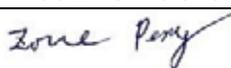
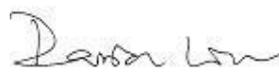


# FCC Test Report

FCC EVALUATION REPORT FOR CI.II Permissive Change	
Project Reference No.	222820
Product	Multi-Link Bluetooth Headphone
Brand Name	N/A
Model	JXHDBT1
Alternate Model	N/A
Tested according to	FCC Rules and Regulations Part 15 Subpart C 2012 15.247, ANSI C63.4-2003

Tested in period	2012.10.29
Issued date	2012.11.07
Name and address of the Test House	 Nemko Shanghai Ltd. 9A No. 528 Ruiqing Road, PuDong New Area, Shanghai, China P.C. Phone : + 86 21 5445 3132 Fax : + 86 21 5445 3215
Tested by	 _____ <b>Zone Peng</b> <span style="float: right;">2012.10.29</span> <span style="float: right;"><b>date</b></span>
Verified by	 _____ <b>Daria Liu</b> <span style="float: right;">2012.11.07</span> <span style="float: right;"><b>date</b></span>

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## 1. Client Information

### 1.1 Applicant

Company Name: **Alford Industries Ltd**  
Company Address: **Unit 201, 2/F, Park Building 476 Castle Peak Road ,Kowloon,Hong Kong**

### 1.2 Manufacturer

Company Name: **Foshan Shunde Alford Electronics Co. Ltd.**  
Company Address: **Xinjiao Industrial Park, Daliang, Shunde Foshan City, Guangdong Province China**

### 1.3 Scope

●Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission under FCC part 15.



## 2. Equipment under Test (EUT)

### 2.1 Identification of EUT

Category: Multi-Link Bluetooth Headphone  
Model Name: JXHDBT1  
Alternate model: N/A  
Brand name: N/A  
Technical data (Rating, etc.): As below

### 2.2 Detail spec:

Carrier Frequency : 2402MHz~2480MHz

Number of Channel : 79

Output Power : 7.10 dBm

Modulation Type : Bluetooth( GFSK,  $\pi/4$  DQPSK, 8DPSK )

Mode of operation (duplex, simplex, half duplex) : duplex

Antenna Type : Intergral Antenna

Antenna gain : 0 dBi

Input : 2.4VDC ( 1.2VDC rechargeable battery 2pcs)

Adapter 1:

Model : BLJ5W050050U-U

Input: 100V-240VAC 50/60Hz 150mA

Output:5VDC 500mA

### 2.3 Additional Information Related to Testing

**The report is a C2PC report for the eut of fccid LPV-JXHDBT1, the eut 's circuit and pc b layout have been modified ,only a sound optimization IC and its assistant components are added in ,But no any modification is for RF circuit ,layout and components . So only Radiated emission ,Radiated spurious emission and conducted emission have been retest and their results are reported in this report ,other datas are in original report.**

### 3. General Test Conditions

#### 3.1 Location

Global United Technology Services Co., Ltd. -- Nemko ELA 632  
2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China  
FCC Registration No.:600491  
IC Registration No.9079A-1  
Note: all test are witnessed by NEMKO engineer

#### 3.2 Operating Environment

All tests and measurements were performed in a shielded enclosure or a controlled environment suitable for the tests conducted. The climatic conditions in the test area are automatically controlled and recorded continuously.

Parameters	Recording during test	Accepted deviation
Ambient temperature	20-25°C	15 – 35 °C
Relative humidity	45-55%	30 - 60%
Atmospheric pressure	101.2 kPa -101.3kPa	86-106kPa

#### 3.3 Operating During Test

120VAC 60Hz in

CHL : CH 1 2402MHz

CHM : CH 39 2441MHz

CHH : CH 79 2480MHz

Test mode:120V 60Hz

TM1 : continuance TX MODE GFSK CH 1

TM2 : continuance TX MODE GFSK CH 39

TM3: continuance TX MODE GFSK CH 79

TM4: continuance TX MODE 8DPSK CH 1

TM5: continuance TX MODE 8DPSK CH 39

TM6: continuance TX MODE 8DPSK CH 79

TM7: continuance TX MODE  $\pi/4$  DQPSK CH 1

TM8: continuance TX MODE  $\pi/4$  DQPSK CH 39

TM9: continuance TX MODE  $\pi/4$  DQPSK CH 79

TM10: Hopping on CH 1

TM11: Hopping on CH 79

Remark : When measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, have been performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. No findable change appear.

X,Y,Z these 3 axial direction have been tested and only choose the worse mode to be reported.

### 3.4 Test Equipment

The test equipments used in testing are calibrated on a regular basis. For most of the testing equipments accredited calibration is conducted once a year. For certain equipment the calibration interval is longer. Between the calibrations all test equipment are controlled and verified on a regular basis. The test equipments used are defined in each test section of this report.

### 4. Measurement Uncertainty

The Measurement Uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 with the confidence level of 95 %.

Conducted Emission :	0.15~30MHz	3.45dB
Radiated Emission:	30MHz~1000MHz	4.50dB
	1GHz-18GHz	4.70dB

## 5. Radiated Electromagnetic Disturbances

### 5.1 Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast.

The EUT were rotated 0 to 360 degree and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. The test result are reported as below.

For below 1GHz

RBW=120 kHz; VBW=300KHz. The frequency range from 30MHz to 1000MHz is checked using QP detector .

For above 1GHz. The frequency range from 1GHz to 25GHz(10<sup>th</sup> harmonics) is checked.

RBW=1MHz ; VBW=1MHz, PK detector for peak emissions measurement above 1GHz

RBW=1MHz ; VBW=10Hz, PK detector for average emissions measure above 1GHz ( for CW mode only) .

**The duty cycle factor is  $20\log 1/0.359=8.9\text{dB}$ , the duty cycle is referred to Appendix A**

**So AV value should be Peak value subtract the duty cycle factor .**

### 5.2 Measurement Equipment

Equipment	Model No.	Serial No.	Last Cal.	Manufacturer
EMI Test Receiver	ESU26	GTS203	Jul. 04 2012	R&S
BiConiLog Antenna	VULB9163	GTS214	Feb. 26 2012	SCHWARZBECK
Horn Antenna	BBHA9120D	GTS215	Feb. 26 2012	SCHWARZBECK
Horn Antenna	BBHA9170	GTS216	Feb. 26 2012	SCHWARZBECK
Coaxial Cable	N/A	GTS213	Apr. 01 2012	GTS
Coaxial Cable	N/A	GTS211	Apr. 01 2012	GTS
Coaxial cable	N/A	GTS210	Apr. 01 2012	GTS
Coaxial Cable	N/A	GTS212	Apr. 01 2012	GTS
Amplifier	8347A	GTS204	Jul. 04 2012	HP

### 5.3 Test Result

Connect mode	Antenna Polarity	Remark	Test Data	Test Result
TX mode	Horizontal	30-1000MHz	Table 5-1	Pass
	Vertical	30-1000MHz	Table 5-2	Pass
GFSK CHL	Horizontal	1GHz-18GHz	Table 5-3	Pass
	Vertical	1GHz-18GHz	Table 5-4	Pass
GFSK CHM	Horizontal	1GHz-18GHz	Table 5-5	Pass
	Vertical	1GHz-18GHz	Table 5-6	Pass
GFSK CHH	Horizontal	1GHz-18GHz	Table 5-7	Pass
	Vertical	1GHz-18GHz	Table 5-8	Pass
8DPSK CHL	Horizontal	1GHz-18GHz	Table 5-9	Pass
	Vertical	1GHz-18GHz	Table 5-10	Pass
8DPSK CHM	Horizontal	1GHz-18GHz	Table 5-11	Pass
	Vertical	1GHz-18GHz	Table 5-12	Pass
8DPSK CHH	Horizontal	1GHz-18GHz	Table 5-13	Pass
	Vertical	1GHz-18GHz	Table 5-14	Pass
$\pi/4$ DQPSK CHL	Horizontal	1GHz-18GHz	Table 5-15	Pass
	Vertical	1GHz-18GHz	Table 5-16	Pass
$\pi/4$ DQPSK CHM	Horizontal	1GHz-18GHz	Table 5-17	Pass
	Vertical	1GHz-18GHz	Table 5-18	Pass
$\pi/4$ DQPSK CHH	Horizontal	1GHz-18GHz	Table 5-19	Pass
	Vertical	1GHz-18GHz	Table 5-20	Pass

**Remark:**

If PK value is lower than AV limit , then Both PK and AV deem to comply their own limit .

- 1) All modes of operation were investigated and the worst -case emission are reported.
- 2) And for 30-1000MHz , GFSK CHL is the worse case and reported .
- 3) Because no spurious found at 18-25GHz, so no table and reading record of it listed.
- 4) All restriction band have been tested at both CHL,M and H with GFSK ,8DPSK and $\pi/4$  DQPSK modulation , only reported the worse case .

NOTES:

1. All modes were measured and the worst case emission was reported.
2. H =Horizontal V=Vertical
3. Emission = Reading +Antenna Factor + Cable Loss –Amp Factor(if exist)
4. Emission level dB $\mu$ V = 20 log Emission level  $\mu$ V/m
5. The lower limit shall apply at the transition frequencies
6. All the emissions appearing within 15.205 Restricted bands shall not exceed the limits shown in 15.209,all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

Remark :

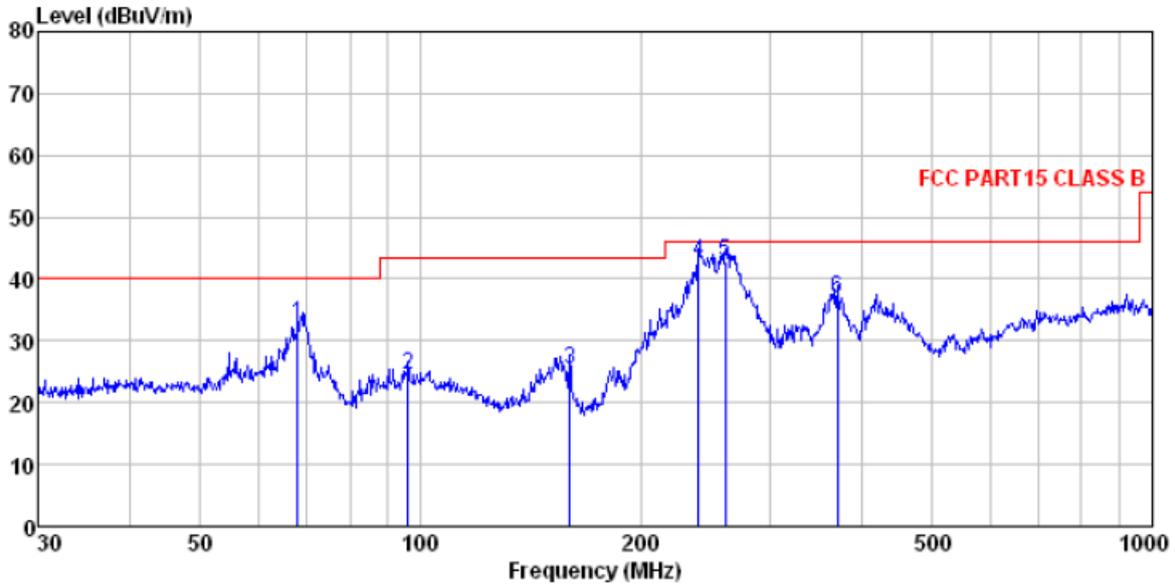
The limit of 15.209(a) of 3 meter distance is

Frequency MHz	Distance m	Field strength		Distance m	Field strength dB $\mu$ V/m(QP)
		$\mu$ V/m	dB $\mu$ V/m(QP)		
30-88	3	100	40.0	10	30.0
88-216	3	150	43.5	10	33.5
216-960	3	200	46.0	10	36.0
960-1000	3	500	54.0	10	44.0
Above 1000	3	74.0 dB $\mu$ V/m (PK) 54.0 dB $\mu$ V/m (AV)		/	/

15.205 Restricted bands of operation:

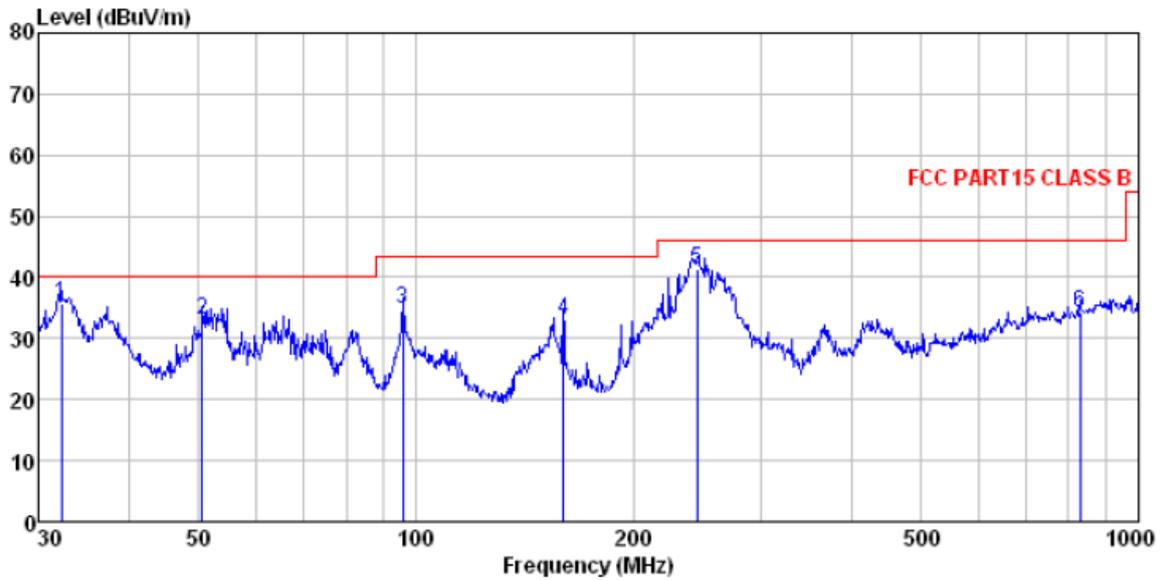
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	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	( <sup>2</sup> )

5.3.1 Table 5-1



	ReadAntenna	Cable Preamp	Limit	Over					
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	67.913	50.35	13.43	0.92	31.89	32.81	40.00	-7.19	QP
2	96.099	39.13	15.99	1.16	31.75	24.53	43.50	-18.97	QP
3	159.784	44.16	11.69	1.63	32.02	25.46	43.50	-18.04	QP
4	239.987	57.87	15.07	2.07	32.16	42.85	46.00	-3.15	QP
5	261.058	57.79	15.13	2.18	32.17	42.93	46.00	-3.07	QP
6	370.702	49.59	16.51	2.72	31.97	36.85	46.00	-9.15	QP

5.3.2 Table 5-2



	ReadAntenna	Cable Preamp	Limit	Over				
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	32.293	51.61	15.73	0.58	32.06	35.86	40.00	-4.14 QP
2	50.586	47.87	16.32	0.78	31.96	33.01	40.00	-6.99 QP
3	95.762	49.33	15.99	1.16	31.74	34.74	43.50	-8.76 QP
4	159.784	51.67	11.69	1.63	32.02	32.97	43.50	-10.53 QP
5	245.090	56.38	15.08	2.10	32.16	41.40	46.00	-4.60 QP
6	830.400	37.55	23.37	4.58	31.27	34.23	46.00	-11.77 QP

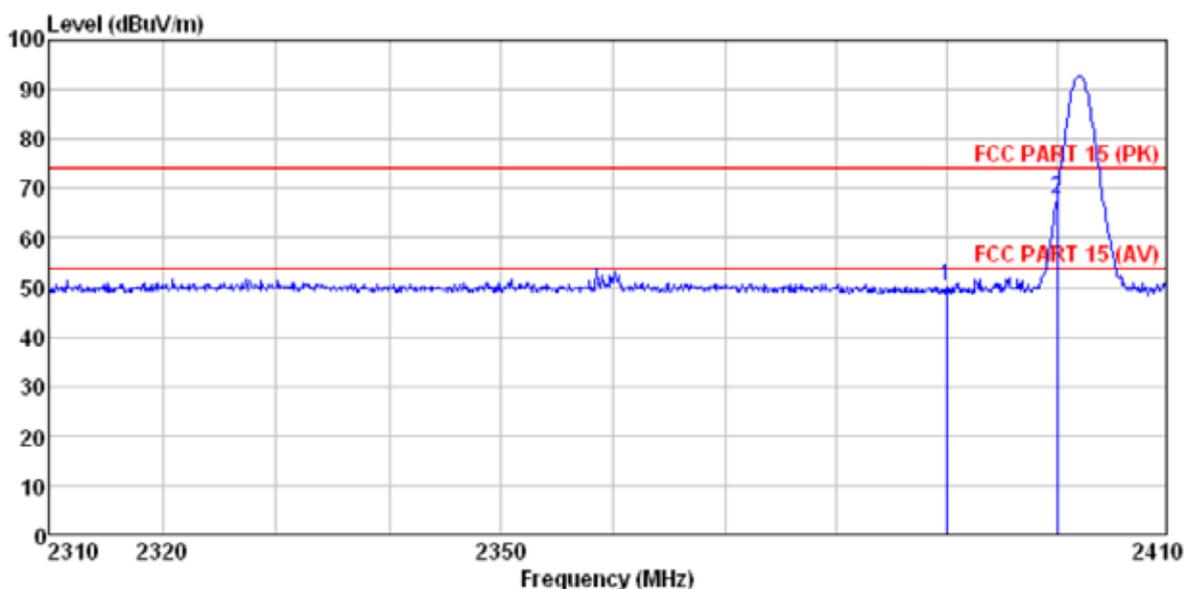
5.3.3 Table 5-3

Frequency (MHz)	Read Level (dBUV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBUV/m)	Limit Line (dBUV/m)	Result	Remark
4804	29.97	31.78	8.60	24.20	46.15	74	Pass	Peak*
7206	31.71	36.15	11.65	25.46	53.05	74	Pass	Peak*
9608	28.87	37.95	14.14	25.45	55.51	74	Pass	Peak
9608	/	/	/	/	46.61	54	Pass	AV

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBUV/m,then AV value is deemed to be comply with AV limit too .



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBUV	dB/m	dB	dB	dBUV/m	dBUV/m	dB	
1	2390.000	47.39	27.59	5.38	30.18	50.18	74.00	-23.82	Peak
2	2400.000	65.00	27.58	5.39	30.18	67.79	74.00	-6.21	Peak

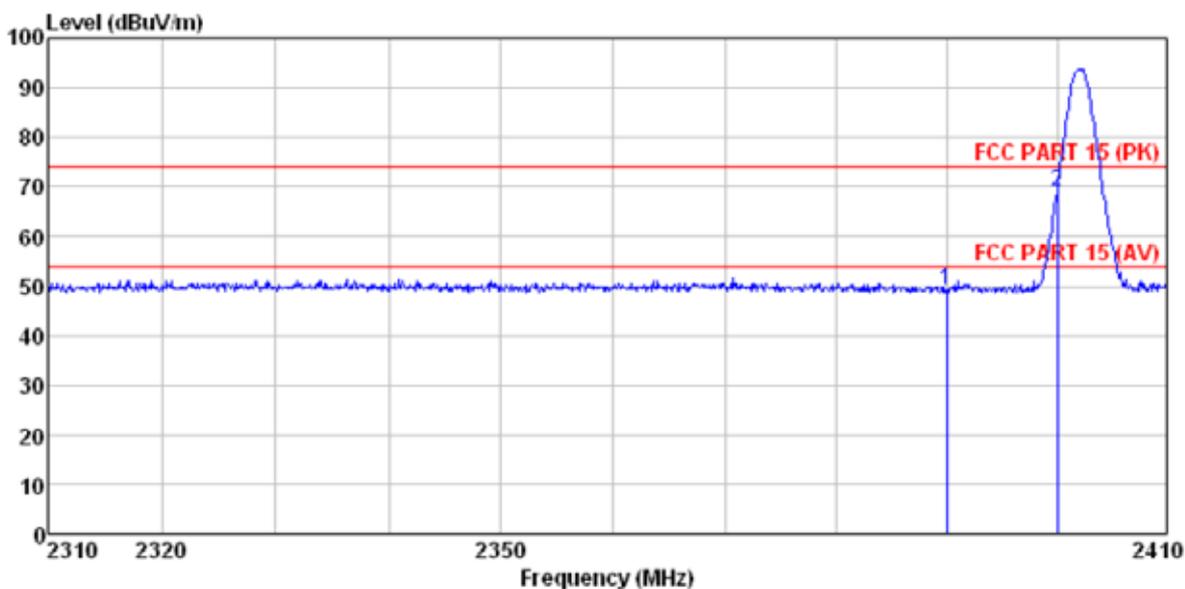
5.3.4 Table 5-4

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4804	26.54	31.78	8.60	24.20	42.72	74	Pass	Peak*
7206	32.57	36.15	11.65	25.46	54.91	74	Pass	Peak
7206	/	/	/	/	46.01	54	Pass	Average
9608	30.41	37.95	14.14	25.45	57.05	74	Pass	Peak
9608	/	/	/	/	48.15	54	Pass	Average

Remark :

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m,then AV value is deemed to be comply with AV limit too .



	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2390.000	46.32	27.59	5.38	30.18	49.11	74.00	-24.89 Peak
2	2400.000	66.32	27.58	5.39	30.18	69.11	74.00	-4.89 Peak

**5.3.5 Table 5-5**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4882	27.67	31.85	8.67	24.10	44.09	74	Pass	Peak*
7323	31.26	36.37	11.72	26.71	52.64	74	Pass	Peak*
9764	28.05	38.35	14.25	25.36	55.29	74	Pass	Peak
9764	/	/	/	/	46.39	54	Pass	Average

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m,then AV value is deemed to be comply with AV limit too .

**5.3.6 Table 5-6**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4882	27.75	31.85	8.67	24.10	44.17	74	Pass	Peak*
7323	31.94	36.37	11.72	26.71	53.32	74	Pass	Peak*
9764	27.73	38.35	14.25	25.36	54.97	74	Pass	Peak
9764	/	/	/	/	46.07	54	Pass	Average

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m,then AV value is deemed to be comply with AV limit too .

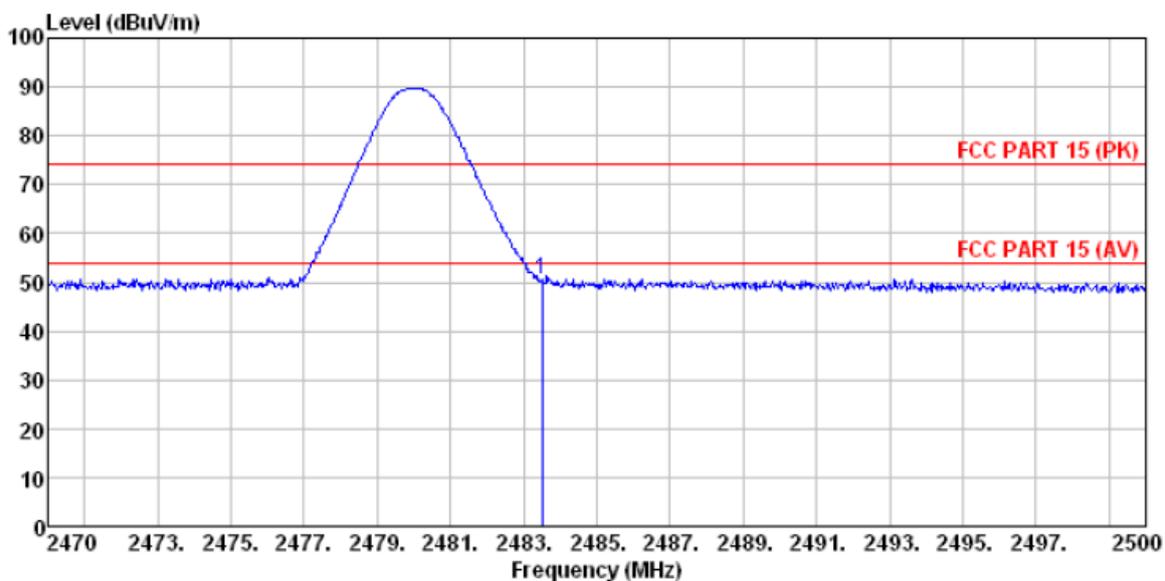
5.3.7 Table 5-7

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4960	28.82	31.93	8.73	24.03	45.45	74	Pass	Peak*
7440	31.07	36.59	11.79	27.03	52.42	74	Pass	Peak*
9920	26.95	38.81	14.38	25.26	54.88	74	Pass	Peak
9920	/	/	/	/	45.98	54	Pass	Average

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m, then AV value is deemed to be comply with AV limit too .



	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	47.46	27.53	5.47	29.93	50.53	74.00	-23.47	Peak

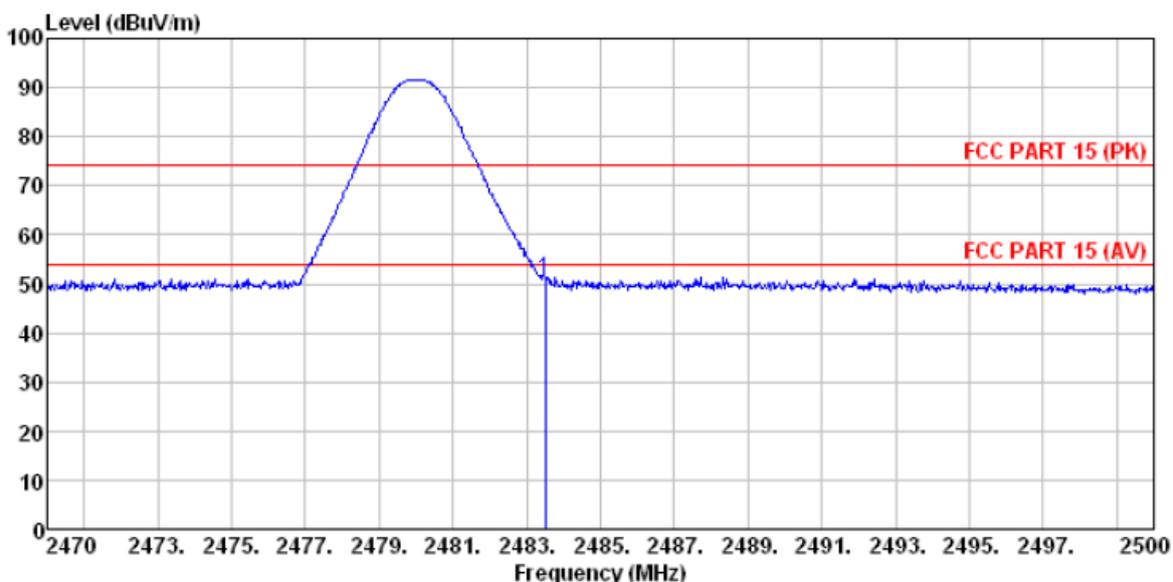
5.3.8 Table 5-8

Frequency (MHz)	Read Level (dBUV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBUV/m)	Limit Line (dBUV/m)	Result	Remark
4960	28.29	31.93	8.73	24.03	44.92	74	Pass	Peak*
7440	31.47	36.59	11.79	27.03	52.82	74	Pass	Peak*
9920	27.56	38.81	14.38	25.26	55.49	74	Pass	Peak
9920	/	/	/	/	46.59	54	Pass	Average

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBUV/m, then AV value is deemed to be comply with AV limit too .



	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
-----	-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBUV	dB/m	dB	dB	dBUV/m	dBUV/m	dB	
1 2483.500	47.93	27.53	5.47	29.93	51.00	74.00	-23.00	Peak

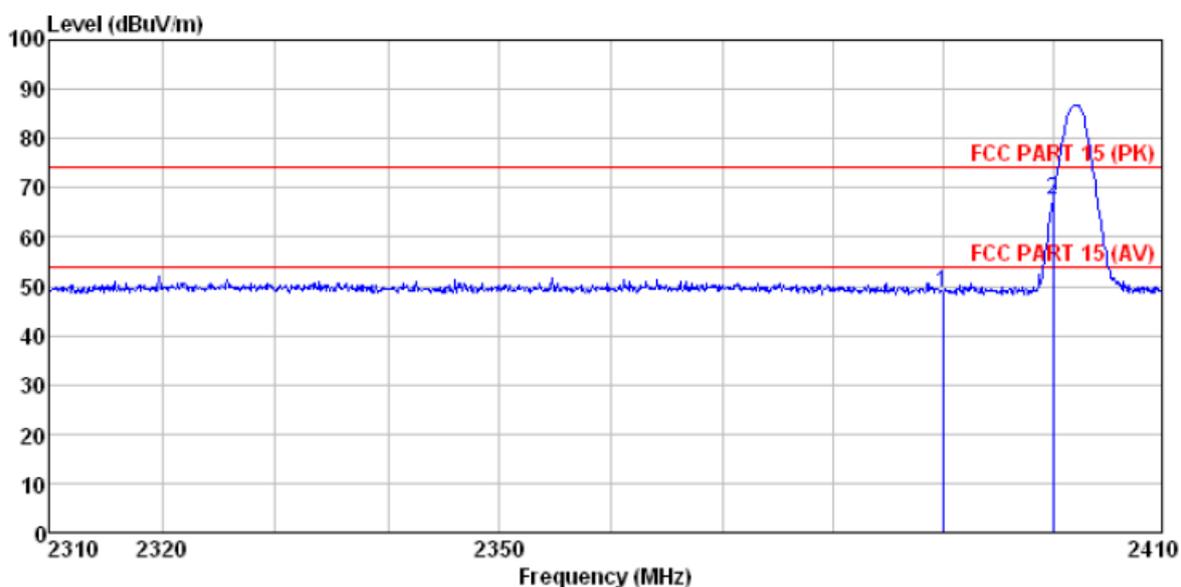
5.3.9 Table 5-9

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4804	28.39	31.78	8.60	24.20	44.57	74	Pass	Peak*
7206	31.95	36.15	11.65	25.46	53.29	74	Pass	Peak*
9608	28.98	37.95	14.14	25.45	55.62	74	Pass	Peak
9608	/	/	/	/	46.72	54	Pass	Average

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m, then AV value is deemed to be comply with AV limit too .



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	45.96	27.59	5.38	30.18	48.75	74.00	-25.25	Peak
2	2400.000	64.76	27.58	5.39	30.18	67.55	74.00	-6.45	Peak

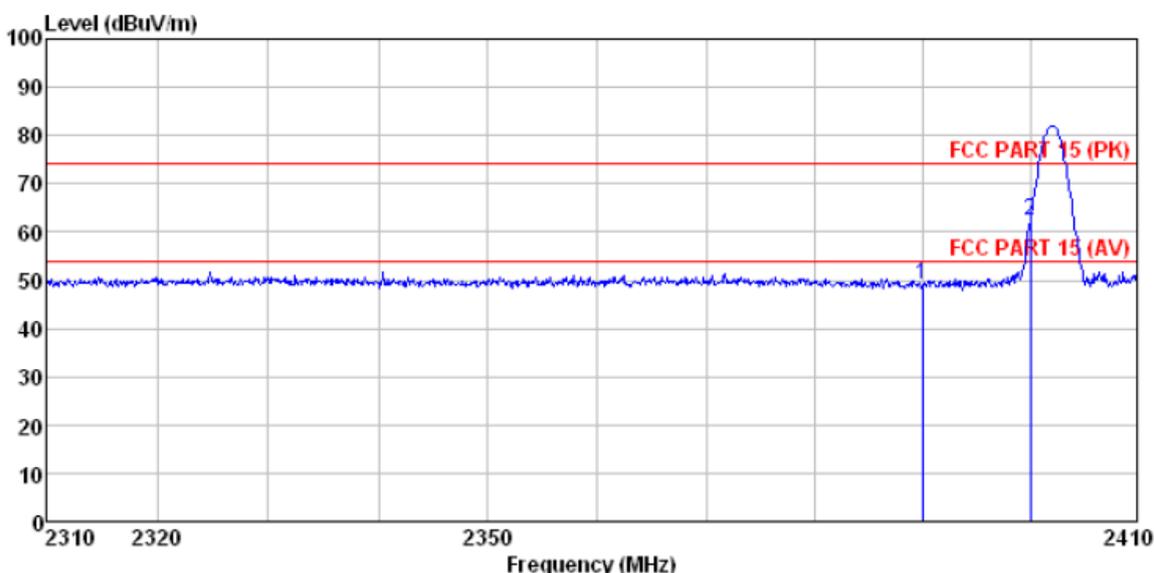
5.3.10 Table 5-10

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4804	28.87	31.78	8.60	24.20	45.05	74	Pass	Peak*
7206	31.65	36.15	11.65	25.46	52.99	74	Pass	Peak*
9608	29.86	37.95	14.14	25.45	56.50	74	Pass	Peak
9608	/	/	/	/	47.60	54	Pass	Average

Remark :

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m,then AV value is deemed to be comply with AV limit too .



	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2390.000	46.26	27.59	5.38	30.18	49.05	74.00	-24.95 Peak
2	2400.000	59.49	27.58	5.39	30.18	62.28	74.00	-11.72 Peak

**5.3.11 Table 5-11**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4882	29.02	31.85	8.67	24.10	45.44	74	Pass	Peak*
7323	33.38	36.37	11.72	26.71	54.76	74	Pass	Peak
7323	/	/	/	/	45.86	54	Pass	Average
9764	28.18	38.35	14.25	25.36	55.42	74	Pass	Peak
9764	/	/	/	/	46.52	54	Pass	Average

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m,then AV value is deemed to be comply with AV limit too .

**5.3.12 Table 5-12**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4882	29.14	31.85	8.67	24.10	45.56	74	Pass	Peak*
7323	33.08	36.37	11.72	26.71	54.46	74	Pass	Peak
7323	/	/	/	/	45.56	54	Pass	Average
9764	28.20	38.35	14.25	25.36	55.44	74	Pass	Peak
9764	/	/	/	/	46.54	54	Pass	Average

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m,then AV value is deemed to be comply with AV limit too .

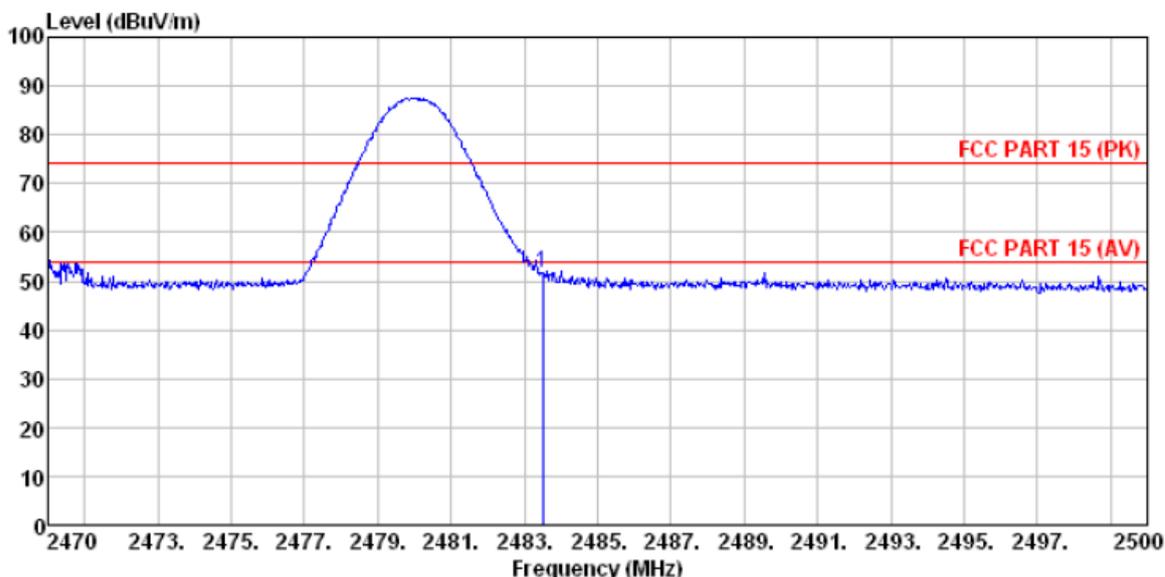
5.3.13 Table 5-13

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4960	30.30	31.93	8.73	24.03	46.93	74	Pass	Peak*
7440	32.84	36.59	11.79	27.03	54.19	74	Pass	Peak
7440	/	/	/	/	45.29	54	Pass	Average
9920	27.43	38.81	14.38	25.26	55.36	74	Pass	Peak
9920	/	/	/	/	46.46	54	Pass	Average

Remark :

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m,then AV value is deemed to be comply with AV limit too .



	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Level	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	48.41	27.53	5.47	29.93	51.48	74.00	-22.52 Peak

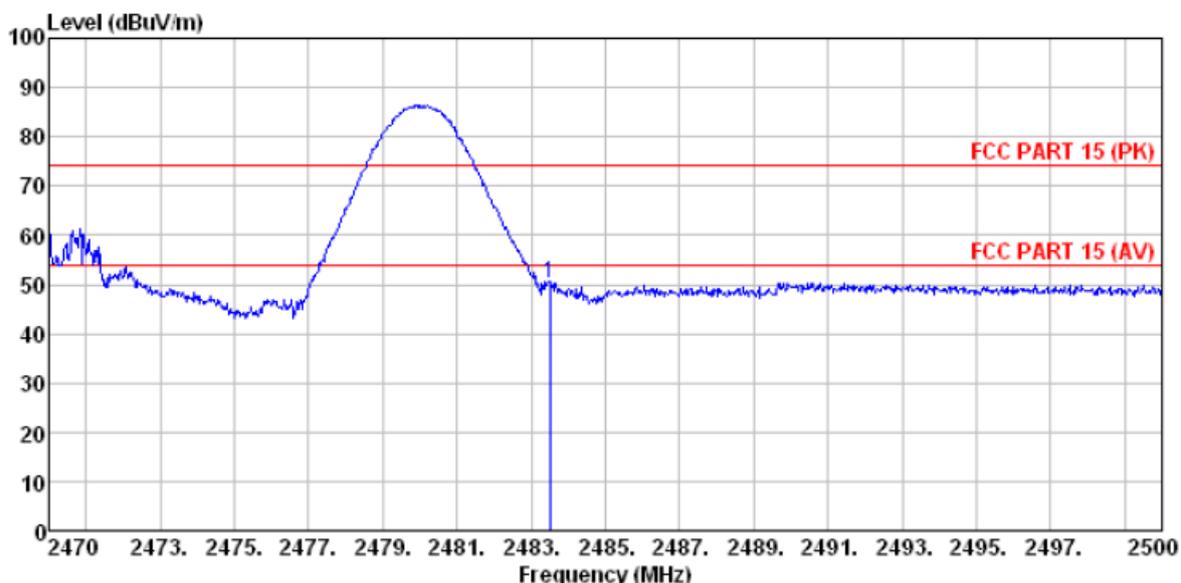
5.3.14 Table 5-14

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4960	31.50	31.93	8.73	24.03	48.13	74	Pass	Peak*
7440	31.34	36.59	11.79	27.03	52.69	74	Pass	Peak*
9920	28.73	38.81	14.38	25.26	56.66	74	Pass	Peak
9920	/	/	/	/	47.76	54	Pass	Average

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m, then AV value is deemed to be comply with AV limit too .



	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
-----	-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 2483.500	47.12	27.53	5.47	29.93	50.19	74.00	-23.81	Peak

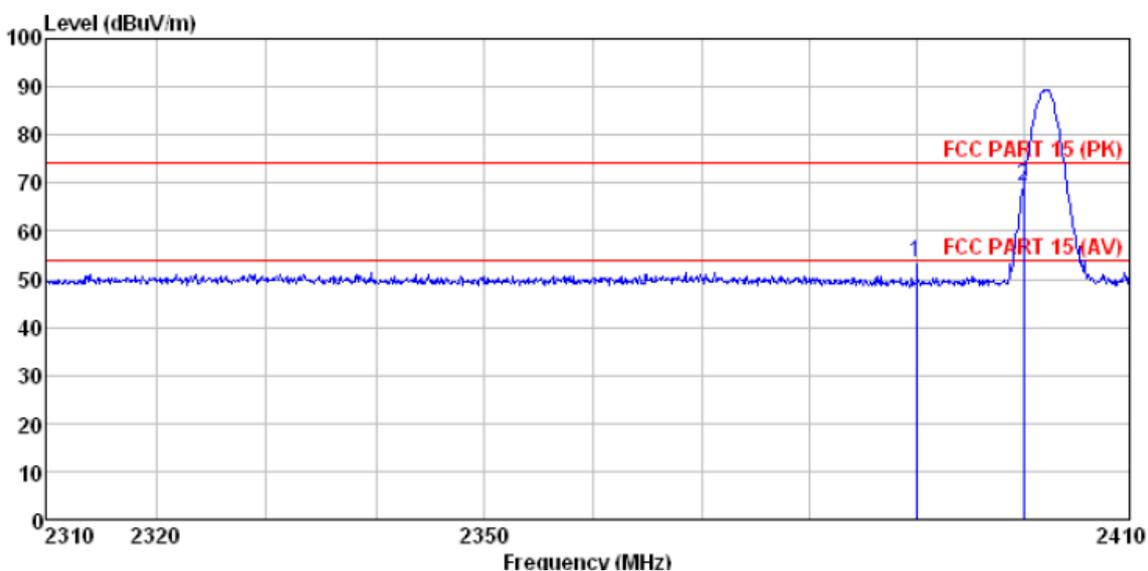
5.3.15 Table 5-15

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4804	29.39	31.78	8.60	24.20	45.57	74	Pass	Peak*
7206	32.95	36.15	11.65	25.46	54.29	74	Pass	Peak
7206	/	/	/	/	45.39	54	Pass	Average
9608	30.28	37.95	14.14	25.45	56.92	74	Pass	Peak
9608	/	/	/	/	48.02	54	Pass	Average

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m, then AV value is deemed to be comply with AV limit too .



	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Level	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB	
1	2390.000	50.83	27.59	5.38	30.18	53.62	74.00	-20.38 Peak
2	2400.000	66.45	27.58	5.39	30.18	69.24	74.00	-4.76 Peak

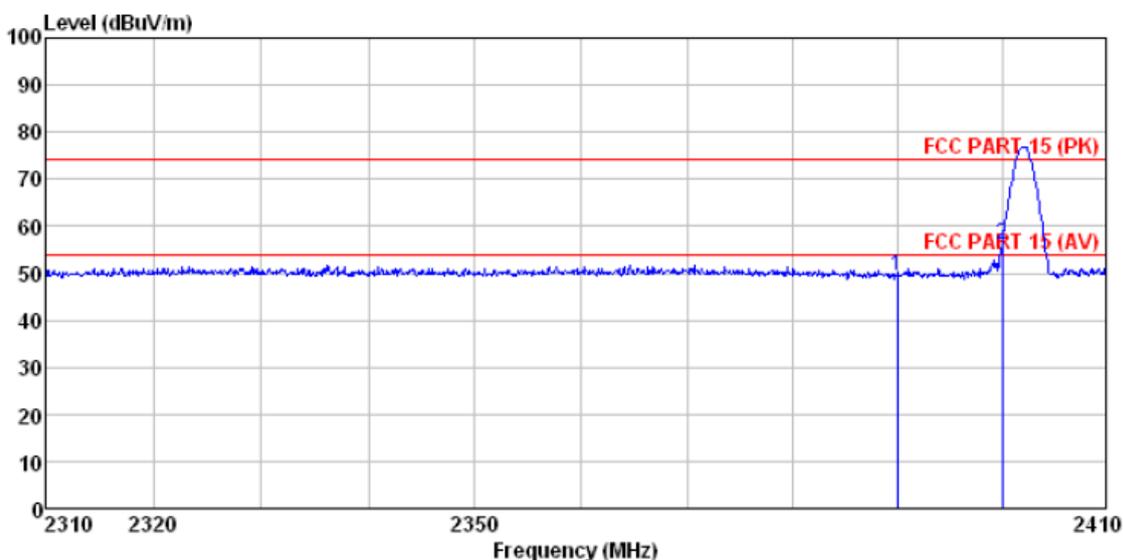
5.3.16 Table 5-16

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4804	28.37	31.78	8.60	24.20	44.55	74	Pass	Peak*
7206	31.15	36.15	11.65	25.46	52.49	74	Pass	Peak*
9608	29.36	37.95	14.14	25.45	56.00	74	Pass	Peak
9608	/	/	/	/	47.10	54	Pass	Average

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m,then AV value is deemed to be comply with AV limit too .



	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
-----	-----	-----	-----	-----	-----	-----	-----	-----
1	2390.000	46.69	27.59	5.38	30.18	49.48	74.00	-24.52 Peak
2	2400.000	53.44	27.58	5.39	30.18	56.23	74.00	-17.77 Peak

**5.3.17 Table 5-17**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4882	29.82	31.85	8.67	24.10	46.24	74	Pass	Peak*
7323	32.68	36.37	11.72	26.71	54.06	74	Pass	Peak
7323	/	/	/	/	45.16	54	Pass	Average
9764	29.08	38.35	14.25	25.36	56.32	74	Pass	Peak
9764	/	/	/	/	47.42	54	Pass	Average

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m,then AV value is deemed to be comply with AV limit too .

**5.3.18 Table 5-18**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4882	29.94	31.85	8.67	24.10	46.36	74	Pass	Peak*
7323	33.88	36.37	11.72	26.71	55.26	74	Pass	Peak
7323	/	/	/	/	46.36	54	Pass	Average
9764	29.50	38.35	14.25	25.36	56.74	74	Pass	Peak
9764	/	/	/	/	47.84	54	Pass	Average

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m,then AV value is deemed to be comply with AV limit too .

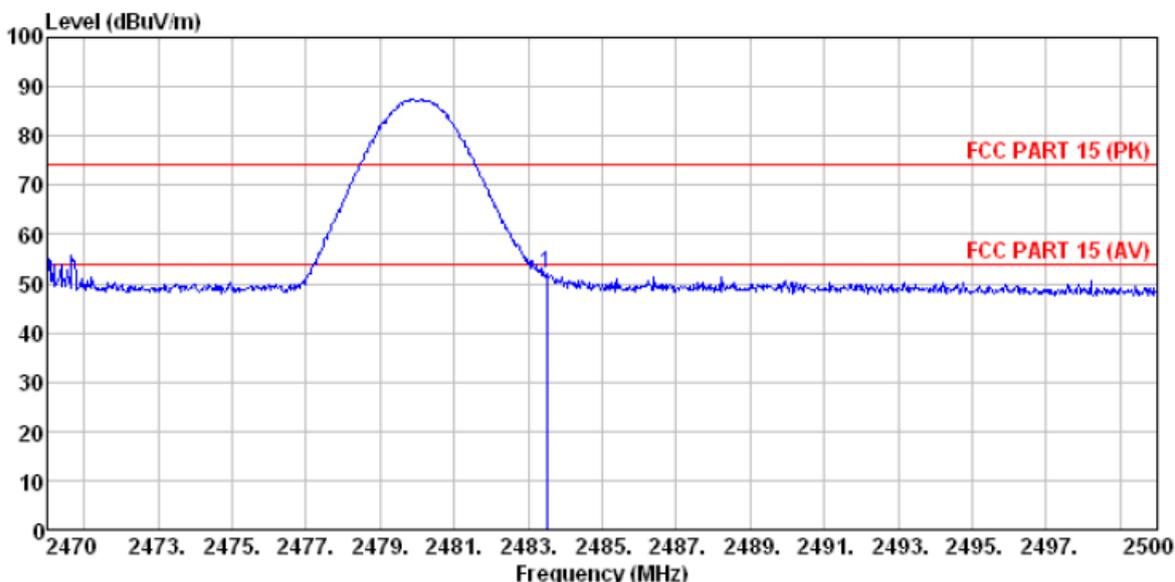
5.3.19 Table 5-19

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4960	31.00	31.93	8.73	24.03	47.63	74	Pass	Peak*
7440	33.84	36.59	11.79	27.03	55.19	74	Pass	Peak
7440	/	/	/	/	46.29	54	Pass	Average
9920	28.46	38.81	14.38	25.26	56.39	74	Pass	Peak
9920	/	/	/	/	47.49	54	Pass	Average

**Remark :**

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m, then AV value is deemed to be comply with AV limit too .



	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Level	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB	
1	2483.500	48.93	27.53	5.47	29.93	52.00	74.00	-22.00 Peak

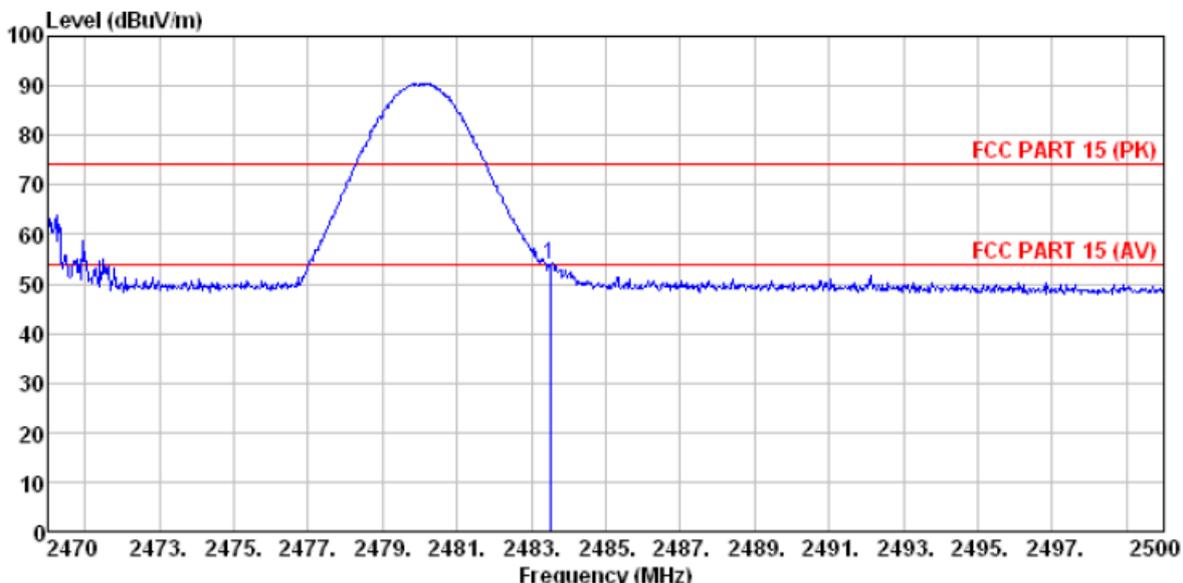
5.3.20 Table 5-20

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Result	Remark
4960	29.85	31.93	8.73	24.03	46.48	74	Pass	Peak*
7440	32.39	36.59	11.79	27.03	53.74	74	Pass	Peak
7440	/	/	/	/	44.84	54	Pass	Average
9920	26.98	38.81	14.38	25.26	54.91	74	Pass	Peak
9920	/	/	/	/	46.01	54	Pass	Average

Remark :

AV value = PK value- 8.9dB

\*: When PK value is lower than AV limit 54 dBuV/m, then AV value is deemed to be comply with AV limit too .



	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	50.77	27.53	5.47	29.93	53.84	74.00	-20.16	Peak

## 6. 20 dB bandwidth Test

### 6.1 Test Procedure

#### Clause 15.215(c) 20dB Bandwidth:

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

#### Remark

**All data listed in original report .**

## 7. Band Edge Compliance Test

### 7.1 Test Procedure

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

### Remark

**All data listed in original report .**

## 8. Carrier Frequency Separation Test

### 8.1 Test Procedure

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

The peak detector was used with 100 kHz/300 kHz RBW/VBW

### Remark

**All data listed in original report .**

## 9. Output Power Test

### 9.1 Test Procedure

The maximum peak conducted output power of the intentional radiator shall not exceed the following:

(1) For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 W. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 W.

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### Remark

**All data listed in original report .**

## 10. NUMBER OF HOPPING FREQUENCY TEST

### 10.1 Test Procedure

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.  
Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

### Remark

All data listed in original report .

## 11. DWELL TIME TEST

### 11.1 Test Procedure

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

### Remark

All data listed in original report .

## 12 POWER LINE CONDUCTED EMISSION TEST

### 12.1 Test Procedure

An intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50  $\Omega$  line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

\*.Decreases with the logarithm of the frequency.

### 12.2 Measurement Equipment

	Equipment	Last Calibration	Type	Serial No.	Manufacturer
<input checked="" type="checkbox"/>	Shielding Room	Jul. 04 2012	7.0(L)x3.0(W)x3.0(H)	GTS252	ZhongYu Electron
<input checked="" type="checkbox"/>	EMI Test Receiver	Jul. 04 2012	ESCS30	1102.4500K30	Rohde & Schwarz
<input checked="" type="checkbox"/>	10dB Pulse Limita	Jul. 04 2012	N/A	GTS224	Rohde & Schwarz
<input checked="" type="checkbox"/>	LISN	Jul. 04 2012	NSLK 8127	8127549	SCHWARZBECK MESS-ELEKTRONIK
<input checked="" type="checkbox"/>	Coaxial Cable	Apr. 01 2012	N/A	N/A	GTS

### 12.3 Test Result

The EUT was placed on a non-metallic table, 80cm above the ground plane. The other peripheral devices power cord connected to the power mains through another line impedance stabilization network. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4-2003 on conducted Emission test.

#### Preview measurements:

0.15 MHz to 30 MHz

Receiver settings: PK&AV detector

RBW:9 kHz

TX MODE

#### Final measurement:

0.15 MHz to 30 MHz

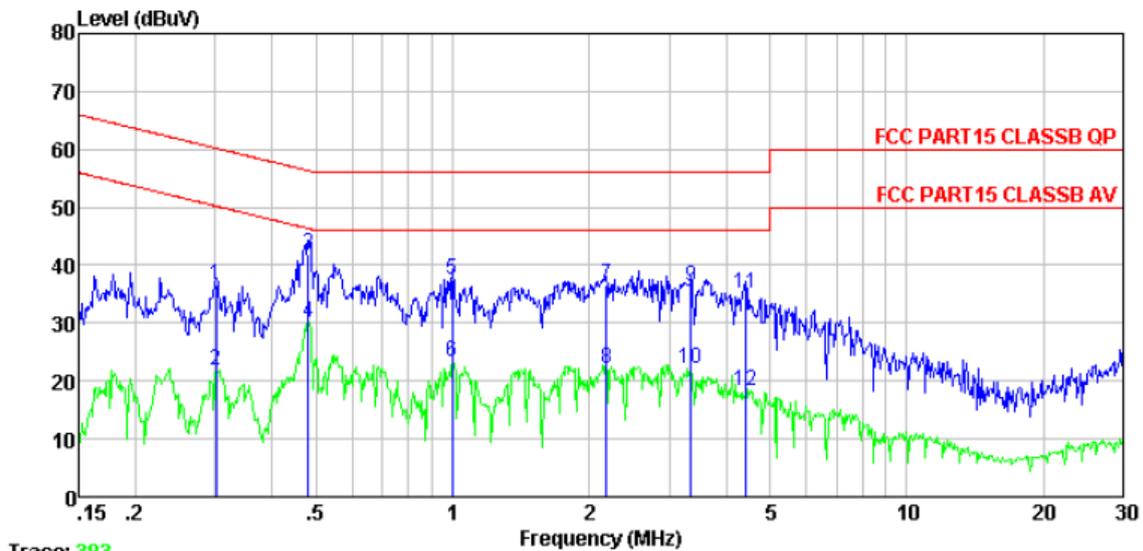
Receiver settings:QP&AV detector

Adapter used	Power Line	Test Data	Test Result
BLJ5W050050U-U	Line	Table 12-1	Pass
	Neutral	Table 12-2	Pass

#### NOTES:

1. Measurements using CISPR quasi-peak mode & average mode.
2. All modes of operation were investigated and the worst -case emission are reported.
- 3: If PK value is lower than AV limit then no reading value listed in report .If QP value is Lower than AV limit ,then AV value don't listed in report.

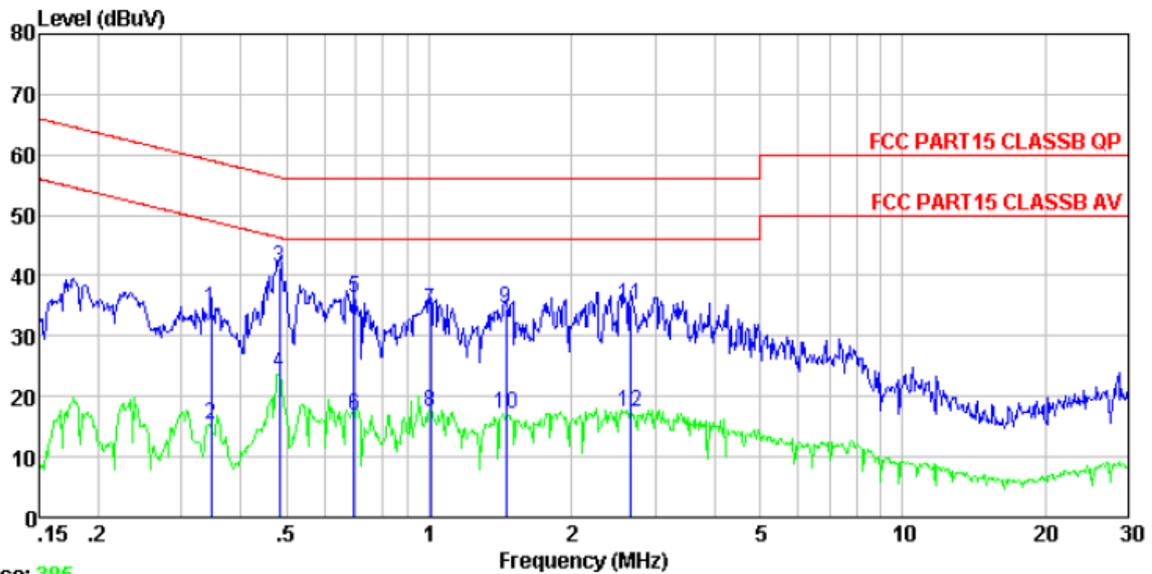
12.3.1 Table 12-1



Trace: 383

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.302	36.76	-0.22	0.10	36.64	60.19	-23.55	QP
2	0.302	22.00	-0.22	0.10	21.88	50.19	-28.31	Average
3	0.481	42.13	-0.21	0.10	42.02	56.32	-14.30	QP
4	0.481	30.22	-0.21	0.10	30.11	46.32	-16.21	Average
5	1.000	37.57	-0.21	0.10	37.46	56.00	-18.54	QP
6	1.000	23.45	-0.21	0.10	23.34	46.00	-22.66	Average
7	2.178	36.75	-0.24	0.10	36.61	56.00	-19.39	QP
8	2.178	22.34	-0.24	0.10	22.20	46.00	-23.80	Average
9	3.346	36.34	-0.26	0.10	36.18	56.00	-19.82	QP
10	3.346	22.35	-0.26	0.10	22.19	46.00	-23.81	Average
11	4.407	35.32	-0.29	0.10	35.13	56.00	-20.87	QP
12	4.407	18.43	-0.29	0.10	18.24	46.00	-27.76	Average

12.3.2 Table 12-2



Trace: 385

	Read Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.346	34.57	-0.09	0.10	34.58	59.05	-24.47	QP
2	0.346	15.25	-0.09	0.10	15.26	49.05	-33.79	Average
3	0.484	41.24	-0.08	0.10	41.26	56.27	-15.01	QP
4	0.484	24.01	-0.08	0.10	24.03	46.27	-22.24	Average
5	0.694	36.44	-0.08	0.10	36.46	56.00	-19.54	QP
6	0.694	16.76	-0.08	0.10	16.78	46.00	-29.22	Average
7	1.005	34.13	-0.09	0.10	34.14	56.00	-21.86	QP
8	1.005	17.44	-0.09	0.10	17.45	46.00	-28.55	Average
9	1.456	34.52	-0.10	0.10	34.52	56.00	-21.48	QP
10	1.456	17.03	-0.10	0.10	17.03	46.00	-28.97	Average
11	2.664	35.24	-0.12	0.10	35.22	56.00	-20.78	QP
12	2.664	17.47	-0.12	0.10	17.45	46.00	-28.55	Average

## **13 Antenna requirement**

### **13.1 Requirement**

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 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### **13.2 Result**

The antenna used for this product is Internal Patch antenna that no antenna other than that furnished by the responsible party shall be used with the device, The maximum peak gain of this antenna is 0dBi.

**14.MPE****Applicable Standard**

According to §1.1307(b)(5), systems operating under the provisions of this section shall be operated in a manner

that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Portable device. **KDB616217 was used as the guidance.**

According to §1.1310 and §2.1093 RF exposure is calculated.

**Measurement Result****Remark**

**All data listed in original report .**

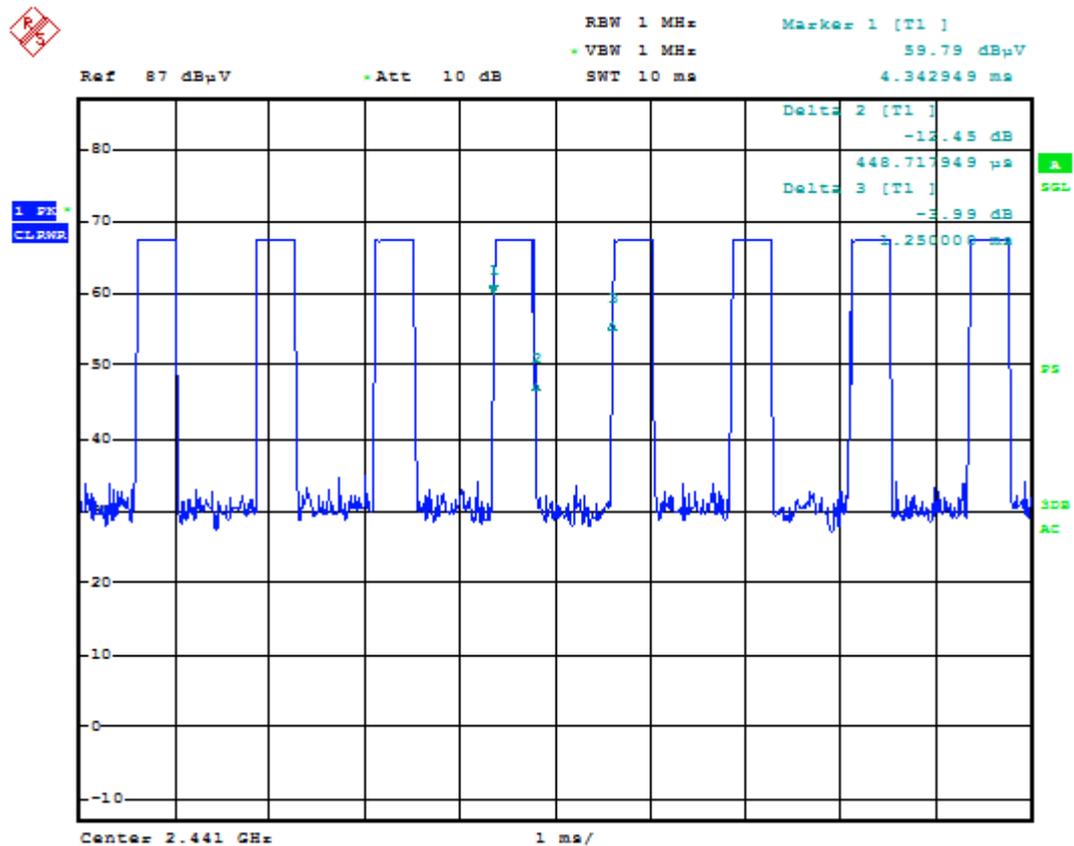
## Appendix A Duty cycle

### Remark

All data listed in original report .

So the duty cycle is  $(0.4487 \times 8) \times 10 / 100 = 35.9\%$

So duty cycle factor is 8.9dB



## **Appendix B Sample Label**

### **Labelling Requirements**

The sample label shown shall be permanently affixed at a conspicuous location on the device and be readily visible to the user at the time of purchase.

\*\*\* The following paragraph specified in the label.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**END OF REPORT**