



# FCC TEST REPORT (BLUETOOTH+EDR)

**REPORT NO.:** RF110830D08C-1

**MODEL NO.:** INWL01c

**FCC ID:** EHA-INWL01C

**RECEIVED:** Sep. 12, 2013

**TESTED:** Sep. 23 ~ 24, 2013

**ISSUED:** Nov. 19, 2013

**APPLICANT:** Intermec Technologies Corporation

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**ISSUED BY:** Bureau Veritas Consumer Products Services  
(H.K.) Ltd., Taoyuan Branch

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110830D08C-1	Original release	Nov. 19, 2013



## 1. CERTIFICATION

**PRODUCT:** WLAN/BT board  
**BRAND NAME:** Intermec  
**MODEL NO.:** INWL01c  
**APPLICANT:** Intermec Technologies Corporation  
**TESTED:** Sep. 23 ~ 24, 2013  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**STANDARDS:** **FCC Part 15, Subpart C (Section 15.247)**  
ANSI C63.10-2009

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY :** Celia Chen , **DATE:** Nov. 19, 2013  
( Celia Chen / Senior Specialist )

**APPROVED BY :** Rex Lai , **DATE:** Nov. 19, 2013  
( Rex Lai / Assistant Manager )

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	NA	Refer to NOTE below
15.247(a)(1) (iii)	Number of Hopping Frequency Used	NA	Refer to NOTE below
15.247(a)(1) (iii)	Dwell Time on Each Channel	NA	Refer to NOTE below
15.247(a)(1)	1. Hopping Channel Separation 2. Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	NA	Refer to NOTE below
15.247(b)	Maximum Peak Output Power	NA	Refer to NOTE below
15.247(d)	Transmitter Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -7.3dB at 665.59MHz.
15.247(d)	Band Edge Measurement	NA	Refer to NOTE below
15.203	Antenna Requirement	PASS	Antenna connector is SMA (MALE-RP) not a standard connector.

**NOTE:** Test item for Radiated Emission Test was performed for this addendum. Other testing data refer to original report.

### 2.1 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:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

Measurement	Frequency	Uncertainty
Radiated emissions	30MHz ~ 1GHz	4.30 dB
	Above 1GHz	3.36 dB



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	WLAN/BT board
<b>MODEL NO.</b>	INWL01c
<b>NOMINAL VOLTAGE</b>	5.0Vdc
<b>MODULATION TYPE</b>	GFSK, $\pi/4$ -DQPSK, 8DPSK
<b>MODULATION TECHNOLOGY</b>	FHSS
<b>TRANSFER RATE</b>	1/2/3Mbps
<b>OPERATING FREQUENCY</b>	2402 ~ 2480MHz
<b>NUMBER OF CHANNEL</b>	79
<b>OUTPUT POWER</b>	6.8mW
<b>ANTENNA TYPE</b>	Refer to note below
<b>ANTENNA CONNECTER</b>	Refer to note below
<b>DATA CABLE</b>	Refer to User's manual
<b>I/O PORTS</b>	Refer to User's manual
<b>ACCESSORY DEVICES</b>	NA

#### NOTE:

1. This report is a supplementary report of the original one (BV CPS report no.: RF110830D08-1) issued on Oct. 7, 2011 to verify test result for the new antenna source (additional as shaded area):

Brand name	Model name	Type	Connector	Gain (dBi)	Remark
Amphenol	Kilimanjro	Dipole	IPEX U.FL	2	Original
KINSUN INDUSTRIES INC.	6603A03081	Dipole	SMA (MALE-RP)	2.32	Additional

2. The changes are meeting the antenna changes of the permissive changes rules; therefore this report is prepared for FCC class II permissive change.
3. The EUT is a WLAN/BT board, the WLAN & Bluetooth function can't transmit simultaneously.
4. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.



### 3.2 DESCRIPTION OF TEST MODES

79 channels are provided to this EUT:

CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		



### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	RE <sup>3</sup> 1G	RE<1G	PLC	APCM	OB	
-	√	√	Note	Note	Note	-

Where **RE<sup>3</sup>1G**: Radiated Emission above 1GHz      **RE<1G**: Radiated Emission below 1GHz  
**PLC**: Power Line Conducted Emission      **APCM**: Antenna Port Conducted Measurement  
**OB**: Conducted Out-Band Emission Measurement

**NOTE:** No need to re-test the test item due to the change should not influence test result.

#### RADIATED EMISSION TEST (BELOW 1 GHz):

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

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE	DATE RATE	AXIS
0 to 78	78	FHSS	8DPSK	DH5	3	Z

#### RADIATED EMISSION TEST (ABOVE 1 GHz):

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

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE	DATE RATE	AXIS
0 to 78	0, 39, 78	FHSS	GFSK	DH5	1	Z
0 to 78	0, 39, 78	FHSS	8DPSK	DH5	3	Z

#### TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE<1G	25deg. C, 75% RH	120Vac, 60Hz	Joey Liu
RE <sup>3</sup> 1G	25deg. C, 75% RH	120Vac, 60Hz	Joey Liu



### 3.3 DESCRIPTION OF SUPPORT UNITS

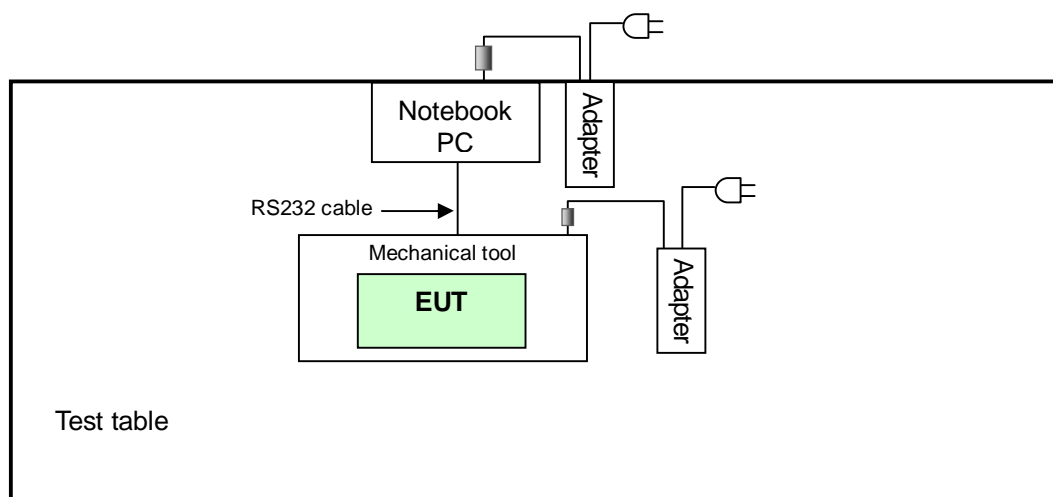
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	510m	1KZ1G1S	FCC DoC Approved
2	Mechanical tool	N/A	N/A	N/A	N/A
3	Mechanical tool's Adapter	FSP	FSP070-RAA	N/A	Verification

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	One RS232 cable (1.8m)
3	Non-shielded DC cable (1.8m)

**NOTE:** (1) All power cords of the above support units are non shielded (1.8m).  
 (2) The support units 2 & 3 were provided by client.

#### 3.3.1 CONFIGURATION OF SYSTEM UNDER TEST





### **3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS**

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C. (15.247)**

ANSI C63.10-2009

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

## 4. TEST TYPES AND RESULTS

### 4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

#### 4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

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.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. 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.



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## 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 26, 2013	Feb. 25, 2014
HP Preamplifier	8449B	3008A01201	Feb. 26, 2013	Feb. 25, 2014
Agilent TEST RECEIVER	N9038A	MY51210129	Jan. 03, 2013	Jan. 02, 2014
Schwarzbeck Antenna	VULB 9168	137	Mar. 20, 2013	Mar. 19, 2014
Schwarzbeck Antenna	VHBA 9123	480	May 29, 2013	May 28, 2014
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	ADT_Radiated_V 7.6.15.9.2	NA	NA	NA
SUHNER RF cable	SF102	CABLE-CH6	Aug. 19, 2013	Aug. 18, 2014
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	May 13, 2013	May 12, 2014
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA
ROHDE & SCHWARZ Spectrum Analyzer	FSP 40	100036	May. 17, 2013	May. 16, 2014
Anritsu Power Sensor	MA2411B	0738404	Apr. 24, 2013	Apr. 23, 2014
Anritsu Power Meter	ML2495A	0842014	Apr. 25, 2013	Apr. 24, 2014

- NOTE:** 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.
4. The Industry Canada Reference No. IC 7450E-6.
5. The FCC Site Registration No. is 447212.

### 4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

**NOTE:**

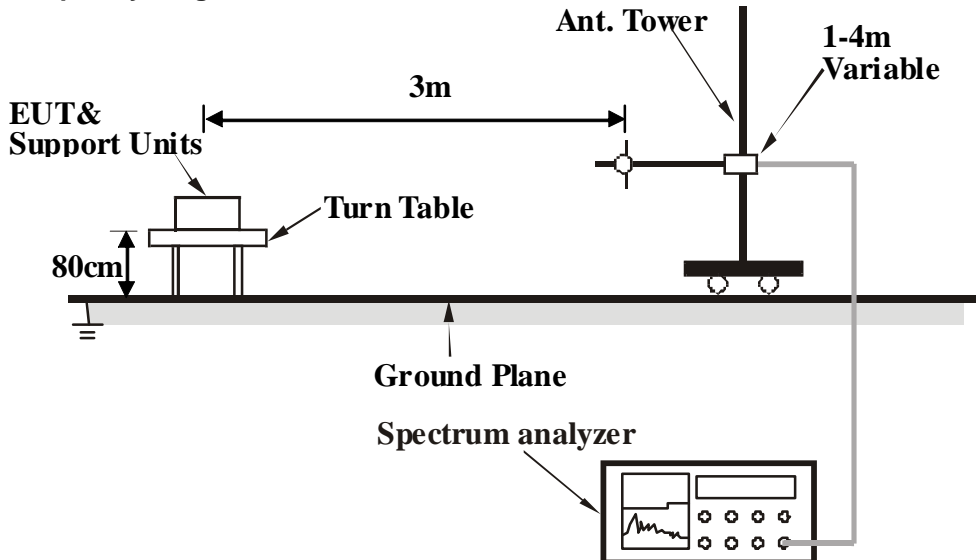
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

### 4.1.4 DEVIATION FROM TEST STANDARD

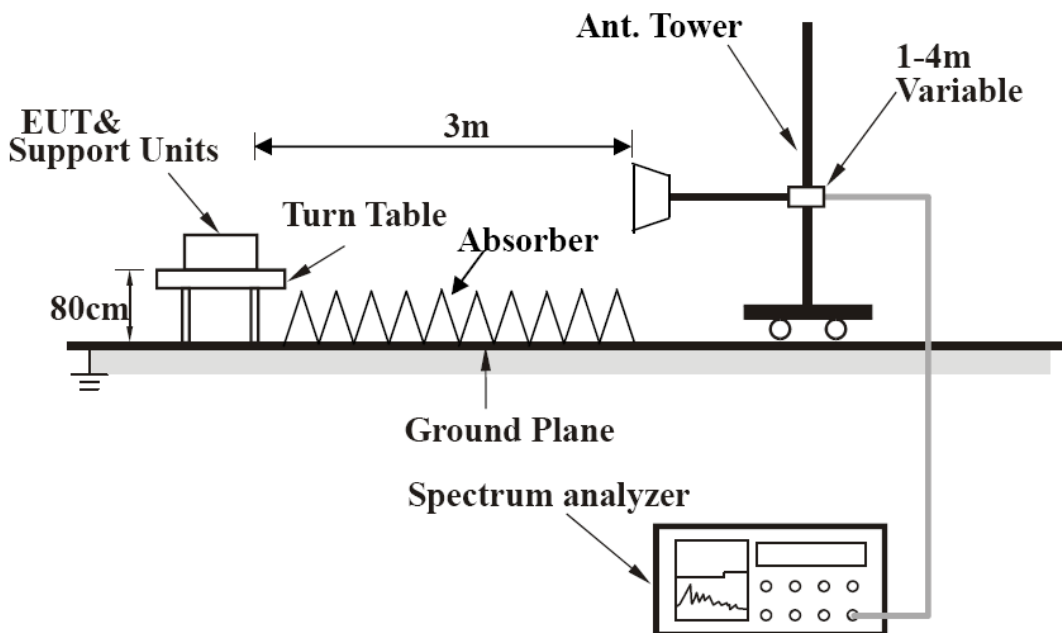
No deviation.

### 4.1.5 TEST SETUP

Frequency range 30MHz~1GHz



Frequency range above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

### 4.1.6 EUT OPERATING CONDITIONS

- Turn on the power of all equipment.
- Connected the EUT with Notebook PC via Mechanical tool placed on testing table.
- Notebook PC ran a test program (provided by manufacture) to enable EUT under transmitting condition at specific channel continuously.

## 4.1.7 TEST RESULTS

### BELOW 1GHz WORST-CASE DATA

#### BT\_8DPSK

<b>CHANNEL</b>	TX Channel 78	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	132.22	28.7 QP	43.5	-14.8	1.22 H	244	43.24	-14.53
2	200.33	34.2 QP	43.5	-9.3	1.63 H	74	50.10	-15.94
3	300.61	32.2 QP	46.0	-13.8	1.17 H	199	43.59	-11.42
4	488.22	38.7 QP	46.0	-7.4	1.28 H	159	46.30	-7.65
5	<b>665.59</b>	<b>38.7 QP</b>	<b>46.0</b>	<b>-7.3</b>	<b>1.91 H</b>	<b>244</b>	<b>43.01</b>	<b>-4.27</b>
6	995.03	38.8 QP	54.0	-15.2	1.31 H	65	38.14	0.69
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	83.98	31.2 QP	40.0	-8.8	1.17 V	193	50.31	-19.15
2	200.09	35.1 QP	43.5	-8.4	1.23 V	360	51.09	-15.95
3	665.64	38.3 QP	46.0	-7.7	1.19 V	234	42.54	-4.27
4	832.34	35.7 QP	46.0	-10.4	1.26 V	360	37.16	-1.51
5	997.43	34.4 QP	54.0	-19.6	1.49 V	22	33.71	0.68
6	5589.53	39.9 QP	54.0	-14.1	1.26 V	238	39.94	0.00

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

## ABOVE 1GHz DATA

### BT\_GFSK

<b>CHANNEL</b>	TX Channel 0	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	48.1 PK	74.0	-25.9	1.00 H	283	51.87	-3.75
2	2390.00	27.3 AV	54.0	-26.7	1.00 H	283	31.08	-3.75
3	*2402.00	98.5 PK			1.00 H	283	102.19	-3.69
4	*2402.00	86.1 AV			1.00 H	283	89.78	-3.69
5	4804.00	43.0 PK	74.0	-31.0	1.00 H	283	39.34	3.70
6	4804.00	35.5 AV	54.0	-18.5	1.00 H	283	31.81	3.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.3 PK	74.0	-18.7	1.11 V	41	59.06	-3.75
2	2390.00	29.5 AV	54.0	-24.5	1.11 V	41	33.29	-3.75
3	*2402.00	101.8 PK			1.11 V	41	105.48	-3.69
4	*2402.00	89.0 AV			1.11 V	41	92.67	-3.69
5	4804.00	46.6 PK	74.0	-27.4	1.11 V	43	42.94	3.70
6	4804.00	36.8 AV	54.0	-17.2	1.11 V	43	33.07	3.70

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.





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<b>CHANNEL</b>	TX Channel 39	<b>DETECTOR FUNCTION</b>	Peak (PK) Average (AV)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	96.2 PK			1.00 H	285	99.75	-3.51
2	*2441.00	84.8 AV			1.00 H	285	88.26	-3.51
3	4882.00	43.2 PK	74.0	-30.8	1.00 H	285	39.41	3.76
4	4882.00	35.0 AV	54.0	-19.0	1.00 H	285	31.24	3.76
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	103.9 PK			1.11 V	97	107.40	-3.51
2	*2441.00	90.7 AV			1.11 V	97	94.20	-3.51
3	4882.00	47.5 PK	74.0	-26.5	1.11 V	96	43.71	3.76
4	4882.00	38.2 AV	54.0	-15.8	1.11 V	96	34.43	3.76

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.



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<b>CHANNEL</b>	TX Channel 78	<b>DETECTOR FUNCTION</b>	Peak (PK) Average (AV)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	95.3 PK			1.00 H	281	98.64	-3.33
2	*2480.00	83.9 AV			1.00 H	281	87.21	-3.33
3	2483.50	40.5 PK	74.0	-33.5	1.00 H	281	43.86	-3.32
4	2483.50	28.2 AV	54.0	-25.8	1.00 H	281	31.48	-3.32
5	4960.00	42.8 PK	74.0	-31.2	1.00 H	283	39.07	3.70
6	4960.00	35.6 AV	54.0	-18.4	1.00 H	283	31.86	3.70
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	102.3 PK			1.00 V	209	105.66	-3.33
2	*2480.00	89.6 AV			1.00 V	209	92.95	-3.33
3	2483.50	42.6 PK	74.0	-31.4	1.00 V	209	45.92	-3.32
4	2483.50	29.0 AV	54.0	-25.0	1.00 V	209	32.28	-3.32
5	4960.00	45.9 PK	74.0	-28.1	1.00 V	201	42.16	3.70
6	4960.00	35.1 AV	54.0	-18.9	1.00 V	201	31.40	3.70

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.



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## BT\_8DPSK

<b>CHANNEL</b>	TX Channel 0	<b>DETECTOR FUNCTION</b>	Peak (PK) Average (AV)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	40.9 PK	74.0	-33.1	1.00 H	248	44.67	-3.75
2	2390.00	27.4 AV	54.0	-26.6	1.00 H	248	31.19	-3.75
3	*2402.00	97.5 PK			1.00 H	248	101.20	-3.69
4	*2402.00	65.5 AV			1.00 H	248	69.15	-3.69
5	4804.00	43.0 PK	74.0	-31.0	1.00 H	242	39.27	3.70
6	4804.00	34.8 AV	54.0	-19.2	1.00 H	242	31.10	3.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	53.4 PK	74.0	-20.6	1.12 V	34	57.16	-3.75
2	2390.00	27.6 AV	54.0	-26.4	1.12 V	34	31.34	-3.75
3	*2402.00	103.3 PK			1.12 V	34	107.02	-3.69
4	*2402.00	68.5 AV			1.12 V	34	72.14	-3.69
5	4804.00	45.6 PK	74.0	-28.4	1.12 V	38	41.86	3.70
6	4804.00	35.7 AV	54.0	-18.3	1.12 V	38	31.98	3.70

### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.



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<b>CHANNEL</b>	TX Channel 39	<b>DETECTOR FUNCTION</b>	Peak (PK) Average (AV)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	95.8 PK			1.00 H	319	99.35	-3.51
2	*2441.00	65.5 AV			1.00 H	319	68.99	-3.51
3	4882.00	42.0 PK	74.0	-32.0	1.00 H	314	38.21	3.76
4	4882.00	35.2 AV	54.0	-18.8	1.00 H	314	31.48	3.76
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	103.9 PK			1.11 V	96	107.42	-3.51
2	*2441.00	69.3 AV			1.11 V	96	72.76	-3.51
3	4882.00	46.0 PK	74.0	-28.0	1.11 V	98	42.24	3.76
4	4882.00	35.2 AV	54.0	-18.9	1.11 V	98	31.39	3.76

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.



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<b>CHANNEL</b>	TX Channel 78	<b>DETECTOR FUNCTION</b>	Peak (PK) Average (AV)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	98.3 PK			1.10 H	267	101.59	-3.33
2	*2480.00	66.2 AV			1.10 H	267	69.48	-3.33
3	2483.50	42.6 PK	74.0	-31.4	1.10 H	267	45.91	-3.32
4	2483.50	27.8 AV	54.0	-26.2	1.10 H	267	31.14	-3.32
5	4960.00	42.9 PK	74.0	-31.1	1.10 H	264	39.19	3.70
6	4960.00	35.5 AV	54.0	-18.5	1.10 H	264	31.77	3.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	104.4 PK			1.10 V	97	107.70	-3.33
2	*2480.00	69.3 AV			1.10 V	97	72.62	-3.33
3	2483.50	47.4 PK	74.0	-26.7	1.10 V	97	50.67	-3.32
4	2483.50	29.8 AV	54.0	-24.2	1.10 V	97	33.13	-3.32
5	4960.00	46.3 PK	74.0	-27.7	1.10 V	99	42.60	3.70
6	4960.00	35.0 AV	54.0	-19.0	1.10 V	99	31.27	3.70

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.



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## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



## 6. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.



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## **7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No modifications were made to the EUT by the lab during the test.

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