



BUREAU  
VERITAS

Test Report No.: RF130712N019



Test Lab  
Cert 2951.01

## TEST REPORT

Applicant	SHENZHEN SHI KISB ELECTRONIC CO., LTD
Address	3-5/F, A Building, Shanghe Industrial Park, Nanchang Road, Xixiang Town, Bao'an District, Shenzhen, Guangdong, 518103 P.R. China

Manufacturer or Supplier	SHENZHEN SHI KISB ELECTRONIC CO., LTD
Address	3-5/F, A Building, Shanghe Industrial Park, Nanchang Road, Xixiang Town, Bao'an District, Shenzhen, Guangdong, 518103 P.R. China
Product	Bluetooth Stereo Headphone
Brand Name	KISS/BTK/Lindero/iFlavor
Model	BTK-28
Additional Models & Model Difference	BTK-30, BTK-31, BTK-32, BTK-33, BTK-35; see section 2.1
Date of tests	Jul. 12, 2013 ~ Jul. 22, 2013

the tests have been carried out according to the requirements of the following standard:

FCC Part 15, Subpart C (Section 15.249)

**CONCLUSION: The submitted sample was found to COMPLY with the test requirement**

Tested by Glyn He  
Project Engineer / EMC Department

Approved by Sam Tung  
Manager / EMC Department

Date: Jul. 22, 2013

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RC130712N019	Original release	Jul. 22, 2013



## 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.249)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
§15.203	Antenna Requirement	PASS	Compliant
§15.207 (a)	Conducted Emission	PASS	Compliant
§15.205	Restricted Band of Operation	PASS	Compliant
§15.209 §15.249(a)	Radiated Emission	PASS	Compliant
§15.215(c)	20dB Bandwidth Test	PASS	Compliant

## 2 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.67dB
Radiated emissions	30MHz ~1GHz	4.81dB
	1GHz ~ 18GHz	4.3 dB
	18GHz ~ 40GHz	1.94dB

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



### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Bluetooth Stereo Headphone
<b>MODEL NO.</b>	BTK-28
<b>ADDITIONAL MODELS</b>	BTK-30, BTK-31, BTK-32, BTK-33, BTK-35
<b>FCC ID</b>	TJ7- BTK28
<b>NOMINAL VOLTAGE</b>	DC 3.7V from battery or DC 5V from USB
<b>MODULATION TECHNOLOGY</b>	FHSS, DTS
<b>MODULATION TYPE</b>	GFSK, 8DPSK, $\pi/4$ DQPSK, BT-LE(GFSK) for DTS
<b>OPERATING FREQUENCY</b>	2402-2480MHz
<b>ANTENNA TYPE</b>	Integral PCB antenna with 0.8dBi gain
<b>I/O PORTS</b>	Refer to user's manual
<b>CABLE SUPPLIED</b>	USB cable: Unshielded, Detachable, 0.8m

**NOTE:**

1. Additional models BTK-30, BTK-31, BTK-32, BTK-33, BTK-35 are identical with the test model BTK-28 except the appearance of color and model number for marketing purpose.
2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.



### 3.2 DESCRIPTION OF TEST MODES

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and packet type. The worst case was found when the EUT was positioned on X axis for radiated emission. The EUT was tested under the following modes, and the final worst is marked in boldface and recorded in the report.

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	BW	
A	√	-	-	-	Powered by battery with BT link
B	√	√	√	√	<b>Charging with PC with BT link</b>

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

**RE≥1G**: Radiated Emission above 1GHz  
**BW**: 20db bandwidth

Following channel(s) was (were) selected for the test as listed below:

#### For BT2.1+EDR:

TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE	PACKET TYPE
Low, Middle, High	FHSS	GFSK	1M	DH1/3/5
Low, Middle, High	FHSS	$\pi/4$ DQPSK	2M	DH1/3/5
Low, Middle, High	FHSS	8DPSK	3M	DH1/3/5

CHANNEL NUMBER	TESTED CHANNEL	TESTED FREQUENCY
0	Low	2402 MHz
39	Middle	2441 MHz
78	High	2480 MHz

After estimating all the combination of every test mode, the result shown as below is the worst case

TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE	PACKET TYPE
Low, Middle, High	FHSS	GFSK	1M	DH5
Low, Middle, High	FHSS	8DPSK	3M	DH5



**For BT4.0:**

Forty channels are provided for BT-LE(GFSK):

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	0,19,39	DTS	GFSK	1

**3.3 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 (15.249)**

**ANSI C63.10-2009**

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

**NOTE:** It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (Verification). The test report has been issued separately.





### 3.4 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	HP	A6608CN	3CR83825X3	N/A
1	BT Tester	Rohde&Schwarz	CBT 32	1153.9000.32	N/A

NO.	DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line :Unshielded, Detachable, 1.0m; DC Line: Unshielded, Undetachable, 2.0m



## 4 TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.3.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBµV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
  2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
  3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
EMI Test Receiver Rohde&Schwarz	ESU 26	100005	May 14,13	May 13,14
Artificial Mains Network Rohde&Schwarz	ENV216	101173	May 14,13	May 13,14
Artificial Mains Network Rohde&Schwarz	ESH2-Z5	100071	May 14,13	May 13,14
Test software	ADT Cond V7.3.7	N/A	N/A	N/A

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
  2. The test was performed in Dongguan Shielded Room 553.



#### 4.3.3 TEST PROCEDURES

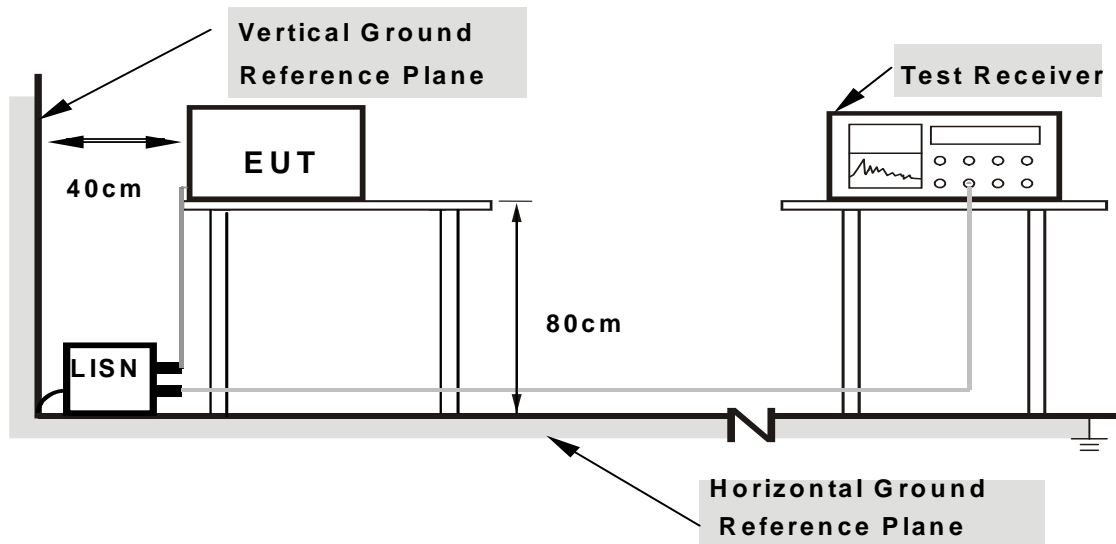
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.3.5 TEST SETUP



- Note:**
1. Support units were connected to second LISN.
  2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

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

#### 4.3.6 EUT OPERATING CONDITIONS

Set the EUT under transmission condition continuously at specific channel frequency.



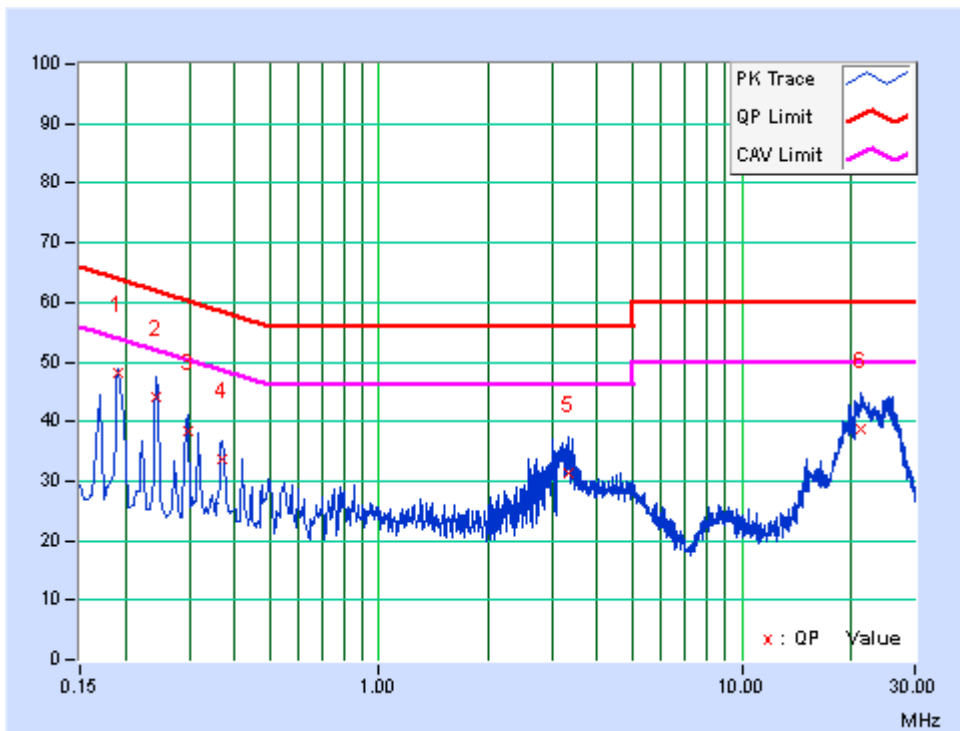
4.3.7 TEST RESULTS

CONDUCTED WORST-CASE DATA: GFSK

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19	10.55	37.61	19.52	48.16	30.07	64.04	54.04	-15.88	-23.97
2	0.242	10.43	33.71	17.55	44.14	27.98	62.03	52.03	-17.89	-24.05
3	0.298	10.44	27.98	12.05	38.42	22.49	60.3	50.3	-21.88	-27.81
4	0.36931	10.39	23.4	11.41	33.79	21.8	58.52	48.52	-24.73	-26.72
5	3.326	9.83	21.5	13.9	31.33	23.73	56	46	-24.67	-22.27
6	21.214	10.16	28.44	19.65	38.6	29.81	60	50	-21.4	-20.19

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.





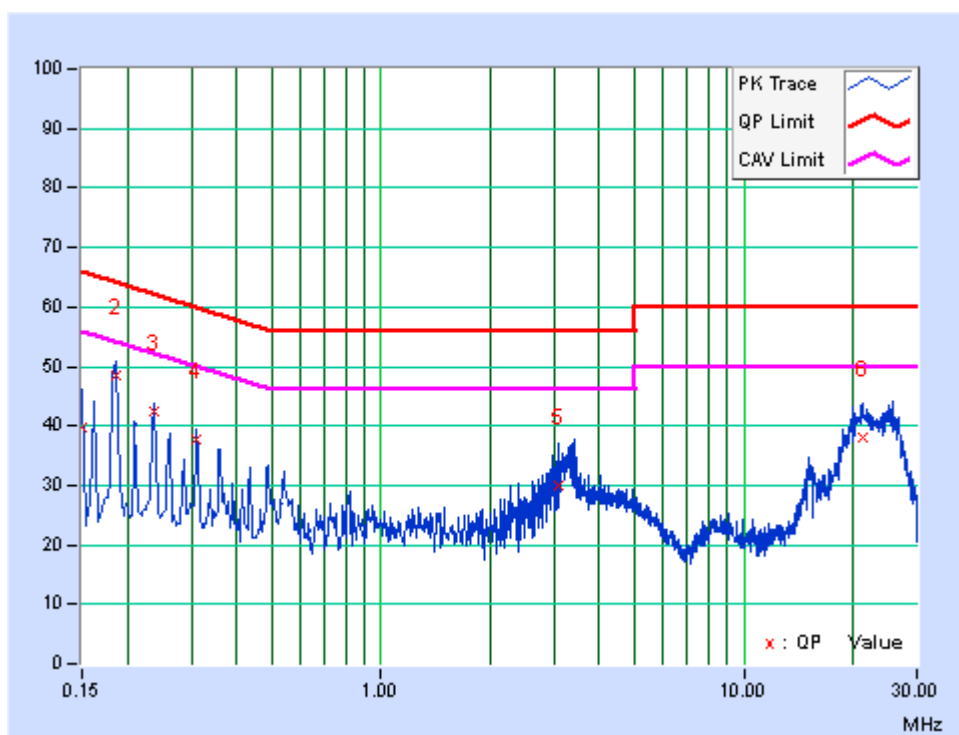
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PHASE	Neutral	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15	10.53	29.31	11.2	39.84	21.73	66	56	-26.16	-34.27
2	<b>0.186</b>	<b>10.46</b>	<b>38.06</b>	<b>23.47</b>	<b>48.52</b>	<b>33.93</b>	<b>64.21</b>	<b>54.21</b>	<b>-15.7</b>	<b>-20.29</b>
3	0.23785	10.37	32	14.65	42.37	25.02	62.17	52.17	-19.8	-27.15
4	0.31	10.45	27.23	14.09	37.68	24.54	59.97	49.97	-22.29	-25.43
5	3.094	9.63	20.38	12.74	30.01	22.37	56	46	-25.99	-23.63
6	21.206	10.21	27.86	20.38	38.07	30.59	60	50	-21.93	-19.41

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.





## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

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

According to §15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field strength of fundamental (milli-volts/meter)	Field strength of harmonics (micro-volts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

**NOTE:**

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



#### 4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	Agilent	E4446A	MY46180622	Apr. 24,13	Apr. 23,14
EMI Test Receiver	Rohde&Schwarz	ESVD	847398/003	May 14,13	May 13,14
Bilog Antenna	Teseq	CBL 6111D	25757	Nov. 22,12	Nov. 21,13
Horn Antenna (1GHz -18GHz)	EMCO	3117	00062558	Oct.18,12	Oct.17,13
Pre-Amplifier (20MHz-3GHz)	EMCI	EMC 330	980095	Nov. 02,12	Nov.01,13
Pre-Amplifier (100MHz-26.5GHz)	Agilent	8449B	3008A00409	May 14,13	May 13,14
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m*8 .8m	NSEMC006	Mar. 24,13	Mar. 23,14
Digital Multimeter	FLUKE	15B	A1220010D G	Oct. 31,12	Oct. 30,13
Test Software	ADT	ADT_Radiated _V7.6.15	N/A	N/A	N/A

- NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in 10m Chamber
3. The FCC Site Registration No. is 502831





#### 4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meters 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 antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 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:**

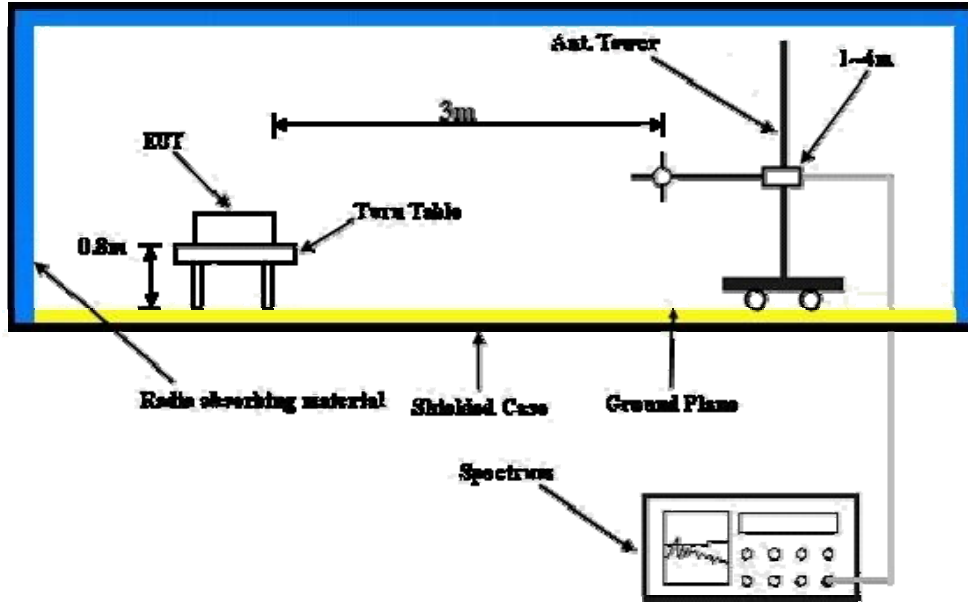
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation



#### 4.2.5 TEST SETUP



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

#### 4.2.6 EUT OPERATING CONDITIONS

Set the EUT under transmission condition continuously at specific channel frequency.



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### 4.2.7 TEST RESULTS

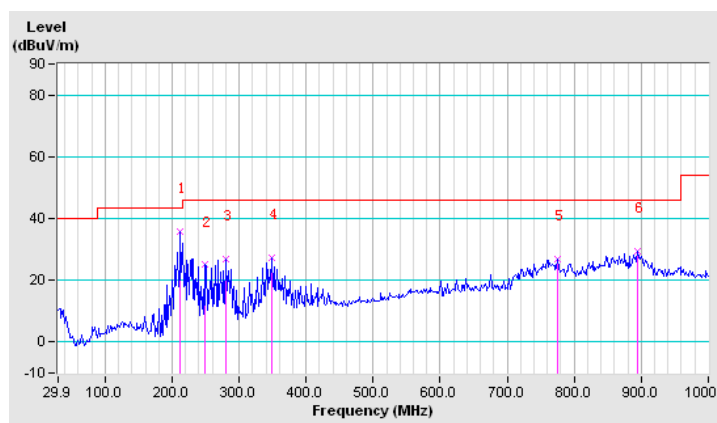
#### BELOW 1GHz WORST-CASE DATA: GFSK

<b>CHANNEL</b>	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	212.62	35.7 QP	43.5	-7.9	1.00 H	290	24.82	10.83
2	248.19	25.0 QP	46.0	-21.0	1.00 H	132	10.64	14.38
3	280.54	27.1 QP	46.0	-19.0	1.00 H	232	11.86	15.19
4	348.45	27.5 QP	46.0	-18.6	1.00 H	270	10.22	17.23
5	775.34	26.9 QP	46.0	-19.1	1.00 H	210	0.40	26.47
6	895.00	29.5 QP	46.0	-16.5	1.00 H	251	2.21	27.32

#### 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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



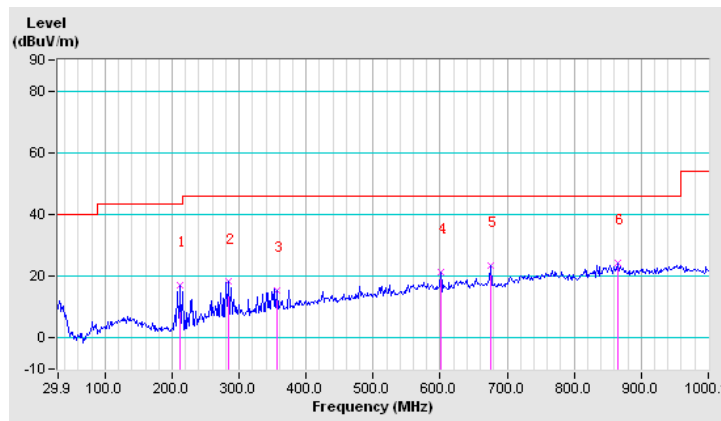


<b>CHANNEL</b>	Channel 78	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

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	212.62	17.1 QP	43.5	-26.4	1.00 V	276	6.30	10.83
2	283.77	18.2 QP	46.0	-27.8	1.00 V	240	2.79	15.43
3	356.53	15.5 QP	46.0	-30.5	1.00 V	293	-1.96	17.49
4	600.70	21.3 QP	46.0	-24.7	1.00 V	259	-1.75	23.09
5	675.08	23.5 QP	46.0	-22.5	1.00 V	320	-0.78	24.28
6	864.27	24.4 QP	46.0	-21.6	1.00 V	208	-3.05	27.44

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.





ABOVE 1GHz WORST-CASE DATA: GFSK DH5

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
TEST VOLTAGE	DC 5V by Notebook	DETECTOR FUNCTION	Peak (PK) 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	2400.00	62.5 PK	74.0	-11.5	1.00 H	290	25.23	37.27
2	2400.00	32.4 AV	54.0	-21.6	1.00 H	290	-4.87	37.27
3	*2402.00	97.1 PK	114.0	-16.9	1.00 H	290	59.83	37.27
4	*2402.00	67.0 AV	94.0	-27.0	1.00 H	290	29.73	37.27
5	4804.00	57.9 PK	74.0	-16.1	1.00 H	317	16.29	41.61
6	4804.00	27.8 AV	54.0	-26.2	1.00 H	317	-13.81	41.61

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	2400.00	59.7 PK	74.0	-14.3	1.00 V	202	22.43	37.27
2	2400.00	29.6 AV	54.0	-24.4	1.00 V	202	-7.67	37.27
3	*2402.00	94.8 PK	114.0	-19.2	1.00 V	202	57.53	37.27
4	*2402.00	64.7 AV	94.0	-29.3	1.00 V	202	27.43	37.27
5	4804.00	60.3 PK	74.0	-13.7	1.13 V	182	18.69	41.61
6	4804.00	30.2 AV	54.0	-23.8	1.13 V	182	-11.41	41.61

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 \* 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to:  $20\log(3.125 / 100) = -30.1\text{dB}$
7. Average value = peak reading +  $20\log(\text{duty cycle})$ .



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
TEST VOLTAGE	DC 5V by Notebook	DETECTOR FUNCTION	Peak (PK) 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	*2441.00	98.7 PK	114.0	-15.3	1.00 H	281	61.36	37.34
2	*2441.00	68.6 AV	94.0	-25.4	1.00 H	281	31.26	37.34
3	4882.00	62.4 PK	74.0	-11.6	1.06 H	251	20.70	41.70
4	4882.00	32.3 AV	54.0	-21.7	1.06 H	251	-9.40	41.70
5	7323.00	63.1 PK	74.0	-10.9	1.12 H	278	17.31	45.79
6	7323.00	33.0 AV	54.0	-21.0	1.12 H	278	-12.79	45.79

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	99.5 PK	114.0	-14.5	1.00 V	201	62.16	37.34
2	*2441.00	69.4 AV	94.0	-24.6	1.00 V	201	32.06	37.34
3	4882.00	62.1 PK	74.0	-11.9	1.12 V	157	20.40	41.70
4	4882.00	32.0 AV	54.0	-22.0	1.12 V	157	-9.70	41.70
5	7323.00	62.7 PK	74.0	-11.3	1.00 V	59	16.91	45.79
6	7323.00	32.6 AV	54.0	-21.4	1.00 V	59	-13.19	45.79

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.
6. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 \* 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to:  $20\log(3.125 / 100) = -30.1$  dB.
7. Average value = peak reading +  $20\log(\text{duty cycle})$ .



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 25GHz
TEST VOLTAGE	DC 5V by Notebook	DETECTOR FUNCTION	Peak (PK) 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	*2480.00	99.2 PK	114.0	-14.8	1.85 H	227	61.79	37.41
2	*2480.00	69.1 AV	94.0	-24.9	1.85 H	227	31.69	37.41
3	2483.50	57.5 PK	74.0	-16.5	1.85 H	227	20.09	37.41
4	2483.50	27.4 AV	54.0	-26.6	1.85 H	227	-10.01	37.41
5	4960.00	63.5 PK	74.0	-10.5	1.49 H	241	21.70	41.80
6	4960.00	33.4 AV	54.0	-20.6	1.49 H	241	-8.40	41.80
7	7440.00	62.9 PK	74.0	-11.1	1.47 H	242	17.08	45.82
8	7440.00	32.8 AV	54.0	-21.2	1.47 H	242	-13.02	45.82

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	98.4 PK	114.0	-15.6	1.00 V	200	60.99	37.41
2	*2480.00	68.3 AV	94.0	-25.7	1.00 V	200	30.89	37.41
3	2483.50	54.8 PK	74.0	-19.2	1.00 V	200	17.39	37.41
4	2483.50	24.7 AV	54.0	-29.3	1.00 V	200	-12.71	37.41
5	4960.00	59.2 PK	74.0	-14.8	1.00 V	291	17.40	41.80
6	4960.00	29.1 AV	54.0	-24.9	1.00 V	291	-12.70	41.80
7	7440.00	61.6 PK	74.0	-12.4	1.00 V	158	15.78	45.82
8	7440.00	31.5 AV	54.0	-22.5	1.00 V	158	-14.32	45.82

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 \* 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to:  $20\log(3.125 / 100) = -30.1$  dB.
7. Average value = peak reading +  $20\log(\text{duty cycle})$



BT\_8DPSK\_DH5

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
TEST VOLTAGE	DC 5V by Notebook	DETECTOR FUNCTION	Peak (PK) 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	2400.00	64.1 PK	74.0	-9.9	1.00 H	289	26.83	37.27
2	2400.00	34.0 AV	54.0	-20.0	1.00 H	289	-3.27	37.27
3	*2402.00	94.5 PK	114.0	-19.5	1.00 H	289	57.23	37.27
4	*2402.00	64.4 AV	94.0	-29.6	1.00 H	289	27.13	37.27
5	4804.00	57.9 PK	74.0	-16.1	1.00 H	330	16.29	41.61
6	4804.00	27.8 AV	54.0	-26.2	1.00 H	330	-13.81	41.61

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	2400.00	63.8 PK	74.0	-10.2	1.00 V	226	26.53	37.27
2	2400.00	33.7 AV	54.0	-20.3	1.00 V	226	-3.57	37.27
3	*2402.00	94.3 PK	114.0	-19.7	1.00 V	226	57.03	37.27
4	*2402.00	64.2 AV	94.0	-29.8	1.00 V	226	26.93	37.27
5	4804.00	58.5 PK	74.0	-15.5	1.00 V	168	16.89	41.61
6	4804.00	28.4 AV	54.0	-25.6	1.00 V	168	-13.21	41.61

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.
6. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 \* 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to:  $20\log(3.125 / 100) = -30.1$  dB.
7. Average value = peak reading +  $20\log(\text{duty cycle})$ .





EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
TEST VOLTAGE	DC 5V by Notebook	DETECTOR FUNCTION	Peak (PK) 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	*2441.00	98.3 PK	114.0	-15.7	1.23 H	289	60.96	37.34
2	*2441.00	68.2 AV	94.0	-25.8	1.23 H	289	30.86	37.34
3	4882.00	62.8 PK	74.0	-11.2	1.33 H	239	21.10	41.70
4	4882.00	32.7 AV	54.0	-21.3	1.33 H	239	-9.00	41.70
5	7323.00	59.6 PK	74.0	-14.4	1.21 H	276	13.81	45.79
6	7323.00	29.5 AV	54.0	-24.5	1.21 H	276	-16.29	45.79
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	97.6 PK	114.0	-16.4	1.00 V	201	60.26	37.34
2	*2441.00	67.5 AV	94.0	-26.5	1.00 V	201	30.16	37.34
3	4882.00	62.6 PK	74.0	-11.4	1.43 V	294	20.90	41.70
4	4882.00	32.5 AV	54.0	-21.5	1.43 V	294	-9.20	41.70
5	7323.00	60.6 PK	74.0	-13.4	1.00 V	245	14.81	45.79
6	7323.00	30.5 AV	54.0	-23.5	1.00 V	245	-15.29	45.79

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 \* 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to:  $20\log(3.125 / 100) = -30.1$  dB.
7. Average value = peak reading +  $20\log(\text{duty cycle})$ .



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 25GHz
TEST VOLTAGE	DC 5V by Notebook	DETECTOR FUNCTION	Peak (PK) 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	*2480.00	95.2 PK	114.0	-18.8	1.20 H	290	57.79	37.41
2	*2480.00	65.1 AV	94.0	-28.9	1.20 H	290	27.69	37.41
3	2483.50	55.2 PK	74.0	-18.8	1.20 H	290	17.79	37.41
4	2483.50	25.1 AV	54.0	-28.9	1.20 H	290	-12.31	37.41
5	4960.00	58.4 PK	74.0	-15.6	1.13 H	278	16.60	41.80
6	4960.00	28.3 AV	54.0	-25.7	1.13 H	278	-13.50	41.80
7	7440.00	58.2 PK	74.0	-15.8	1.00 H	157	12.38	45.82
8	7440.00	28.1 AV	54.0	-25.9	1.00 H	157	-17.72	45.82

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	95.7 PK	114.0	-18.3	1.00 V	199	58.29	37.41
2	*2480.00	65.6 AV	94.0	-28.4	1.00 V	199	28.19	37.41
3	2483.50	53.4 PK	74.0	-20.6	1.00 V	199	15.99	37.41
4	2483.50	23.3 AV	54.0	-30.7	1.00 V	199	-14.11	37.41
5	4960.00	57.6 PK	74.0	-16.4	1.00 V	274	15.80	41.80
6	4960.00	27.5 AV	54.0	-26.5	1.00 V	274	-14.30	41.80
7	7440.00	59.7 PK	74.0	-14.3	1.00 V	286	13.88	45.82
8	7440.00	29.6 AV	54.0	-24.4	1.00 V	286	-16.22	45.82

REMARKS:

- Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- The other emission levels were very low against the limit.
- Margin value = Emission level – Limit value.
- \* \* \*: Fundamental frequency.
- The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 \* 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(3.125 / 100)= -30.1 dB.
- Average value = peak reading + 20log(duty cycle).



BUREAU VERITAS

Test Report No.: RF130712N019

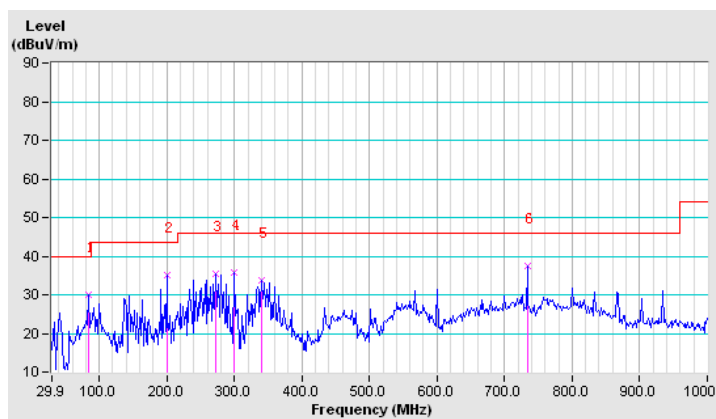
BT-LE BELOW 1G WORST CASE DATA:

CHANNEL	Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	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	83.26	30.1 QP	40.0	-9.9	1.00 H	19	21.06	9.00
2	199.69	35.1 QP	43.5	-8.4	1.00 H	41	24.12	10.99
3	272.45	35.5 QP	46.0	-10.5	1.67 H	146	20.58	14.96
4	299.94	35.9 QP	46.0	-10.1	1.30 H	104	20.02	15.89
5	340.36	33.7 QP	46.0	-12.4	1.46 H	122	16.76	16.89
6	733.29	37.5 QP	46.0	-8.5	1.04 H	73	11.47	26.06

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.





**BUREAU  
VERITAS**

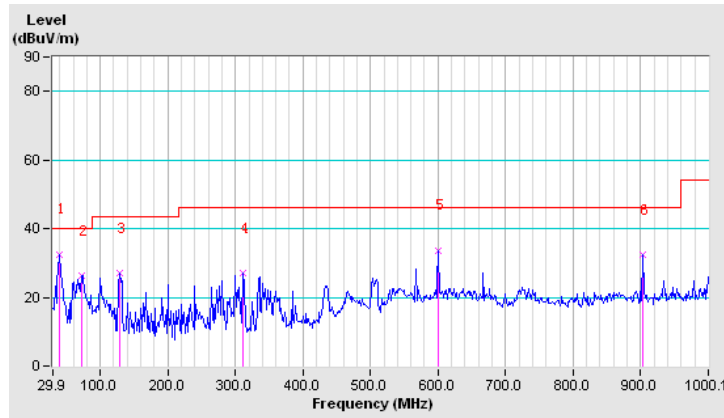
Test Report No.: RF130712N019

<b>CHANNEL</b>	Channel 39	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

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	39.60	32.6 QP	40.0	-7.4	1.78 V	264	17.51	15.08
2	71.94	26.4 QP	40.0	-13.6	2.52 V	116	18.85	7.58
3	128.54	27.0 QP	43.5	-16.5	1.80 V	231	13.54	13.47
4	311.26	27.0 QP	46.0	-19.0	2.26 V	176	11.07	15.93
5	600.70	33.7 QP	46.0	-12.3	1.92 V	215	10.65	23.09
6	903.08	32.5 QP	46.0	-13.5	2.10 V	194	4.91	27.56

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.





**BT-LE ABOVE 1G WORST CASE DATA:**

<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	2400.00	63.5 PK	74.0	-10.5	1.00 H	251	26.23	37.27
2	2400.00	45.0 AV	54.0	-9.0	1.00 H	251	7.73	37.27
3	*2402.00	98.6 PK	114.0	-15.4	1.00 H	251	61.33	37.27
4	*2402.00	76.5 AV	94.0	-17.5	1.00 H	251	39.23	37.27
5	4804.00	58.5 PK	74.0	-15.5	1.36 H	32	16.89	41.61
6	4804.00	45.9 AV	54.0	-8.1	1.36 H	32	4.29	41.61

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	2400.00	63.4 PK	74.0	-10.6	1.00 V	300	26.13	37.27
2	2400.00	47.1 AV	54.0	-6.9	1.00 V	300	9.83	37.27
3	*2402.00	99.3 PK	114.0	-14.7	1.00 V	300	62.03	37.27
4	*2402.00	77.2 AV	94.0	-16.8	1.00 V	300	39.93	37.27
5	4804.00	57.9 PK	74.0	-16.1	1.00 V	248	16.29	41.61
6	<b>4804.00</b>	<b>47.8 AV</b>	<b>54.0</b>	<b>-6.2</b>	<b>1.00 V</b>	<b>248</b>	<b>6.19</b>	<b>41.61</b>

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.
6. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.



**BUREAU  
VERITAS**

Test Report No.: RF130712N019

<b>CHANNEL</b>	TX Channel 19	<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	*2440.00	100.9 PK	114.0	-13.1	1.00 H	276	63.56	37.34
2	*2440.00	77.9 AV	94.0	-16.1	1.00 H	276	40.56	37.34
3	4880.00	62.6 PK	74.0	-11.4	1.45 H	23	20.90	41.70
4	4880.00	47.6 AV	54.0	-6.4	1.45 H	23	5.90	41.70
5	7320.00	61.2 PK	74.0	-12.8	1.48 H	310	15.41	45.79
6	7320.00	45.7 AV	54.0	-8.3	1.48 H	310	-0.09	45.79

**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	*2440.00	102.7 PK	114.0	-11.3	1.00 V	295	65.36	37.34
2	*2440.00	79.6 AV	94.0	-14.4	1.00 V	295	42.26	37.34
3	4880.00	61.5 PK	74.0	-12.5	1.04 V	253	19.80	41.70
4	4880.00	46.8 AV	54.0	-7.2	1.04 V	253	5.10	41.70
5	7320.00	61.3 PK	74.0	-12.7	1.00 V	298	15.51	45.79
6	7320.00	45.4 AV	54.0	-8.6	1.00 V	298	-0.39	45.79

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.



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CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	*2480.00	97.3 PK	114.0	-16.7	1.23 H	275	59.89	37.41
2	*2480.00	74.1 AV	94.0	-19.9	1.23 H	275	36.69	37.41
3	2483.50	53.5 PK	74.0	-20.5	1.23 H	275	16.09	37.41
4	2483.50	35.5 AV	54.0	-18.5	1.23 H	275	-1.91	37.41
5	4960.00	61.4 PK	74.0	-12.6	1.48 H	34	19.60	41.80
6	4960.00	45.8 AV	54.0	-8.2	1.48 H	34	4.00	41.80
7	7440.00	60.3 PK	74.0	-13.7	1.12 H	306	14.48	45.82
8	7440.00	44.9 AV	54.0	-9.1	1.12 H	306	-0.92	45.82

**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	100.2 PK	114.0	-13.8	1.00 V	305	62.79	37.41
2	*2480.00	76.8 AV	94.0	-17.2	1.00 V	305	39.39	37.41
3	2483.50	54.1 PK	74.0	-19.9	1.00 V	305	16.69	37.41
4	2483.50	36.1 AV	54.0	-17.9	1.00 V	305	-1.31	37.41
5	4960.00	61.3 PK	74.0	-12.7	1.00 V	306	19.50	41.80
6	4960.00	46.3 AV	54.0	-7.7	1.00 V	306	4.50	41.80
7	7440.00	60.2 PK	74.0	-13.8	1.00 V	297	14.38	45.82
8	7440.00	44.7 AV	54.0	-9.3	1.00 V	297	-1.12	45.82

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.
6. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.



### 4.3 20dB BANDWIDTH MEASUREMENT

#### 4.3.1 LIMITS OF 20dB BANDWIDTH MEASUREMENT

According to FCC 15.215(c), 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.

#### 4.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Horn Antenna	EMCO	3117	00062558	Oct. 18, 12	Oct. 17, 13
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 04, 11	Jan. 03, 14
Spectrum Analyzer	Agilent	E4446A	MY46180622	Apr. 24, 13	Apr. 23, 14
Pre-Amplifier (100MHz-26.5GHz)	Agilent	8449B	3008A00409	May 14, 13	May 13, 14
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04, 12	Nov. 03, 13
Test Software	ADT	ADT_Radiated V7.6.15	N/A	N/A	N/A

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
  2. The test was performed in Dongguan Chamber 10m.
  3. The FCC Site Registration No. is 502831

#### 4.3.3 TEST PROCEDURE

The EUT was placed on a turn table which was 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 to 4 m for horizontal and vertical polarizations. The spectrum analyzer was receiving the maximum emission level. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

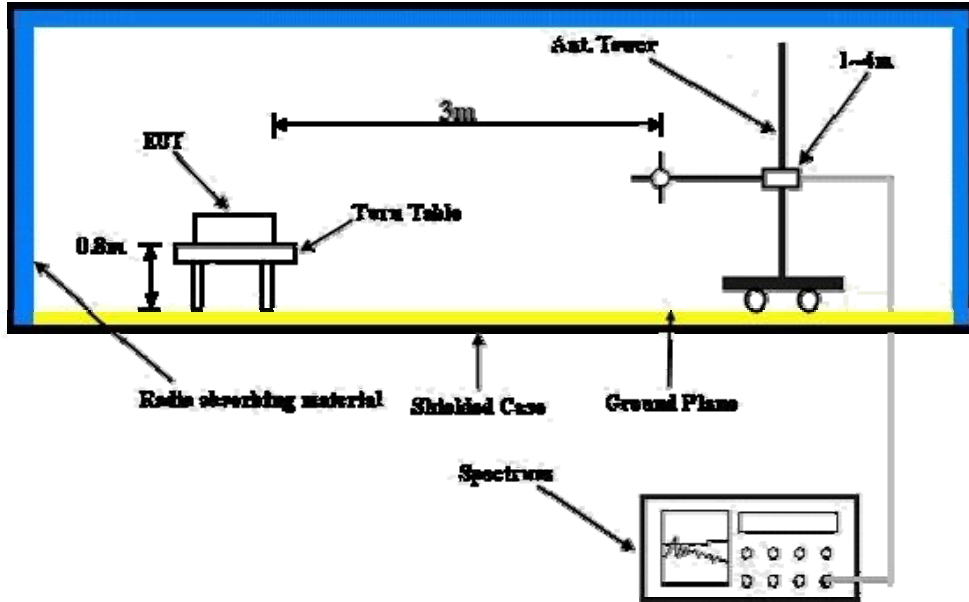
#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation.





#### 4.3.5 TEST SETUP



#### 4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

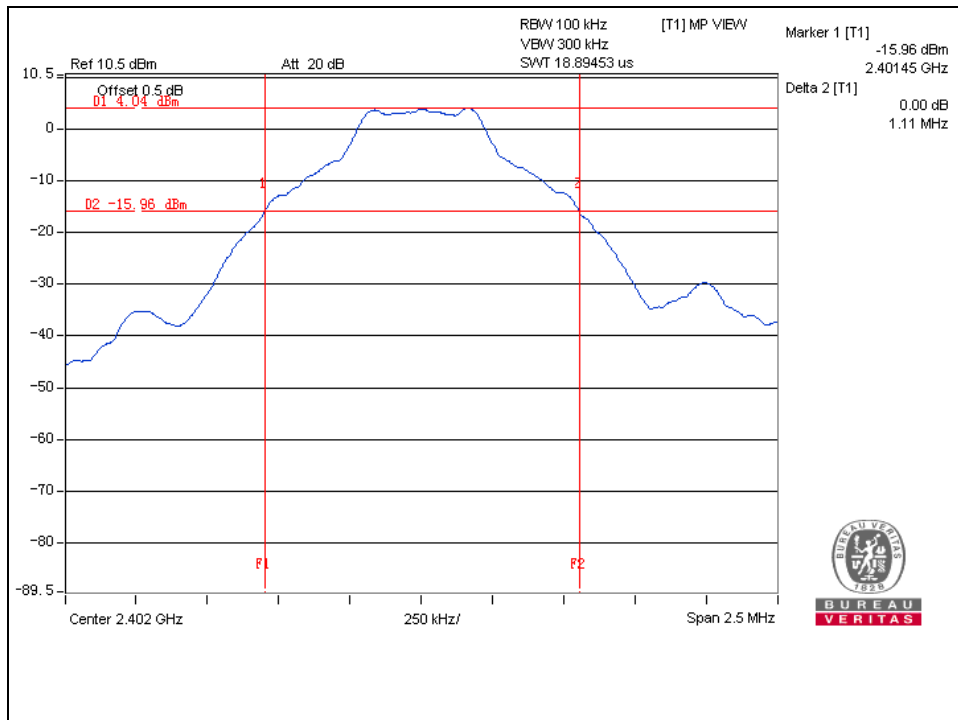


### 4.3.7 TEST RESULTS

#### GFSK DH5

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2402	1.11
Middle	2441	1.11
High	2480	1.11

#### Test Data: Low channel

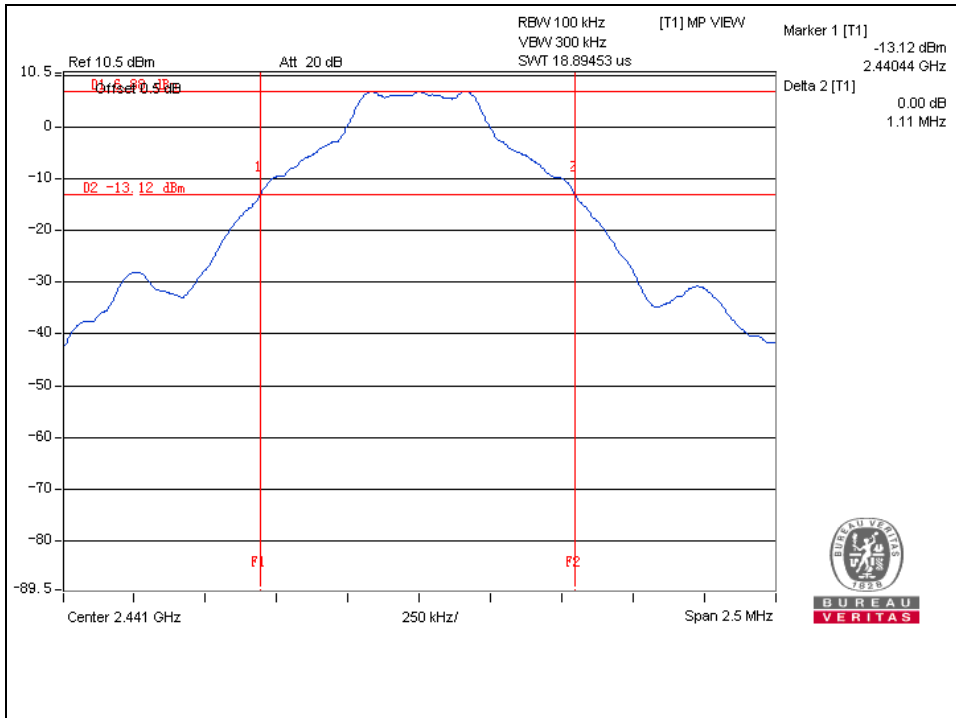




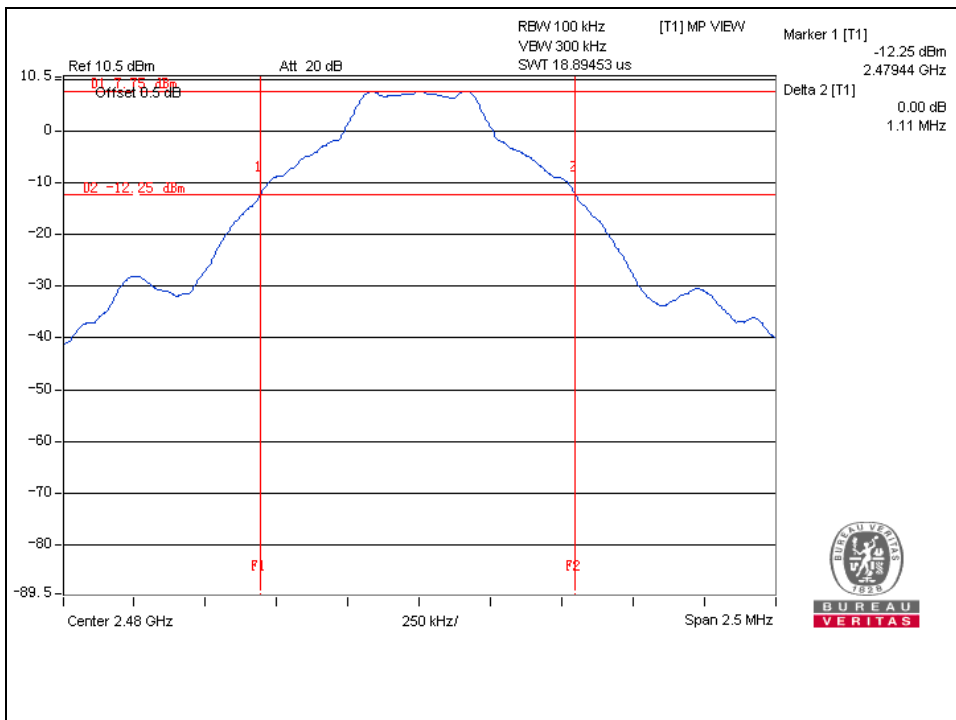
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Test Data: Middle channel



Test Data: High channel





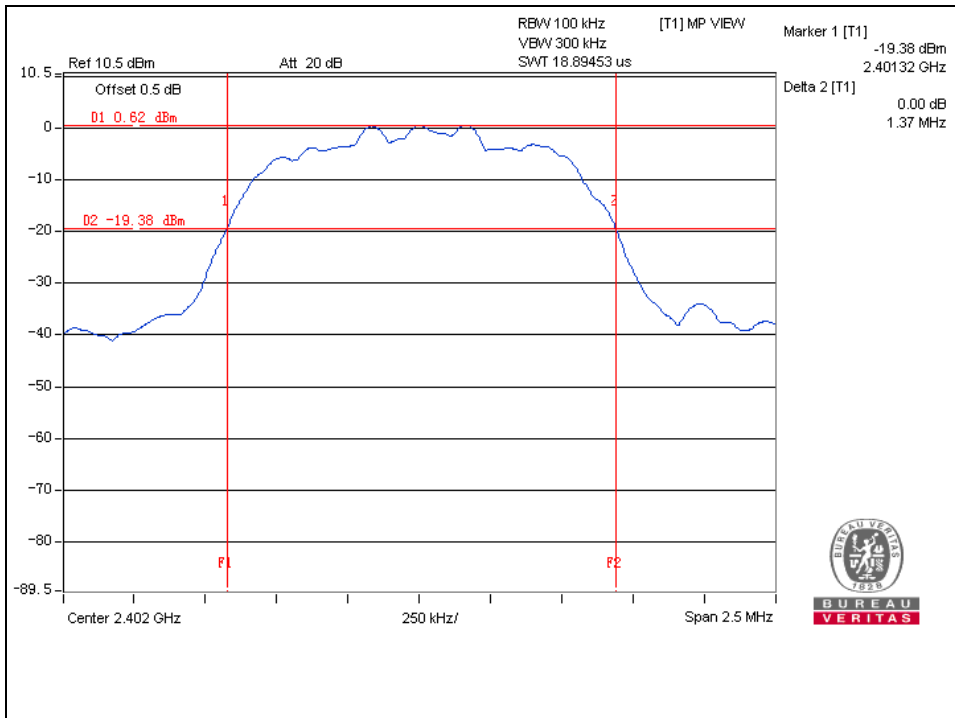
BUREAU VERITAS

Test Report No.: RF130712N019

### 8DPSK DH5

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2402	1.37
Middle	2441	1.37
Hight	2480	1.37

### Test Data: Low channel

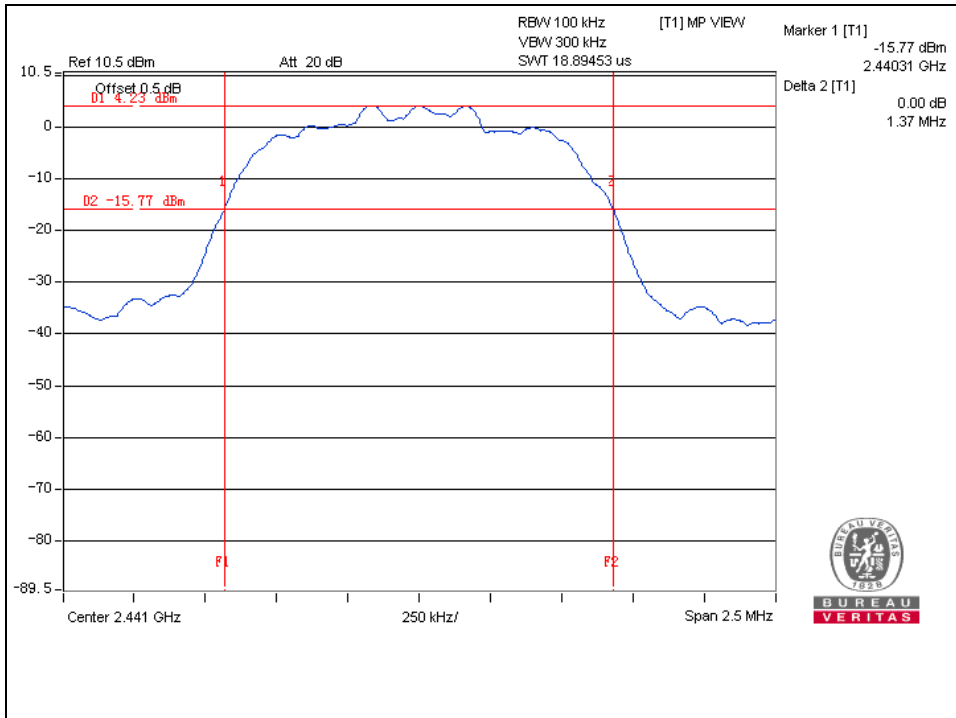




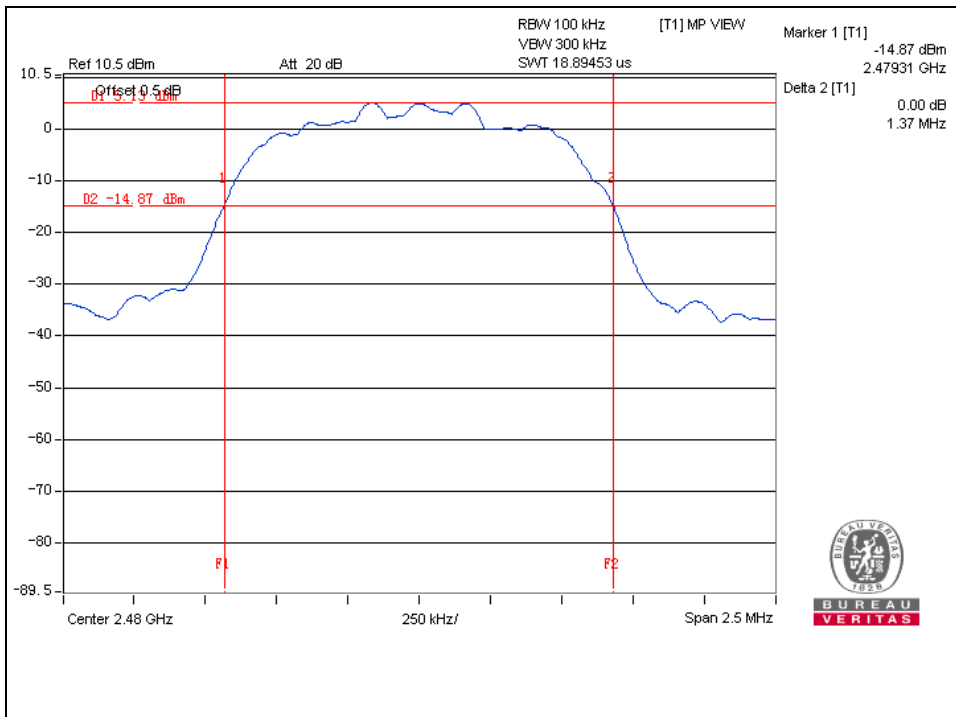
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Test Report No.: RF130712N019

Test Data: Middle channel



Test Data: High channel





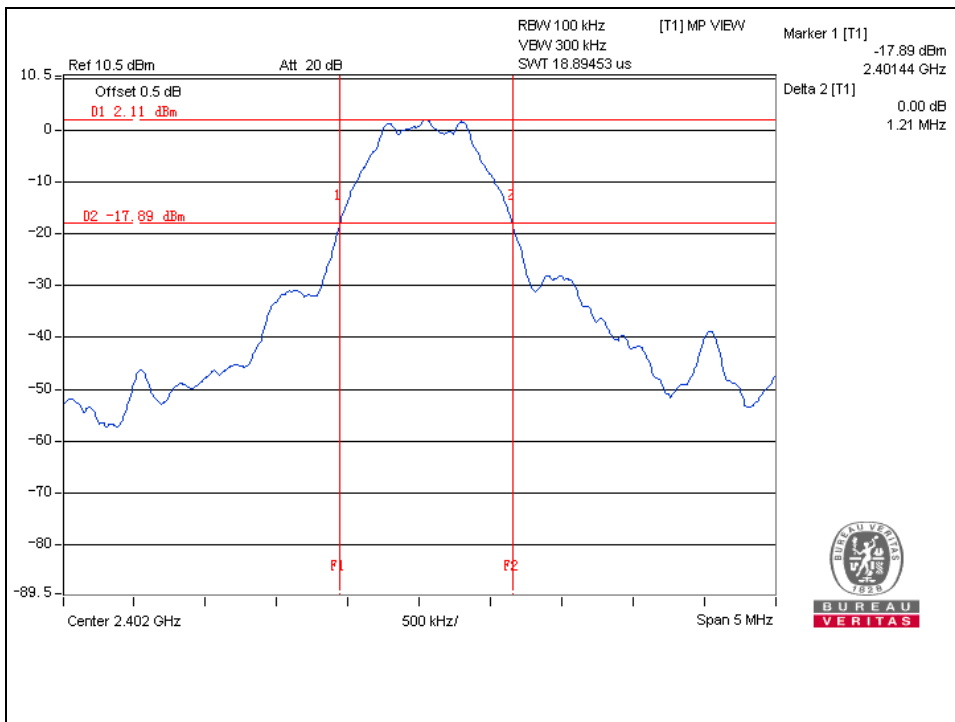
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Test Report No.: RF130712N019

BT-LE

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2402	1.21
Middle	2440	1.20
High	2480	1.21

Test Data: Low channel

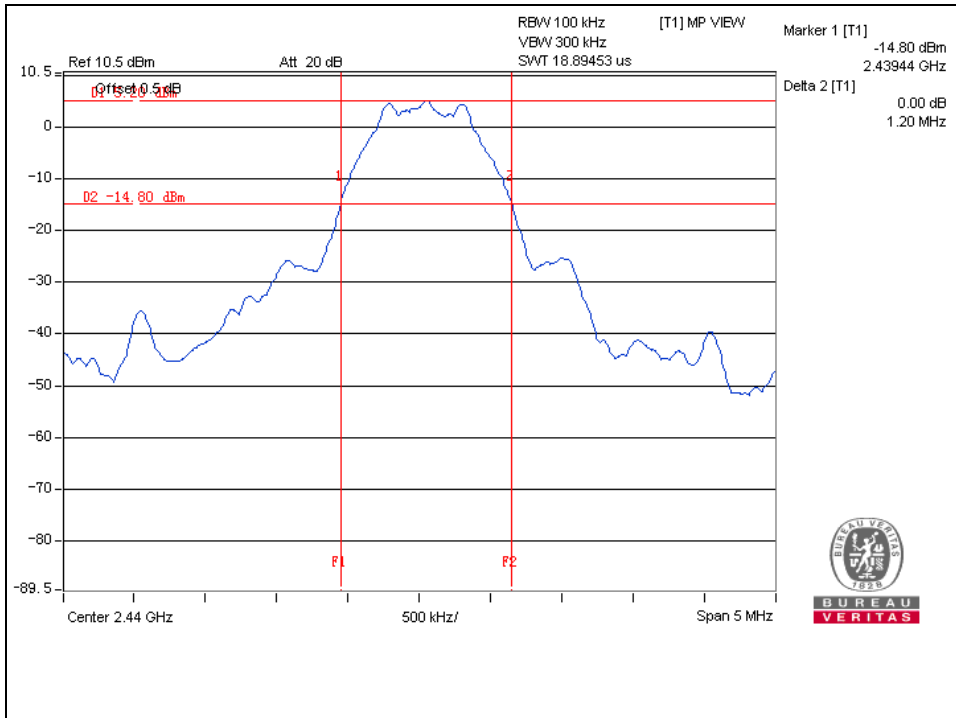




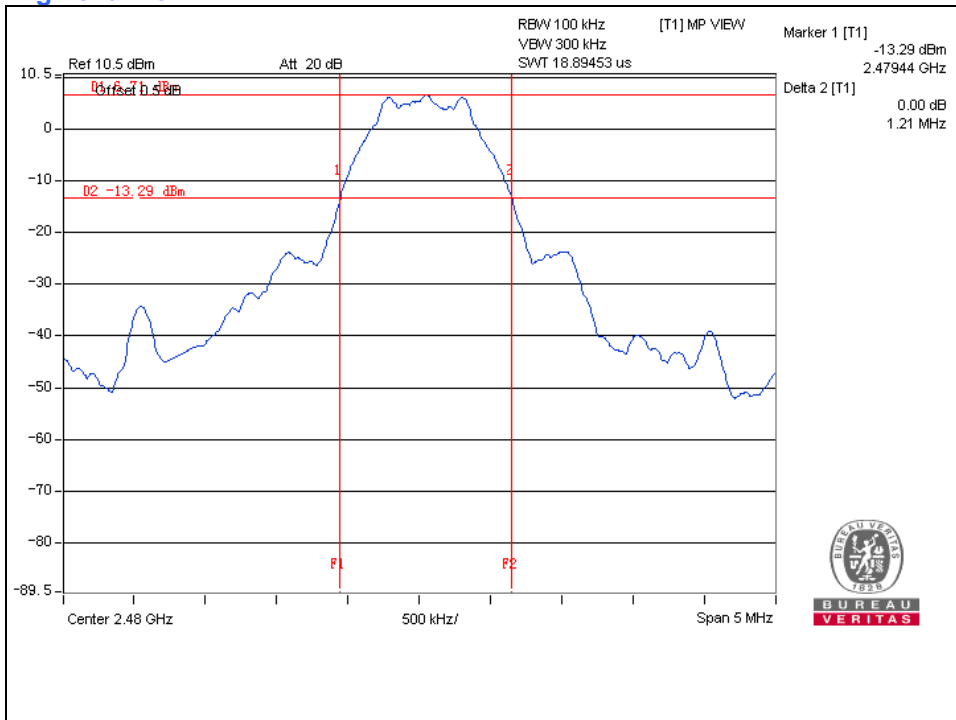
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Test Data: Middle channel



Test Data: High channel



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## 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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





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

No any modifications are made to the EUT by the lab during the test.

**---END---**