



Report No.:

TW2010054E

File Reference No.:

2020-10-23

Applicant:

Dehong Douzi-Tech Co., Ltd.

Product:

Mini Smart TV

Model No.:

TJ800

Trademark:

N/A

Test Standards:

FCC Part 15.247

Test Result:

It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10, FCC Part 15.247 for the evaluation of electromagnetic compatibility

Approved By



Jack Chung

Manager

Dated:

October 23, 2020

Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com



Special Statement:

The testing quality ability of our laboratory meet with “Quality Law of People’s Republic of China” Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

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

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

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1.0 General Details

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.
Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Telephone: (755) 83448688
Fax: (755) 83442996
Site Listed with Federal Communications commission (FCC)
Registration Number: 744189
For 3m Anechoic Chamber
Site Listed with Industry Canada of Ottawa, Canada
Registration Number: IC: 5205A
For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: Dehong Douzi-Tech Co., Ltd.
Address: No. as2-44, 2nd floor, Xingchang Commercial Plaza, Menghuan street, Mangshi, Dehong Prefecture, Yunnan Province
Telephone: --
Fax: --

1.3 Description of EUT

Product: Mini Smart TV
Manufacturer: Dehong Douzi-Tech Co., Ltd.
Address: No. as2-44, 2nd floor, Xingchang Commercial Plaza, Menghuan street, Mangshi, Dehong Prefecture, Yunnan Province
Brand Name: N/A
Model Number: TJ800
Additional Model Number: N/A

Type of Modulation IEEE 802.11b: DSSS (CCK, QPSK, DBPSK)
IEEE 802.11g/n (HT20): OFDM (64QAM, 16QAM, QPSK, BPSK)
Frequency range IEEE 802.11b/g/n (HT20): 2412-2462MHz
Channel Spacing 5MHz for IEEE 802.11b/g/n HT20
Air Data Rate IEEE 802.11b: 11, 5.5, 2, 1 Mbps
IEEE 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps
IEEE 802.11n HT20: mcs0-mcs7, up to 72.2MHz
Frequency Selection By software
Channel Number IEEE 802.11b/g/n (HT20): 11 Channels

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Antenna: PCB antenna used. The gain of the antennas is 0.5dBi (get from the antenna specification provided the applicant)
Input Voltage: DC6.0V, 1A
Power Adaptor: Model: R8-F1000-1; Input: 100-240V~, 50/60Hz, 0.45A Max; Output: DC6V, 1A

1.4 Submitted Sample: 1 Samples

1.5 Test Duration
2020-10-14 to 2020-10-23

1.6 Test Uncertainty
Conducted Emissions Uncertainty =3.6dB
Radiated Emissions below 1GHz Uncertainty =4.7dB
Radiated Emissions above 1GHz Uncertainty =6.0dB
Conducted Power Uncertainty =6.0dB
Occupied Channel Bandwidth Uncertainty =5%
Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

1.7 Test Engineer

The sample tested by



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2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2020-06-23	2021-06-22
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2020-06-23	2021-06-22
Loop Antenna	EMCO	6507	00078608	2018-06-25	2021-06-24
Spectrum	R&S	FSIQ26	100292	2020-06-23	2021-06-22
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2019-06-21	2021-06-20
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-07-09	2021-07-08
Power meter	Anritsu	ML2487A	6K00003613	2020-06-23	2021-06-22
Power sensor	Anritsu	MA2491A	32263	2020-06-23	2021-06-22
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2018-07-04	2021-07-03
9*6*6 Anechoic	--	--	N/A	2018-02-07	2021-02-06
EMI Test Receiver	RS	ESVB	826156/011	2020-06-23	2021-06-22
EMI Test Receiver	RS	ESH3	860904/006	2020-06-23	2021-06-22
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2020-06-23	2021-06-22
Spectrum	HP/Agilent	E4407B	MY50441392	2020-06-23	2021-06-22
Spectrum	RS	FSP	1164.4391.38	2020-01-16	2021-01-15
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA	--	2020-06-23	2021-06-22
RF Cable	Zhengdi	7m	--	2020-06-23	2021-06-22
RF Switch	EM	EMSW18	060391	2020-06-23	2021-06-22
Pre-Amplifier	Schwarebeck	BBV9743	#218	2020-06-23	2021-06-22
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2020-06-23	2021-06-22
LISN	SCHAFFNER	NNB42	00012	2021-01-07	2020-01-06

2.2 Automation Test Software

For Conducted Emission Test

Name	Version
EZ-EMC	Ver.EMC-CON 3A1.1

For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

2.3 WIFI Test Software:

ADB Command used

Power Setting: 15

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3. DESCRIPTION OF TEST MODES

IEEE 802.11b, 802.11g, 802.11n (HT20) mode

The EUT had been tested under operating condition. There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode: 1Mbps data rate (worst case) was chosen for full testing. IEEE 802.11g mode: 6Mbps data rate (worst case) was chosen for full testing. IEEE 802.11n (HT20) mode: mcs0 (worst case) were chosen for full testing

Note: during the test, the duty cycle was set up to 100%.

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3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:			
Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.107 & 15.207	Conducted Emission Test	PASS	Complies
FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit	Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System Limit: 6dB bandwidth>500kHz	PASS	Complies
FCC Part 15, Paragraph 15.247(b)	Maximum peak output power Limit: max. 30dBm	PASS	Complies
FCC Part 15, Paragraph 15.109,15.205 & 15.209	Transmitter Radiated Emission Limit: Table 15.209	PASS	Complies
FCC Part 15, Paragraph 15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Complies
FCC Part 15, Paragraph 15.247(d)	Out of Band Emission and Restricted Band Radiation Limit: 20dB less than peak value of fundamental frequency Restricted band limit: Table 15.209	PASS	Complies

3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

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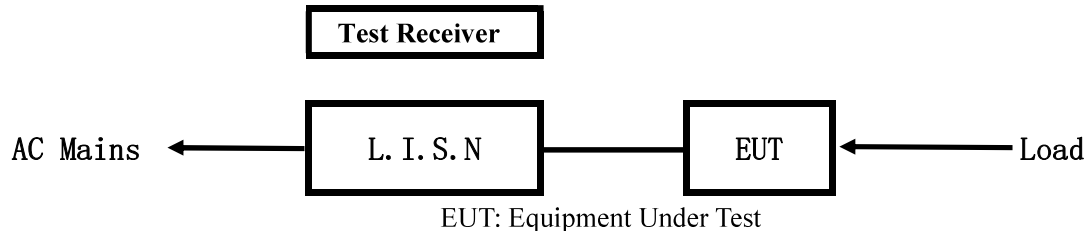
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5.0 Power Line Conducted Emission Test

5.1 Schematics of the test

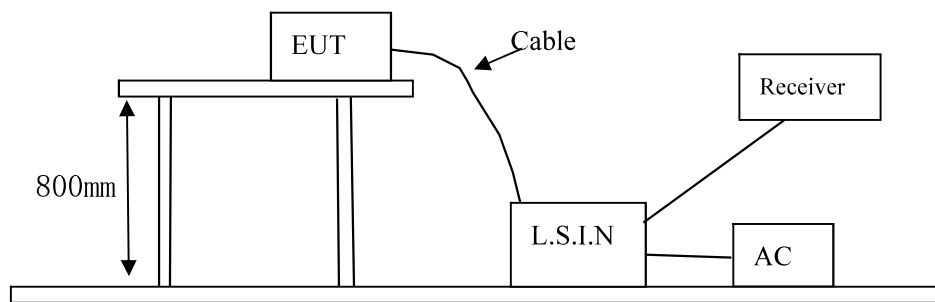


5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10 –2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

Device	Manufacturer	Model	FCC ID
Mini Smart TV	Dehong Douzi-Tech Co., Ltd.	TJ800	FCC ID:2AXZI-TJ800

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	Rating
Power Supply	RH	RS-F1000-A	Input: 100-240V~, 50/60Hz, 0.45A; Output: 6V, 1A

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5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Limits (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0~56.0*	56.0~46.0*
0.50 ~ 5 00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

- Notes:
1. *Decreasing linearly with logarithm of frequency.
 2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

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A: Conducted Emission on Live Terminal (150kHz to 30MHz)

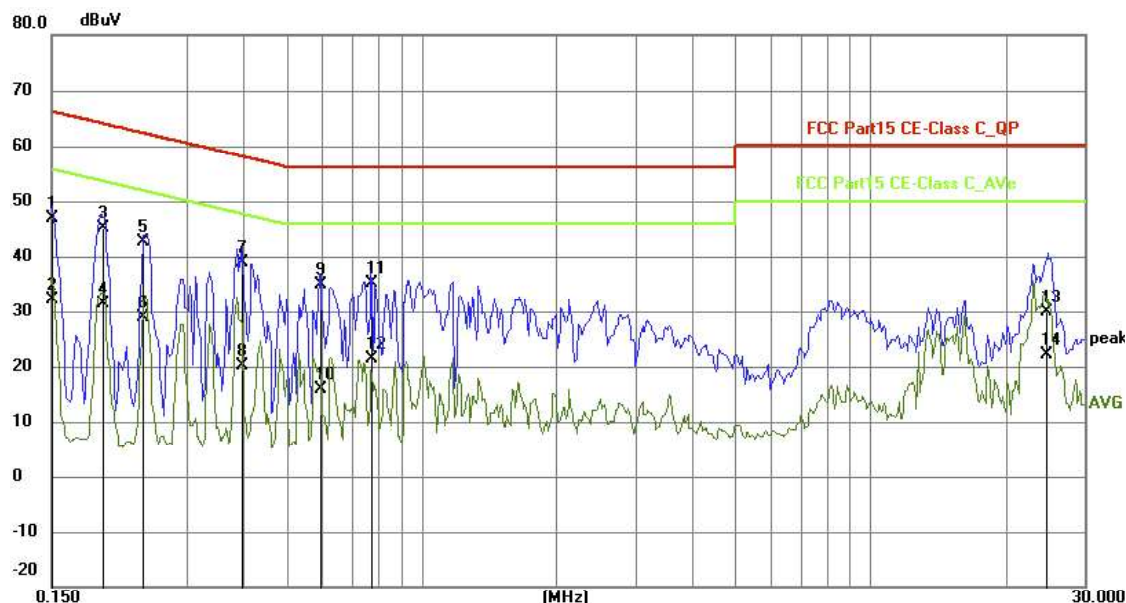
EUT Operating Environment

Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keep WIFI Transmitting

Results: PASS

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1500	37.06	9.79	46.85	66.00	-19.15	QP	P
2	0.1500	22.34	9.79	32.13	56.00	-23.87	AVG	P
3	0.1945	35.39	9.75	45.14	63.84	-18.70	QP	P
4	0.1945	21.67	9.75	31.42	53.84	-22.42	AVG	P
5	0.2397	32.79	9.75	42.54	62.11	-19.57	QP	P
6	0.2397	19.10	9.75	28.85	52.11	-23.26	AVG	P
7	0.3996	29.16	9.76	38.92	57.86	-18.94	QP	P
8	0.3996	10.44	9.76	20.20	47.86	-27.66	AVG	P
9	0.5946	25.16	9.77	34.93	56.00	-21.07	QP	P
10	0.5946	6.22	9.77	15.99	46.00	-30.01	AVG	P
11	0.7740	25.31	9.78	35.09	56.00	-20.91	QP	P
12	0.7740	11.63	9.78	21.41	46.00	-24.59	AVG	P
13	24.6594	18.94	10.97	29.91	60.00	-30.09	QP	P
14	24.6594	11.06	10.97	22.03	50.00	-27.97	AVG	P

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B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

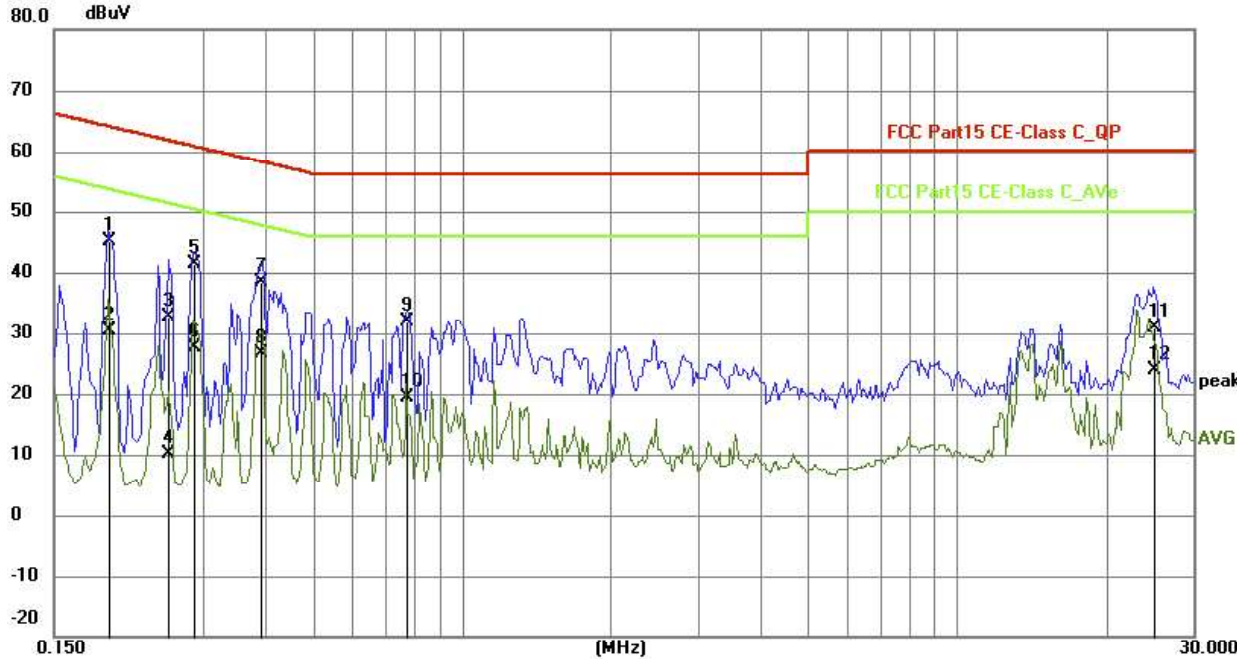
EUT Operating Environment

Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keep WIFI Transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1929	35.35	9.75	45.10	63.91	-18.81	QP	P
2	0.1929	20.51	9.75	30.26	53.91	-23.65	AVG	P
3	0.2553	22.83	9.75	32.58	61.58	-29.00	QP	P
4	0.2553	0.34	9.75	10.09	51.58	-41.49	AVG	P
5	0.2878	31.59	9.76	41.35	60.59	-19.24	QP	P
6	0.2878	17.94	9.76	27.70	50.59	-22.89	AVG	P
7	0.3933	28.60	9.76	38.36	57.99	-19.63	QP	P
8	0.3933	16.92	9.76	26.68	47.99	-21.31	AVG	P
9	0.7740	22.04	9.78	31.82	56.00	-24.18	QP	P
10	0.7740	9.56	9.78	19.34	46.00	-26.66	AVG	P
11	24.9648	19.86	10.99	30.85	60.00	-29.15	QP	P
12	24.9648	12.97	10.99	23.96	50.00	-26.04	AVG	P

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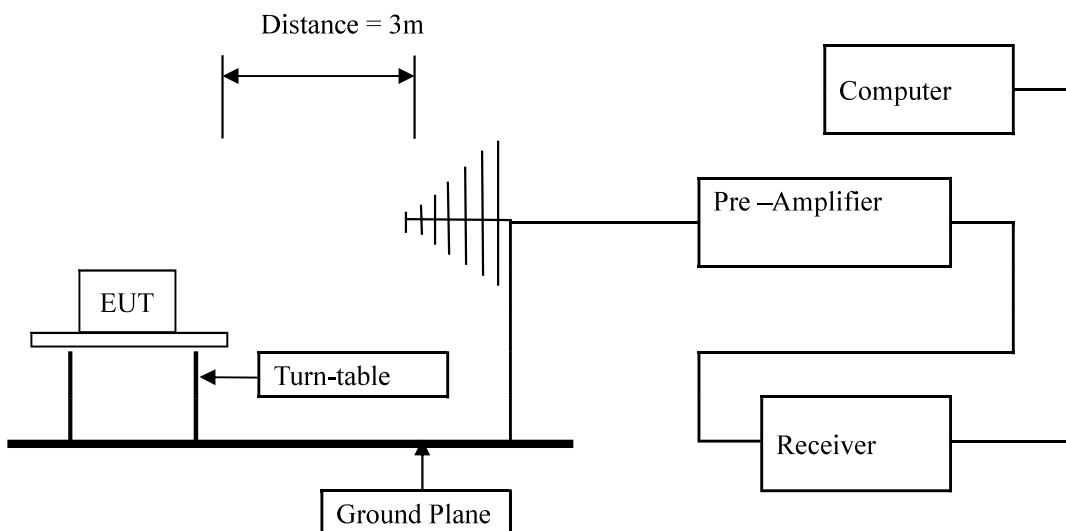


6 Radiated Emission Test

6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) 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. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a “QP” in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

Block diagram of Test setup



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

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6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

- Note:
1. RF Voltage (dBuV) = 20 log RF Voltage (μ V)
 2. In the Above Table, the higher limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
 4. Worse case were recorded in the test report. 802.11b was the worst case.

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Test result

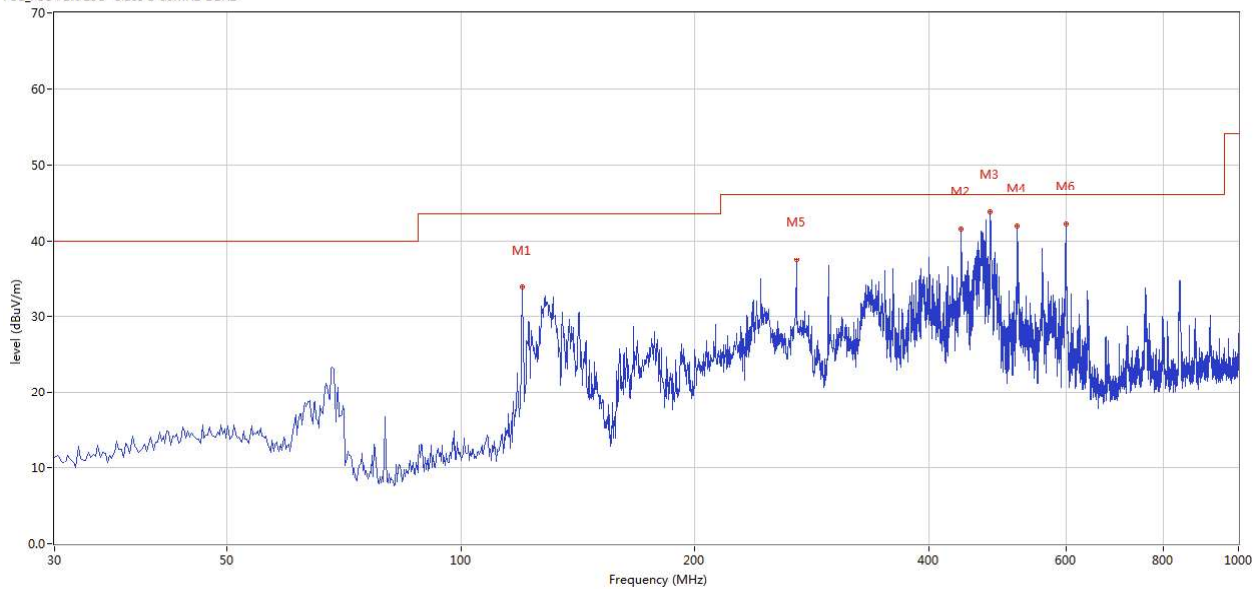
General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: **Keep Transmitting**

Results: **Pass**

FCC_FCC Part 15C Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	119.945	33.82	-15.32	43.5	-9.68	Peak	319.00	100	Horizontal	Pass
2	439.480	41.49	-8.05	46.0	-4.51	Peak	297.00	100	Horizontal	Pass
3	479.725	43.82	-7.41	46.0	-2.18	Peak	290.00	100	Horizontal	Pass
4	519.485	41.98	-6.76	46.0	-4.02	Peak	297.00	100	Horizontal	Pass
5	270.015	37.47	-11.75	46.0	-8.53	Peak	307.00	100	Horizontal	Pass
6	599.490	42.16	-5.01	46.0	-3.84	Peak	324.00	100	Horizontal	Pass

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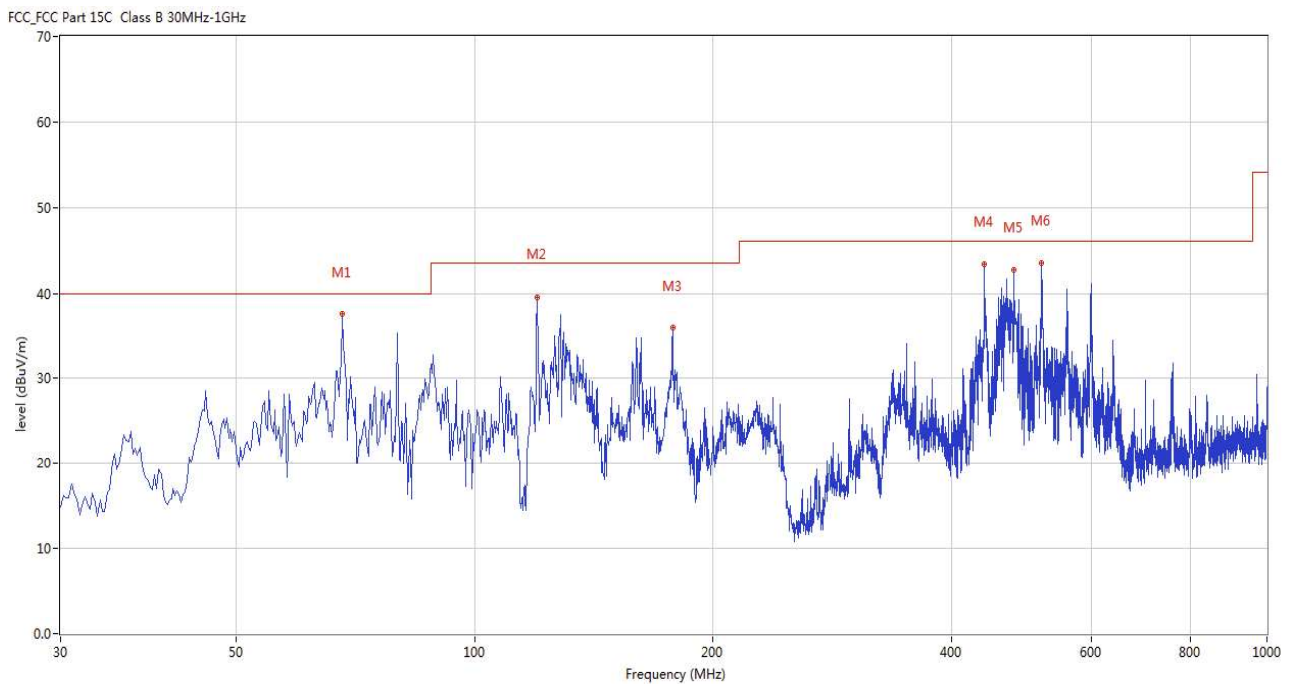
Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: **Keep Transmitting**

Results: Pass



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	68.063	37.48	-14.68	40.0	-2.52	Peak	0.00	100	Vertical	Pass
2	119.945	39.55	-15.32	43.5	-3.95	Peak	6.00	100	Vertical	Pass
3	177.646	35.90	-15.61	43.5	-7.60	Peak	13.00	100	Vertical	Pass
4	439.723	43.41	-8.07	46.0	-2.59	Peak	0.00	100	Vertical	Pass
5	479.483	42.72	-7.43	46.0	-3.28	Peak	4.00	100	Vertical	Pass
6	519.485	43.48	-6.76	46.0	-2.52	Peak	17.00	100	Vertical	Pass

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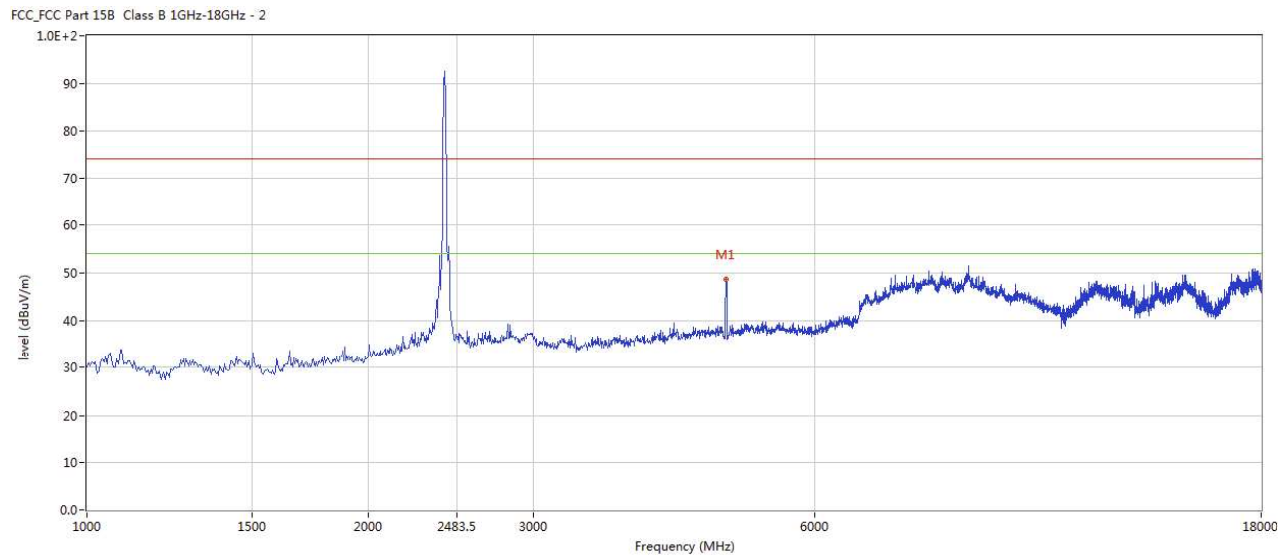
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Please refer to the following test plots for details:

CH01 for 11b at 1Mbps: Horizontal



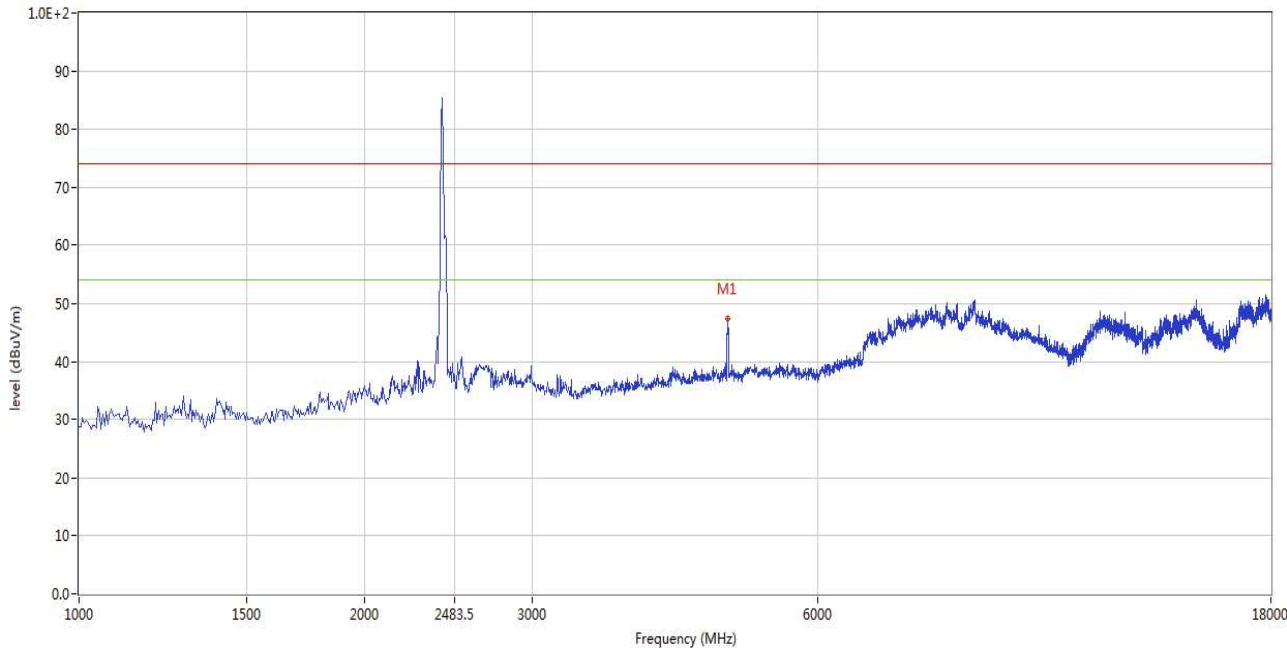
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	4824.044	49.75	3.14	54.0	-4.25	Peak	342.00	100	H	Pass

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CH01 for 11b at 1Mbps: Vertical

FCC_FCC Part 15B Class B 1GHz-18GHz - 2

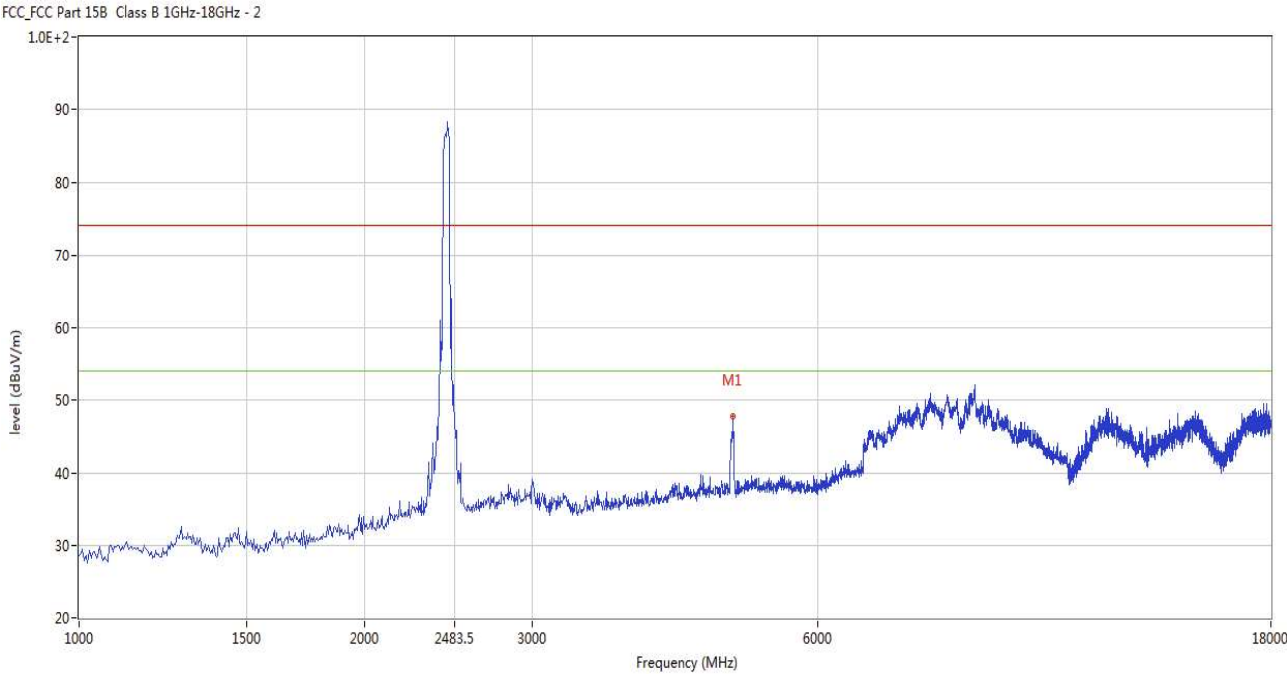


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	4824.044	47.52	3.15	54.0	-6.48	Peak	184.00	100	V	Pass

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CH06 for 11b at 1Mbps: Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	4887.778	48.85	3.21	54.0	-5.15	Peak	163.00	100	V	Pass

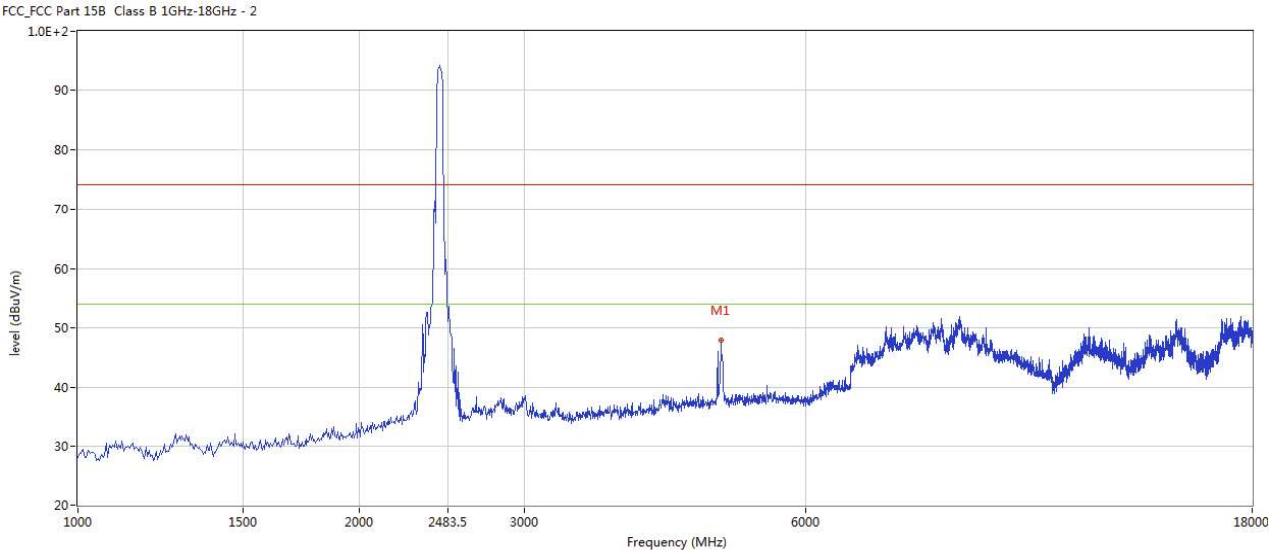
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CH06 for 11b at 1Mbps: Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	4870.782	48.92	3.19	54.0	-5.08	Peak	203.00	100	H	Pass

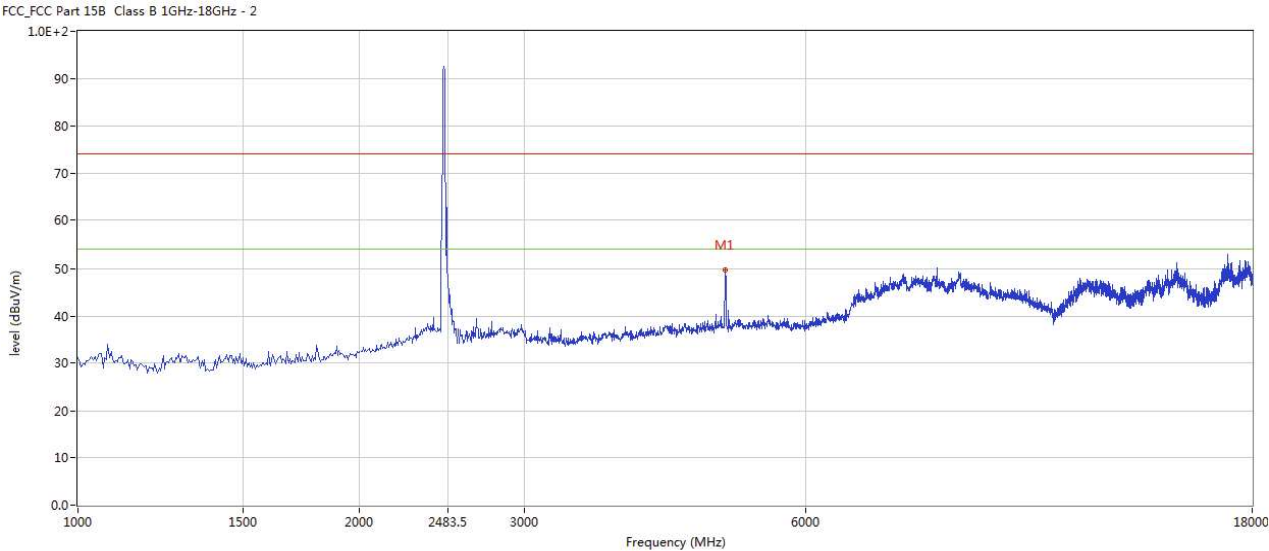
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CH11 for 11b at 1Mbps: Vertical

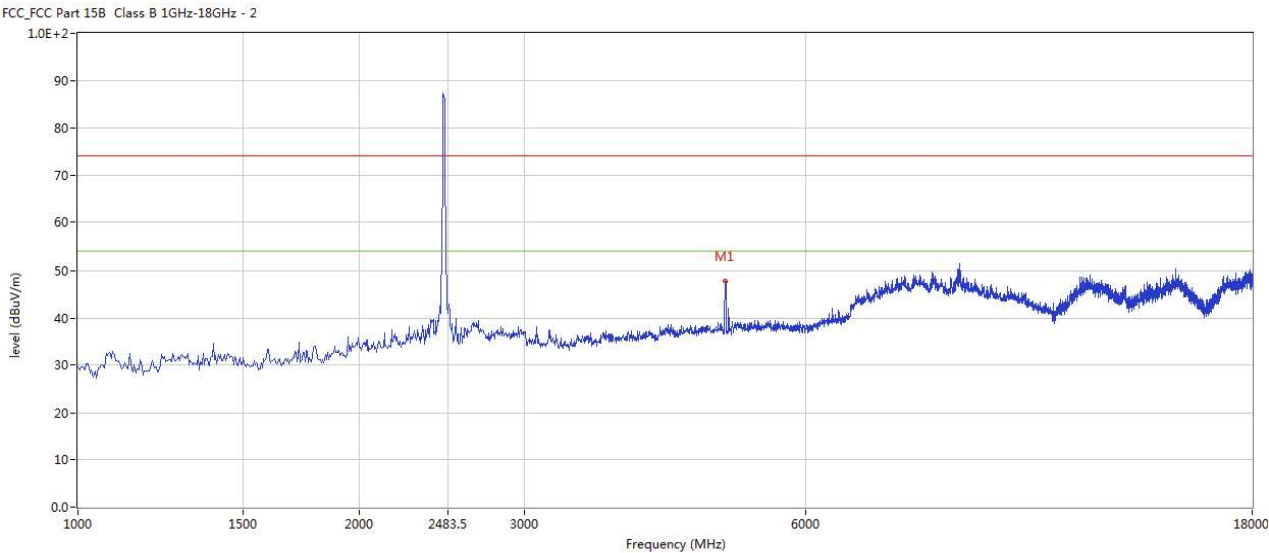


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	4921.770	49.88	3.27	54.0	-4.12	Peak	279.00	100	H	Pass

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CH11 for 11g at 6Mbps: Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	4921.770	48.84	3.27	54.0	-5.16	Peak	200.00	100	V	Pass

- Note: 1. Result Level = Reading + Factor
2. Factor= AF + Cable Loss- Preamp
3. Margin = Result– Limit
4. For radiated Emissions from 18-25GHz and below 30MHz, it is only the floor noise.
5. The peak value less than the AV limit, no necessary to take down the AV measurement result.

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