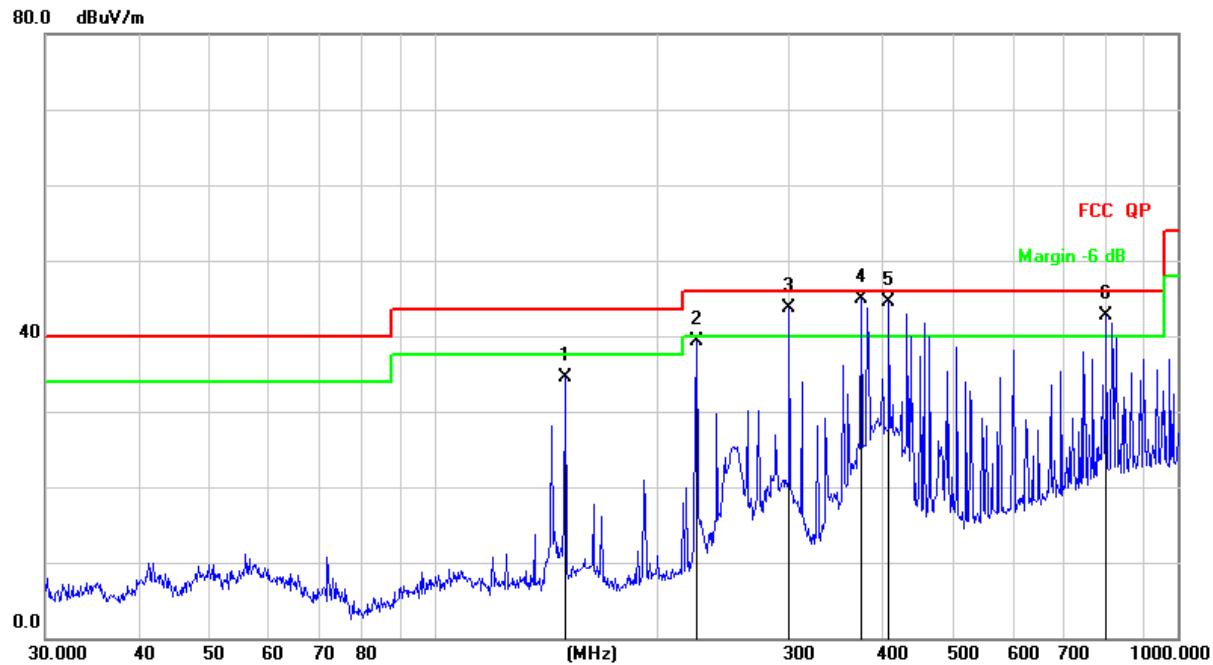
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

Between 30MHz – 1GHz

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Test Voltage :	AC120V/60Hz
Test Mode :	Mode 5	Polarization :	Horizontal

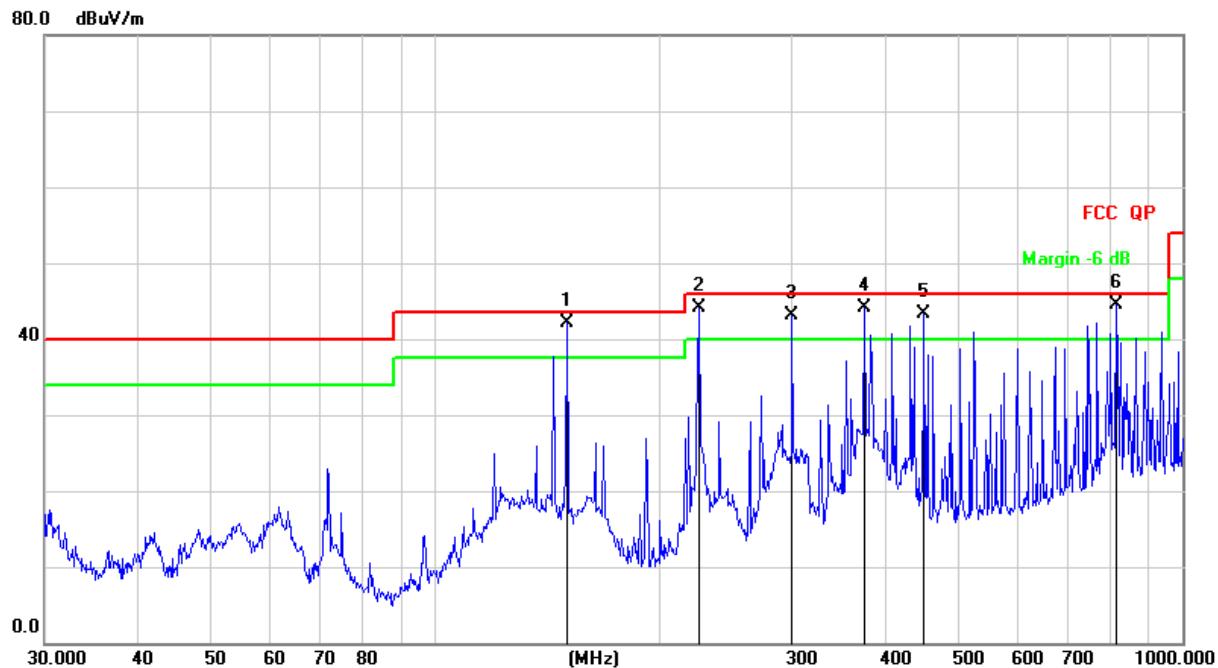


Remark:

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

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level	Factor	ment			
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		150.0107	54.08	-19.49	34.59	43.50	-8.91	QP
2		225.3079	54.32	-15.04	39.28	46.00	-6.72	QP
3	!	300.3672	57.53	-13.75	43.78	46.00	-2.22	QP
4	*	375.9384	56.53	-11.55	44.98	46.00	-1.02	QP
5	!	408.9460	55.17	-10.62	44.55	46.00	-1.45	QP
6	!	801.7862	44.55	-1.90	42.65	46.00	-3.35	QP

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kpa	Test Voltage :	AC120V/60Hz
Test Mode :	Mode 5	Polarization :	Vertical



Remark:

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

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over
			Level	Factor	ment		
		MHz	dBuV	dB	dBuV/m	dB/m	dB
1	*	150.0107	61.68	-19.49	42.19	43.50	-1.31
2	!	225.3079	59.17	-15.04	44.13	46.00	-1.87
3	!	300.3672	56.93	-13.75	43.18	46.00	-2.82
4	!	375.9384	55.59	-11.55	44.04	46.00	-1.96
5	!	451.1349	52.78	-9.55	43.23	46.00	-2.77
6	!	815.9678	46.06	-1.57	44.49	46.00	-1.51
							Detector

Between 1GHz – 25GHz
802.11b

Polar (H/V)	Frequency	Reading Level	Correct Factor	Measure-m ent	Limits	Over	Detector Type
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
Low channel:2412MHz							
V	4824.00	53.43	-0.43	53.00	74.00	-21.00	PK
V	4824.00	43.99	-0.43	43.56	54.00	-10.44	AV
V	7236.00	45.86	8.31	54.17	74.00	-19.83	PK
V	7236.00	35.42	8.31	43.73	54.00	-10.27	AV
H	4824.00	50.70	-0.43	50.27	74.00	-23.73	PK
H	4824.00	40.96	-0.43	40.53	54.00	-13.47	AV
H	7236.00	43.81	8.31	52.12	74.00	-21.88	PK
H	7236.00	35.19	8.31	43.50	54.00	-10.50	AV
Middle channel:2437MHz							
V	4874.00	50.03	-0.38	49.65	74.00	-24.35	PK
V	4874.00	43.29	-0.38	42.91	54.00	-11.09	AV
V	7311.00	39.36	8.83	48.19	74.00	-25.81	PK
V	7311.00	31.29	8.83	40.12	54.00	-13.88	AV
H	4874.00	47.94	-0.38	47.56	74.00	-26.44	PK
H	4874.00	38.00	-0.38	37.62	54.00	-16.38	AV
H	7311.00	37.92	8.83	46.75	74.00	-27.25	PK
H	7311.00	29.21	8.83	38.04	54.00	-15.96	AV
High channel:2462MHz							
V	4924.00	51.12	-0.32	50.80	74.00	-23.20	PK
V	4924.00	42.06	-0.32	41.74	54.00	-12.26	AV
V	7386.00	44.28	9.35	53.63	74.00	-20.37	PK
V	7386.00	33.87	9.35	43.22	54.00	-10.78	AV
H	4924.00	48.92	-0.32	48.60	74.00	-25.40	PK
H	4924.00	38.35	-0.32	38.03	54.00	-15.97	AV
H	7386.00	42.21	9.35	51.56	74.00	-22.44	PK
H	7386.00	34.59	9.35	43.94	54.00	-10.06	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. If peak below the average limit, the average emission was no test.
3. In restricted bands of operation, The spurious emissions below the permissible value more than 20dB
4. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
5. All the Modulation are test, the worst mode is 802.11b, the data recording in the report.

802.11g

Polar (H/V)	Frequency	Reading Level	Correct Factor	Measure-m ent	Limits	Over	Detector Type
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
Low channel:2412MHz							
V	4824.00	53.64	-0.43	53.21	74.00	-20.79	PK
V	4824.00	43.88	-0.43	43.45	54.00	-10.55	AV
V	7236.00	44.65	8.31	52.96	74.00	-21.04	PK
V	7236.00	34.50	8.31	42.81	54.00	-11.19	AV
H	4824.00	49.78	-0.43	49.35	74.00	-24.65	PK
H	4824.00	39.07	-0.43	38.64	54.00	-15.36	AV
H	7236.00	41.85	8.31	50.16	74.00	-23.84	PK
H	7236.00	33.67	8.31	41.98	54.00	-12.02	AV
Middle channel:2437MHz							
V	4874.00	50.11	-0.38	49.73	74.00	-24.27	PK
V	4874.00	42.41	-0.38	42.03	54.00	-11.97	AV
V	7311.00	43.09	8.83	51.92	74.00	-22.08	PK
V	7311.00	34.26	8.83	43.09	54.00	-10.91	AV
H	4874.00	46.03	-0.38	45.65	74.00	-28.35	PK
H	4874.00	35.08	-0.38	34.70	54.00	-19.30	AV
H	7311.00	41.73	8.83	50.56	74.00	-23.44	PK
H	7311.00	33.20	8.83	42.03	54.00	-11.97	AV
High channel:2462MHz							
V	4924.00	52.91	-0.32	52.59	74.00	-21.41	PK
V	4924.00	42.13	-0.32	41.81	54.00	-12.19	AV
V	7386.00	45.73	9.35	55.08	74.00	-18.92	PK
V	7386.00	35.03	9.35	44.38	54.00	-9.62	AV
H	4924.00	50.67	-0.32	50.35	74.00	-23.65	PK
H	4924.00	40.51	-0.32	40.19	54.00	-13.81	AV
H	7386.00	44.06	9.35	53.41	74.00	-20.59	PK
H	7386.00	36.66	9.35	46.01	54.00	-7.99	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
- Over= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. In restricted bands of operation, The spurious emissions below the permissible value more than 20dB
4. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
5. All the Modulation are test, the worst mode is 802.11b, the data recording in the report.

802.11n20

Polar (H/V)	Frequency	Reading Level	Correct Factor	Measure-m ent	Limits	Over	Detector Type
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
Low channel:2412MHz							
V	4824.00	52.00	-0.43	51.57	74.00	-22.43	PK
V	4824.00	42.52	-0.43	42.09	54.00	-11.91	AV
V	7236.00	42.06	8.31	50.37	74.00	-23.63	PK
V	7236.00	31.63	8.31	39.94	54.00	-14.06	AV
H	4824.00	50.33	-0.43	49.90	74.00	-24.10	PK
H	4824.00	40.37	-0.43	39.94	54.00	-14.06	AV
H	7236.00	40.05	8.31	48.36	74.00	-25.64	PK
H	7236.00	32.19	8.31	40.50	54.00	-13.50	AV
Middle channel:2437MHz							
V	4874.00	50.69	-0.38	50.31	74.00	-23.69	PK
V	4874.00	43.96	-0.38	43.58	54.00	-10.42	AV
V	7311.00	39.74	8.83	48.57	74.00	-25.43	PK
V	7311.00	31.33	8.83	40.16	54.00	-13.84	AV
H	4874.00	48.93	-0.38	48.55	74.00	-25.45	PK
H	4874.00	39.75	-0.38	39.37	54.00	-14.63	AV
H	7311.00	38.38	8.83	47.21	74.00	-26.79	PK
H	7311.00	30.31	8.83	39.14	54.00	-14.86	AV
High channel:2462MHz							
V	4924.00	53.54	-0.32	53.22	74.00	-20.78	PK
V	4924.00	43.95	-0.32	43.63	54.00	-10.37	AV
V	7386.00	47.36	9.35	56.71	74.00	-17.29	PK
V	7386.00	36.69	9.35	46.04	54.00	-7.96	AV
H	4924.00	51.46	-0.32	51.14	74.00	-22.86	PK
H	4924.00	41.10	-0.32	40.78	54.00	-13.22	AV
H	7386.00	44.78	9.35	54.13	74.00	-19.87	PK
H	7386.00	37.35	9.35	46.70	54.00	-7.30	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Over= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. In restricted bands of operation, The spurious emissions below the permissible value more than 20dB
4. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
5. All the Modulation are test, the worst mode is 802.11b, the data recording in the report.

802.11n40

Polar (H/V)	Frequency	Reading Level	Correct Factor	Measure-m ent	Limits	Over	Detector Type
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
Low channel:2422MHz							
V	4844.00	53.10	-0.43	52.67	74.00	-21.33	PK
V	4844.00	43.32	-0.43	42.89	54.00	-11.11	AV
V	7266.00	44.48	8.31	52.79	74.00	-21.21	PK
V	7266.00	34.56	8.31	42.87	54.00	-11.13	AV
H	4844.00	51.21	-0.43	50.78	74.00	-23.22	PK
H	4844.00	40.66	-0.43	40.23	54.00	-13.77	AV
H	7266.00	41.67	8.31	49.98	74.00	-24.02	PK
H	7266.00	33.76	8.31	42.07	54.00	-11.93	AV
Middle channel:2437MHz							
V	4874.00	49.33	-0.38	48.95	74.00	-25.05	PK
V	4874.00	41.64	-0.38	41.26	54.00	-12.74	AV
V	7311.00	39.91	8.83	48.74	74.00	-25.26	PK
V	7311.00	31.00	8.83	39.83	54.00	-14.17	AV
H	4874.00	47.24	-0.38	46.86	74.00	-27.14	PK
H	4874.00	38.21	-0.38	37.83	54.00	-16.17	AV
H	7311.00	38.54	8.83	47.37	74.00	-26.63	PK
H	7311.00	29.99	8.83	38.82	54.00	-15.18	AV
High channel:2452MHz							
V	4904.00	51.89	-0.32	51.57	74.00	-22.43	PK
V	4904.00	43.05	-0.32	42.73	54.00	-11.27	AV
V	7356.00	43.13	9.35	52.48	74.00	-21.52	PK
V	7356.00	32.81	9.35	42.16	54.00	-11.84	AV
H	4904.00	50.79	-0.32	50.47	74.00	-23.53	PK
H	4904.00	41.35	-0.32	41.03	54.00	-12.97	AV
H	7356.00	40.46	9.35	49.81	74.00	-24.19	PK
H	7356.00	31.76	9.35	41.11	54.00	-12.89	AV

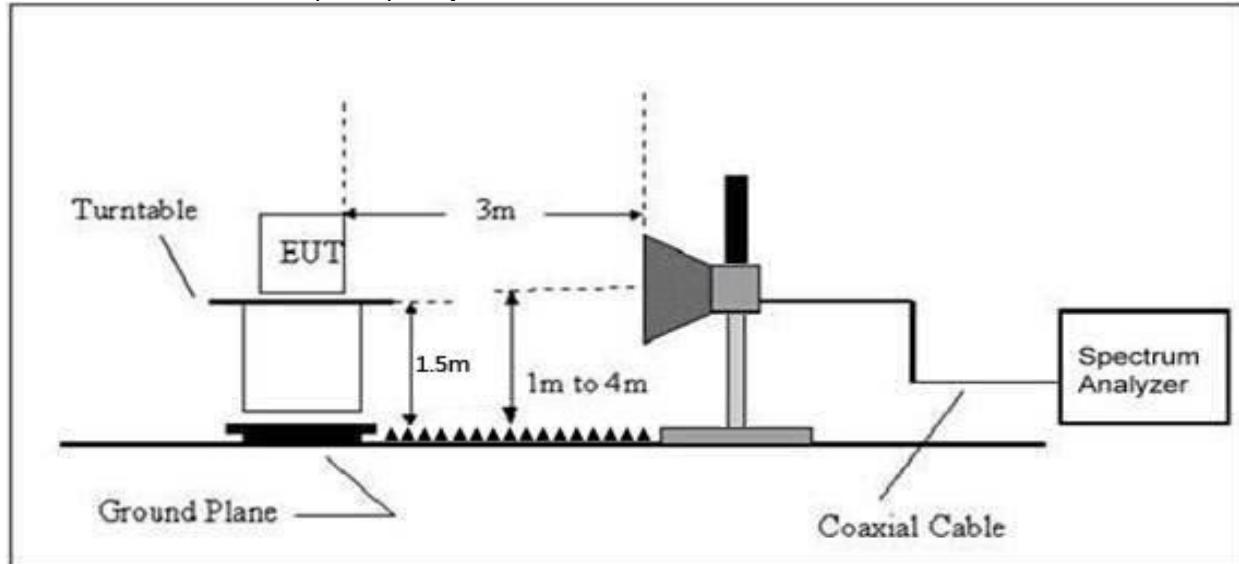
Remark:

1. Emission Level = Meter Reading + Factor,
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Over= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. In restricted bands of operation, The spurious emissions below the permissible value more than 20dB
4. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
5. All the Modulation are test, the worst mode is 802.11b, the data recording in the report.

8. Radiated Band Emission Measurement And Restricted Bands Of Operation

8.1 Block Diagram Of Test Setup

Radiated Emission Test-Up Frequency Above 1GHz



8.2 Limit

FCC Part15 C Section 15.209 and 15.205

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (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).

8.3 Test Procedure

Receiver Parameter	Setting
Attenuation	Auto
Start Frequency	2300MHz
Stop Frequency	2520
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Above 1GHz test procedure as below:

- a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. 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.
- d. 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.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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.
- g. Test the EUT in the lowest channel, the Highest channel.

Note:

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

8.4 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.