



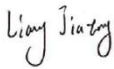
Test Report No.:
FCCSZ2023-0009-RF1

RF Test Report

FCC ID : 2AOKI-AL8731B
IC : 23460-AL8731B
EUT : WIFI Module
MODEL : AL-8731B-WG-A, WF-R31B-UWD1
BRAND NAME : AI-Link
APPLICANT : Sichuan AI-Link Technology Co.,Ltd.
Classification Of Test : N/A

CVC Testing Technology (Shenzhen) Co., Ltd.



Applicant		Name: Sichuan AI-Link Technology Co.,Ltd. Address: Anzhou Industrial Park, Mianyang, Sichuan, P.R.C	
Manufacturer		Name: Sichuan AI-Link Technology Co.,Ltd. Address: Anzhou Industrial Park, Mianyang, Sichuan, P.R.C	
Equipment Under Test		Product Name:WIFI Module Model/Type: AL-8731B-WG-A, WF-R31B-UWD1 Brand Name: AI-Link Serial NO.: N/A Sample NO.:4-1	
Date of Receipt.	2023.09.13	Date of Testing	2023.09.13~2023.09.26
Test Specification		Test Result	
FCC Part 15, Subpart C (15.247) Canada RSS-247 Issue 3 (2023-08) Canada RSS-Gen Issue 5+A1+A2 (2021-02)		PASS	
Evaluation of Test Result		The equipment under test was found to comply with the requirements of the standards applied. Seal of CVC Issue Date: 2023.09.26	
Tested by:  <u>Liang Jiatong</u> Name Signature		Tested by:  <u>Huang Meng</u> Name Signature	
		Approved by:  <u>Dong Sanbi</u> Name Signature	
Other Aspects: NONE.			
Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested			

This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of CVC.



TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1 SUMMARY OF TEST RESULTS	5
1.1 LIST OF TEST AND MEASUREMENT INSTRUMENTS	6
1.2 MEASUREMENT UNCERTAINTY	7
1.3 TEST LOCATION	7
2 GENERAL INFORMATION	8
2.1 GENERAL PRODUCT INFORMATION	8
2.2 ANTENNA INFORMATION	10
2.3 OTHER INFORMATION	11
2.4 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	12
2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS	14
2.6 DESCRIPTION OF SUPPORT UNITS	14
3 TEST TYPES AND RESULTS	15
3.1 CONDUCTED EMISSION MEASUREMENT	15
3.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT	18
3.3 6DB BANDWIDTH MEASUREMENT	35
3.4 CONDUCTED OUTPUT POWER	36
3.5 POWER SPECTRAL DENSITY MEASUREMENT	37
3.6 OUT OF BAND EMISSION MEASUREMENT	38
3.7 OCCUPIED BANDWIDTH MEASUREMENT	39
3.8 ANTENNA REQUIREMENT	40
4 PHOTOGRAPHS OF TEST SETUP	41
5 PHOTOGRAPHS OF THE EUT	42



RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FCCSZ2023-0009-RF1	Original release	2023.09.26



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C, Canada RSS-247, Canada RSS-Gen			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
FCC 15.207 RSS-Gen 8.8	AC Power Conducted Emission	PASS	See section 3.1
FCC 15.247(d) FCC 15.209 RSS GEN 8.10 Table 7 RSS GEN 8.9 Table 5	Radiated Emissions	PASS	See section 3.2
FCC 15.247(d) RSS-247 5.5	Out of band Emission Measurement	PASS	Appendix E&F&G of FCCSZ2023-0009-RF1-A1
FCC 15.247(a)(2) RSS-247 5.2(a)	6dB bandwidth	PASS	Appendix A of FCCSZ2023-0009-RF1-A1
RSS-Gen 6.7	Occupied Bandwidth Measurement	PASS	Appendix B of FCCSZ2023-0009-RF1-A1
FCC 15.247(b) RSS-247 5.4(d)	Conducted Output power	PASS	Appendix C of FCCSZ2023-0009-RF1-A1
FCC 15.247(e) RSS-247 5.2(b)	Power Spectral Density	PASS	Appendix D of FCCSZ2023-0009-RF1-A1
FCC 15.203 FCC 15.247(b) RSS-Gen 6.8	Antenna Requirement	PASS	See section 3.8



1.1 LIST OF TEST AND MEASUREMENT INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial Number	Cal. interval	Cal. Due
WIFI & Bluetooth Test System					/
Signal&Spectrum Analyzer	Rohde&Schwarz	FSV 30	104408	1 year	2024.5.21
#3Shielding room	MORI	443	N/A	3 year	2026.5.16
Wideband radio communication tester	Rohde&Schwarz	CMW 500	168778	1 year	2024.5.25
Analog signal Generator (100kHz ~ 40GHz)	Rohde&Schwarz	SMB 100A	181934	1 year	2024.5.21
Vector signal Generator (9kHz ~ 6GHz)	Keysight	N5182B	MY57301451	1 year	2024.4.25
Vector signal Generator (9kHz ~ 6GHz)	Rohde&Schwarz	SGT 100A	111724	1 year	2024.5.21
RF control unit(BT/WiFi)	Tonscend	JS0806-2-8CH	20E8060261	1 year	2024.5.21
Radiation Spurious(Above 1GHz)					/
Signal&Spectrum Analyzer	Rohde&Schwarz	FSV 40	101898	1 year	2024.5.21
EMI Test Receiver	Rohde&Schwarz	ESR3	102693	1 year	2024.5.25
Antenna(30MHz~1001MHz)	SCHWARZBECK	VULB 9168	1133	1 year	2024.2.21
Horn antenna(1GHz-18GHz)	ETS	3117	227611	1 year	2024.3.25
Horn antenna(18GHz-40GHz)	QMS	QMS-00880	22051	1 year	2024.3.25
3m anechoic chamber	MORI	966	CS0300011	3 year	2026.5.18
Filter group(RSE-BT/WiFi)	Rohde&Schwarz	WiFi /BT Variant 1	100820	1 year	2024.5.21
Filter group(RSE-Cellular)	Rohde&Schwarz	Cellular Variant 1	100768	1 year	2024.5.21
Preamplifier(10kHz-1GHz)	Rohde&Schwarz	SCU-01F	100299	1 year	2024.5.21
Preamplifier(1GHz-18GHz)	Rohde&Schwarz	SCU-18F	100799	1 year	2024.5.21
Preamplifier(1GHz-18GHz)	Rohde&Schwarz	SCU-18F	100801	1 year	2024.5.21
Preamplifier(18Gz-40GHz)	Rohde&Schwarz	SCU-40A	101209	1 year	2024.5.21
#2 control room	MORI	433	CS0300028	3 year	2024.5.21
Temperature and humidity meter	/	C193561517	C193561517	1 year	2024.5.21
Radiation Spurious(Below 1GHz)					/
EMI Test Receiver	Rohde&Schwarz	ESR 26	101718	1 year	2024.5.25
Loop antenna (8.3k~30MHz)	Rohde&Schwarz	HFH2-Z2E	100951	1 year	2024.5.26
Antenna(30MHz~1000MHz)	SCHWARZBECK	VULB 9168	1132	1 year	2024.2.14
3m anechoic chamber	MORI	966	CS0200019	3 year	2026.5.18
Attenuator	/	SJ-5dB	607684	1 year	2024.2.21
#1 control room	MORI	433	CS0300028	3 year	2026.5.16
Temperature and humidity meter	/	C193561473	CS0200071	1 year	2024.5.21
Conducted emission					/
EMI Test Receiver	Rohde&Schwarz	ESR3	102694	1 year	2024.5.25
limiter (10 dB)	Rohde&Schwarz	ESH3-Z2	102824	1 year	2024.5.16
Voltage probe	Rohde&Schwarz	CVP9222C	28	1 year	2024.5.16
Current probe	Rohde&Schwarz	EZ-17	101442	1 year	2024.5.21
ISN network	Rohde&Schwarz	ENV 81	100401	1 year	2024.5.16
ISN network	Rohde&Schwarz	ENV 81 Cat6	101896	1 year	2024.5.16
LISN (single-phase)	Rohde&Schwarz	ENV216	102569	1 year	2024.4.11
#1Shielding room	MORI	854	N/A	3 year	2026.5.16



1.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

No.	Item	Measurement Uncertainty
1	Conducted emission test	+/-2.7 dB
2	Radiated emission 9kHz-30MHz	+/-5.6 dB
3	Radiated emission 30MHz-1GHz	+/-4.6 dB
4	Radiated emission 1GHz-18GHz	+/-4.4 dB
5	Radiated emission 18GHz-40GHz	+/-5.1 dB
6	Occupied Bandwidth	+/-1.86%
Remark: 95% Confidence Levels, k=2.		

1.3 TEST LOCATION

The tests and measurements refer to this report were performed by EMC testing Lab. of CVC Testing Technology (Shenzhen) Co., Ltd.

CABID:CN0137

Lab Address: No. 1301, Guanguang Road, Xinlan Community, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province 518110 P.R.China

Post Code: 518110 Tel: 0755-23763060-8805

Fax: 0755-23763060 E-mail: sz-kf@cvc.org.cn

<http://www.cvc.org.cn>



2 GENERAL INFORMATION

2.1 GENERAL PRODUCT INFORMATION

PRODUCT	WIFI Module						
BRAND	AI-Link						
TEST MODEL	AL-8731B-WG-A						
ADDITIONAL MODEL	WF-R31B-UWD1						
POWER SUPPLY	DC 5V host unit						
MODULATIONTECHNOLOGY	DSSS, OFDM						
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM						
OPERATING FREQUENCY	2412MHz ~ 2462MHz for 11b/g/n(HT20) 2422MHz ~ 2452MHz for 11n(HT40)						
NUMBER OF CHANNEL	802.11b/g/n(HT20): 11 802.11n(HT40): 7						
PEAK OUTPUT POWER	24.24dBm (Maximum)						
AVERAGE OUTPUT POWER	17.67dBm (Maximum)						
PEAK EIRP	28.53dBm (Maximum)						
ANTENNA TYPE(Note 4)	ANT1:PIFA Antenna with gain 4.29dBi ANT2:PIFA Antenna with gain 3.68dBi More antenna information see section 2.2						
HARDWARE REVISION	JU17.820.1171-3						
SOFTWARE REVISION	v5.13.0.1						
FIX FREQUENCY SOFTWARE	REALTEK MPTool						
I/O PORTS	Refer to user's manual						
CABLE SUPPLIED	N/A						
Note: - For more detailed features description, please refer to the manufacturer's specifications or the User's Manual. - For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report. - EUT photo refer to report (Report NO.: FCCSZ2023-0009-EUT). - Since the above data and/or information is provided by the client, CVC is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion. - AL-8731B-WG-A and WF-R31B-UWD1 are electrical identical including the same software parameter and hardware design (i.e., circuit design, PCB Layout, RF module/circuit, antenna type(s) and antenna location, components on PCB, etc.), same mechanical structure and design (including product enclosure, materials, etc.), the only difference is the model name. - EUT provides a complete transmitter and a receiver.ANT1 and ANT2 cannot be transmitted simultaneously. Mode 1 ANT1: <table><tr><th>MODULATION MODE</th><th>TX FUNCTION</th></tr><tr><td>802.11b</td><td>1TX/1RX</td></tr><tr><td>802. 11g</td><td>1TX/1RX</td></tr></table>		MODULATION MODE	TX FUNCTION	802.11b	1TX/1RX	802. 11g	1TX/1RX
MODULATION MODE	TX FUNCTION						
802.11b	1TX/1RX						
802. 11g	1TX/1RX						

802.11n		1TX/1RX
Mode 2 ANT2:		
MODULATION MODE		TX FUNCTION
802.11b		1TX/1RX
802.11g		1TX/1RX
802.11n		1TX/1RX

2.2 ANTENNA INFORMATION

Antenna 1 has 4 different manufacturers of antennas, and antenna 2 has only one manufacturer.

Antenna1

NUMBER		1#
MANUFACTURER		B&T
ANTENNA TYPE		PIFA Antenna
MODEL		TX-DM200BD113B63M
PEAK GIAN	2.4G	2.18dBi
	5G	4.33dBi

NUMBER		2#
MANUFACTURER		Yishengbang
ANTENNA TYPE		PIFA Antenna
MODEL		TX-DM200BD113Y63M
PEAK GIAN	2.4G	4.29dBi
	5G	4.55dBi

NUMBER		3#
MANUFACTURER		Jiexuntong
ANTENNA TYPE		PIFA Antenna
MODEL		TX-DM200BD113Y63M
PEAK GIAN	2.4G	3.92dBi
	5G	2.66dBi

NUMBER		4#
MANUFACTURER		JINGHONG
ANTENNA TYPE		PIFA Antenna
MODEL		TX-DM300BD113JH63M
PEAK GIAN	2.4G	2.72dBi
	5G	1.51dBi

Antenna2

MANUFACTURER		WALSIN
ANTENNA TYPE		PIFA Antenna
MODEL		RFMTA170900NNLB003
PEAK GIAN	2.4G	3.68dBi
	5G	2.88dBi

Note: For the test results, the EUT had been tested with all Antenna. Only the worst case(**Antenna1 2#**) was shown in test report

2.3 OTHER INFORMATION

Operating frequency of each channel

2.4G WIFI					
802.11b/g/n(HT20)					
CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
1	2412	5	2432	9	2452
2	2417	6	2437	10	2457
3	2422	7	2442	11	2462
4	2427	8	2447		
802.11n(HT40)					
CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
3	2422	6	2437	9	2452
4	2427	7	2442		
5	2432	8	2447		

- The channels which were indicated in bold type of the above channel list were selected as representative test channel. Therefore only the data of the test channels were recorded in this report.
- By means of test software which provided by manufacture, the power levels during the tests were set

2.4G WIFI							
802.11b		802.11g		802.11n(HT20)		802.11n(HT40)	
FREQUENCY (MHZ)	POWER SETTING	FREQUENCY (MHZ)	POWER SETTING	FREQUENCY (MHZ)	POWER SETTING	FREQUENCY (MHZ)	POWER SETTING
2412	94	2412	94	2412	92	2422	82
2437	94	2437	94	2437	92	2437	82
2462	94	2462	94	2462	92	2452	82



2.4 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, xyz axis and antenna ports

EUT CONFIGURE MODE	APPLICABLE TEST ITEMS				DESCRIPTION
	RE<1G	RE≥1G	PLC	APCM	
A	√	√	√	√	2.4G WIFI Function

Where **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission

RE≥1G: Radiated Emission above 1GHz
APCM: Antenna Port Conducted Measurement

MODULATION	DATA RATE
802.11b	1Mbps
802.11g	6Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

RADIATED EMISSION TEST (BELOW 1 GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.
- ☒ The worst case was found when positioned on x axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1	DSSS	DBPSK	1.0

For the test results, only the worst case was shown in test report.

RADIATED EMISSION TEST (ABOVE 1 GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.
- ☒ The worst case was found when positioned on x axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE PARAMETER
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0 Mbps
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0 Mbps
A	802.11n(HT20)	1 to 11	1, 6, 11	OFDM	BPSK	MCS0
A	802.11n(HT40)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0

**POWER LINE CONDUCTED EMISSION TEST:**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	TESTED CONDITION
-	WIFI (2.4G) Link

ANTENNA PORT CONDUCTED MEASUREMENT:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0 Mbps
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0 Mbps
A	802.11n(HT20)	1 to 11	1, 6, 11	OFDM	BPSK	MCS0
A	802.11n(HT40)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE (SYSTEM)	TESTED BY
RE<1G	24deg. C, 55%RH	DC 3.3V from host unit	Liu Yuan
RE≥1G	24deg. C, 55%RH	DC 3.3V from host unit	Liu Yuan
PLC	24deg. C, 55%RH	DC 3.3V from host unit	Wang Zhiming
APCM	25deg. C, 58%RH	DC 3.3V from host unit	Liang Jiatong



2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC PART 15, Subpart C. Section 15.247
KDB 558074 D01 15.247 Meas Guidance v05r02
ANSI C63.10-2013
Canada RSS-247 Issue 3 (2023-08)
Canada RSS-Gen Issue 5+A1+A2 (2021-02)

All test items have been performed and recorded as per the above standards

2.6 DESCRIPTION OF SUPPORT UNITS

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.

Training and tests:

Support Equipment							
NO	Description	Brand	Model No.	Serial Number	Supplied by		
1	Laptop	Lenovo	K4e-ARE120	MP20kshe	Lab		
Support Cable							
NO	Description	Quantity (Number)	Length (cm)	Detachable (Yes/ No)	Shielded (Yes/ No)	Cores (Number)	Supplied by
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 Limit

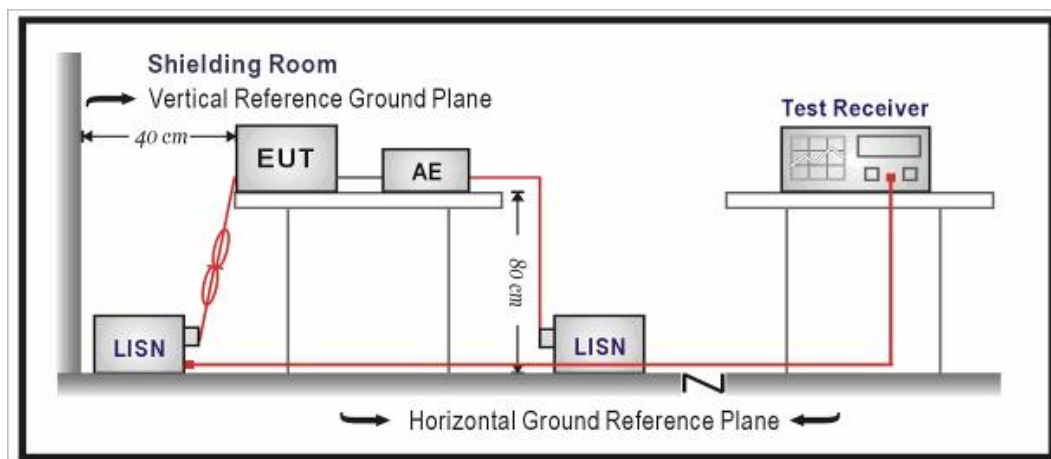
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.
NOTE: 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

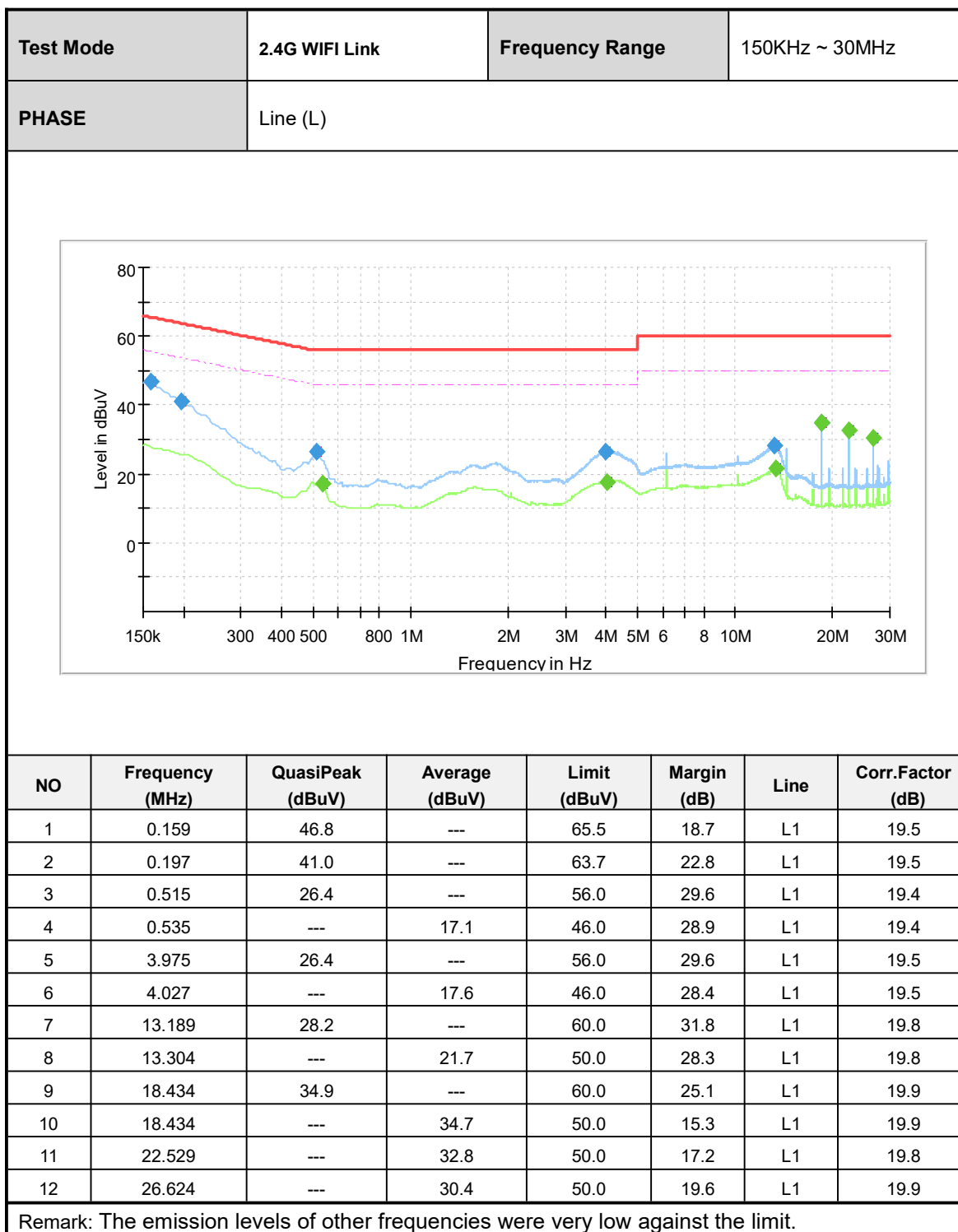
3.1.2 Measurement procedure

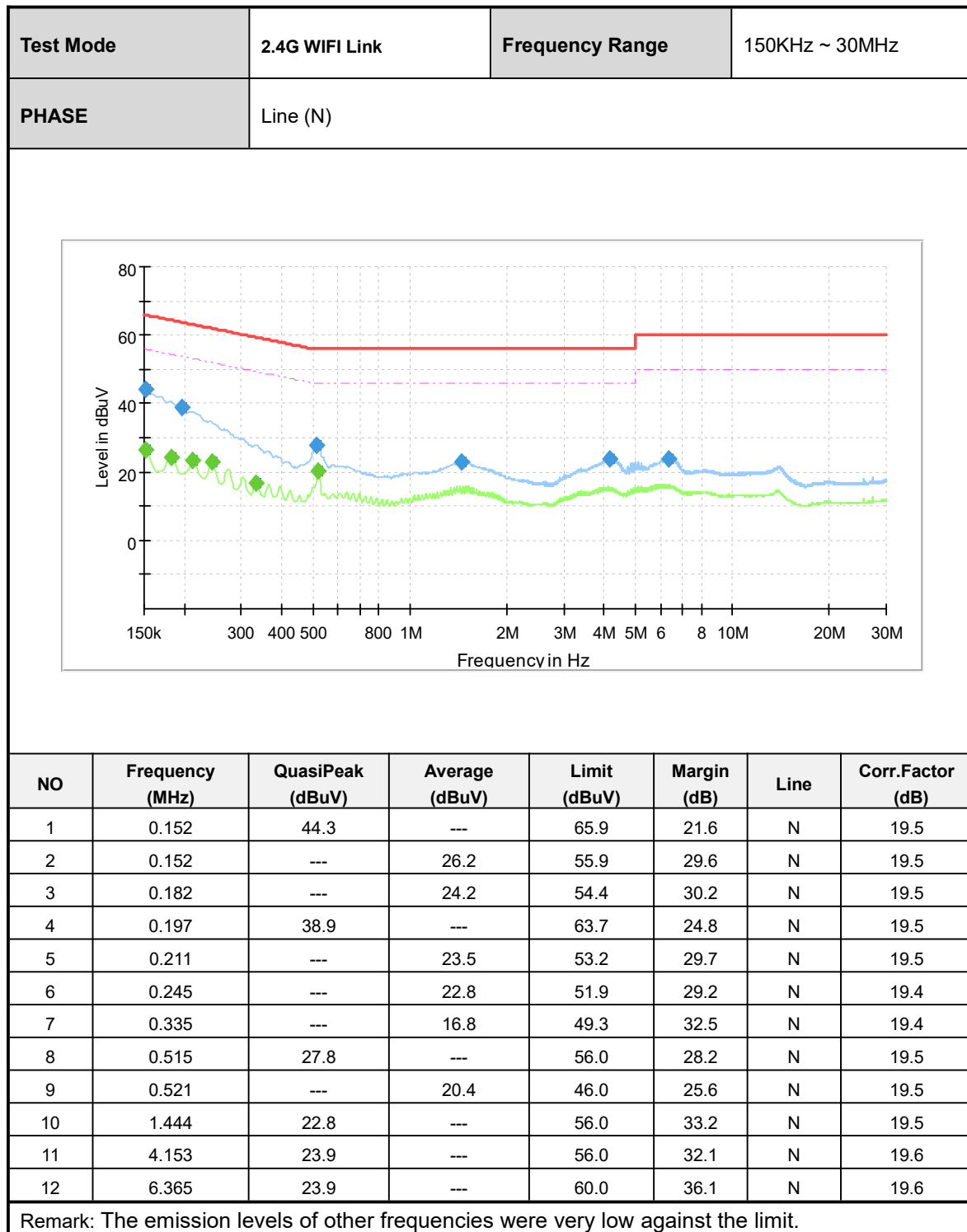
- The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the Test photographs) Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source. The equipment under test shall be placed on a support of non-metallic material, the height of which shall be 1.5m above the ground,
- The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
- Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

3.1.3 Test setup



3.1.4 Test results







3.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

3.2.1 Limit

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

FREQUENCIES (MHz)	FIELD STRENGTH (Microvolts/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

NOTE: 1. The lower limit shall apply at the transition frequencies.
NOTE: 2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
NOTE: 3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

3.2.2 Measurement procedure

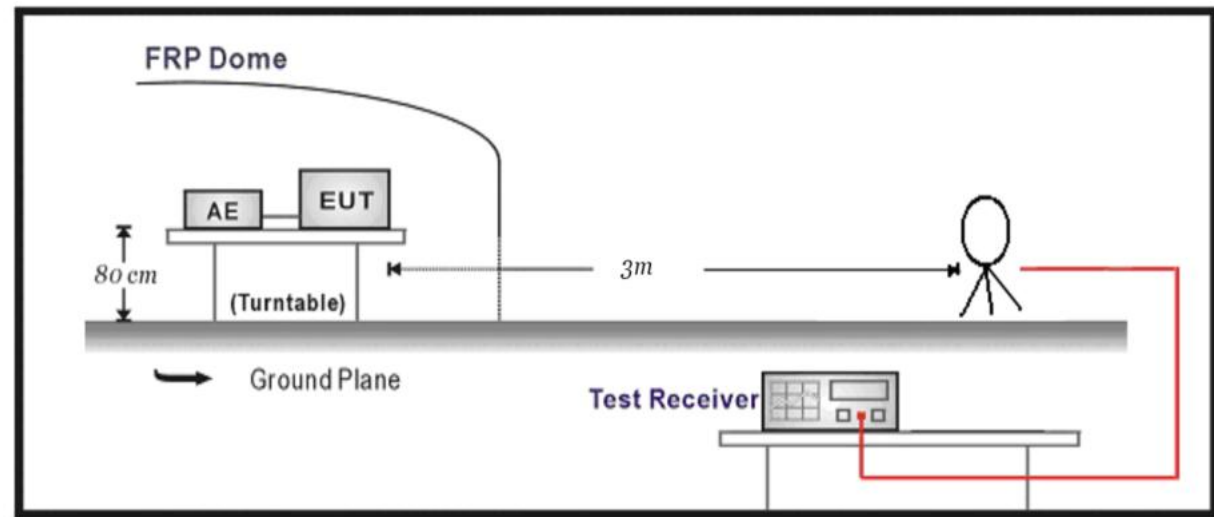
- The EUT was placed on the top of a rotating table 1.5 meters(above 1GHz) and 0.8 meters(below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- For below 1GHz was used bilog antenna, and above 1GHz was used horn antenna, and its 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 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.
- For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
- During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

NOTE:

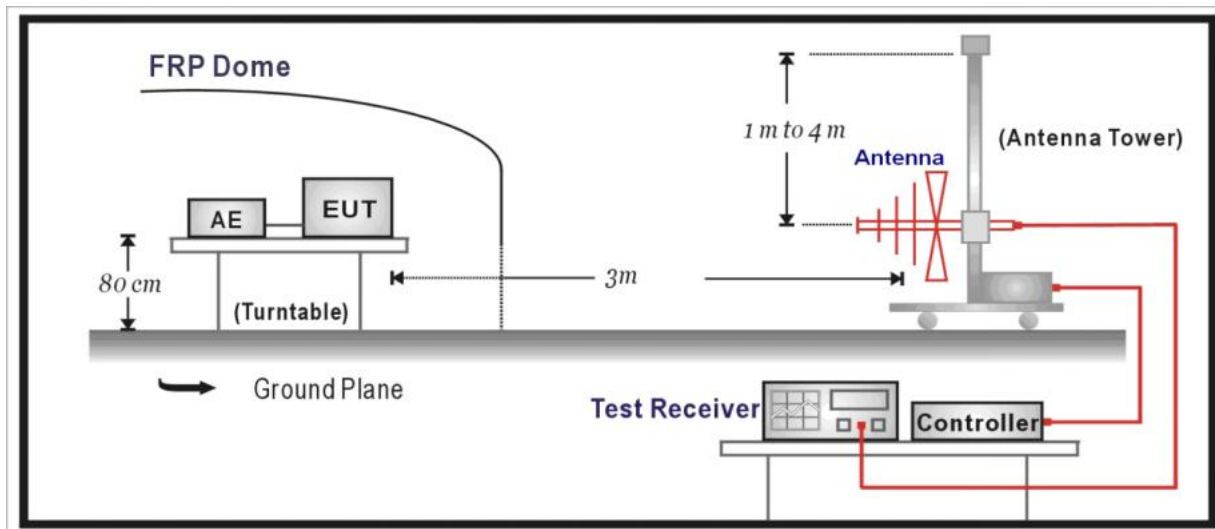
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

3.2.3 Test setup

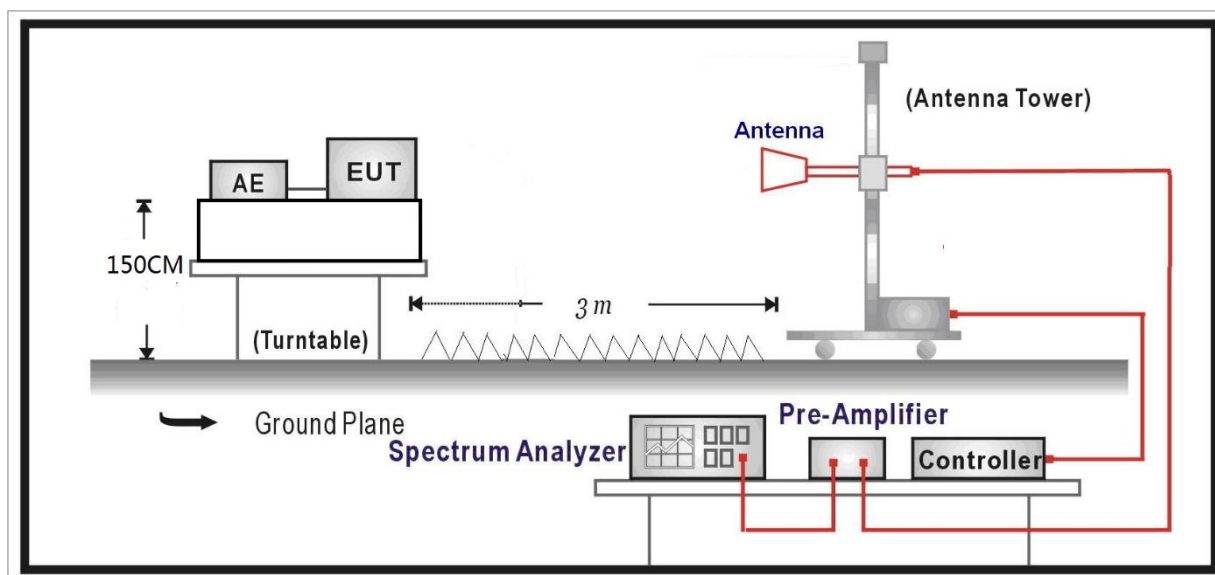
Below 30MHz Test Setup:



Below 1GHz Test Setup:

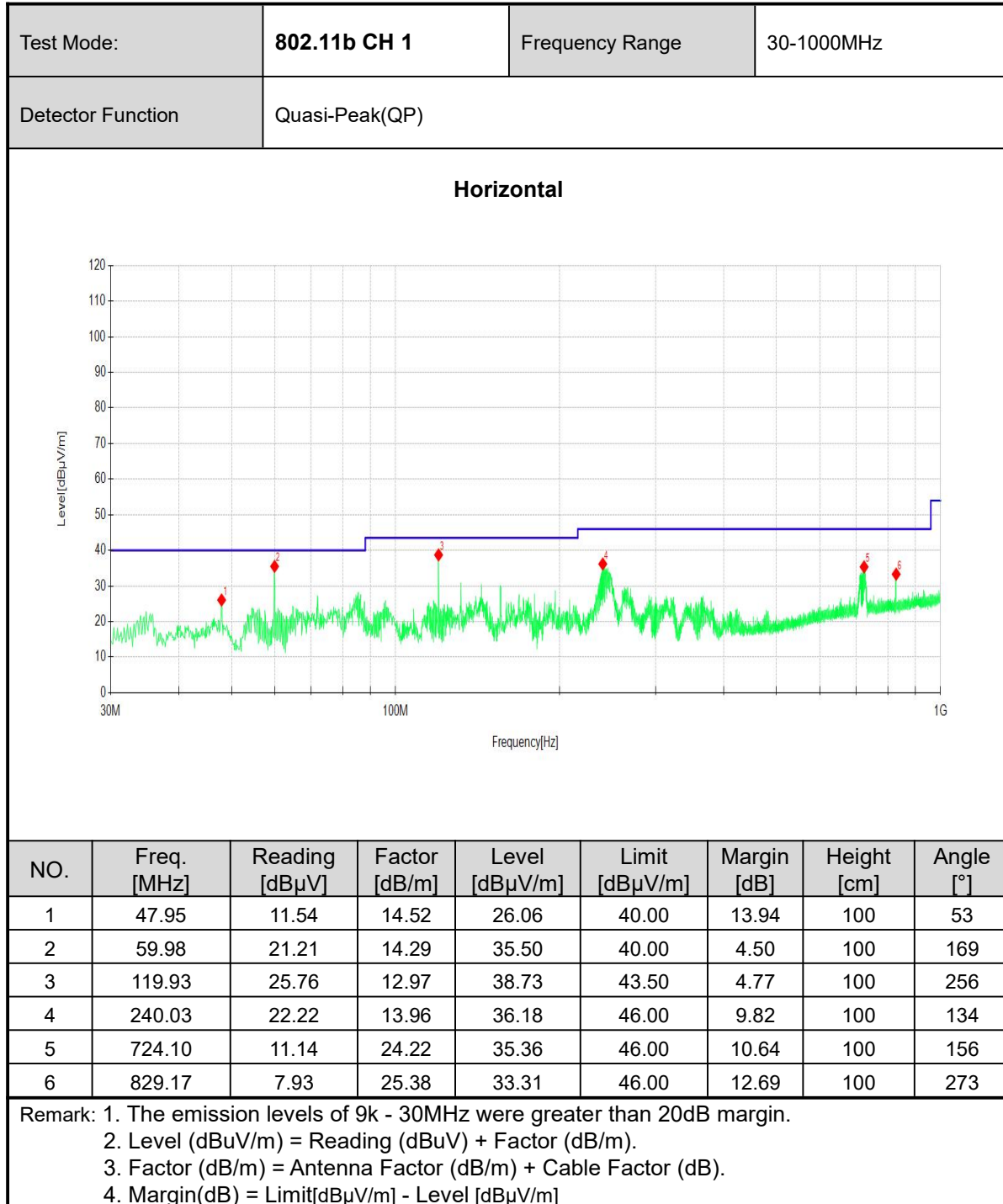


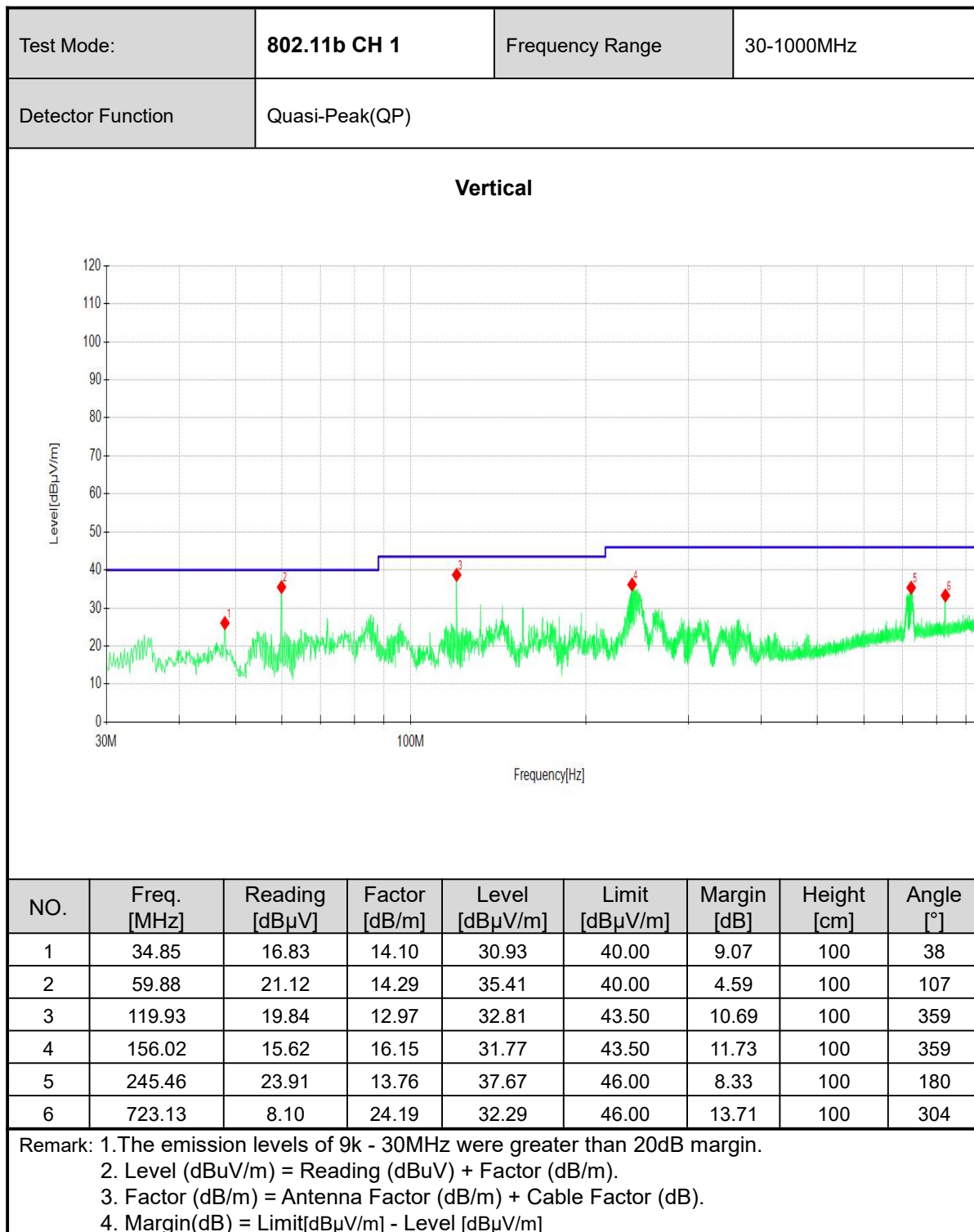
Above 1GHz Test Setup:



3.2.4 Test results

BELOW 1GHz WORST-CASE DATA:





ABOVE 1GHz DATA

Channel	802.11b CH 1	Frequency	2412MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	2387.23	51.39	-0.19	51.20	74.00	22.80	100	352	PK	Horizontal
2	2387.53	42.37	-0.18	42.19	54.00	11.81	100	346	AV	Horizontal
3	2390.00	40.60	-0.15	40.45	54.00	13.55	100	352	AV	Horizontal
4	2390.00	50.13	-0.15	49.98	74.00	24.02	100	346	PK	Horizontal
5	2411.81	100.92	0.15	101.07			100	130	PK	Horizontal
6	2413.63	98.64	0.17	98.81			100	130	AV	Horizontal
7	4824.00	35.28	9.68	44.96	54.00	9.04	400	353	AV	Horizontal
8	4824.00	44.88	9.68	54.56	74.00	19.44	400	200	PK	Horizontal
9	7236.00	27.07	12.39	39.46	54.00	14.54	200	103	AV	Horizontal
10	7236.00	32.99	12.39	45.38	74.00	28.62	200	74	PK	Horizontal
11	9648.00	19.83	13.13	32.96	54.00	21.04	200	0	AV	Horizontal
12	9648.00	26.82	13.13	39.95	74.00	34.05	200	320	PK	Horizontal
13	2379.91	51.30	-0.29	51.01	74.00	22.99	100	76	PK	Vertical
14	2385.52	40.90	-0.21	40.69	54.00	13.31	100	356	AV	Vertical
15	2390.00	48.62	-0.15	48.47	74.00	25.53	400	239	PK	Vertical
16	2390.00	39.41	-0.15	39.26	54.00	14.74	400	148	AV	Vertical
17	2412.05	98.88	0.15	99.03			200	62	PK	Vertical
18	2413.55	96.35	0.17	96.52			200	62	AV	Vertical
19	4824.00	36.11	9.68	45.79	54.00	8.21	100	84	AV	Vertical
20	4824.00	44.16	9.68	53.84	74.00	20.16	100	220	PK	Vertical
21	7236.00	35.35	12.39	47.74	74.00	26.26	400	146	PK	Vertical
22	7236.00	29.96	12.39	42.35	54.00	11.65	400	146	AV	Vertical
23	9647.70	31.29	13.14	44.43	74.00	29.57	200	211	PK	Vertical
24	9647.70	25.77	13.14	38.91	54.00	15.09	200	211	AV	Vertical

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV) + Factor (dB/m).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]



Channel	802.11b CH 6	Frequency	2437MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	4874.00	35.02	9.71	44.73	54.00	9.27	100	338	AV	Horizontal
2	4874.00	43.77	9.71	53.48	74.00	20.52	100	241	PK	Horizontal
3	7311.00	31.75	11.03	42.78	54.00	11.22	100	69	AV	Horizontal
4	7311.00	36.32	11.03	47.35	74.00	26.65	100	102	PK	Horizontal
5	9748.00	20.77	13.24	34.01	54.00	19.99	100	160	AV	Horizontal
6	9748.00	28.71	13.24	41.95	74.00	32.05	100	110	PK	Horizontal
7	4874.00	42.72	9.71	52.43	74.00	21.57	400	75	PK	Vertical
8	4874.00	35.46	9.71	45.17	54.00	8.83	400	3	AV	Vertical
9	7311.00	34.74	11.03	45.77	54.00	8.23	200	152	AV	Vertical
10	7311.00	38.18	11.03	49.21	74.00	24.79	200	152	PK	Vertical
11	9748.00	28.35	13.24	41.59	74.00	32.41	200	233	PK	Vertical
12	9748.00	20.72	13.24	33.96	54.00	20.04	200	233	AV	Vertical

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV) + Factor (dB/m).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]



Channel	802.11b CH 11	Frequency	2462MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	2462.09	104.21	0.63	104.84			100	129	PK	Horizontal
2	2462.96	102.13	0.64	102.77			100	129	AV	Horizontal
3	2483.50	49.27	0.45	49.72	74.00	24.28	100	1	PK	Horizontal
4	2483.50	41.94	0.45	42.39	54.00	11.61	100	129	AV	Horizontal
5	2487.36	45.46	0.61	46.07	54.00	7.93	100	77	AV	Horizontal
6	2488.00	52.57	0.63	53.20	74.00	20.80	100	70	PK	Horizontal
7	4926.00	34.16	10.07	44.23	54.00	9.77	400	350	AV	Horizontal
8	4926.00	41.75	10.07	51.82	74.00	22.18	400	180	PK	Horizontal
9	7386.00	36.89	9.80	46.69	74.00	27.31	200	101	PK	Horizontal
10	7386.00	33.69	9.80	43.49	54.00	10.51	200	101	AV	Horizontal
11	9848.00	19.22	13.24	32.46	54.00	21.54	200	238	AV	Horizontal
12	9848.00	26.64	13.24	39.88	74.00	34.12	200	143	PK	Horizontal
13	2462.28	103.68	0.63	104.31			100	56	PK	Vertical
14	2463.44	101.55	0.66	102.21			100	56	AV	Vertical
15	2483.50	42.62	0.45	43.07	54.00	10.93	400	56	AV	Vertical
16	2483.50	50.55	0.45	51.00	74.00	23.00	400	348	PK	Vertical
17	2487.27	45.87	0.61	46.48	54.00	7.52	200	56	AV	Vertical
18	2490.88	53.13	0.69	53.82	74.00	20.18	200	153	PK	Vertical
19	4926.00	33.82	10.07	43.89	54.00	10.11	100	184	AV	Vertical
20	4926.00	42.55	10.07	52.62	74.00	21.38	100	30	PK	Vertical
21	7386.00	34.51	9.80	44.31	54.00	9.69	400	165	AV	Vertical
22	7386.00	38.34	9.80	48.14	74.00	25.86	400	165	PK	Vertical
23	9848.00	19.71	13.24	32.95	54.00	21.05	200	99	AV	Vertical
24	9848.00	27.37	13.24	40.61	74.00	33.39	200	29	PK	Vertical

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV) + Factor (dB/m).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]



Channel	802.11g CH 1	Frequency	2412MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	2388.98	55.93	-0.16	55.77	74.00	18.23	100	342	PK	Horizontal
2	2389.47	43.01	-0.16	42.85	54.00	11.15	100	34	AV	Horizontal
3	2390.00	53.61	-0.15	53.46	74.00	20.54	100	342	PK	Horizontal
4	2390.00	42.55	-0.15	42.40	54.00	11.60	100	342	AV	Horizontal
5	2413.00	101.26	0.17	101.43			100	126	PK	Horizontal
6	2413.66	94.21	0.17	94.38			100	126	AV	Horizontal
7	4824.00	34.86	9.68	44.54	54.00	9.46	300	357	AV	Horizontal
8	4824.00	43.57	9.68	53.25	74.00	20.75	300	43	PK	Horizontal
9	7236.00	31.52	12.39	43.91	74.00	30.09	100	110	PK	Horizontal
10	7236.00	22.63	12.39	35.02	54.00	18.98	100	102	AV	Horizontal
11	9648.00	20.27	13.13	33.40	54.00	20.60	100	48	AV	Horizontal
12	9648.00	28.70	13.13	41.83	74.00	32.17	100	81	PK	Horizontal
13	2388.77	42.60	-0.17	42.43	54.00	11.57	100	53	AV	Vertical
14	2389.06	56.82	-0.16	56.66	74.00	17.34	100	53	PK	Vertical
15	2390.00	42.76	-0.15	42.61	54.00	11.39	200	53	AV	Vertical
16	2390.00	54.50	-0.15	54.35	74.00	19.65	200	53	PK	Vertical
17	2413.06	100.03	0.17	100.20			300	59	PK	Vertical
18	2413.31	92.86	0.17	93.03			300	59	AV	Vertical
19	4824.00	34.63	9.68	44.31	54.00	9.69	100	28	AV	Vertical
20	4824.00	42.57	9.68	52.25	74.00	21.75	100	139	PK	Vertical
21	7236.00	25.86	12.39	38.25	54.00	15.75	300	142	AV	Vertical
22	7236.00	33.54	12.39	45.93	74.00	28.07	300	113	PK	Vertical
23	9648.00	19.57	13.13	32.70	54.00	21.30	200	180	AV	Vertical
24	9648.00	27.76	13.13	40.89	74.00	33.11	200	96	PK	Vertical

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV) + Factor (dB/m).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]



Channel	802.11g CH 6	Frequency	2437MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	4874.00	34.27	9.71	43.98	54.00	10.02	200	341	AV	Horizontal
2	4874.00	42.51	9.71	52.22	74.00	21.78	200	172	PK	Horizontal
3	7311.00	35.70	11.03	46.73	74.00	27.27	100	63	PK	Horizontal
4	7311.00	27.02	11.03	38.05	54.00	15.95	100	92	AV	Horizontal
5	9748.00	19.79	13.24	33.03	54.00	20.97	400	221	AV	Horizontal
6	9748.00	28.40	13.24	41.64	74.00	32.36	400	54	PK	Horizontal
7	4874.00	34.57	9.71	44.28	54.00	9.72	300	316	AV	Vertical
8	4874.00	43.28	9.71	52.99	74.00	21.01	300	156	PK	Vertical
9	7311.00	40.49	11.03	51.52	74.00	22.48	300	160	PK	Vertical
10	7311.00	30.59	11.03	41.62	54.00	12.38	300	160	AV	Vertical
11	9748.00	19.00	13.24	32.24	54.00	21.76	200	160	AV	Vertical
12	9748.00	26.80	13.24	40.04	74.00	33.96	200	126	PK	Vertical

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.

2. Level (dBuV/m) = Reading (dBuV) + Factor (dB/m).

3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]



Channel	802.11g CH 11	Frequency	2462MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	2462.75	98.20	0.64	98.84			300	130	AV	Horizontal
2	2463.02	104.67	0.65	105.32			300	130	PK	Horizontal
3	2483.50	48.61	0.45	49.06	54.00	4.94	100	78	AV	Horizontal
4	2483.50	58.07	0.45	58.52	74.00	15.48	100	353	PK	Horizontal
5	2484.36	48.91	0.49	49.40	54.00	4.60	400	130	AV	Horizontal
6	2485.23	59.64	0.53	60.17	74.00	13.83	400	32	PK	Horizontal
7	4926.00	34.03	10.07	44.10	54.00	9.90	100	194	AV	Horizontal
8	4926.00	42.31	10.07	52.38	74.00	21.62	100	46	PK	Horizontal
9	7386.00	38.84	9.80	48.64	74.00	25.36	200	135	PK	Horizontal
10	7386.00	27.89	9.80	37.69	54.00	16.31	200	135	AV	Horizontal
11	9848.00	19.61	13.24	32.85	54.00	21.15	300	243	AV	Horizontal
12	9848.00	27.40	13.24	40.64	74.00	33.36	300	288	PK	Horizontal
13	2463.01	103.29	0.65	103.94			200	65	PK	Vertical
14	2463.03	96.86	0.65	97.51			200	65	AV	Vertical
15	2483.50	48.80	0.45	49.25	54.00	4.75	400	354	AV	Vertical
16	2483.50	61.23	0.45	61.68	74.00	12.32	400	65	PK	Vertical
17	2486.47	48.34	0.57	48.91	54.00	5.09	400	65	AV	Vertical
18	2486.64	61.35	0.58	61.93	74.00	12.07	400	359	PK	Vertical
19	4926.00	33.97	10.07	44.04	54.00	9.96	300	312	AV	Vertical
20	4926.00	41.78	10.07	51.85	74.00	22.15	300	329	PK	Vertical
21	7386.00	27.92	9.80	37.72	54.00	16.28	100	313	AV	Vertical
22	7386.00	38.93	9.80	48.73	74.00	25.27	100	136	PK	Vertical
23	9848.00	19.76	13.24	33.00	54.00	21.00	200	248	AV	Vertical
24	9848.00	27.72	13.24	40.96	74.00	33.04	200	248	PK	Vertical

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV) + Factor (dB/m).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]



Channel	802.11n20 CH 1	Frequency	2412MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	2388.10	54.38	-0.17	54.21	74.00	19.79	300	32	PK	Horizontal
2	2389.41	43.62	-0.16	43.46	54.00	10.54	300	334	AV	Horizontal
3	2390.00	56.26	-0.15	56.11	74.00	17.89	200	334	PK	Horizontal
4	2390.00	43.57	-0.15	43.42	54.00	10.58	200	334	AV	Horizontal
5	2412.84	93.77	0.16	93.93			200	130	AV	Horizontal
6	2413.17	101.11	0.17	101.28			200	130	PK	Horizontal
7	4824.00	42.76	9.68	52.44	74.00	21.56	300	151	PK	Horizontal
8	4824.00	34.63	9.68	44.31	54.00	9.69	300	266	AV	Horizontal
9	7231.41	33.28	12.46	45.74	74.00	28.26	300	94	PK	Horizontal
10	7236.00	22.73	12.39	35.12	54.00	18.88	300	103	AV	Horizontal
11	9648.00	20.18	13.13	33.31	54.00	20.69	100	315	AV	Horizontal
12	9648.00	27.39	13.13	40.52	74.00	33.48	100	311	PK	Horizontal
13	2385.33	52.42	-0.21	52.21	74.00	21.79	300	348	PK	Vertical
14	2385.95	41.20	-0.20	41.00	54.00	13.00	300	357	AV	Vertical
15	2390.00	41.83	-0.15	41.68	54.00	12.32	300	359	AV	Vertical
16	2390.00	52.49	-0.15	52.34	74.00	21.66	300	354	PK	Vertical
17	2413.18	99.22	0.17	99.39			100	49	PK	Vertical
18	2413.42	91.72	0.17	91.89			100	49	AV	Vertical
19	4824.00	34.32	9.68	44.00	54.00	10.00	100	333	AV	Vertical
20	4824.00	42.52	9.68	52.20	74.00	21.80	100	188	PK	Vertical
21	7236.00	34.44	12.39	46.83	74.00	27.17	100	148	PK	Vertical
22	7236.00	24.33	12.39	36.72	54.00	17.28	100	152	AV	Vertical
23	9648.00	19.24	13.13	32.37	54.00	21.63	400	3	AV	Vertical
24	9648.00	27.14	13.13	40.27	74.00	33.73	400	168	PK	Vertical

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV) + Factor (dB/m).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]



Channel	802.11n20 CH 6	Frequency	2437MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	4874.00	43.68	9.71	53.39	74.00	20.61	200	102	PK	Horizontal
2	4874.00	34.40	9.71	44.11	54.00	9.89	200	32	AV	Horizontal
3	7311.00	26.03	11.03	37.06	54.00	16.94	100	102	AV	Horizontal
4	7311.00	34.47	11.03	45.50	74.00	28.50	100	110	PK	Horizontal
5	9748.00	26.65	13.24	39.89	74.00	34.11	300	359	PK	Horizontal
6	9748.00	19.00	13.24	32.24	54.00	21.76	300	226	AV	Horizontal
7	4874.00	34.38	9.71	44.09	54.00	9.91	300	209	AV	Vertical
8	4874.00	42.11	9.71	51.82	74.00	22.18	300	6	PK	Vertical
9	7310.98	37.76	11.03	48.79	74.00	25.21	400	150	PK	Vertical
10	7311.00	26.40	11.03	37.43	54.00	16.57	400	150	AV	Vertical
11	9748.00	27.79	13.24	41.03	74.00	32.97	300	138	PK	Vertical
12	9748.00	19.07	13.24	32.31	54.00	21.69	300	221	AV	Vertical

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV) + Factor (dB/m).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]



Channel	802.11n20 CH 11	Frequency	2462MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	2462.79	97.93	0.64	98.57			100	137	AV	Horizontal
2	2463.17	104.20	0.65	104.85			100	137	PK	Horizontal
3	2483.50	47.52	0.45	47.97	54.00	6.03	300	78	AV	Horizontal
4	2483.50	58.54	0.45	58.99	74.00	15.01	300	32	PK	Horizontal
5	2484.01	49.89	0.48	50.37	54.00	3.63	200	78	AV	Horizontal
6	2485.63	62.86	0.55	63.41	74.00	10.59	200	85	PK	Horizontal
7	4926.00	34.11	10.07	44.18	54.00	9.82	400	225	AV	Horizontal
8	4926.00	42.27	10.07	52.34	74.00	21.66	400	212	PK	Horizontal
9	7386.00	27.45	9.80	37.25	54.00	16.75	200	101	AV	Horizontal
10	7386.00	37.16	9.80	46.96	74.00	27.04	200	101	PK	Horizontal
11	9848.00	18.98	13.24	32.22	54.00	21.78	400	122	AV	Horizontal
12	9848.00	27.35	13.24	40.59	74.00	33.41	400	138	PK	Horizontal
13	2462.97	96.26	0.65	96.91			400	64	AV	Vertical
14	2463.21	102.74	0.65	103.39			400	64	PK	Vertical
15	2483.50	59.05	0.45	59.50	74.00	14.50	300	52	PK	Vertical
16	2483.50	50.05	0.45	50.50	54.00	3.50	300	58	AV	Vertical
17	2483.91	62.39	0.47	62.86	74.00	11.14	100	64	PK	Vertical
18	2485.00	49.56	0.52	50.08	54.00	3.92	100	64	AV	Vertical
19	4926.00	34.01	10.07	44.08	54.00	9.92	300	283	AV	Vertical
20	4926.00	42.33	10.07	52.40	74.00	21.60	300	101	PK	Vertical
21	7386.00	35.80	9.80	45.60	74.00	28.40	100	293	PK	Vertical
22	7386.00	26.49	9.80	36.29	54.00	17.71	100	127	AV	Vertical
23	9848.00	19.43	13.24	32.67	54.00	21.33	200	331	AV	Vertical
24	9848.00	26.04	13.24	39.28	74.00	34.72	200	272	PK	Vertical

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV) + Factor (dB/m).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]



Channel	802.11n40 CH 3	Frequency	2422MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	2385.68	51.90	-0.21	51.69	74.00	22.31	300	351	PK	Horizontal
2	2385.91	42.72	-0.20	42.52	54.00	11.48	300	346	AV	Horizontal
3	2390.00	49.67	-0.15	49.52	74.00	24.48	100	135	PK	Horizontal
4	2390.00	42.95	-0.15	42.80	54.00	11.20	100	346	AV	Horizontal
5	2424.85	90.23	0.31	90.54			200	135	AV	Horizontal
6	2428.97	97.27	0.35	97.62			200	135	PK	Horizontal
7	4844.00	42.27	9.94	52.21	74.00	21.79	200	188	PK	Horizontal
8	4844.00	34.94	9.94	44.88	54.00	9.12	200	344	AV	Horizontal
9	7266.00	21.29	12.00	33.29	54.00	20.71	300	98	AV	Horizontal
10	7266.00	29.32	12.00	41.32	74.00	32.68	300	217	PK	Horizontal
11	9688.00	28.08	13.15	41.23	74.00	32.77	200	200	PK	Horizontal
12	9688.00	19.39	13.15	32.54	54.00	21.46	200	357	AV	Horizontal
13	2386.41	53.58	-0.20	53.38	74.00	20.62	200	51	PK	Vertical
14	2387.70	43.43	-0.18	43.25	54.00	10.75	200	354	AV	Vertical
15	2390.00	50.82	-0.15	50.67	74.00	23.33	100	1	PK	Vertical
16	2390.00	43.80	-0.15	43.65	54.00	10.35	100	51	AV	Vertical
17	2425.51	91.40	0.31	91.71			200	56	AV	Vertical
18	2428.95	98.07	0.35	98.42			200	56	PK	Vertical
19	4844.00	34.36	9.94	44.30	54.00	9.70	200	333	AV	Vertical
20	4844.00	42.90	9.94	52.84	74.00	21.16	200	333	PK	Vertical
21	7266.00	30.40	12.00	42.40	74.00	31.60	300	151	PK	Vertical
22	7266.00	22.17	12.00	34.17	54.00	19.83	300	139	AV	Vertical
23	9688.00	19.47	13.15	32.62	54.00	21.38	200	143	AV	Vertical
24	9688.00	27.19	13.15	40.34	74.00	33.66	200	231	PK	Vertical

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.

2. Level (dBuV/m) = Reading (dBuV) + Factor (dB/m).

3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]



Channel	802.11n40 CH 6	Frequency	2437MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	4874.00	43.17	9.71	52.88	74.00	21.12	300	213	PK	Horizontal
2	4874.00	34.48	9.71	44.19	54.00	9.81	300	110	AV	Horizontal
3	7311.00	21.95	11.03	32.98	54.00	21.02	400	110	AV	Horizontal
4	7311.00	29.74	11.03	40.77	74.00	33.23	400	238	PK	Horizontal
5	9748.00	26.75	13.24	39.99	74.00	34.01	300	72	PK	Horizontal
6	9748.00	18.81	13.24	32.05	54.00	21.95	300	131	AV	Horizontal
7	4874.00	34.32	9.71	44.03	54.00	9.97	200	208	AV	Vertical
8	4874.00	43.19	9.71	52.90	74.00	21.10	200	359	PK	Vertical
9	7311.00	32.77	11.03	43.80	74.00	30.20	200	168	PK	Vertical
10	7311.00	24.16	11.03	35.19	54.00	18.81	200	160	AV	Vertical
11	9748.00	18.83	13.24	32.07	54.00	21.93	300	252	AV	Vertical
12	9748.00	27.90	13.24	41.14	74.00	32.86	300	252	PK	Vertical

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV) + Factor (dB/m).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]



Channel	802.11n40 CH 9	Frequency	2452MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	2455.48	78.22	0.57	78.79			100	84	AV	Horizontal
2	2458.77	85.62	0.56	86.18			100	84	PK	Horizontal
3	2483.50	53.72	0.46	54.18	74.00	19.82	100	64	PK	Horizontal
4	2483.50	43.14	0.46	43.60	54.00	10.40	100	11	AV	Horizontal
5	2485.96	57.00	0.56	57.56	74.00	16.44	400	57	PK	Horizontal
6	2486.79	44.11	0.59	44.70	54.00	9.30	400	31	AV	Horizontal
7	4904.00	34.97	10.10	45.07	54.00	8.93	100	253	AV	Horizontal
8	4904.00	43.14	10.10	53.24	74.00	20.76	100	298	PK	Horizontal
9	7356.00	30.21	10.31	40.52	74.00	33.48	100	118	PK	Horizontal
10	7356.00	22.53	10.31	32.84	54.00	21.16	100	110	AV	Horizontal
11	9808.00	19.39	13.20	32.59	54.00	21.41	400	164	AV	Horizontal
12	9808.00	27.41	13.20	40.61	74.00	33.39	400	278	PK	Horizontal
13	2454.79	90.58	0.56	91.14			300	359	AV	Vertical
14	2458.82	97.62	0.57	98.19			300	0	PK	Vertical
15	2483.50	50.44	0.45	50.89	54.00	3.11	300	359	AV	Vertical
16	2483.50	58.67	0.45	59.12	74.00	14.88	300	1	PK	Vertical
17	2484.57	49.57	0.50	50.07	54.00	3.93	400	60	AV	Vertical
18	2485.03	60.61	0.52	61.13	74.00	12.87	400	50	PK	Vertical
19	4904.00	42.86	10.10	52.96	74.00	21.04	400	307	PK	Vertical
20	4904.00	34.74	10.10	44.84	54.00	9.16	400	51	AV	Vertical
21	7356.00	23.18	10.31	33.49	54.00	20.51	400	163	AV	Vertical
22	7356.00	31.11	10.31	41.42	74.00	32.58	400	163	PK	Vertical
23	9808.00	27.04	13.20	40.24	74.00	33.76	100	122	PK	Vertical
24	9808.00	19.30	13.20	32.50	54.00	21.50	100	167	AV	Vertical

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV) + Factor (dB/m).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]

3.3 6DB BANDWIDTH MEASUREMENT

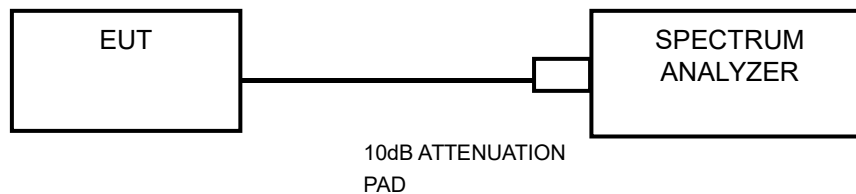
3.3.1 Limits

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

3.3.2 Measurement procedure

- Set resolution bandwidth (RBW) = 100KHz
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

3.3.3 Test setup



3.4 CONDUCTED OUTPUT POWER

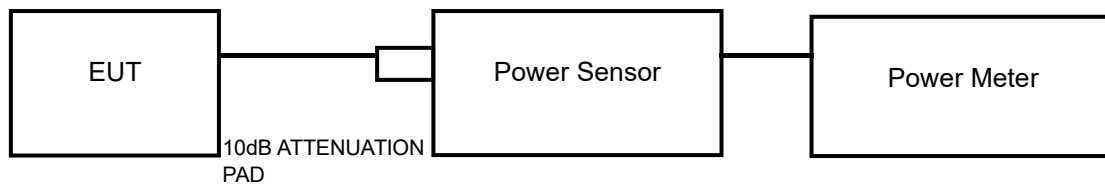
3.4.1 Limits

For DTS employing digital modulation techniques operating in the bands 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W. The e.i.r.p. shall not exceed 4 W,

3.4.2 Measurement procedure

- A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor and set the detector to PEAK. Record the power level.
- An average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor and set the detector to AVERAGE. Record the power level.

3.4.3 Test setup



3.5 POWER SPECTRAL DENSITY MEASUREMENT

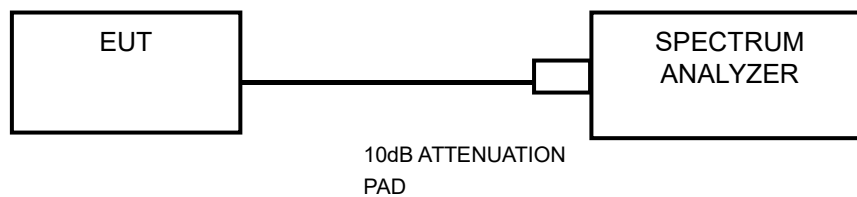
3.5.1 Limits

The Maximum of Power Spectral Density Measurement is 8dBm/3KHz.

3.5.2 Measurement procedure

- Set instrument center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set RBW to: 3KHz
- Set VBW $\geq 3 \times$ RBW.
- Detector = peak
- Ensure that the number of measurement points in the sweep $\geq 2 \times$ span/RBW.
- Sweep time = auto couple.
- Use the peak marker function to determine the maximum amplitude level.

3.5.3 Test setup



3.6 OUT OF BAND EMISSION MEASUREMENT

3.6.1 Limits

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

3.6.2 Measurement procedure

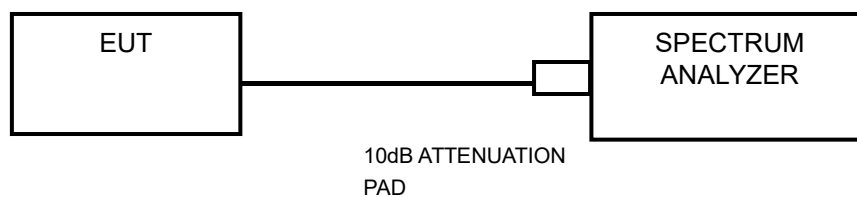
Measurement Procedure -Reference Level

- Set the RBW = 100 kHz.
- Set the VBW $\geq$ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHzband segment within the fundamental EBW.

Measurement Procedure –Unwanted Emission Level

- Set RBW = 100 kHz.
- Set VBW $\geq$ 300 kHz.
- Set span to encompass the spectrum to be examined
- Detector = peak.
- Trace Mode = max hold.
- Sweep = auto couple.

3.6.3 Test setup



3.7 OCCUPIED BANDWIDTH MEASUREMENT

3.7.1 Measurement procedure

The transmitter antenna output was connected to the spectrum analyzer through an attenuator. The resolution bandwidth shall be set to the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth.
below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

3.7.2 TEST SETUP





3.8 ANTENNA REQUIREMENT

3.8.1 LIMITS OFFREQUENCY STABILITY

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247 (b) , if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.8.2 ANTENNA ANTI-REPLACEMENT CONSTRUCTION

The antenna used for this product is PIFA antenna and that no antenna other than that furnished by the responsible party shall be used with the device

3.8.3 ANTENNA GAIN

The maximum peak gain of the transmit antenna is 4.29 dBi.

4 PHOTOGRAPHS OF TEST SETUP

Please refer to the attached file (Test Setup Photo).

,



5 PHOTOGRAPHS OF THE EUT

Please refer to the attached file (External Photos report and Internal Photos).

----- End of the Report -----



Important

- (1) The test report is valid without the official stamp of CVC;
- (2) Any part photocopies of the test report are forbidden without the written permission from CVC;
- (3) The test report is invalid without the signatures of Approval and Reviewer;
- (4) The test report is invalid if altered;
- (5) Objections to the test report must be submitted to CVC within 15 days.
- (6) Generally, commission test is responsible for the tested samples only.
- (7) As for the test result “-” or “N” means “not applicable”, “/” means “not test”, “P” means “pass” and “F” means “fail”

The test data and test results given in this test report should only be used for purposes of scientific research, teaching and internal quality control when the CMA symbol is not presented.

Address: No. 1301, Guanguang Road, Xinlan Community, Guanlan Street,
Longhua District, Shenzhen, Guangdong, 518110, P. R. China

Post Code: 518110 Tel: 0755-23763060-8805

Fax: 0755-23763060 E-mail: sz-kf@cvc.org.cn

<http://www.cvc.org.cn>