



## FCC 47 CFR PART 15 SUBPART C TEST REPORT

**FOR**

**2.4G Nano Dongle**

Model : VP3820D

Trade Name: SMK-Link

Issued to

SMK-Link Electronics Corporation  
3601-B Calle Tecate, Camarillo, CA 93012, USA

Issued by

WH Technology Corp.



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## 1. GENERAL INFORMATION

**Applicant** : SMK-Link Electronics Corporation

**Address** : 3601-B Calle Tecate, Camarillo, CA 93012, USA

**Manufacturer** : Precision Squared Technology Corp.

**Address** : 5F-7, No.2, JIAN BA ROAD, Zhonghe Dist., New Taipei City 235, Taiwan

**EUT** : 2.4G Nano Dongle

**Model Name** : VP3820D

**Model Differences** : N/A

Is here with confirmed to comply with the requirements set out in the FCC Rules and Regulations Part 15 Subpart C and the measurement procedures were according to ANSI C63.4-2009. The said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

### FCC part 15 subpart C

Receipt Date : 03/08/2016

Final Test Date : 04/25/2016

Tested by:

Bell Wei/ Engineer

Reviewed by:

Mike Lee / Manager

(Place)

(Date)

(Signature)

Designation Number: TW1083



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## 1.1 DESCRIPTION OF THE TESTED SAMPLES

EUT Name : 2.4G Nano Dongle

Model Number :: VP3820D

FCCID Number IE3VP3820R16

Receipt Date : 03/08/2014

Input Voltage : 5 Vdc (From PC)

Power From ☐ Inside ☒ Outside  
☐ Adaptor ☐ BATTERY ☐ AC Power Source  
☐ DC Power Source ☒ Support Unit PC

Operate Frequency : Refer to the channel list as described below

Modulation Technique : GFSK

Number of Channels : 16

Channel spacing : ☐ N/A ☒ 1 MHz

Operating Mode : ☐ Simplex ☒ Half Duplex

Antenna Type : ☒ integral antenna: PCB Printing  
☐ a dedicated antenna

Antenna gain 0 dBi



Channel	Freq.(MHz)
1	2424
2	2425
3	2429
4	2433
5	2437
6	2441
7	2445
8	2449
9	2450
10	2454
11	2458
12	2462
13	2466
14	2476
15	2477
16	2479



## **2. TEST METHODOLOGY**

All testing as described bellowed were performed in accordance with ANSI C63.4:2009 and FCC CFR 47 Part 15 Subpart C.

### **2.1 GENERAL TEST PROCEDURES**

#### **Conducted Emissions**

The EUT is placed on a wood table, which is at 0.8 m above ground plane acceding to clause 15.207 and requirements of ANSI C63.4:2009. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz are using CISPR Quasi-Peak / Average detectors.

#### **Radiated Emissions**

The EUT is a placed on a turn table, which is 0.8 m above ground plane. The turntable was rotated through 360 degrees to determine the position of maximum emission level. The EUT is placed at 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.



## 2.2 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

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

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423		
10.495 - 0.505	16.69475 -	399.9 - 410	4.5 - 5.15
2.1735 - 2.1905	16.69525	608 - 614	5.35 - 5.46
4.125 - 4.128	16.80425 -	960 - 1240	7.25 - 7.75
4.17725 - 4.17775	16.80475	1300 - 1427	8.025 - 8.5
4.20725 - 4.20775	25.5 - 25.67	1435 - 1626.5	9.0 - 9.2
6.215 - 6.218	37.5 - 38.25	1645.5 - 1646.5	9.3 - 9.5
6.26775 - 6.26825	73 - 74.6	1660 - 1710	10.6 - 12.7
6.31175 - 6.31225	74.8 - 75.2	1718.8 - 1722.2	13.25 - 13.4
8.291 - 8.294	108 - 121.94	2200 - 2300	14.47 - 14.5
8.362 - 8.366	123 - 138	2310 - 2390	15.35 - 16.2
8.37625 - 8.38675	149.9 - 150.05	2483.5 - 2500	17.7 - 21.4
8.41425 - 8.41475	156.52475 -	2655 - 2900	22.01 - 23.12
12.29 - 12.293	156.52525	3260 - 3267	23.6 - 24.0
12.51975 - 12.52025	156.7 - 156.9	3332 - 3339	31.2 - 31.8
12.57675 - 12.57725	162.0125 - 167.17	3345.8 - 3358	36.43 - 36.5
13.36 - 13.41	167.72 - 173.2	3600 - 4400	( <sup>2</sup> )
	240 - 285		
	322 - 335.4		

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

## 2.3 DESCRIPTION OF TEST MODES

The EUT was tested under following modes:

### Modes:

1. Continuous transmitting

### Channels:

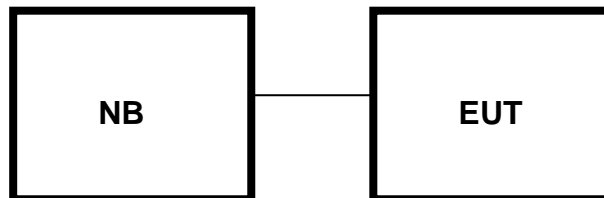
1. 2.424 GHz (Lowest Channel)
2. 2.450 GHz (Middle Channel)
3. 2.479 GHz (Highest Channel)



## 2.4 DESCRIPTION OF THE SUPPORT EQUIPMENTS

### Setup Diagram

See test photographs attached in appendix 1 for the actual connections between EUT and support equipment.







**Support Equipment**

Peripherals Devices:

OUTSIDE SUPPORT EQUIPMENT							
No.	Equipment	Model	Serial No.	FCC ID/BSMI ID	Trade name	Data Cable	Power Cord
1.	Notebook	B470	WB0604823	R33B65	lenovo	N/A	N/A

**Note:** All the above equipment /cable were placed in worse case position to maximize emission signals during emission test

**Grounding:** Grounding was in accordance with the manufacturer's requirement and conditions for the intended use.



### 3. TEST AND MEASUREMENT EQUIPMENT

#### 3.1 CALIBRATION

The measuring equipment utilized to perform the tests documented in the report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

#### 3.2 EQUIPMENT

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and. Other required standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective.

**Table 1 List of Test and Measurement Equipment**

Test Site	Instrument	Manufacturer	Model No.	S/N	Next Cal. Date
Conduction	EMI Receiver	R&S	ESHS10	830223/008	105/05/20
	LISN	Rolf Heine Hochfrequenztechnik	NNB-2/16z	98062	105/05/20
	RF Cable	N/A	N/A	EMI-3	105/10/20
Radiation	Bilog antenna(30M-1G)	Schwarzbeck	VULB9161	4019	105/10/26
	Double Ridged Guide Horn antenna(1G-18G)	ETC	MCTD 1209	DRH15N0 2009	105/11/18
	Pre amplifier (30M-1G)	Anritsv	MH648A	M15180	105/10/20
	Microwave Preamplifier (1G-18G)	EMC INSTRUMENT	EMC051845	980108&AT -18001	105/10/22
	EMI Test Receiver	R&S	ESVS30 (20M-1000MHz)	863342/012	105/10/22
	RF Cable (open site)	EMCI	N male on end of both sides (EMI4)	30m	105/10/21
	RF CABLE (1~26.5G) (output)	HARBOUT INDUSTRIES	LL142MI(4M+4M)	NA	106/03/08
	RF CABLE (1~26.5G) (input)	HARBOUR INDUSTRIES	LL142MI(7M)	NA	105/08/20
	Spectrum (9K--7GHz)	R&S	FSP7	830180/006	105/02/25
	Spectrum (9K--40GHz)	AGILENT	8564EC	4046A0032	106/01/03

● CALIBRATION INTERVAL OF INSTRUMENTS LISTED ABOVE IS ONE YEAR



#### 4. SECTION 15.249 REQUIREMENTS (FUNDAMENTAL/ HARMONICS)

##### 4.1 TEST SETUP

Refer to paragraph 6.1.

##### 4.2 LIMIT

Fundamental Frequency (MHz)	Field Strength of Fundamental (dB $\mu$ V/m at 3-meter)	Detector
902 - 928 2400 – 2483 5725 - 5875	114	Peak
902 - 928 2400 – 2483 5725 - 5875	94	AV

Fundamental Frequency (MHz)	Field Strength of Harmonics (dB $\mu$ V/m at 3-meter)	Detector
902 - 928 2400 – 2483 5725 - 5875	74	Peak
902 - 928 2400 – 2483 5725 - 5875	54	AV

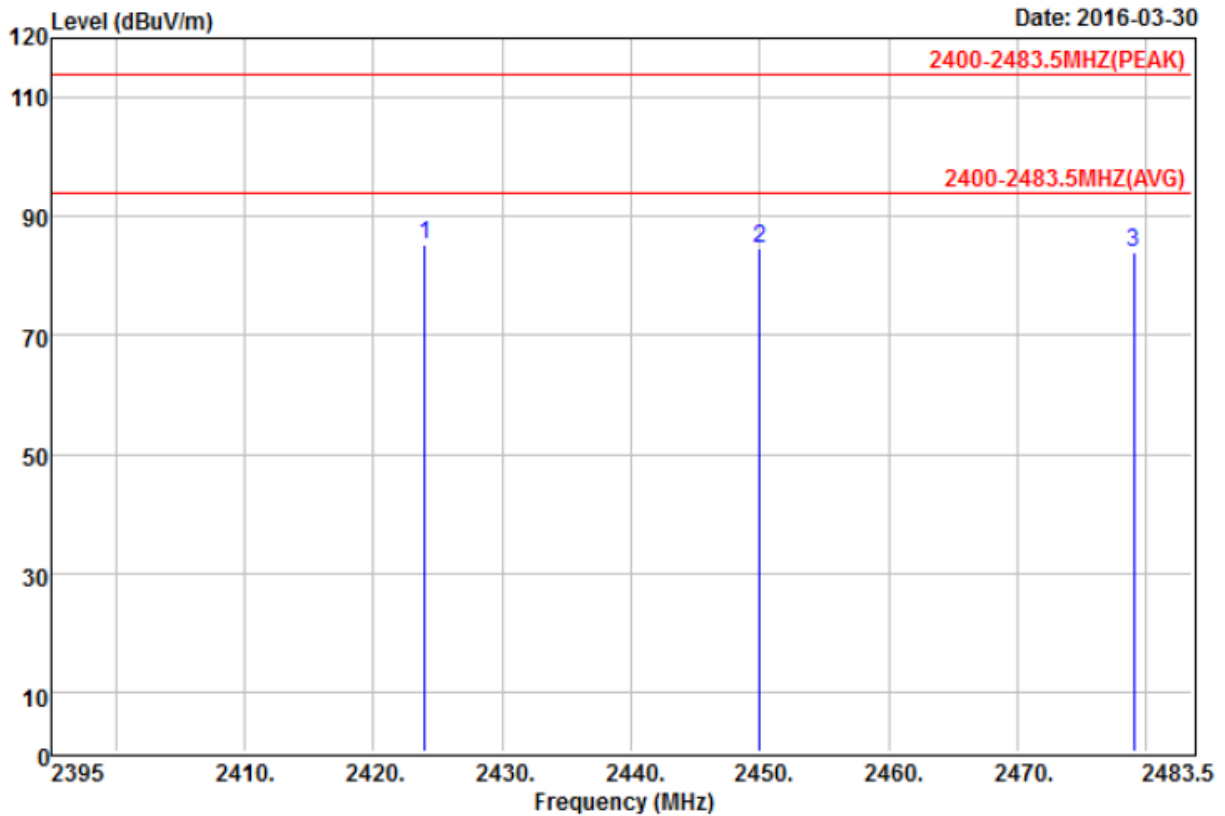
##### 4.3 RESULT: PASSED

##### 4.4 TEST DATA:



## Fundamental

Horizontal



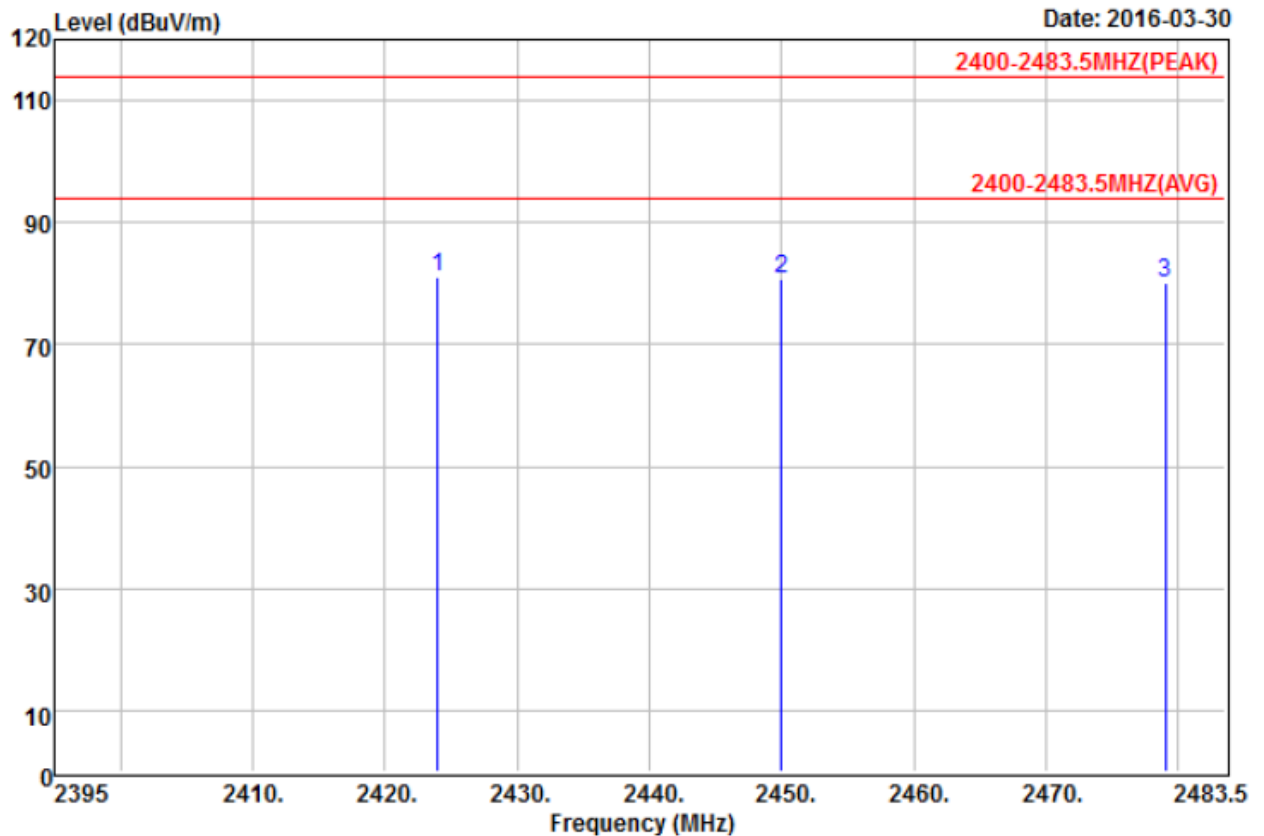
Site : open site  
Condition : 2400-2483.5MHz(PEAK) 3m MCTD-1209(1-18G)-105 HORIZONTAL  
EUT : VP3820\_dongle  
Power : DC 5V  
Mode : TX-CH 2424 - MI 2450 - HI 2479MHz  
Temperature : 23  
Humidity : 60  
Mode : Fundamental

Remarks: : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor+Cable loss-  
: Amplifier Factor

		Read			Over	Limit	
	Freq	Level	Factor	Level	Limit	Line	Remark
	MHz	dBuV	dB/m	dBuV/m	dB	dBuV/m	
1	2424.00	99.56	-14.29	85.27	-28.73	114.00	Peak
2	2450.00	98.73	-14.21	84.52	-29.48	114.00	Peak
3	2479.00	98.18	-14.12	84.06	-29.94	114.00	Peak



## Vertical



Site : open site  
Condition : 2400-2483.5MHZ(PEAK) 3m MCTD-1209(1-18G)-105 VERTICAL  
EUT : VP3820\_dongle  
Power : DC 5V  
Mode : TX-CH 2424 - MI 2450 - HI 2479MHz  
Temperature : 23  
Humidity : 60  
Mode : Fundamental

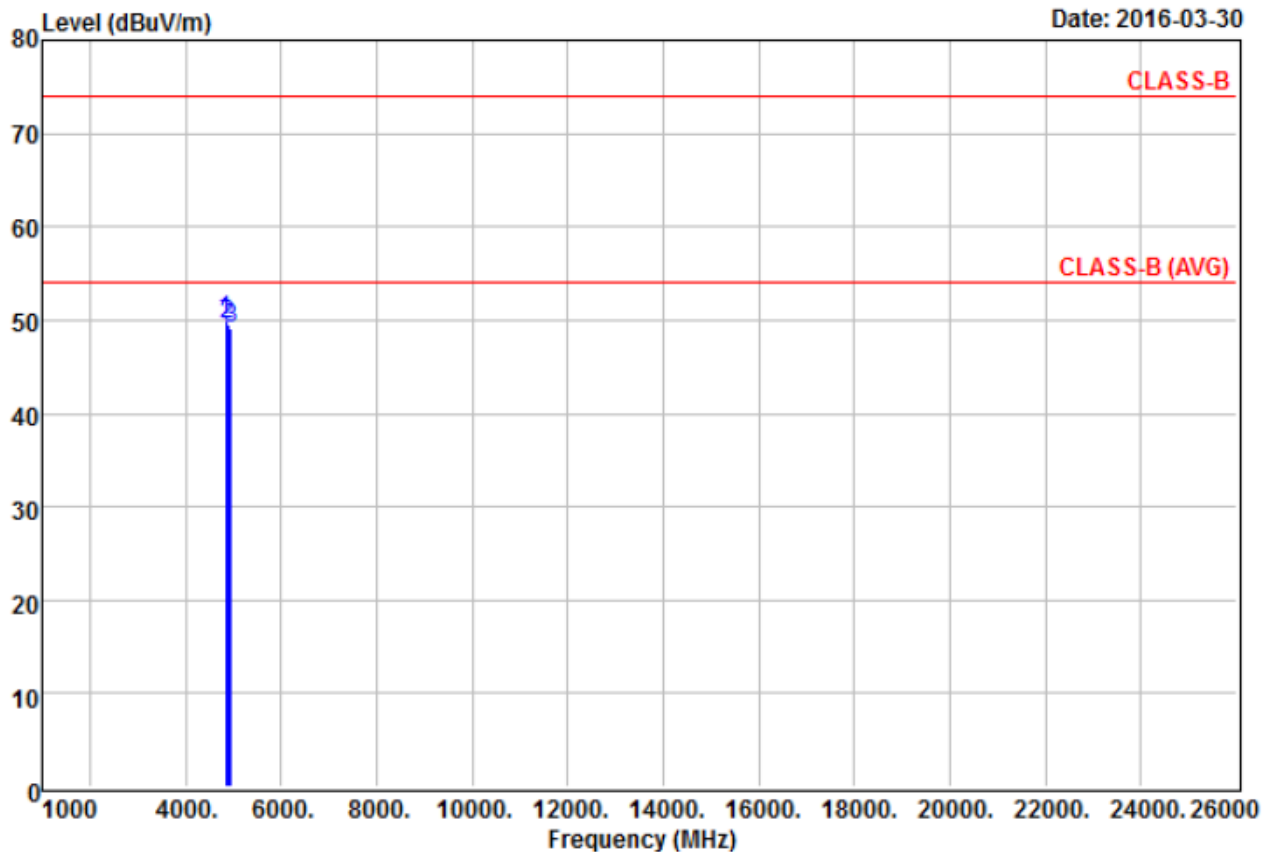
Remarks: : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor+Cable loss-  
: Amplifier Factor

		Read			Over	Limit	
	Freq	Level	Factor	Level	Limit	Line	Remark
	MHz	dBuV	dB/m	dBuV/m	dB	dBuV/m	
1	2424.00	95.47	-14.29	81.18	-32.82	114.00	Peak
2	2450.00	94.90	-14.21	80.69	-33.31	114.00	Peak
3	2479.00	94.20	-14.12	80.08	-33.92	114.00	Peak



## Harmonics

Horizontal



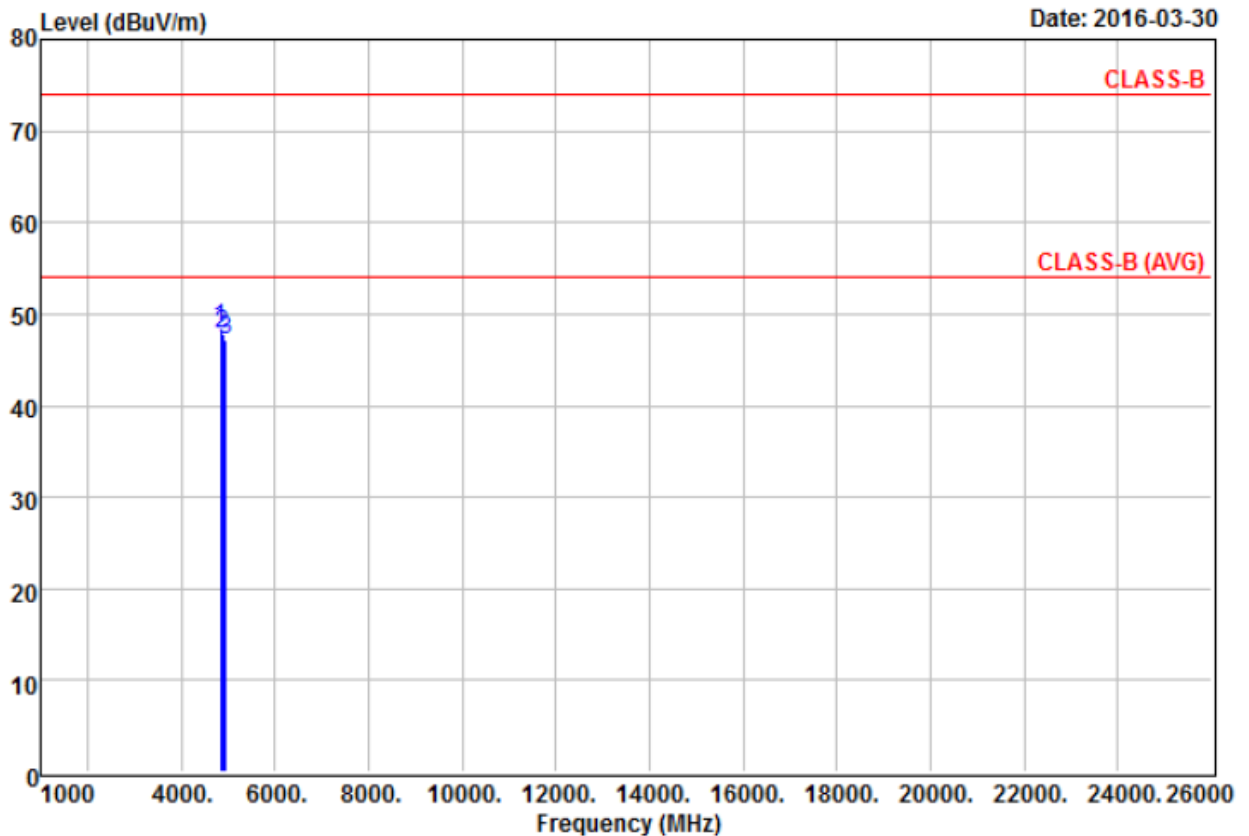
Site : open site  
Condition : CLASS-B 3m MCTD-1209(1-18G)-105 HORIZONTAL  
EUT : VP3820\_dongle  
Power : DC 5V  
Mode : TX-CH 2424 - MI 2450 - HI 2479MHz  
Temperature : 23  
Humidity : 60  
Mode : Harmonics

Remarks: :  
: 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor+Cable loss-  
: Amplifier Factor

		Read			Over	Limit	
	Freq	Level	Factor	Level	Limit	Line	Remark
	MHz	dBuV	dB/m	dBuV/m	dB	dBuV/m	
1	4848.00	56.26	-6.29	49.97	-24.03	74.00	Peak
2	4900.00	55.69	-6.20	49.49	-24.51	74.00	Peak
3	4958.00	55.14	-6.09	49.05	-24.95	74.00	Peak



## Vertical



Site : open site  
Condition : CLASS-B 3m MCTD-1209(1-18G)-105 VERTICAL  
EUT : VP3820\_dongle  
Power : DC 5V  
Mode : TX-CH 2424 - MI 2450 - HI 2479MHz  
Temperature : 23  
Humidity : 60  
Mode : Harmonics

Remarks: : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor+Cable loss-  
: Amplifier Factor

		Read			Over	Limit	
	Freq	Level	Factor	Level	Limit	Line	Remark
	MHz	dBuV	dB/m	dBuV/m	dB	dBuV/m	
1	4848.00	54.68	-6.29	48.39	-25.61	74.00	Peak
2	4900.00	54.07	-6.20	47.87	-26.13	74.00	Peak
3	4958.00	53.27	-6.09	47.18	-26.82	74.00	Peak



Note:

1. Emission level = Reading level + Correction factor
2. Correction factor : Antenna factor, Cable loss, Pre-Amp, etc.
3. All emissions as described above were determining by rotating the EUT through three orthogonal axes to maximizing the emissions if the EUT belongs to hand-held or body-worn devices.
4. Measurements above 1000 MHz, Peak detector setting: use a 1 MHz RBW, a 3 MHz VBW.
5. Measurements above 1000 MHz, Average detector setting: 1 MHz RBW with 10 Hz VBW
6. Peak detector measurement data will represent the worst case results.
7. "---" denotes the data which is not available.





## 5. SECTION 15.205 REQUIREMENTS (BAND EDGE)

### 5.1 TEST SETUP

Refer to paragraph 6.1.

### 5.2 LIMIT

Restricted Bands:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 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> )
13.36 - 13.41			

Operation within the bands:

902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

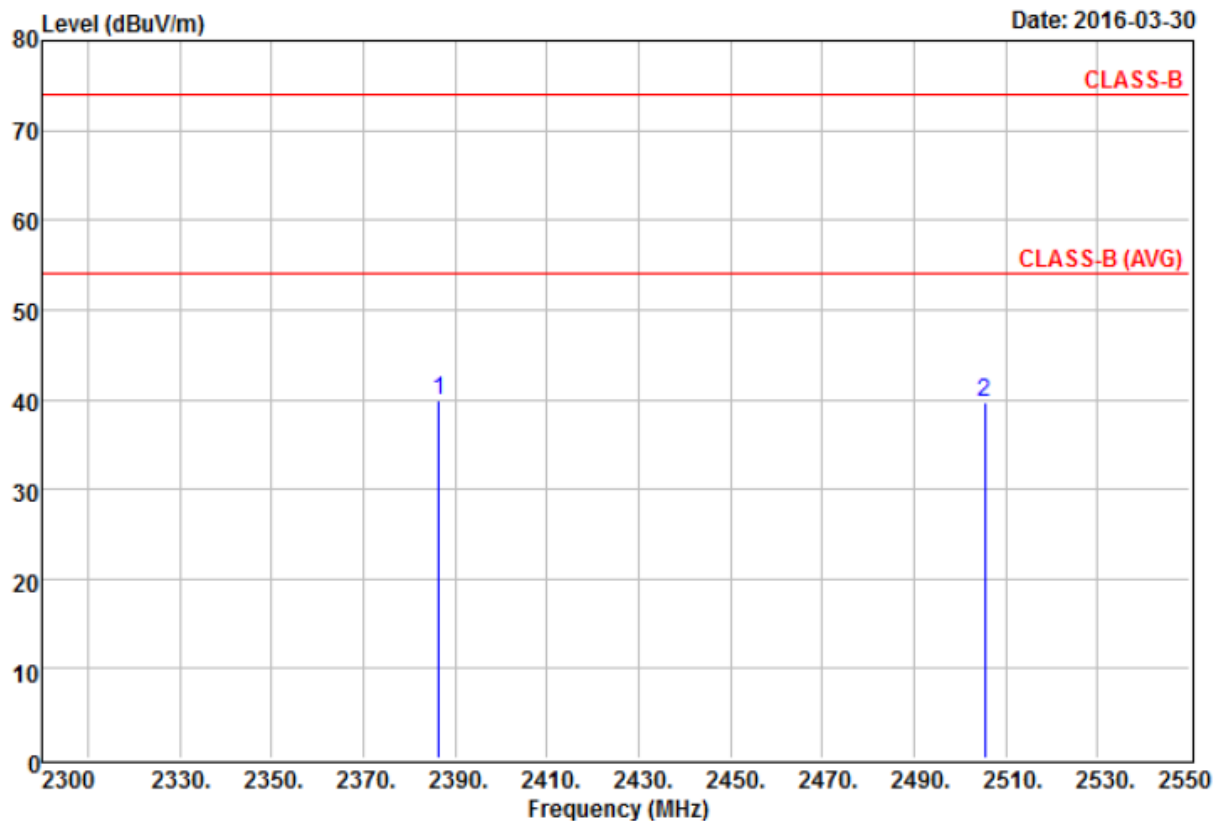
Frequency (Hz)	Field Strength ( $\mu\text{V}/\text{m}$ at 3-meter)	Field Strength ( $\text{dB}\mu\text{V}/\text{m}$ at 3-meter)
1.705-30	30 (at 30-meter)	49.5
30-88	100	40
88-216	150	43
216-960	200	46
Above 960	500	54



## 5.3 RESULT: PASSED

## 5.4 TEST DATA:

Horizontal



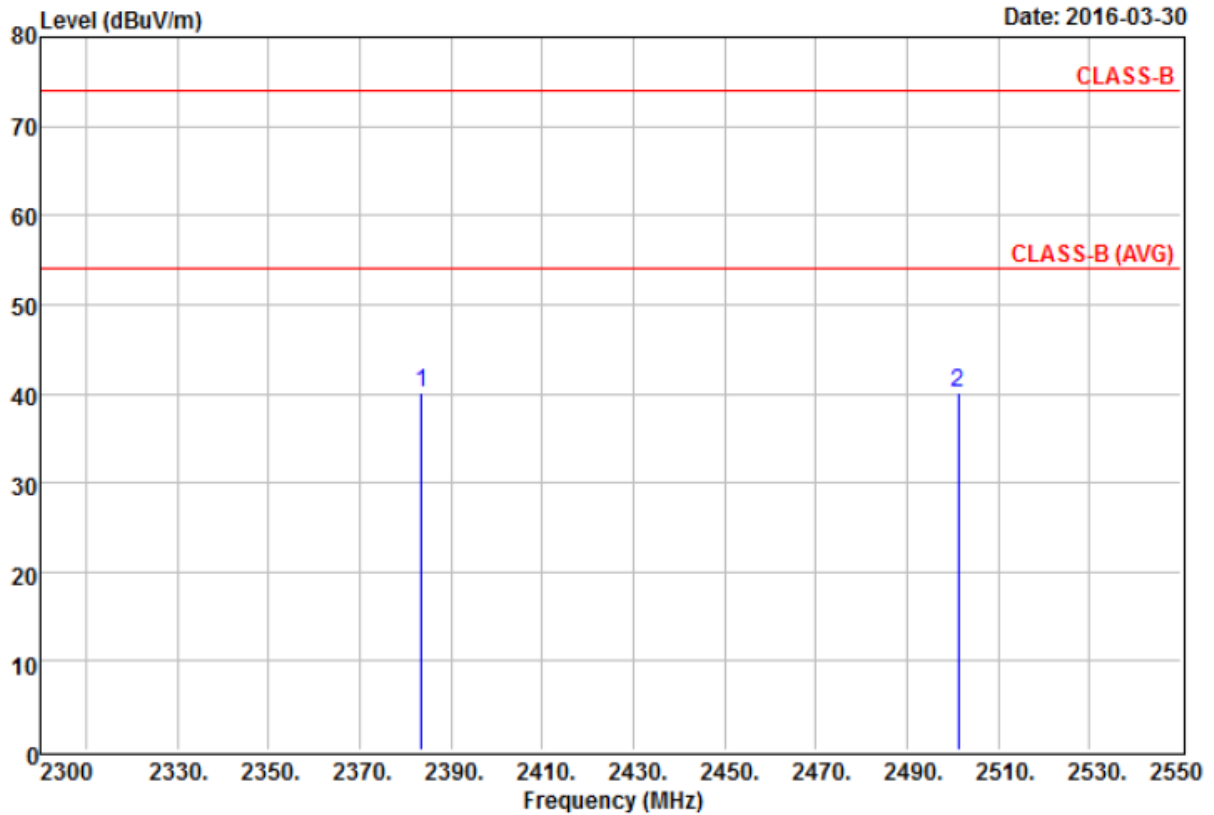
Site : open site  
Condition : CLASS-B 3m MCTD-1209(1-18G)-105 HORIZONTAL  
EUT : VP3820\_dongle  
Power : DC 5V  
Mode : CH LO & HI - Restricted Bands  
Temperature : 23  
Humidity : 60  
Mode :

Remarks: : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor+Cable loss-  
: Amplifier Factor

		Read			Over	Limit	
	Freq	Level	Factor	Level	Limit	Line	Remark
	MHz	dBuV	dB/m	dBuV/m	dB	dBuV/m	
1	2386.50	54.39	-14.41	39.98	-34.02	74.00	Peak
2	2505.40	53.72	-14.02	39.70	-34.30	74.00	Peak



## Vertical



Site : open site  
Condition : CLASS-B 3m MCTD-1209(1-18G)-105 VERTICAL  
EUT : VP3820\_dongle  
Power : DC 5V  
Mode : CH LO & HI - Restricted Bands  
Temperature : 23  
Humidity : 60  
Mode :

Remarks: : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor+Cable loss-  
: Amplifier Factor

		Read			Over	Limit	
	Freq	Level	Factor	Level	Limit	Line	Remark
	MHz	dBuV	dB/m	dBuV/m	dB	dBuV/m	
1	2383.60	54.52	-14.41	40.11	-33.89	74.00	Peak
2	2501.20	54.13	-14.05	40.08	-33.92	74.00	Peak



Note:

1. Emission level = Reading level + Correction factor
2. Correction factor : Antenna factor, Cable loss, Pre-Amp, etc.
3. All emissions as described above were determining by rotating the EUT through three orthogonal axes to maximizing the emissions if the EUT belongs to hand-held or body-worn devices.
4. Measurements above 1000 MHz, Peak detector setting: use a 1 MHz RBW, a 3 MHz VBW.
5. Measurements above 1000 MHz, Average detector setting: 1 MHz RBW with 10 Hz VBW.
6. Peak detector measurement data will represent the worst case results.



## **6. 20DB BANDWIDTH MEASUREMENT**

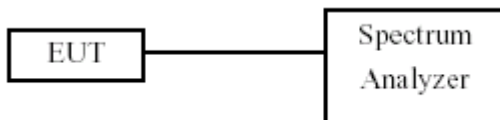
### **6.1 TEST LIMIT**

The minimum of 20dB Bandwidth Measurement is 0.5 MHz.

### **6.2 TEST PROCEDURES**

- a. The transmitter output was connected to the spectrum analyzer.
- b. Set RBW of spectrum analyzer to 1~5% of the emission bandwidth and  $VBW \geq 3x RBW$ .
- c. The 20 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.
- d. The 20dB Bandwidth was measured and recorded.

### **6.3 TEST SETUP LAYOUT**





## 6.4 TEST RESULT AND DATA

Test Date: Apr. 22, 2016

Temperature: 25°C

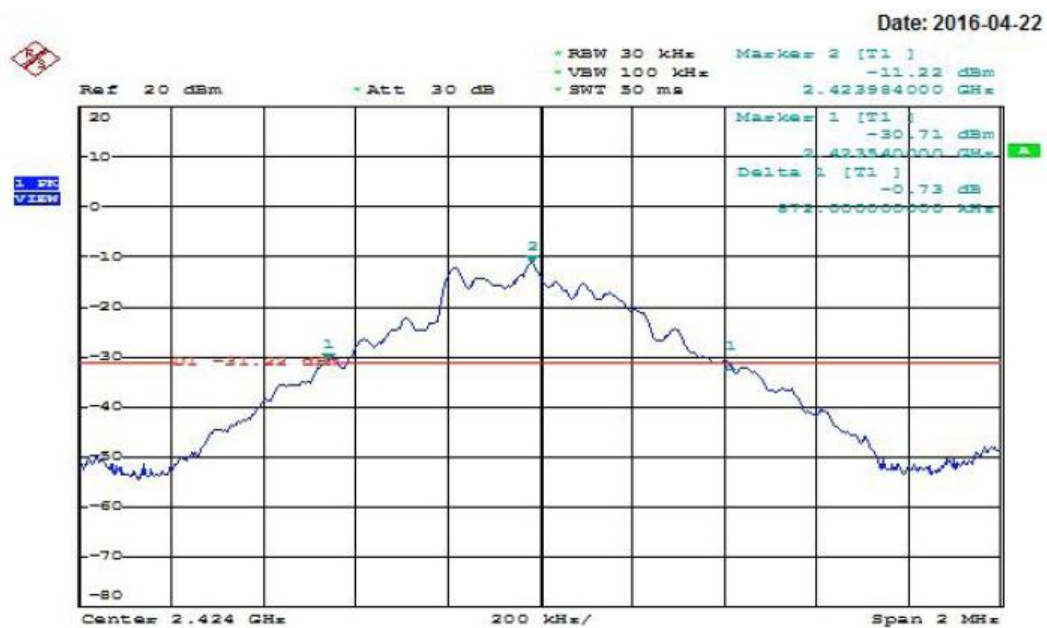
Atmospheric pressure: 1010 hPa

Humidity: 60%

Modulation Standard	Channel	Frequency (MHz)	6dB Bandwidth (MHz)
GFSK (1Mbps)	0	2424	0.872
	19	2450	0.872
	39	2479	0.872

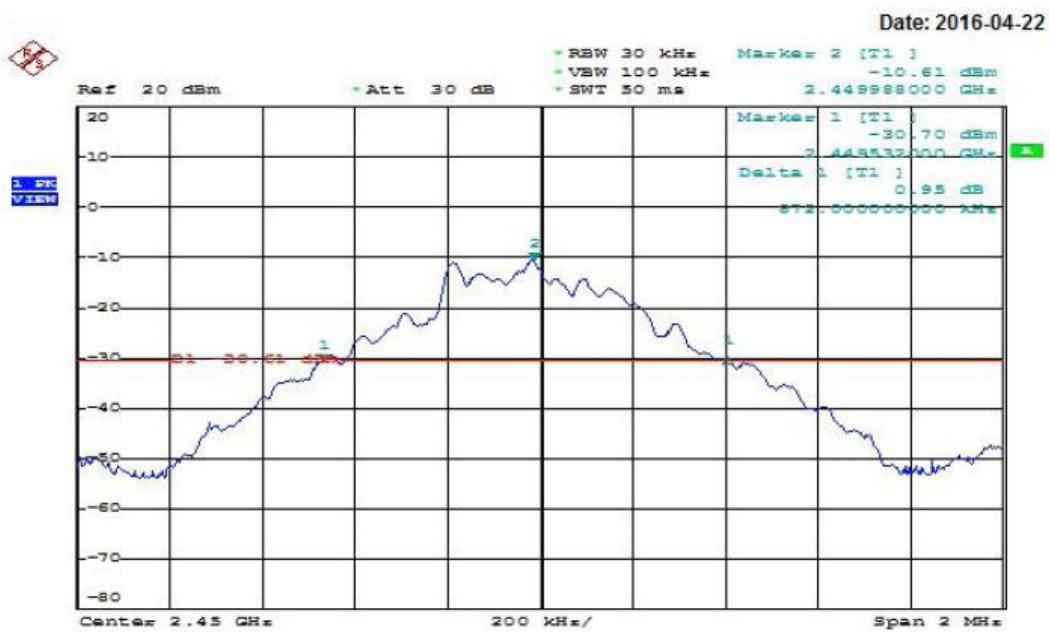
Modulation Standard: GFSK (1Mbps)

Channel: 0



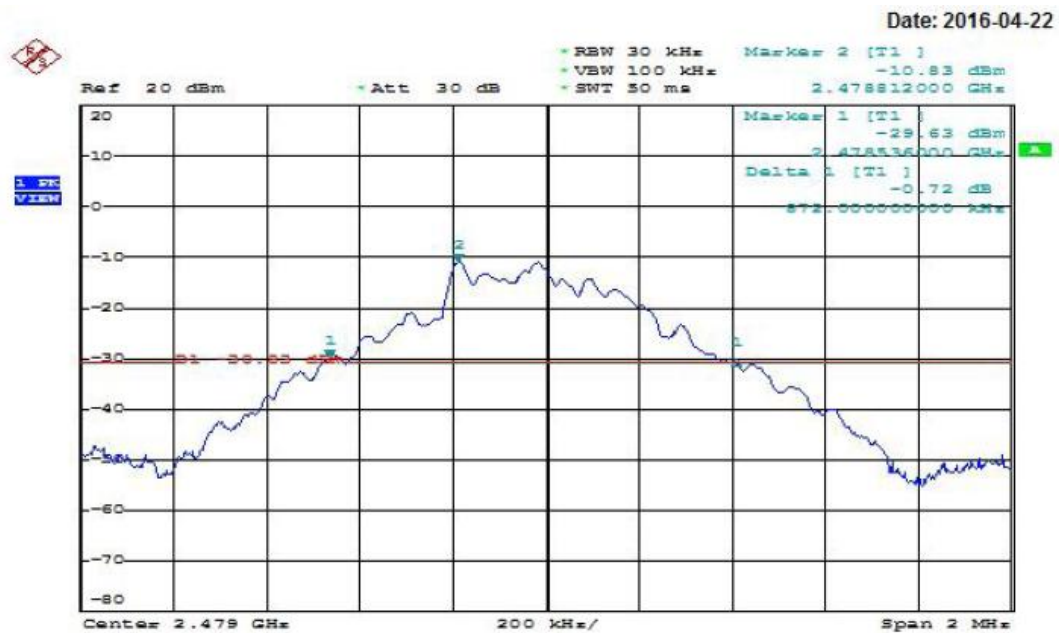


Modulation Standard: GFSK (1Mbps)  
Channel: 19





Modulation Standard: GFSK (1Mbps)  
Channel: 39

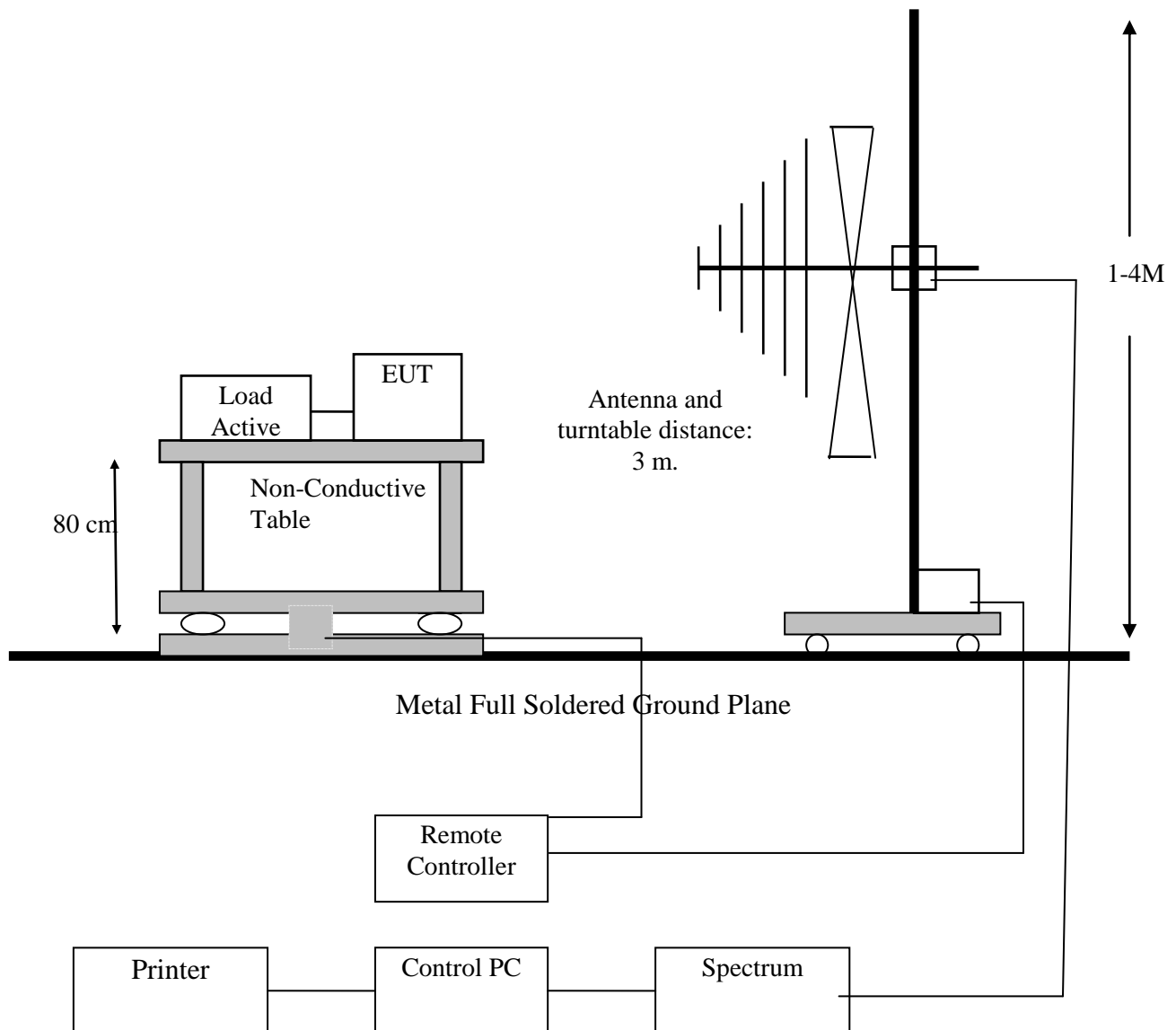






## 7. SECTION 15.209 REQUIREMENTS (GENERAL RADIATED EMISSION)

### 7.1 TEST SETUP





## 7.2 LIMIT

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209 as below.

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
1.705-30	30	30
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500*	3

*\*Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under*

*other sections of this Part, e.g., Sections 15.231 and 15.241.*

*In the above emission table, the tighter limit applies at the band edges.*

Frequency (Hz)	Field Strength ( $\mu$ V/m at 3-meter)	Field Strength (dB $\mu$ V/m at 3-meter)
1.705-30	30 (at 30-meter)	49.5
30-88	100	40
88-216	150	43
216-960	200	46
Above 960	500	54



### **7.3 TEST PROCEDURE**

1. The EUT was placed on a turntable, which was 0.8m above ground plane.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT was set at 3m away from the receiving antenna, which was varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was maximized by changing the polarization of receiving antenna, both horizontal and vertical.
6. Repeated above procedures until the measurements for all frequencies are completed.

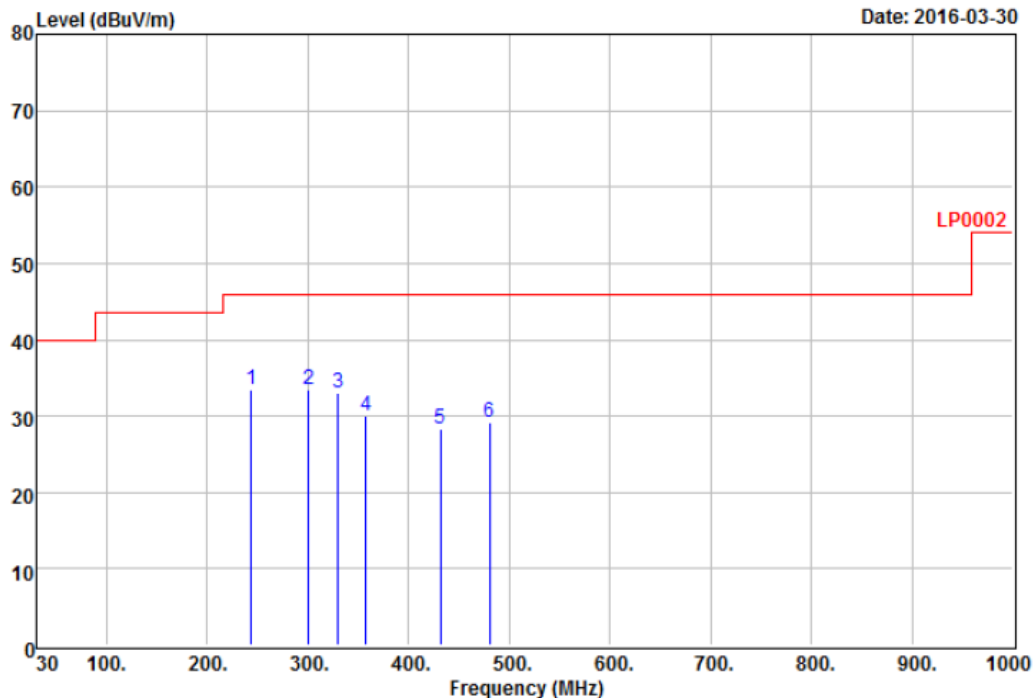
### **7.4 RESULT: PASSED**



## 7.5 TEST DATA:

All frequencies not described in this test report and within the range of the general radiated emission limits are not detectable significantly. The table as below is representing worst emissions found.

Horizontal(worst emissions found)



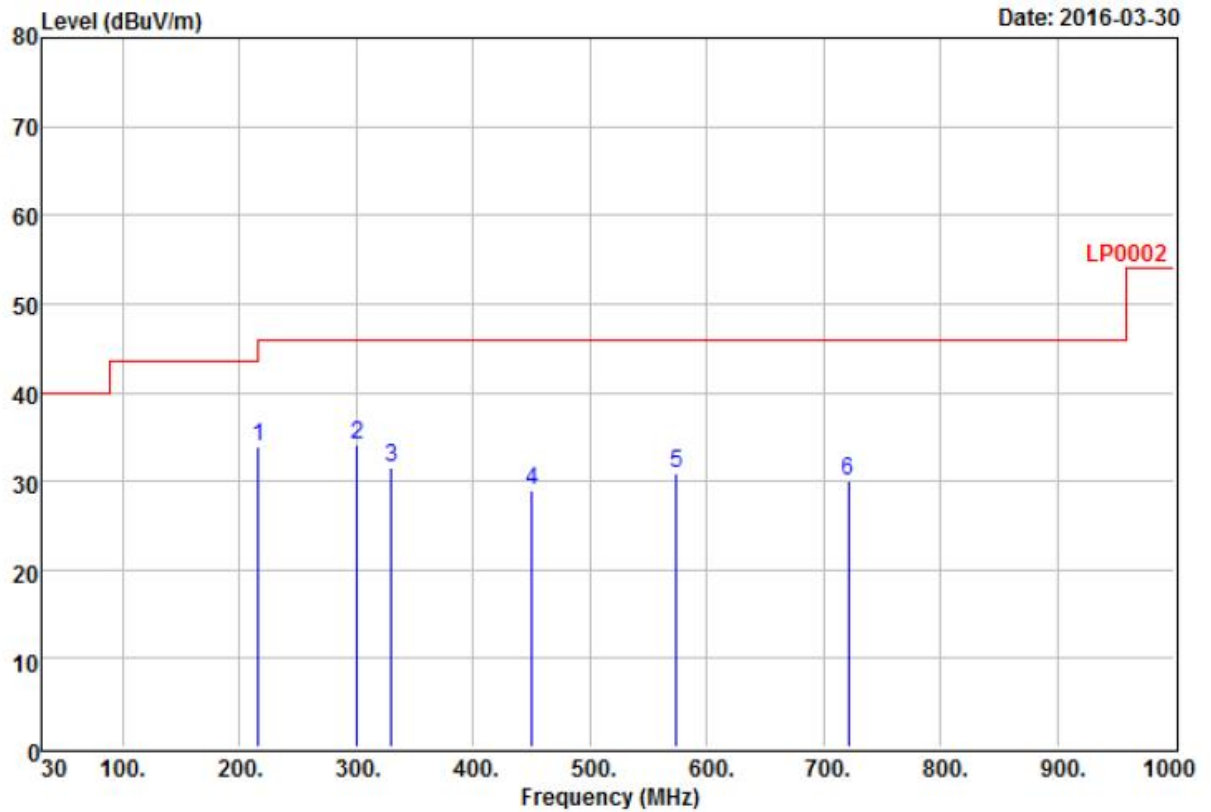
Site : open site  
Condition : LP0002 3m VULB9160(30-1G)-105 HORIZONTAL  
EUT : VP3820\_dongle  
Power : DC 5V  
Mode : BT Operation  
Temperature : 23  
Humidity : 60  
Mode :

Remarks :  
: 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor+Cable loss-  
: Amplifier Factor

		Read			Over	Limit	
	Freq	Level	Factor	Level	Limit	Line	Remark
	MHz	dBuV	dB/m	dBuV/m	dB	dBuV/m	
1	243.40	49.19	-15.70	33.49	-12.51	46.00	QP
2	300.63	47.25	-13.74	33.51	-12.49	46.00	QP
3	329.73	45.94	-12.96	32.98	-13.02	46.00	QP
4	357.86	42.30	-12.23	30.07	-15.93	46.00	QP
5	431.58	38.50	-10.25	28.25	-17.75	46.00	QP
6	480.08	38.19	-9.10	29.09	-16.91	46.00	QP



Vertical(worst emissions found)



Site : open site  
Condition : LP0002 3m VULB9160(30-1G)-105 VERTICAL  
EUT : VP3820\_dongle  
Power : DC 5V  
Mode : BT Operation  
Temperature : 23  
Humidity : 60  
Mode :

Remarks: : 1.Result=Read Value+Factor  
: 2.Factor=Antenna Factor+Cable loss-  
: Amplifier Factor

	Freq	Read		Over	Limit	
	Level	Factor	Level	Limit	Line	Remark
	MHz	dBuV	dB/m	dBuV/m	dB	dBuV/m
1	216.24	48.87	-15.07	33.80	-12.20	46.00 QP
2	300.63	47.90	-13.74	34.16	-11.84	46.00 QP
3	329.73	44.51	-12.96	31.55	-14.45	46.00 QP
4	450.01	38.65	-9.69	28.96	-17.04	46.00 QP
5	574.17	38.13	-7.24	30.89	-15.11	46.00 QP
6	721.61	34.48	-4.43	30.05	-15.95	46.00 QP



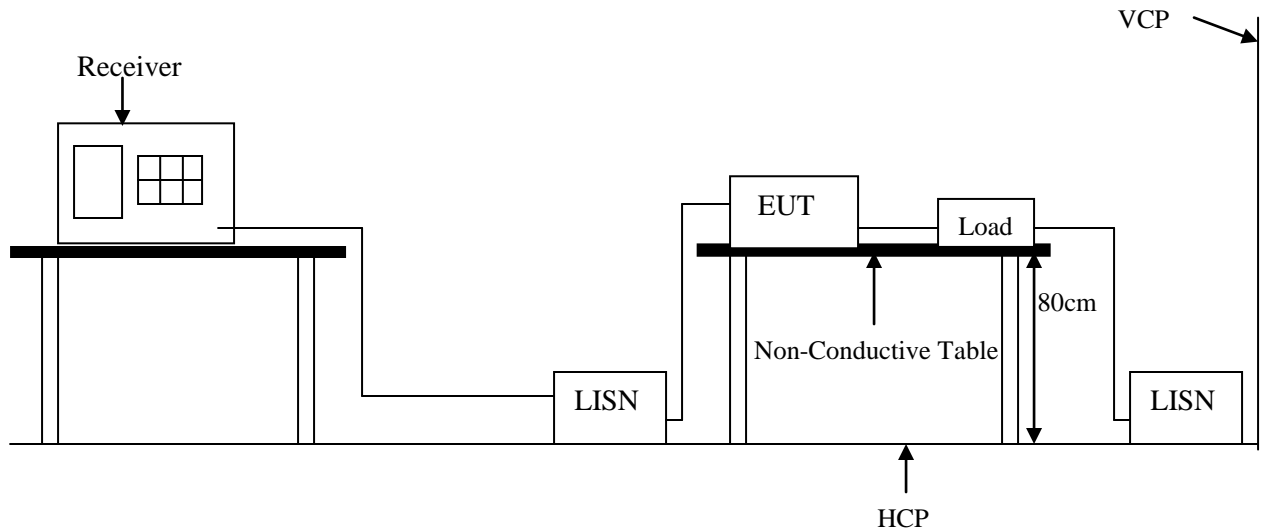
Note:

1. Emission level = Reading level + Correction factor
2. Correction factor : Antenna factor, Cable loss, Pre-Amp, etc.
3. All emissions as described above were determining by rotating the EUT through three orthogonal axes to maximizing the emissions if the EUT belongs to hand-held or body-worn devices.
4. Measurements from 9 kHz to 150 kHz, Peak detector setting: 100 Hz RBW
5. Measurements from 150 kHz to 30MHz, Peak detector setting: 10 kHz RBW
6. Measurements from 30 MHz to 1000 MHz, Peak detector setting: 100 kHz RBW
7. Measurements from 9 kHz to 150 kHz, CISPR Quasi-Peak detector: 200 Hz RBW
8. Measurements from 150 kHz to 30MHz, CISPR Quasi-Peak detector: 9 kHz RBW
9. Measurements from 30 MHz to 1000 MHz, CISPR Quasi-Peak detector: 120 kHz RBW
10. Peak detector measurement data will represent the worst case results.



## 8. SECTION 15.207 REQUIREMENTS (POWERLINE CONDUCTED EMISSIONS)

### 8.1 TEST SETUP



### 8.2 LIMIT

Frequency range (MHz)	CLASS B	
	QP dB(uV)	Average dB(uV)
0.15-0.5	66 - 56 dBuV	56 - 46 dBuV
0.5-5.0	56 dBuV	46 dBuV
5.0-30.0	60 dBuV	50 dBuV

Remark: In the above table, the tighter limit applies at the band edges.

### 8.3 TEST PROCEDURE

The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). It provides a 50 ohm / 50  $\mu$ H coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm / 50  $\mu$ H coupling impedance with 50 ohm termination. (Please refer to the block diagram of the test setup and photograph.)

Both sides of AC line are checked for the maximum conducted emission interference. In order to find the maximum emissions, the relating positions of equipment and all of the interference cables must be changed according to EN 55022 regulations: The measurement procedure on conducted emission interference.

The resolution bandwidth of the field strength meter is set at 9 KHz.



#### **8.4 TEST SPECIFICATION**

According to PART15.207

#### **8.5 RESULT: PASSED**

EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)

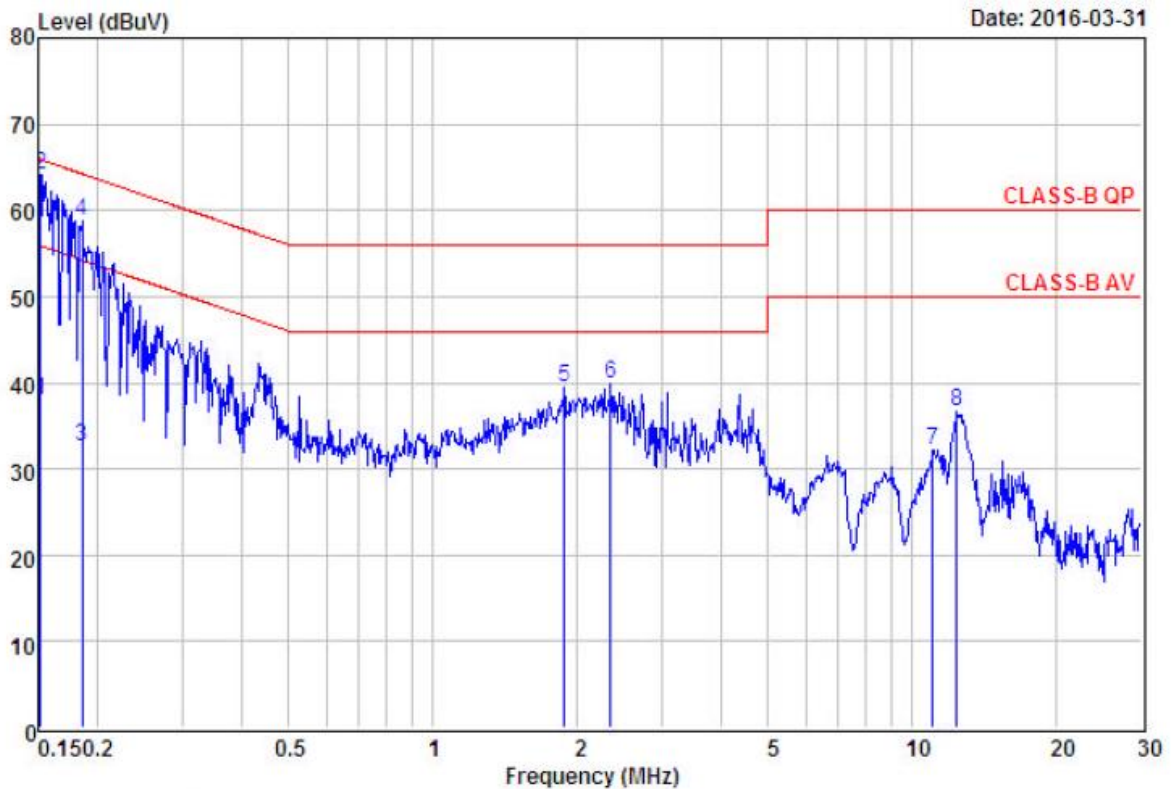
Frequency Range:	150KHz--30MHz
Detector Function:	Quasi-Peak / Average Mode
Resolution Bandwidth:	9KHz

#### **8.6 TEST DATA:**





Line



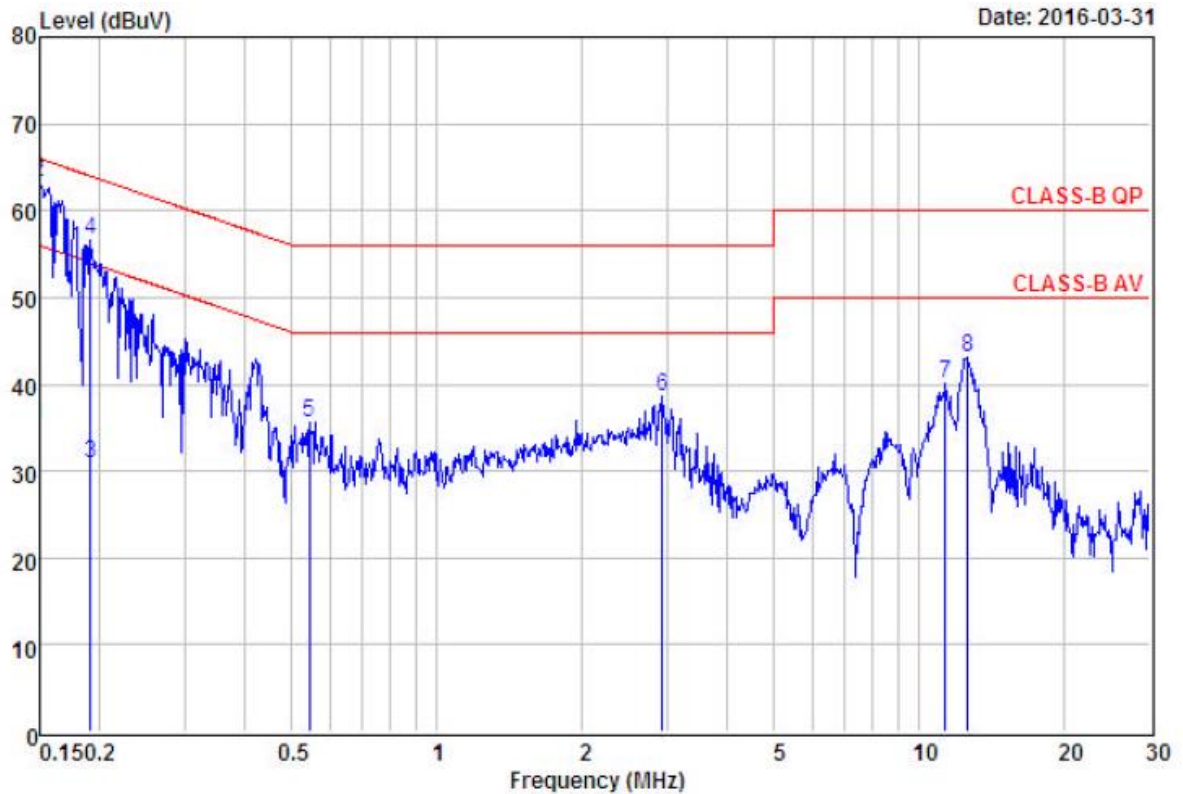
Site : Conduction  
Condition : CLASS-B QP CON-LISN-104 LINE  
EUT : VO3820\_dongle  
Power : PC Supply  
Mode : BT Operation  
Temperature : 22  
Humidity : 55  
Memo :

Remarks: : Factor=Insertion loss+Cable loss

	Freq	Read Level	Level Factor	Over Limit	Limit Line	Remark
	MHz	dBuV	dBuV	dB	dBuV	
1	0.15	37.90	38.02	0.12	-17.89	55.91 Average
2	0.15	64.09	64.21	0.12	-1.70	65.91 Peak
3	0.19	32.50	32.61	0.11	-21.63	54.24 Average
4	0.19	58.55	58.66	0.11	-5.58	64.24 Peak
5	1.88	39.31	39.52	0.21	-16.48	56.00 Peak
6	2.35	39.57	39.80	0.23	-16.20	56.00 Peak
7	11.02	31.76	32.24	0.48	-27.76	60.00 Peak
8	12.38	36.09	36.60	0.51	-23.40	60.00 Peak



Neutral



Site : Conduction  
Condition : CLASS-B QP CON-LISN-104 NEUTRAL  
EUT : VO3820 dongle  
Power : PC Supply  
Mode : BT Operation  
Temperature : 22  
Humidity : 55  
Memo :

Remarks: : Factor=Insertion loss+Cable loss

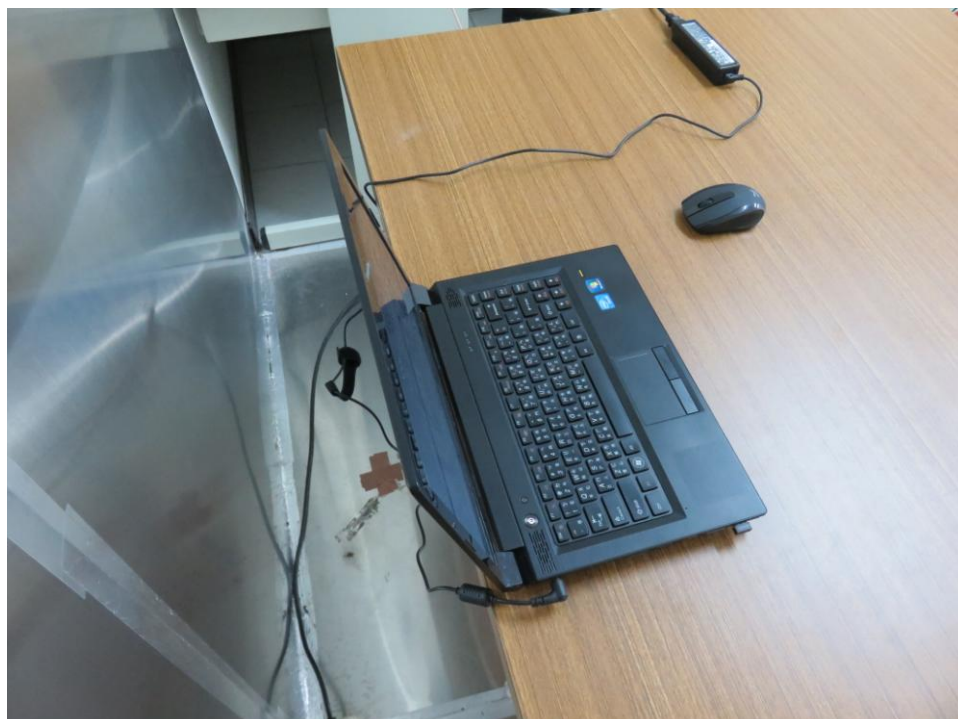
	Freq	Read	Level	Level	Over	Limit	
	MHz	Level	dBuV	Factor	Limit	Line	Remark
			dBuV	dB	dB	dBuV	
1	0.15	35.30	35.39	0.09	-20.61	56.00	Average
2	0.15	63.18	63.27	0.09	-2.73	66.00	Peak
3	0.19	30.80	30.89	0.09	-23.09	53.98	Average
4	0.19	56.47	56.56	0.09	-7.42	63.98	Peak
5	0.54	35.56	35.69	0.13	-20.31	56.00	Peak
6	2.93	38.48	38.71	0.23	-17.29	56.00	Peak
7	11.32	39.76	40.21	0.45	-19.79	60.00	Peak
8	12.58	42.60	43.08	0.48	-16.92	60.00	Peak



# APPENDIX 1

## PHOTOS OF TEST CONFIGURATION

Photograph – Conducted Emission Test Setup







### Photograph – Radiated Emission Test Setup





## **APPENDIX 2**

### **PHOTOS OF EUT**

