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# FCC TEST REPORT (BLUETOOTH)

**REPORT NO.:** RF110715C25A-1

**MODEL NO.:** F-01E

**FCC ID:** VQK-F01E

**RECEIVED:** Jul. 15, 2011

**TESTED:** Aug. 21 ~ Aug. 27, 2011 (For Sample 1)

Sep. 12 ~ Sep. 15, 2012 (For Sample 2)

**ISSUED:** Sep. 17, 2012

**APPLICANT:** FUJITSU LIMITED

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110715C25A-1	Original release	Sep. 17, 2012



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## 1. CERTIFICATION

**PRODUCT:** Mobile Phone

**MODEL NO.:** F-01E

**BRAND:** FOMA

**APPLICANT:** FUJITSU LIMITED

**TESTED:** Aug. 21 ~ Aug. 27, 2011 (For Sample 1)

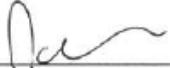
Sep. 12 ~ Sep. 15, 2012 (For Sample 2)

**TEST SAMPLE:** ENGINEERING SAMPLE

**STANDARDS:** FCC Part 15, Subpart C (Section 15.247)

ANSI C63.10-2009

The above equipment (Model: F-01E) 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** :  , **DATE:** Sep. 17, 2012  
Pettie Chen / Senior Specialist

**APPROVED BY** :  , **DATE:** Sep. 17, 2012  
Gary Chang / Technical Manager



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## 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	PASS	Meet the requirement of limit. Minimum passing margin is -19.16dB at 0.771MHz.
15.247(a)(1) (iii)	Number of Hopping Frequency Used	PASS	Meet the requirement of limit.
15.247(a)(1) (iii)	Dwell Time on Each Channel	PASS	Meet the requirement of limit.
15.247(a)(1)	1. Hopping Channel Separation 2. Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power	PASS	Meet the requirement of limit.
15.247(d)	Transmitter Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -5.9dB at 2398.00MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

**NOTE:** If The Frequency Hopping System operating in 2400-2483.5MHz band and the output power less than 125mW. The hopping channel carrier frequencies separated by a minimum of 25kHz or two-thirds of the 20dB bandwidth of hopping channel whichever is greater.



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## 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:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions (Sample 1)	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB
Radiated emissions (Sample 2)	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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



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### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

EUT	Mobile Phone
MODEL NO.	F-01E
POWER SUPPLY	3.7Vdc (Li-ion battery) 5.4Vdc (Adapter)
MODULATION TYPE	GFSK, $\pi/4$ -DQPSK, 8DPSK
MODULATION TECHNOLOGY	FHSS
TRANSFER RATE	1/2/3Mbps
OPERATING FREQUENCY	2402 ~ 2480MHz
NUMBER OF CHANNEL	79
MAX. OUTPUT POWER	2.5mW
ANTENNA TYPE	$\lambda/4$ Monopole Antenna with -1.73dBi gain
ANTENNA CONNECTOR	NA
I/O PORTS	Refer to user's manual
DATA CABLE	NA
ACCESSORY DEVICES	Battery

#### NOTE:

1. There are two samples for the EUT. The differences between these two samples are HW versions and GPS function (sample 1 is without GPS function, sample 2 is with GPS function). The difference of two HW versions is the mechanical part of top cover. All tests were fully tested on the sample 1, and sample 2 was verified on the worst condition of sample 1.
2. The EUT use the following internal Li-ion battery:

BRAND	Fujitsu Limited
MODEL	F19
RATING	3.7Vdc, 830mAh

3. The following accessories are for optional units only.

PRODUCT	BRAND	MODEL	DESCRIPTION
ADAPTER	SMK	NA	I/P: 100-240Vac, 0.12A, 50-60Hz O/P: 5.4Vdc, 700mA
USB cable	NA	NA	0.8m non-shielded cable without core

4. The following table is for HW and SW.

ITEM	HARDWARE VERSION	SOFTWARE VERSION
Sample 1	V2.2	R17.2
Sample 2	V1.2.0	R08.2

5. The following table is for IMEI code.

ITEM	IMEI code
Sample 1	357261040007442 & 357261040007434
Sample 2	353705050008017

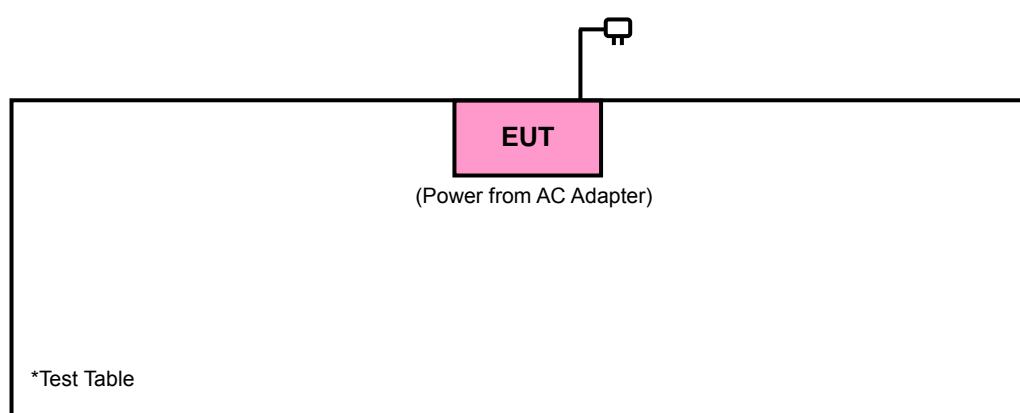
6. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

### 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 CONFIGURATION OF SYSTEM UNDER TEST





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### 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Sample 1
B	√	√	√	-	Sample 2

Where    **RE≥1G:** Radiated Emission above 1GHz  
**PLC:** Power Line Conducted Emission

**RE<1G:** Radiated Emission below 1GHz  
**APCM:** Antenna Port Conducted Measurement

**NOTE:**

The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.

**NOTE:** “-” means no effect.

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

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

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	0, 39, 78	FHSS	GFSK	DH5
A	0 to 78	0, 39, 78	FHSS	8DPSK	DH5
B	0 to 78	0	FHSS	8DPSK	DH5

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

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

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	78	FHSS	8DPSK	DH5
B	0 to 78	0	FHSS	8DPSK	DH5

#### POWER LINE CONDUCTED EMISSION TEST:

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

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	78	FHSS	8DPSK	DH5
B	0 to 78	0	FHSS	8DPSK	DH5



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**BANDEDGE MEASUREMENT:**

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

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	0, 78	FHSS	GFSK	DH5
A	0 to 78	0, 78	FHSS	8DPSK	DH5

**ANTENNA PORT CONDUCTED MEASUREMENT:**

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	0, 39, 78	FHSS	GFSK	DH5
A	0 to 78	0, 39, 78	FHSS	8DPSK	DH5

**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G (Test Mode A)	25deg. C, 65%RH	120Vac, 60Hz	David Huang
RE<1G (Test Mode B)	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
RE<1G (Test Mode A)	25deg. C, 65%RH	120Vac, 60Hz	David Huang
RE<1G (Test Mode B)	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
PLC (Test Mode A)	23deg. C, 62%RH	120Vac, 60Hz	Ariel Lin
PLC (Test Mode B)	25deg. C, 52%RH	120Vac, 60Hz	David Huang
APCM	25deg. C, 65%RH	120Vac, 60Hz	David Huang



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### **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. (15.247)**

**558074 D01 DTS Meas Guidance v01**

**FCC Public Notice DA 00-705**

**ANSI C63.10-2009**

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

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

### **3.4 DESCRIPTION OF SUPPORT UNITS**

The EUT has been tested as an independent unit.



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## 4. TEST TYPES AND RESULTS

### 4.1 RADIATED EMISSION MEASUREMENT

#### 4.1.1 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

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dB<sub>u</sub>V/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

##### Test Mode A

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUe DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 02, 2011	Aug. 01, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100041	Jul. 21, 2011	Jul. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 13, 2011	Apr. 12, 2012
HORN Antenna SCHWARZBECK	9120D	9120D-405	Feb. 08, 2011	Feb. 07, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8447D	2944A10633	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8449B	3008A01964	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295014/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	Aug. 19, 2011	Aug. 18, 2012
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA

**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 test was performed in HwaYa Chamber 3.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 988962.
5. The IC Site Registration No. is IC 7450F-3.



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**Test Mode B**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUe DATE OF CALIBRATION
Test Receiver Agilent	N9038A	MY51210203	Dec. 22, 2011	Dec. 21, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 21, 2011	Dec. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 20, 2011	Dec. 19, 2012
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Dec. 20, 2011	Dec. 19, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 20, 2011	Dec. 19, 2012
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier EMCI	EMC 012645	980115	Dec. 30, 2011	Dec. 29, 2012
Preamplifier EMCI	EMC 330H	980112	Dec. 30, 2011	Dec. 29, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4	Oct. 21, 2011	Oct. 20, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Jan. 02, 2012	Jan. 01, 2013
RF signal cable Worken	RG-213	NA	Jan. 02, 2012	Jan. 01, 2013
Software	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

**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 calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in HwaYa Chamber 9.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 460141.
6. The IC Site Registration No. is IC 7450F-4.



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#### 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 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.

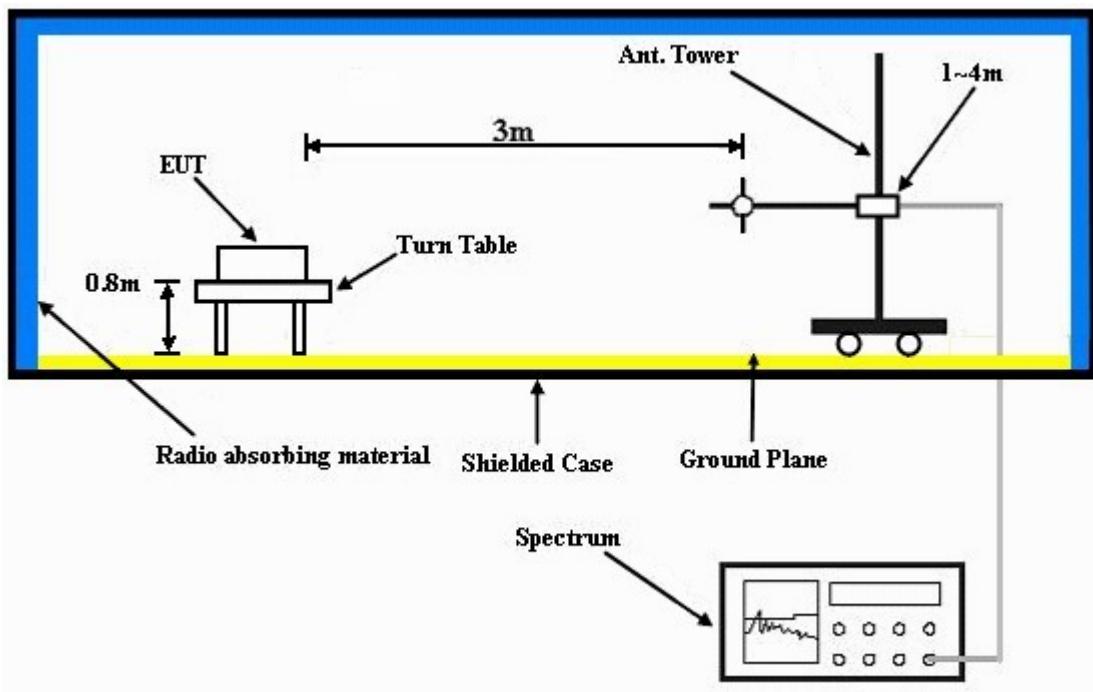
**NOTE:**

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 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



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

#### 4.1.6 EUT OPERATING CONDITIONS

- a. Placed the EUT on a testing table.
- b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.



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#### 4.1.7 TEST RESULTS

##### GFSK

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang
TEST MODE	A		

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	43.1 PK	74.0	-30.9	1.33 H	142	12.60	30.50
2	2390.00	32.4 AV	54.0	-21.6	1.33 H	142	1.90	30.50
3	#2398.00	48.8 PK	78.9	-30.1	1.33 H	142	18.30	30.50
4	#2398.00	42.8 AV	48.8	-6.0	1.33 H	142	12.30	30.50
5	#2400.00	44.1 PK	78.9	-34.8	1.33 H	142	13.60	30.50
6	#2400.00	14.0 AV	48.8	-34.8	1.33 H	142	-16.50	30.50
7	*2402.00	98.9 PK			1.33 H	142	68.40	30.50
8	*2402.00	68.8 AV			1.33 H	142	38.30	30.50
9	4804.00	50.4 PK	74.0	-23.6	1.34 H	137	13.90	36.50
10	4804.00	20.3 AV	54.0	-33.7	1.34 H	137	-16.20	36.50

**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 worst 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 +  $20\log(\text{duty cycle})$ .
8. "#": The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang
TEST MODE	A		

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	41.3 PK	74.0	-32.7	2.07 V	177	10.80	30.50
2	2390.00	29.4 AV	54.0	-24.6	2.07 V	177	-1.10	30.50
3	#2398.00	44.5 PK	72.5	-28.0	2.07 V	177	14.00	30.50
4	<b>#2398.00</b>	<b>36.5 AV</b>	<b>42.4</b>	<b>-5.9</b>	<b>2.07 V</b>	<b>177</b>	<b>6.00</b>	<b>30.50</b>
5	#2400.00	35.6 PK	72.5	-36.9	2.07 V	177	5.10	30.50
6	#2400.00	5.5 AV	42.4	-36.9	2.07 V	177	-25.00	30.50
7	*2402.00	92.5 PK			2.07 V	177	62.00	30.50
8	*2402.00	62.4 AV			2.07 V	177	31.90	30.50
9	4804.00	48.9 PK	74.0	-25.1	1.00 V	241	12.40	36.50
10	4804.00	18.8 AV	54.0	-35.2	1.00 V	241	-17.70	36.50

**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 worst 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 +  $20\log(\text{duty cycle})$ .
8. "#": The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang
TEST MODE	A		

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	38.8 PK	74.0	-35.2	1.03 H	143	8.30	30.50
2	2390.00	30.7 AV	54.0	-23.3	1.03 H	143	0.20	30.50
3	*2441.00	99.5 PK			1.03 H	143	68.80	30.70
4	*2441.00	69.4 AV			1.03 H	143	38.70	30.70
5	4882.00	49.8 PK	74.0	-24.2	1.00 H	245	13.10	36.70
6	4882.00	19.7 AV	54.0	-34.3	1.00 H	245	-17.00	36.70
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	39.3 PK	74.0	-34.7	1.65 V	180	8.80	30.50
2	2390.00	27.7 AV	54.0	-26.3	1.65 V	180	-2.80	30.50
3	*2441.00	95.0 PK			1.65 V	180	64.30	30.70
4	*2441.00	64.9 AV			1.65 V	180	34.20	30.70
5	4882.00	49.2 PK	74.0	-24.8	1.20 V	351	12.50	36.70
6	4882.00	19.1 AV	54.0	-34.9	1.20 V	351	-17.60	36.70

**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).
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 worst 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 +  $20\log(\text{duty cycle})$ .



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang
TEST MODE	A		

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	99.1 PK			1.26 H	132	68.30	30.80
2	*2480.00	69.0 AV			1.26 H	132	38.20	30.80
3	2483.50	41.2 PK	74.0	-32.8	1.26 H	132	10.40	30.80
4	2483.50	11.1 AV	54.0	-42.9	1.26 H	132	-19.70	30.80
5	2485.50	47.6 PK	74.0	-26.4	1.26 H	132	16.80	30.80
6	2485.50	38.5 AV	54.0	-15.5	1.26 H	132	7.70	30.80
7	4960.00	50.4 PK	74.0	-23.6	1.10 H	213	13.60	36.80
8	4960.00	20.3 AV	54.0	-33.7	1.10 H	213	-16.50	36.80
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	93.4 PK			1.00 V	204	65.30	28.10
2	*2480.00	63.3 AV			1.00 V	204	35.20	28.10
3	2483.50	37.4 PK	74.0	-36.6	1.00 V	204	9.30	28.10
4	2483.50	7.3 AV	54.0	-46.7	1.00 V	204	-20.80	28.10
5	2485.50	43.2 PK	74.0	-30.8	1.00 V	204	15.10	28.10
6	2485.50	33.2 AV	54.0	-20.8	1.00 V	204	5.10	28.10
7	4960.00	49.9 PK	74.0	-24.1	1.00 V	124	21.80	28.10
8	4960.00	19.8 AV	54.0	-34.2	1.00 V	124	-8.30	28.10

**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 worst 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 +  $20\log(\text{duty cycle})$ .



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## 8DPSK

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		Channel 0		FREQUENCY RANGE 1 ~ 25GHz
INPUT POWER		120Vac, 60Hz		DETECTOR FUNCTION Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS		25deg. C, 65%RH		TESTED BY David Huang
TEST MODE		A		

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	43.2 PK	74.0	-30.8	1.33 H	143	12.70	30.50
2	2390.00	32.1 AV	54.0	-21.9	1.33 H	143	1.60	30.50
3	#2398.00	48.3 PK	78.7	-30.4	1.33 H	143	17.80	30.50
4	#2398.00	41.2 AV	48.6	-7.4	1.33 H	143	10.70	30.50
5	#2400.00	44.5 PK	78.7	-34.2	1.33 H	143	14.00	30.50
6	#2400.00	14.4 AV	48.6	-34.2	1.33 H	143	-16.10	30.50
7	*2402.00	98.7 PK			1.33 H	143	68.20	30.50
8	*2402.00	68.6 AV			1.33 H	143	38.10	30.50
9	4804.00	49.6 PK	74.0	-24.4	1.10 H	241	13.10	36.50
10	4804.00	19.5 AV	54.0	-34.5	1.10 H	241	-17.00	36.50

**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 worst 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 +  $20\log(\text{duty cycle})$ .
8. "#": The radiated frequency is out the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang
TEST MODE	A		

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	41.7 PK	74.0	-32.3	2.06 V	176	11.20	30.50
2	2390.00	11.6 AV	54.0	-42.4	2.06 V	176	-18.90	30.50
3	#2398.00	43.6 PK	72.3	-28.7	2.06 V	176	13.10	30.50
4	#2398.00	35.2 AV	41.2	-6.0	2.06 V	176	4.70	30.50
5	#2400.00	40.1 PK	72.3	-32.2	2.06 V	176	9.60	30.50
6	#2400.00	9.0 AV	41.2	-32.2	2.06 V	176	-21.50	30.50
7	*2402.00	92.3 PK			2.06 V	176	61.80	30.50
8	*2402.00	61.2 AV			2.06 V	176	30.70	30.50
9	4804.00	49.5 PK	74.0	-24.5	1.10 V	157	13.00	36.50
10	4804.00	19.4 AV	54.0	-34.6	1.10 V	157	-17.10	36.50

**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 worst 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 +  $20\log(\text{duty cycle})$ .
8. "#": The radiated frequency is out the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang
TEST MODE	A		

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	39.6 PK	74.0	-34.4	1.04 H	145	9.10	30.50
2	2390.00	27.9 AV	54.0	-26.1	1.04 H	145	-2.60	30.50
3	*2441.00	99.5 PK			1.04 H	145	68.80	30.70
4	*2441.00	69.4 AV			1.04 H	145	38.70	30.70
5	4882.00	49.3 PK	74.0	-24.7	1.00 H	124	12.60	36.70
6	4882.00	19.2 AV	54.0	-34.8	1.00 H	124	-17.50	36.70
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	38.8 PK	74.0	-35.2	1.64 V	180	8.30	30.50
2	2390.00	28.1 AV	54.0	-25.9	1.64 V	180	-2.40	30.50
3	*2441.00	94.8 PK			1.64 V	180	64.10	30.70
4	*2441.00	64.7 AV			1.64 V	180	34.00	30.70
5	4882.00	48.3 PK	74.0	-25.7	1.00 V	234	11.60	36.70
6	4882.00	18.2 AV	54.0	-35.8	1.00 V	234	-18.50	36.70

**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).
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 worst 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 +  $20\log(\text{duty cycle})$ .



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang
TEST MODE	A		

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	99.1 PK			1.28 H	129	68.30	30.80
2	*2480.00	69.0 AV			1.28 H	129	38.20	30.80
3	2483.50	42.5 PK	74.0	-31.5	1.28 H	129	11.70	30.80
4	2483.50	12.4 AV	54.0	-41.6	1.28 H	129	-18.40	30.80
5	2485.50	46.9 PK	74.0	-27.1	1.28 H	129	16.10	30.80
6	2485.50	37.5 AV	54.0	-16.5	1.28 H	129	6.70	30.80
7	4960.00	50.9 PK	74.0	-23.1	1.10 H	162	14.10	36.80
8	4960.00	20.8 AV	54.0	-33.2	1.10 H	162	-16.00	36.80
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	93.9 PK			1.63 V	179	63.10	30.80
2	*2480.00	63.8 AV			1.63 V	179	33.00	30.80
3	2483.50	39.0 PK	74.0	-35.0	1.63 V	179	8.20	30.80
4	2483.50	8.9 AV	54.0	-45.1	1.63 V	179	-21.90	30.80
5	2485.50	43.9 PK	74.0	-30.1	1.63 V	179	13.10	30.80
6	2485.50	33.8 AV	54.0	-20.2	1.63 V	179	3.00	30.80
7	4960.00	48.5 PK	74.0	-25.5	1.10 V	210	11.70	36.80
8	4960.00	18.4 AV	54.0	-35.6	1.10 V	210	-18.40	36.80

**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 worst 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 +  $20\log(\text{duty cycle})$ .



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## BELOW 1GHz WORST-CASE DATA : 8DPSK

EUT TEST CONDITION		MEASUREMENT DETAIL			
CHANNEL		Channel 78		FREQUENCY RANGE	
INPUT POWER		120Vac, 60Hz		DETECTOR FUNCTION	
ENVIRONMENTAL CONDITIONS		25deg. C, 65%RH		TESTED BY	
TEST MODE		A			

## ANTENNA POLARITY &amp; 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	72.67	18.5 QP	40.0	-21.5	1.50 H	154	7.20	11.30
2	125.17	23.4 QP	43.5	-20.1	1.50 H	115	10.50	12.90
3	204.89	27.6 QP	43.5	-15.9	1.00 H	217	17.00	10.60
4	282.66	22.5 QP	46.0	-23.5	1.00 H	46	8.30	14.20
5	424.59	24.9 QP	46.0	-21.1	1.00 H	280	6.80	18.10
6	471.25	25.5 QP	46.0	-20.5	1.50 H	25	6.10	19.40

## ANTENNA POLARITY &amp; 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	45.45	31.0 QP	40.0	-9.0	1.00 V	286	16.60	14.40
2	72.67	32.0 QP	40.0	-8.0	1.50 V	193	20.70	11.30
3	99.89	29.1 QP	43.5	-14.4	1.00 V	343	18.90	10.20
4	204.89	25.4 QP	43.5	-18.1	1.00 V	121	14.80	10.60
5	298.21	20.4 QP	46.0	-25.6	1.50 V	205	5.60	14.80
6	471.25	24.0 QP	46.0	-22.0	1.00 V	10	4.60	19.40

**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.



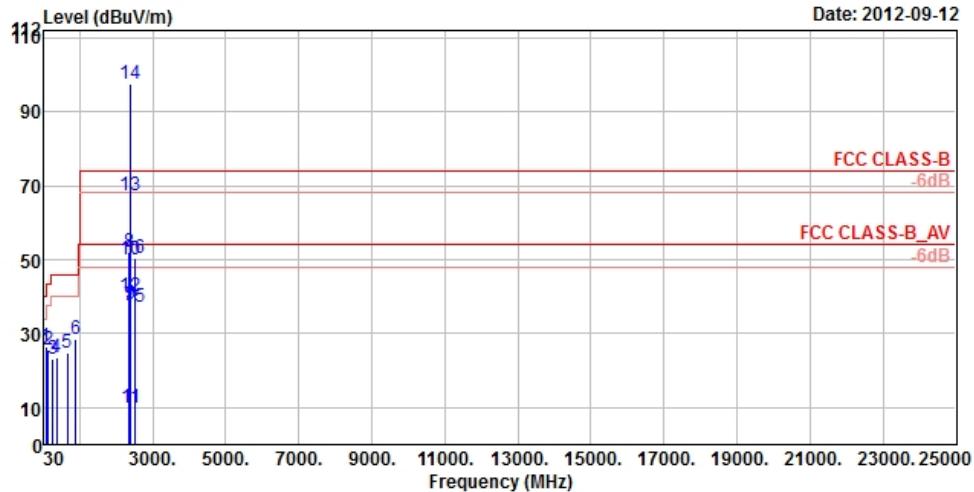
A D T

**Test Mode B**

A D T

Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

Data: 23



Site : 966 Chamber 5  
 Condition : FCC CLASS-B 3m ANT\_18G~40G\_HF HORIZONTAL  
 Brand/Model: F-01E  
 Remark : BT TX CH00  
 Tested by : Kay Wu  
 Temperature : 25°C  
 Humidity : 65%  
 Plane : X  
 Rate : DH5

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		MHz	dBuV/m	dBuV	dBuV/m	Line	Limit Factor	Loss	Factor	
1	76.44	26.59	48.17	40.00	-13.41	9.09	0.95	31.62	214	115 Peak
2	131.52	25.66	44.43	43.50	-17.84	11.81	1.25	31.83	187	44 Peak
3	271.38	23.28	41.24	46.00	-22.72	12.11	1.92	31.99	103	215 Peak
4	361.60	23.52	38.78	46.00	-22.48	14.43	2.27	31.96	113	55 Peak
5	659.10	24.84	33.18	46.00	-21.16	20.33	3.28	31.95	109	248 Peak
6	902.70	28.31	32.83	46.00	-17.69	23.53	3.97	32.02	157	132 Peak
7	2354.00	37.52	43.03	54.00	-16.48	27.16	4.82	37.49	107	142 Average
8	2354.00	51.98	57.49	74.00	-22.02	27.16	4.82	37.49	107	142 Peak
9	2398.00	37.85	43.24	54.00	-16.15	27.26	4.87	37.52	107	142 Average
10	2398.00	49.82	55.21	74.00	-24.18	27.26	4.87	37.52	107	142 Peak
11	2400.00	9.83	15.22	54.00	-44.17	27.26	4.87	37.52	107	142 Average
12	2400.00	39.93	45.32	74.00	-34.07	27.26	4.87	37.52	107	142 Peak
13 av	2402.00	67.50	72.89			27.26	4.87	37.52	107	142 Average
14 pp	2402.00	97.60	102.99			27.26	4.87	37.52	107	142 Peak
15	2496.00	37.15	41.91	54.00	-16.85	27.55	4.94	37.25	107	142 Average
16	2496.00	50.41	55.17	74.00	-23.59	27.55	4.94	37.25	107	142 Peak



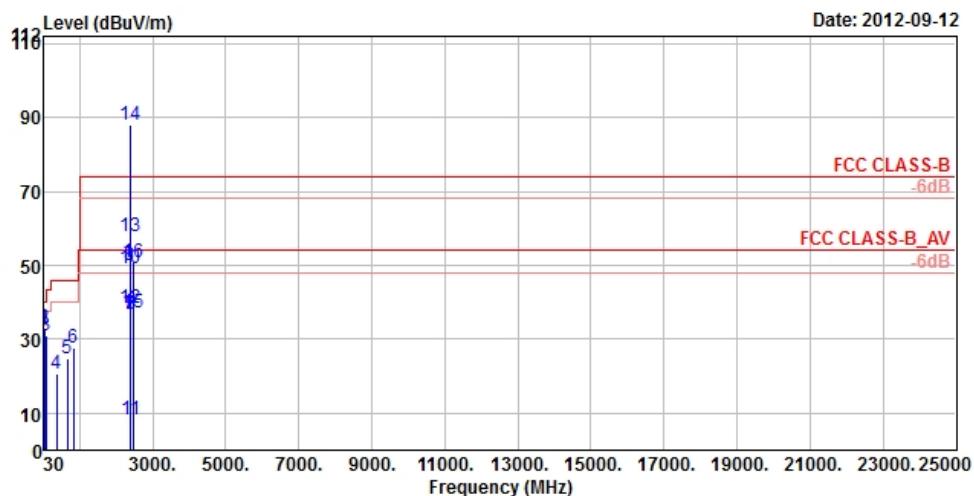
A D T



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 24



Site : 966 Chamber 5

Condition : FCC CLASS-B 3m ANT\_18G~40G\_HF VERTICAL

Brand/Model: F-01E

Remark : BT TX CH00

Tested by : Kay Wu

Temprature : 25°C

Humidity : 65%

Plane : X

Rate : DHS

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Freq	Level	Line	Limit Factor	dB/m	dB	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m		dB	dB/m	dB			
1 qp	33.78	33.25	51.11	40.00	-6.75	12.63	0.59	31.08	122	252 QP
2	42.42	32.86	49.66	40.00	-7.14	13.58	0.70	31.08	133	174 QP
3	76.44	30.88	52.46	40.00	-9.12	9.09	0.95	31.62	152	274 Peak
4	361.60	20.86	36.12	46.00	-25.14	14.43	2.27	31.96	132	57 Peak
5	657.70	24.92	33.31	46.00	-21.08	20.30	3.27	31.96	200	114 Peak
6	825.70	27.57	32.93	46.00	-18.43	22.55	3.76	31.67	198	88 Peak
7	2376.00	36.82	42.26	54.00	-17.18	27.21	4.85	37.50	100	227 Average
8	2376.00	49.96	55.40	74.00	-24.04	27.21	4.85	37.50	100	227 Peak
9	2398.00	36.83	42.22	54.00	-17.17	27.26	4.87	37.52	100	227 Average
10	2398.00	49.07	54.46	74.00	-24.93	27.26	4.87	37.52	100	227 Peak
11	2400.00	8.38	13.77	54.00	-45.62	27.26	4.87	37.52	100	227 Average
12	2400.00	38.48	43.87	74.00	-35.52	27.26	4.87	37.52	100	227 Peak
13 av	2402.00	58.02	63.41		27.26	4.87	37.52	100	227 Average	
14 pp	2402.00	88.12	93.51		27.26	4.87	37.52	100	227 Peak	
15	2492.00	37.12	41.88	54.00	-16.88	27.55	4.94	37.25	100	227 Average
16	2492.00	50.67	55.43	74.00	-23.33	27.55	4.94	37.25	100	227 Peak



A D T

## 4.2 CONDUCTED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

**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 0.50 MHz.  
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.

### 4.2.2 TEST INSTRUMENTS

#### Test Mode A

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 23, 2010	Nov. 22, 2011
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 30, 2010	Dec. 29, 2011
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 06, 2011	Jan. 05, 2012
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jul. 07, 2011	Jul. 06, 2012
V-LISN SCHWARZBECK	NNBL 8226-2	8226-142	Jun. 30, 2011	Jun. 29, 2012
LISN ROHDE & SCHWARZ	ENV216	100072	Jun. 10, 2011	Jun. 09, 2012
Software ADT	ADT_Cond_V7.3.7	NA	NA	NA

**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 test was performed in HwaYa Shielded Room 2.  
3. The VCCI Site Registration No. is C-2047.



A D T

### Test Mode B

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 19, 2011	Nov. 18, 2012
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 29, 2011	Dec. 28, 2012
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 30, 2011	Dec. 29, 2012
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 06, 2012	Jul. 05, 2013
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

**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 test was performed in HwaYa Shielded Room 2.  
3. The VCCI Site Registration No. is C-2047.

#### 4.2.3 TEST PROCEDURES

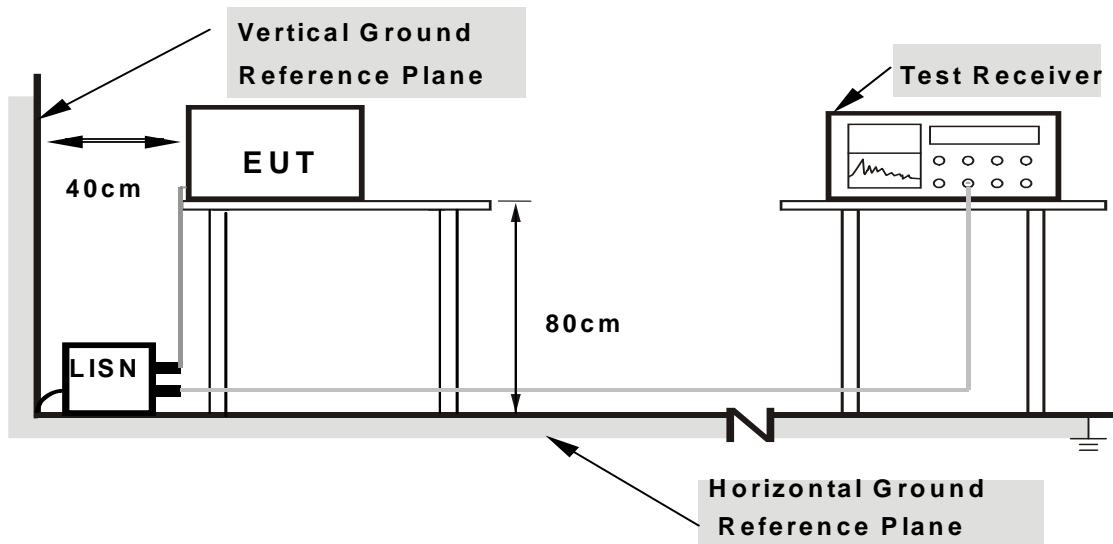
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- 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.

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.2.5 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).

#### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

## 4.2.7 TEST RESULTS

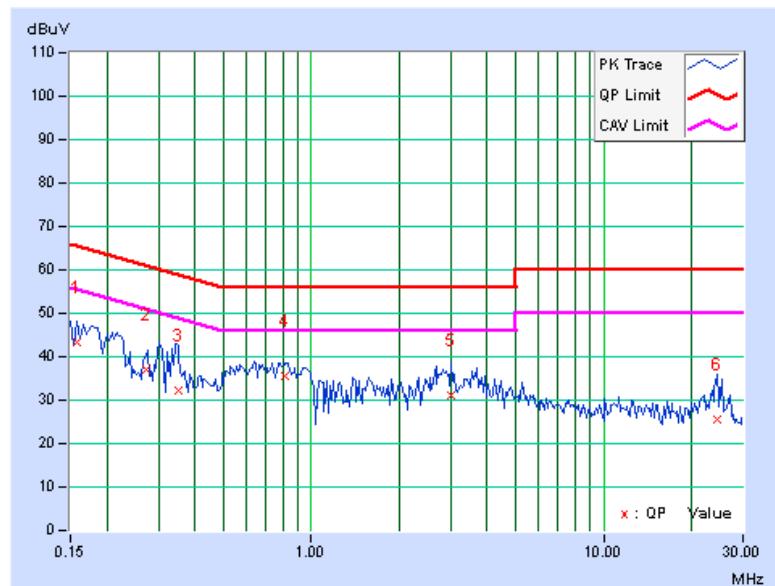
## CONDUCTED WORST CASE DATA: 8DPSK

PHASE	Line 1	6dB BANDWIDTH	9 kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.17	43.18	29.22	43.35	29.39	65.58	55.58	-22.23	-26.19
2	0.27245	0.18	36.68	33.72	36.86	33.90	61.04	51.04	-24.18	-17.14
3	0.35092	0.19	31.85	22.67	32.04	22.86	58.94	48.94	-26.90	-26.08
4	0.81554	0.22	35.22	23.94	35.44	24.16	56.00	46.00	-20.56	-21.84
5	3.00391	0.32	30.90	22.72	31.22	23.04	56.00	46.00	-24.78	-22.96
6	24.33594	1.32	24.33	15.87	25.65	17.19	60.00	50.00	-34.35	-32.81

## REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

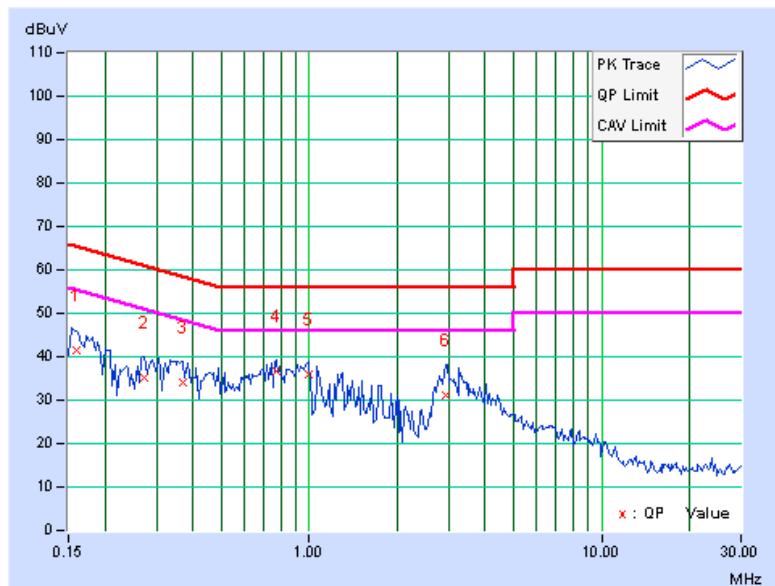


PHASE	Line 2	6dB BANDWIDTH	9 kHz
TEST MODE	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16027	0.19	41.41	29.03	41.60	29.22	65.45	55.45	-23.85	-26.23
2	0.27109	0.19	35.01	34.07	35.20	34.26	61.08	51.08	-25.88	-16.82
3	0.36875	0.21	33.93	21.04	34.14	21.25	58.53	48.53	-24.39	-27.28
4	<b>0.77109</b>	<b>0.21</b>	<b>36.63</b>	<b>25.45</b>	<b>36.84</b>	<b>25.66</b>	<b>56.00</b>	<b>46.00</b>	<b>-19.16</b>	<b>-20.34</b>
5	0.99766	0.21	35.64	23.81	35.85	24.02	56.00	46.00	-20.15	-21.98
6	2.92969	0.29	30.96	23.33	31.25	23.62	56.00	46.00	-24.75	-22.38

**REMARKS:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

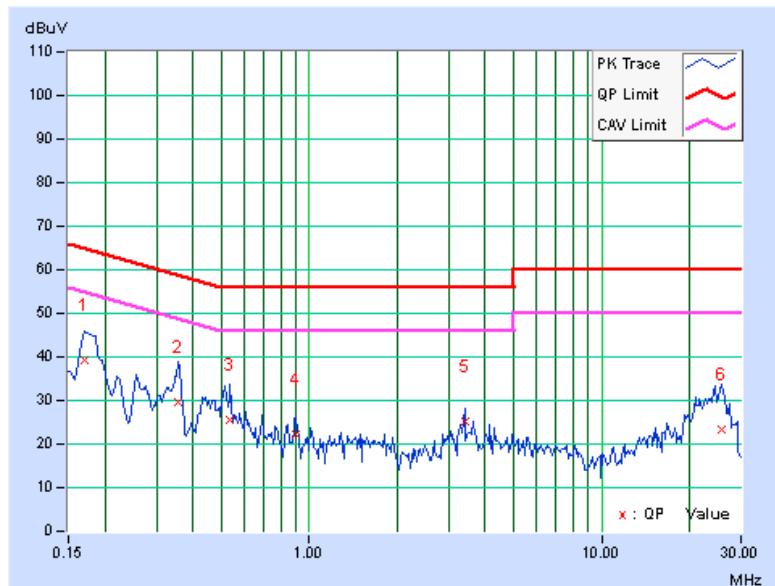


PHASE	Line 1	6dB BANDWIDTH	9 kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	0.15	39.06	32.87	39.21	33.02	64.98	54.98	-25.77	-21.96
2	0.35703	0.17	29.42	20.73	29.59	20.90	58.80	48.80	-29.21	-27.90
3	0.53672	0.17	25.26	14.37	25.43	14.54	56.00	46.00	-30.57	-31.46
4	0.90391	0.19	22.18	9.77	22.37	9.96	56.00	46.00	-33.63	-36.04
5	3.40234	0.32	24.89	16.05	25.21	16.37	56.00	46.00	-30.79	-29.63
6	25.67188	0.57	22.75	10.48	23.32	11.05	60.00	50.00	-36.68	-38.95

**REMARKS:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

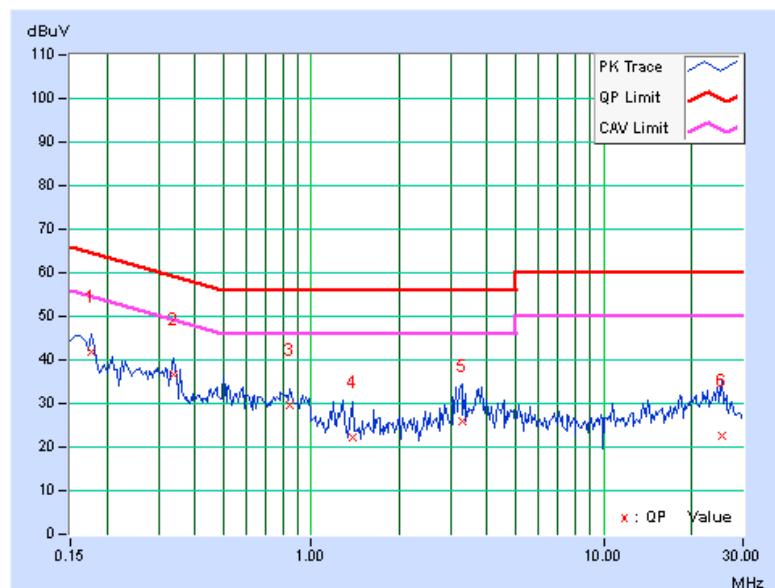


PHASE	Line 2	6dB BANDWIDTH	9 kHz
TEST MODE	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	0.14	41.58	33.67	41.72	33.81	64.61	54.61	-22.89	-20.80
2	0.33750	0.15	36.40	27.94	36.55	28.09	59.26	49.26	-22.71	-21.17
3	0.84141	0.18	29.36	20.68	29.54	20.86	56.00	46.00	-26.46	-25.14
4	1.38281	0.22	21.92	12.47	22.14	12.69	56.00	46.00	-33.86	-33.31
5	3.27734	0.32	25.58	16.79	25.90	17.11	56.00	46.00	-30.10	-28.89
6	25.51953	0.62	21.88	12.62	22.50	13.24	60.00	50.00	-37.50	-36.76

**REMARKS:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.





## 4.3 NUMBER OF HOPPING FREQUENCY USED

### 4.3.1 LIMIT OF HOPPING FREQUENCY USED

At least 15 channels frequencies, and should be equally spaced.

### 4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100040	Aug. 01, 2011	Jul. 31, 2012

**NOTE:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.3.3 TEST PROCEDURES

- a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- c. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
- d. Set the SA on View mode and then plot the result on SA screen.
- e. Repeat above procedures until all frequencies measured were complete.

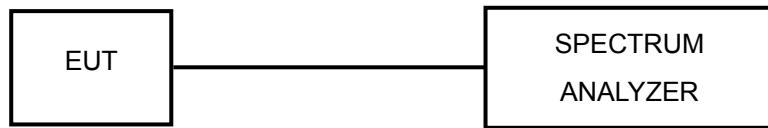


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#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.3.5 TEST SETUP



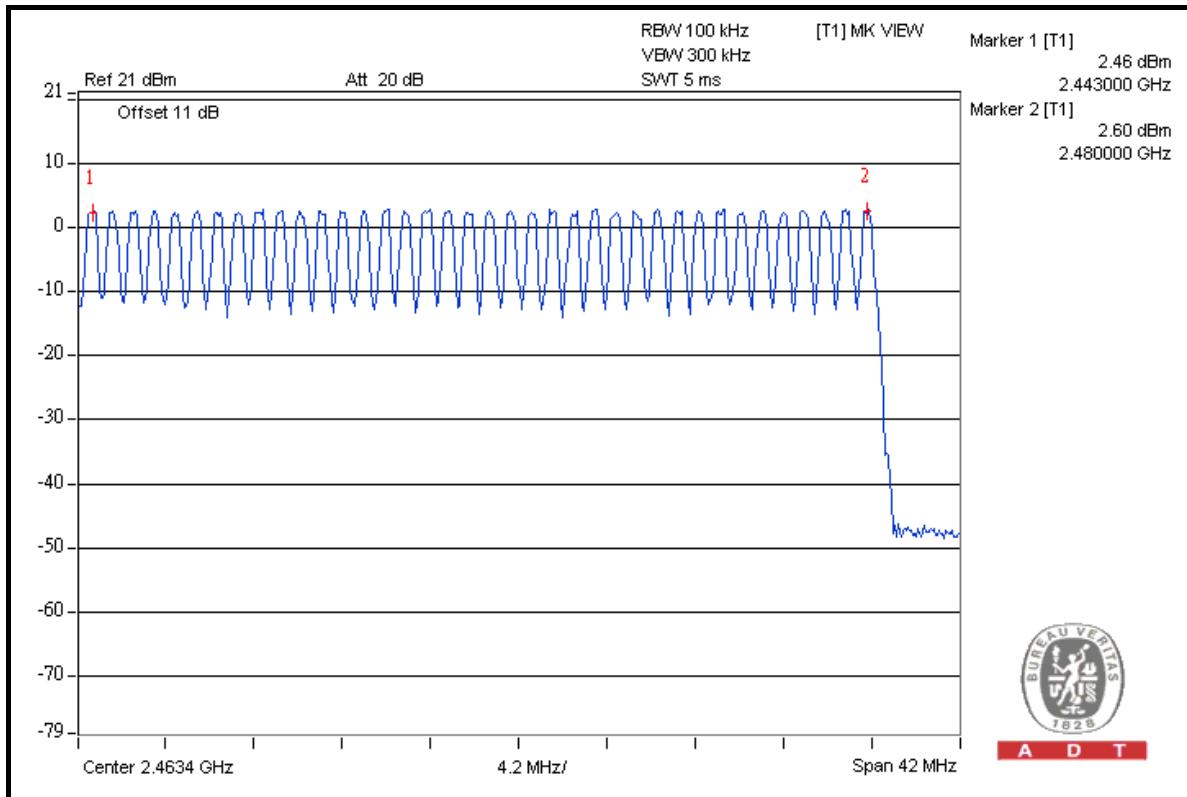
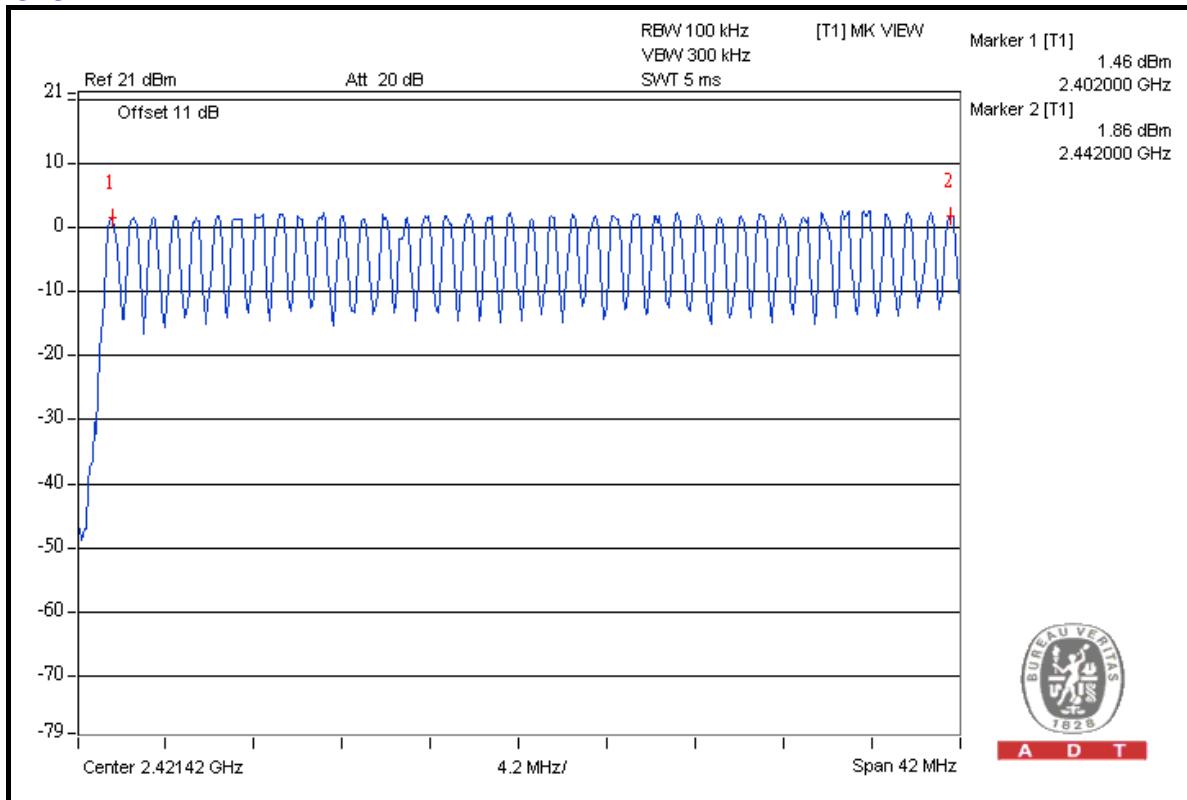
#### 4.3.6 TEST RESULTS

There are 79 hopping frequencies in the hopping mode. Please refer to next two pages for the test result. On the plots, it shows that the hopping frequencies are equally spaced.



A D T

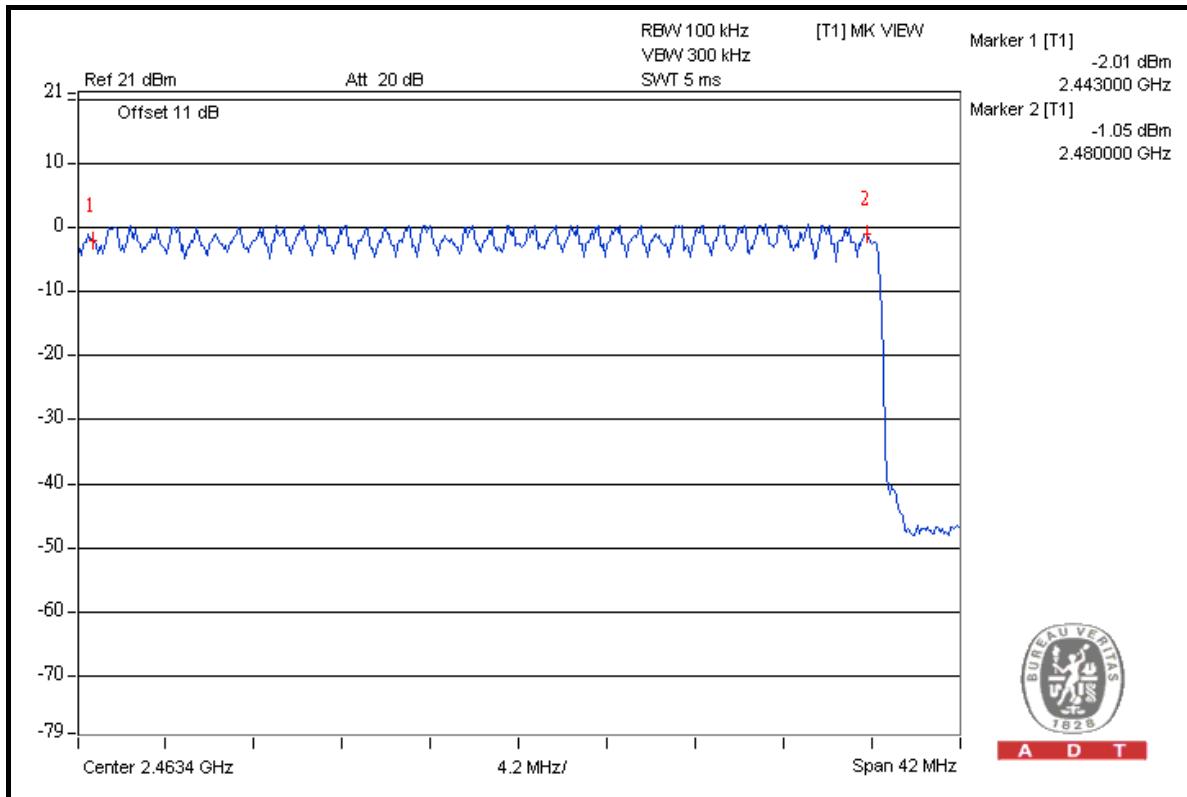
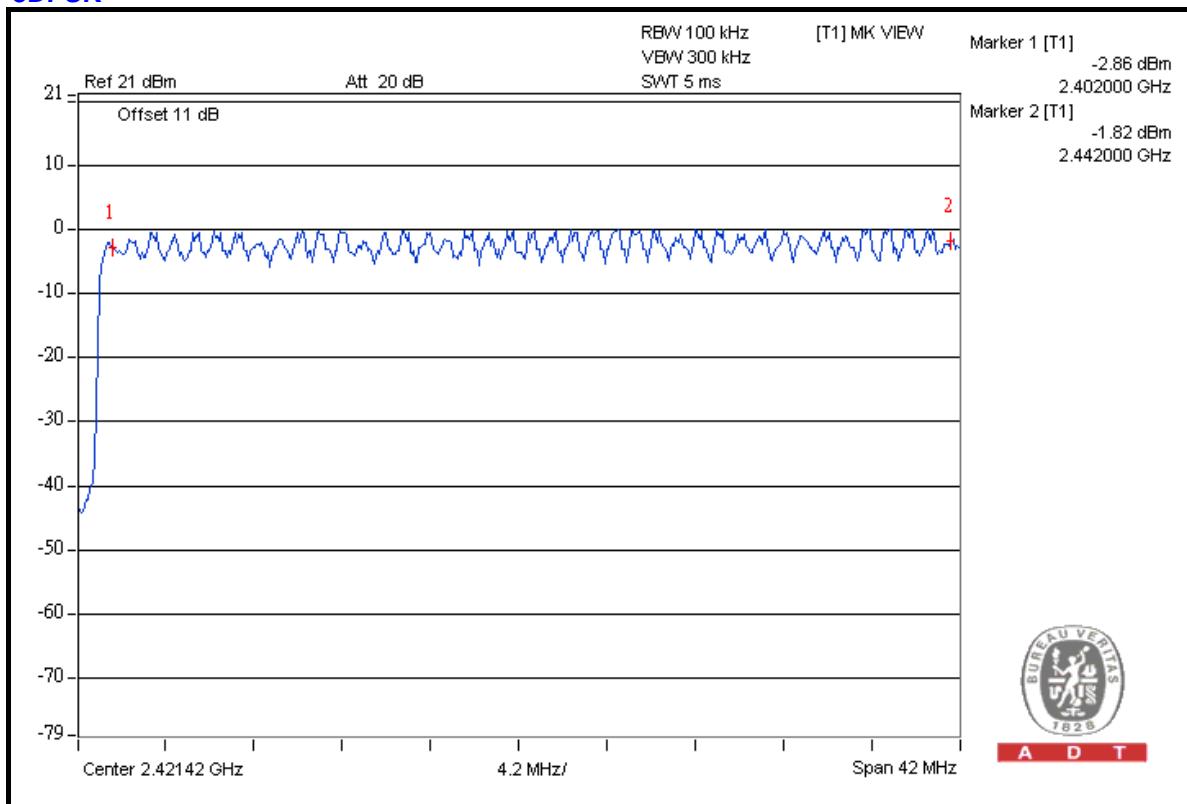
## GFSK





A D T

## 8DPSK





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## 4.4 DWELL TIME ON EACH CHANNEL

### 4.4.1 LIMIT OF DWELL TIME USED

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

### 4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100040	Aug. 01, 2011	Jul. 31, 2012

**NOTE:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.4.3 TEST PROCEDURES

- a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- c. Adjust the center frequency of SA on any frequency to be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
- d. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
- e. Repeat above procedures until all different time-slot modes have been completed.

### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation.



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#### 4.4.5 TEST SETUP

Same as 4.3.5.

#### 4.4.6 TEST RESULTS

##### GFSK

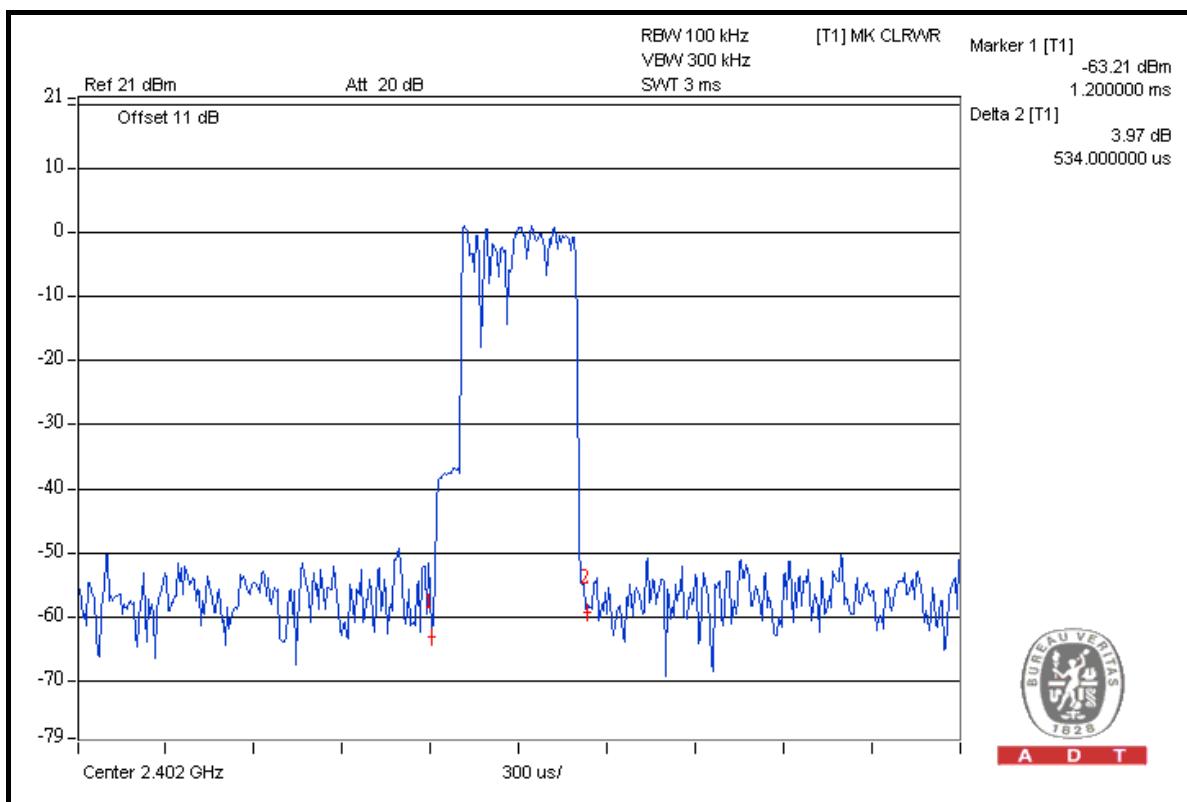
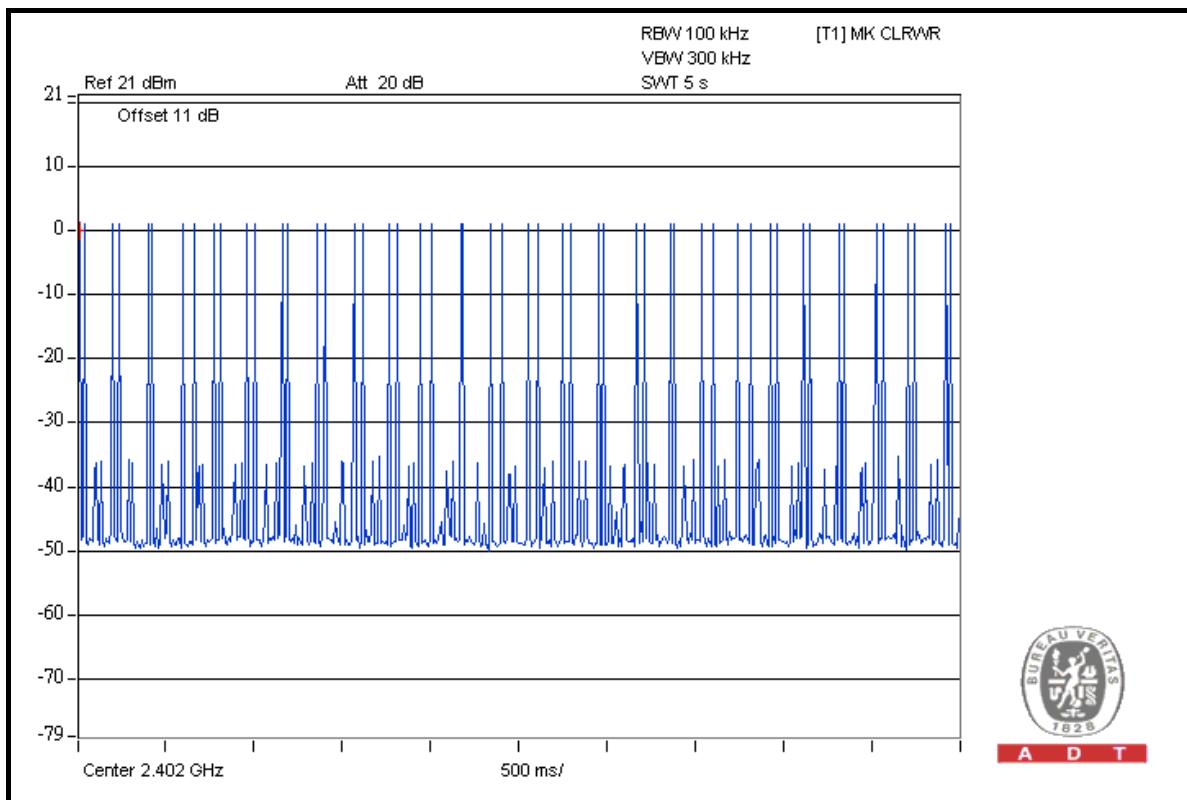
Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	50 (times / 5 sec) * 6.32 = 316.00 times	0.534	168.744	400
DH3	26 (times / 5 sec) * 6.32 = 164.32 times	1.776	291.832	400
DH5	17 (times / 5 sec) * 6.32 = 107.44 times	3.020	324.469	400

**NOTE:** Test plots of the transmitting time slot are shown on next 3 pages.



A D T

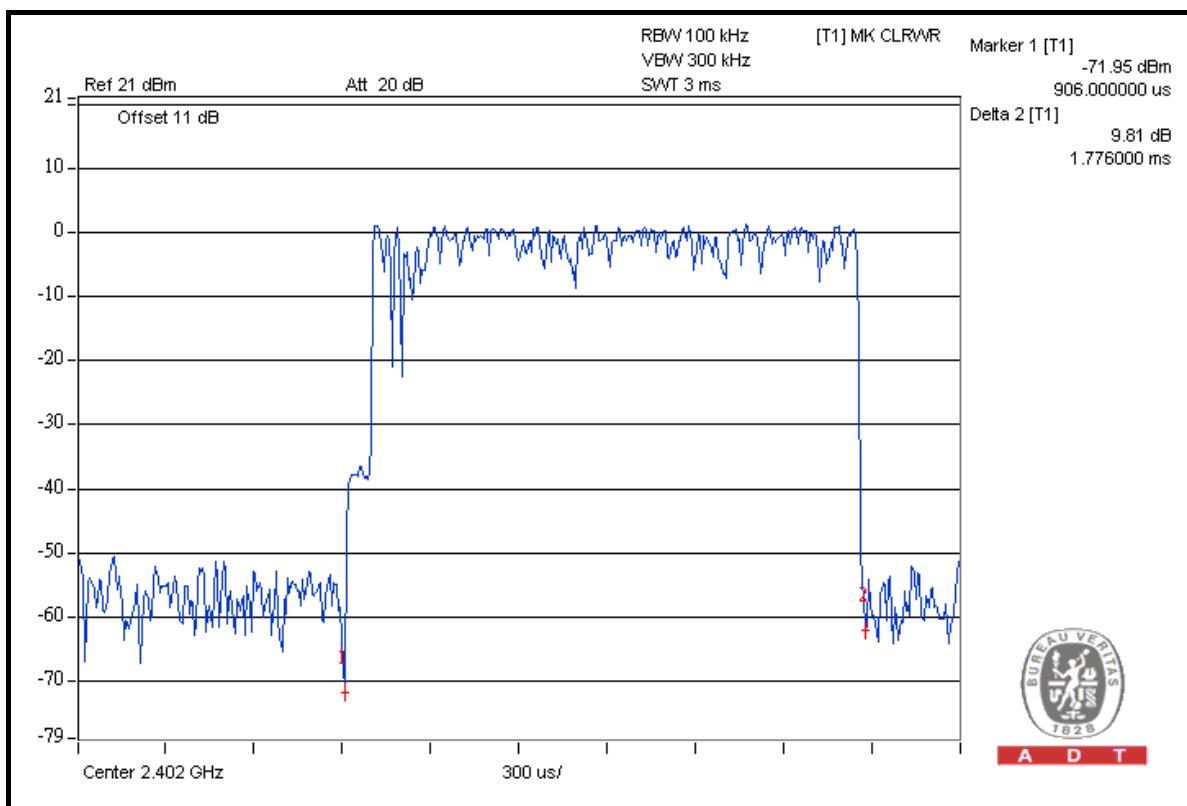
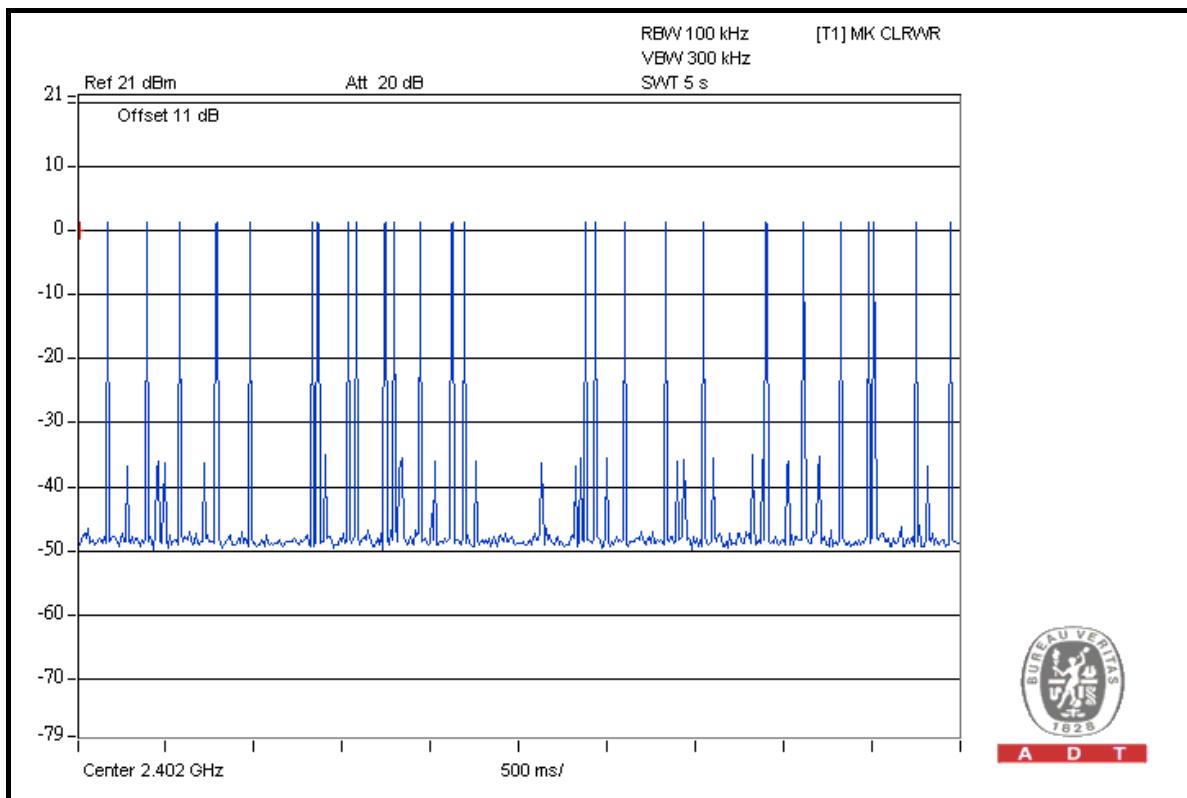
DH1





A D T

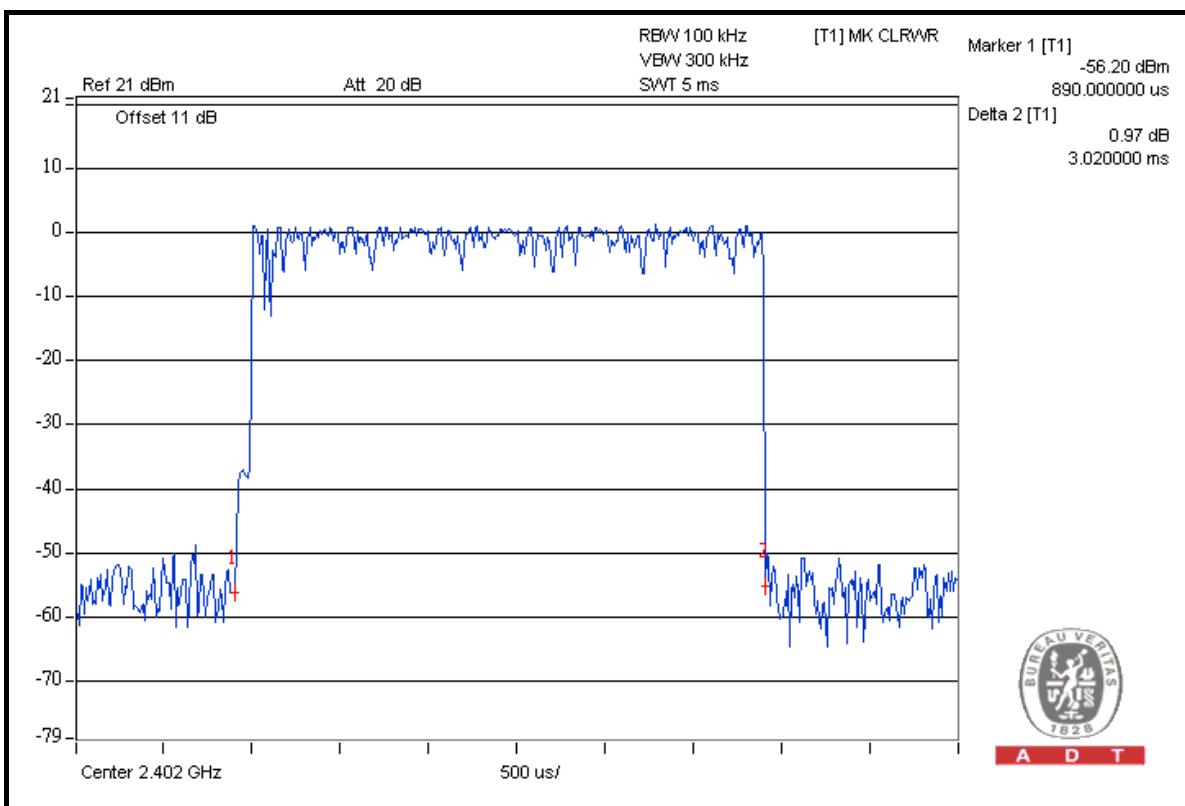
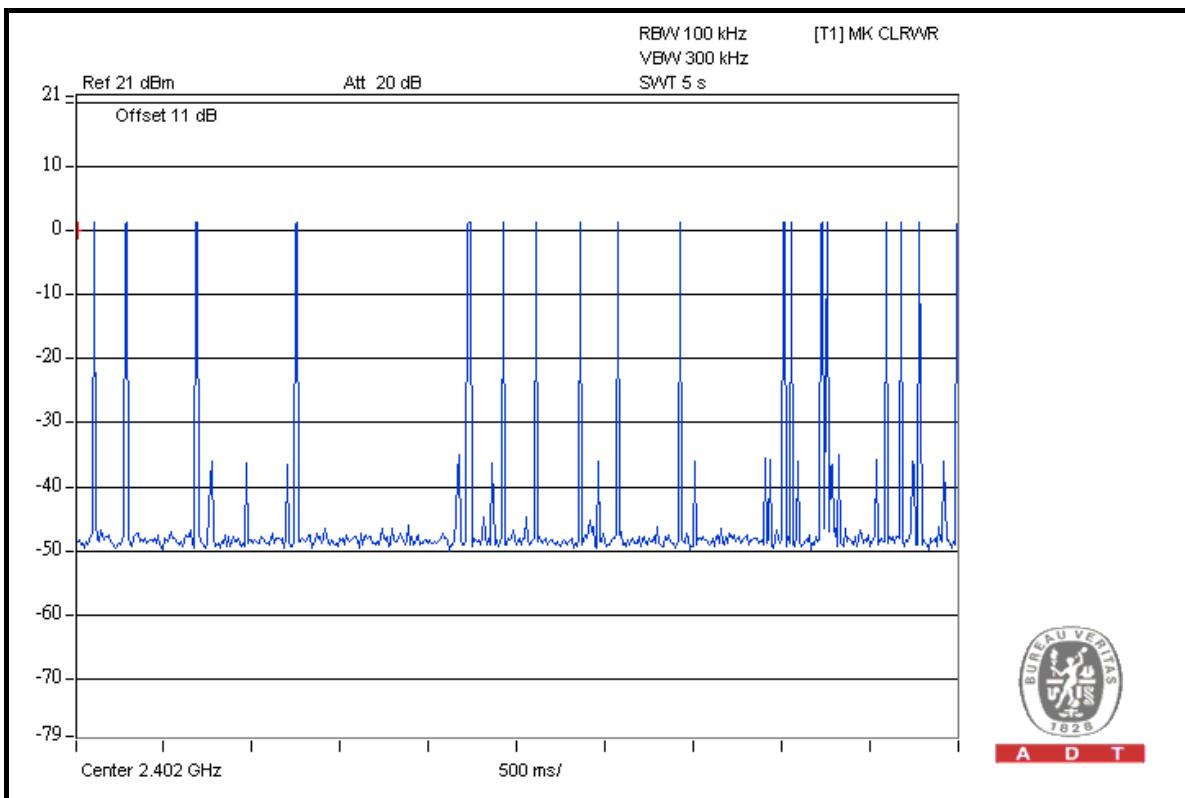
DH3





A D T

DH5





A D T

### 8DPSK

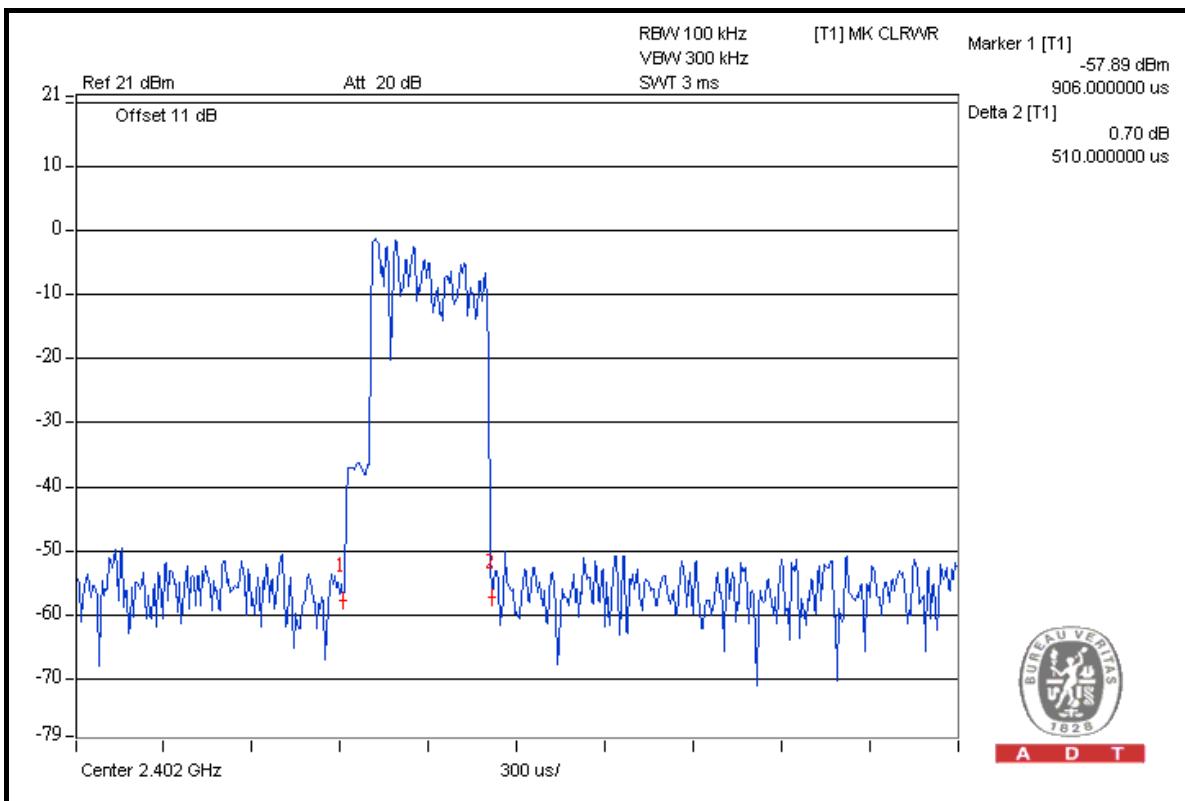
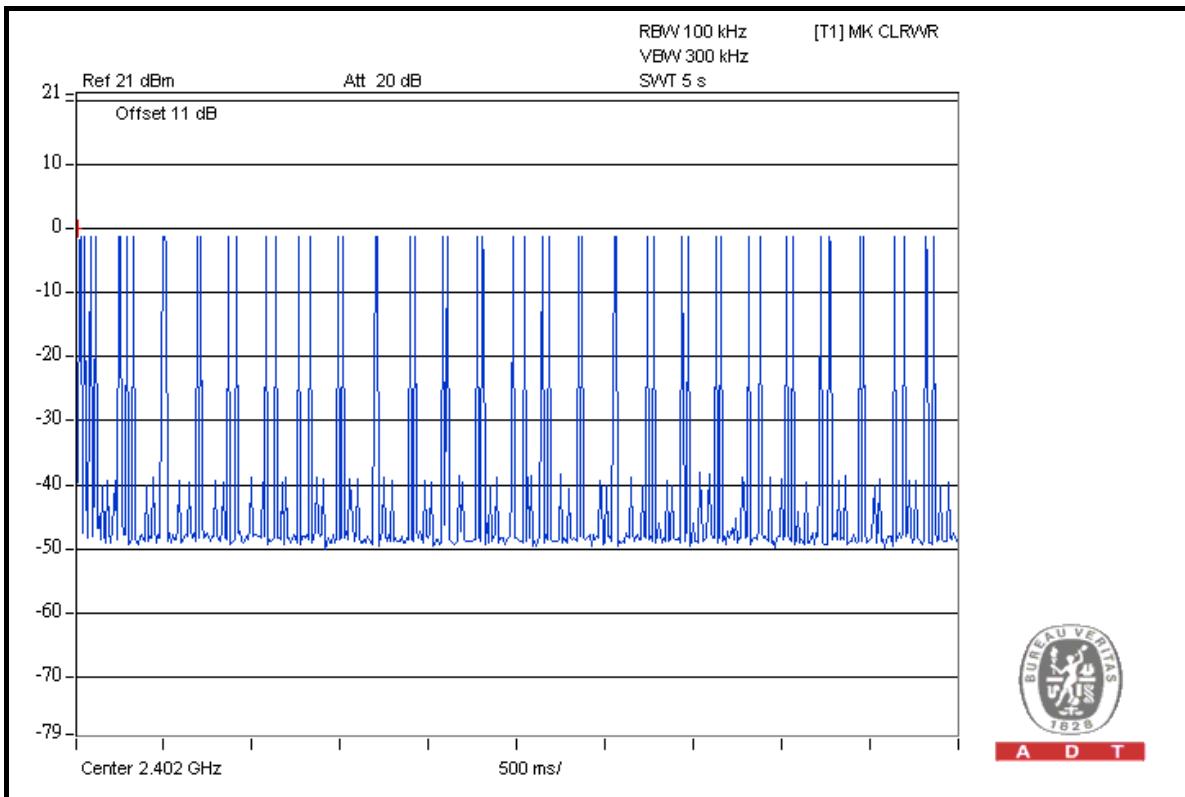
Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	$50 \text{ (times / 5 sec)} * 6.32 = 316.00 \text{ times}$	0.510	161.160	400
DH3	$26 \text{ (times / 5 sec)} * 6.32 = 164.32 \text{ times}$	1.770	290.846	400
DH5	$18 \text{ (times / 5 sec)} * 6.32 = 113.76 \text{ times}$	3.060	348.106	400

**NOTE:** Test plots of the transmitting time slot are shown on next 3 pages.



A D T

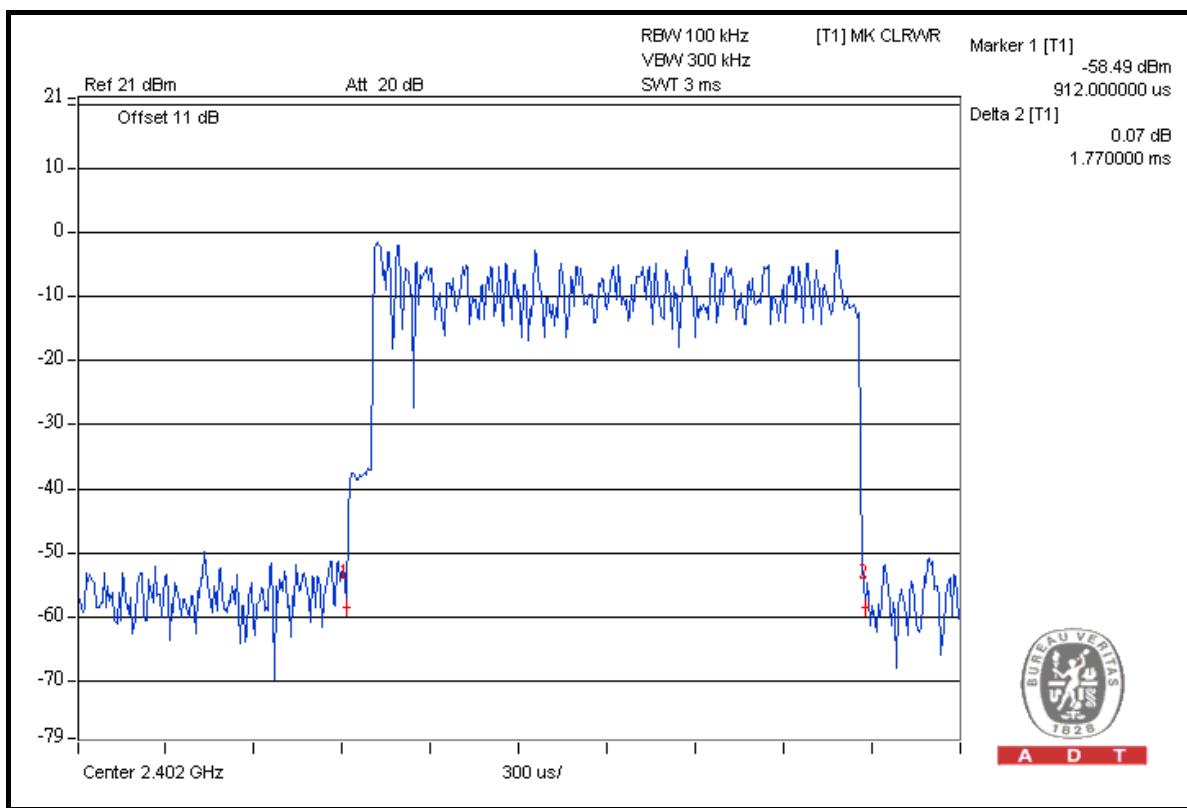
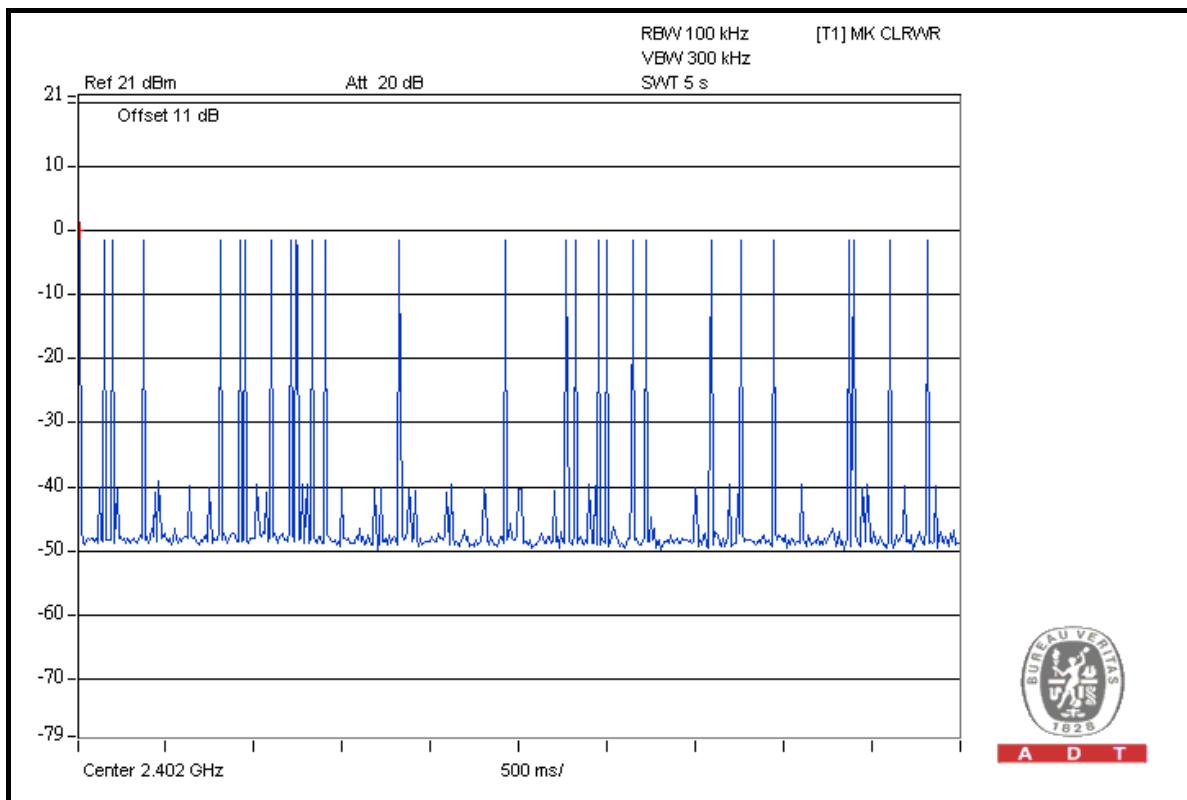
DH1





A D T

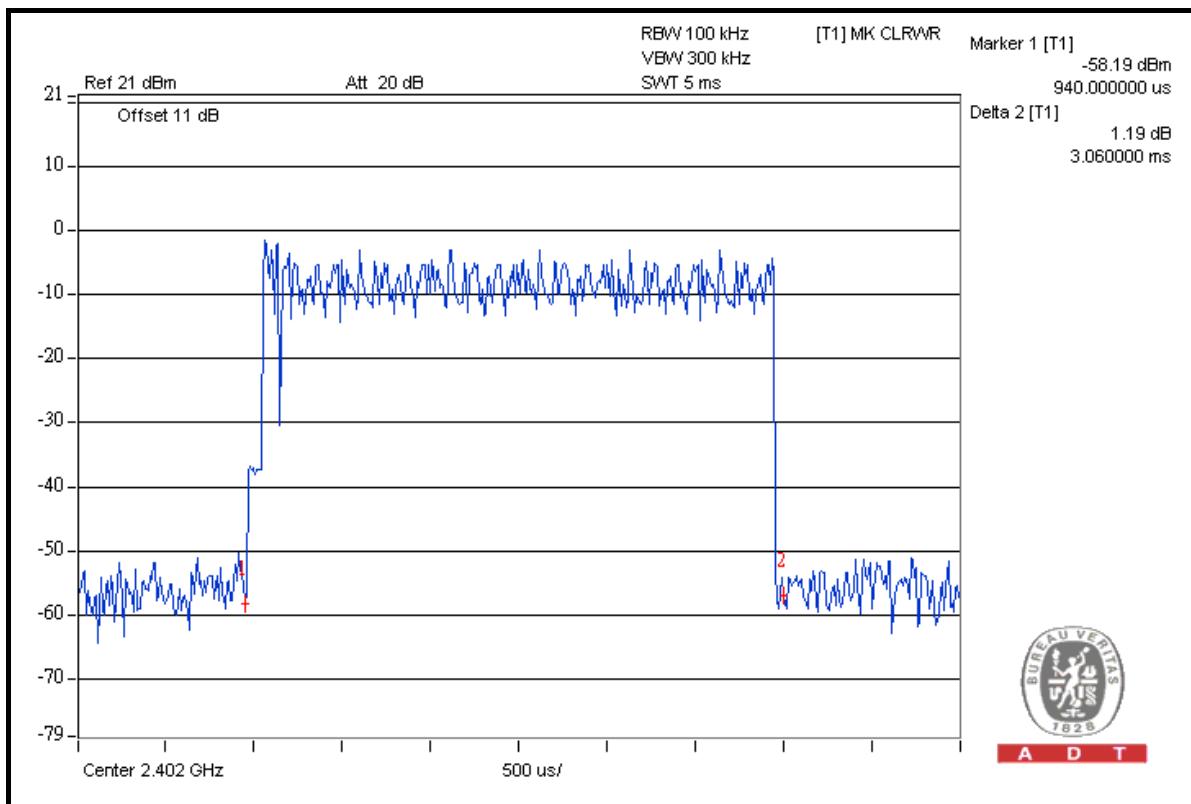
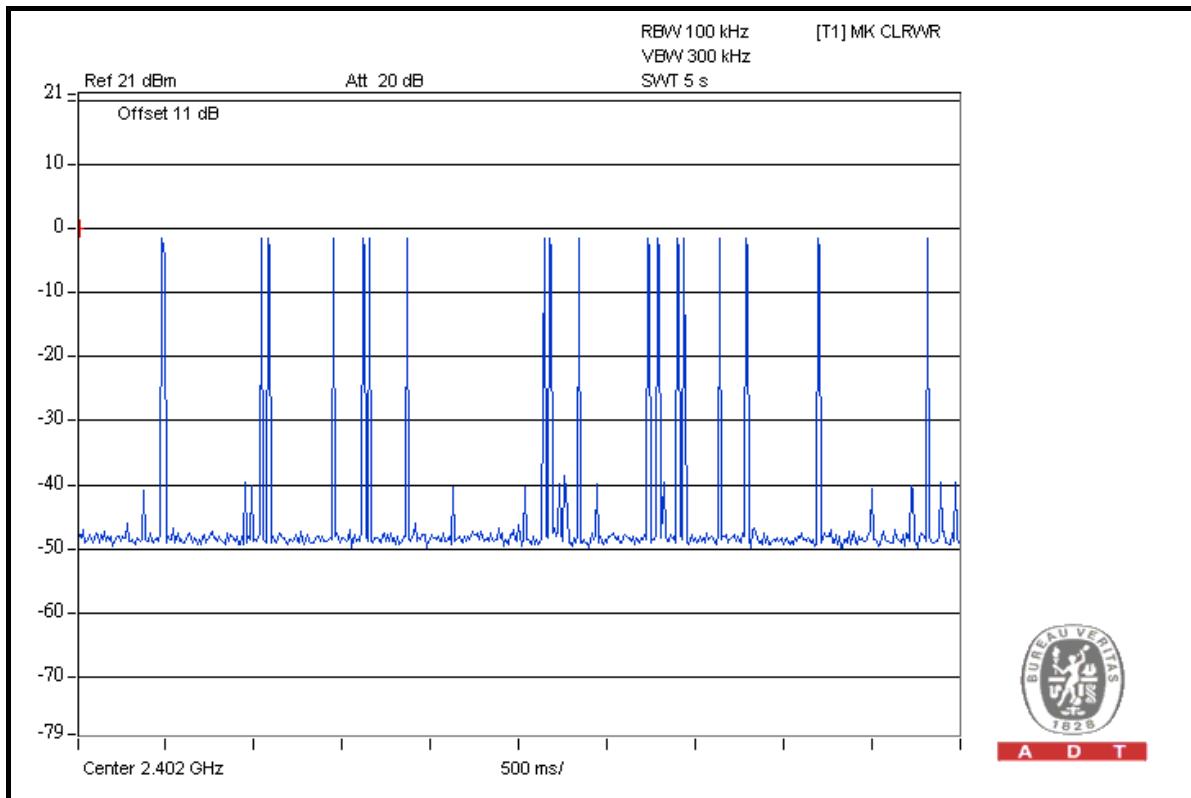
DH3





A D T

DH5





## 4.5 CHANNEL BANDWIDTH

### 4.5.1 LIMITS OF CHANNEL BANDWIDTH

For frequency hopping system operating in the 2400-2483.5MHz, If the 20dB bandwidth of hopping channel is greater than 25kHz, two-thirds 20dB bandwidth of hopping channel shall be a minimum limit for the hopping channel separation.

### 4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100040	Aug. 01, 2011	Jul. 31, 2012

**NOTE:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.5.3 TEST PROCEDURE

- a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
- d. Repeat above procedures until all frequencies measured were complete.



A D T

#### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.5.5 TEST SETUP

Same as 4.3.5.

#### 4.5.6 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.



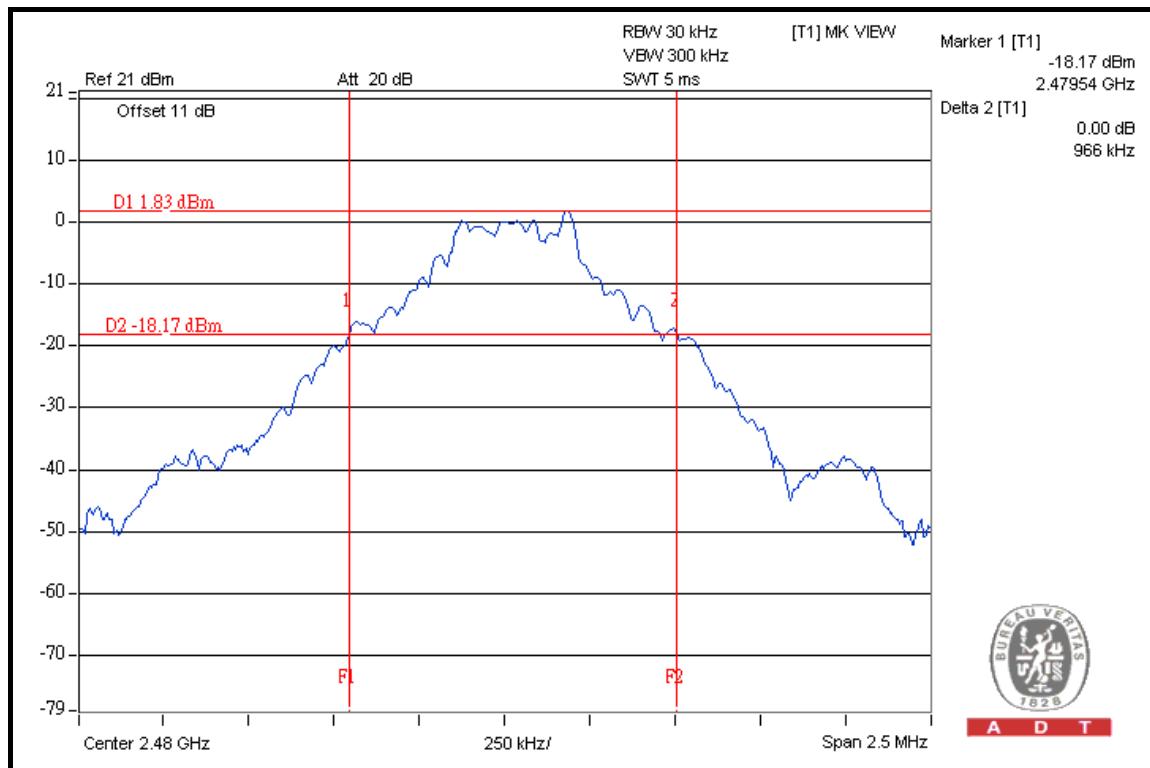
A D T

#### 4.5.7 TEST RESULTS

##### GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	0.963
39	2441	0.964
78	2480	0.966

##### CH 78



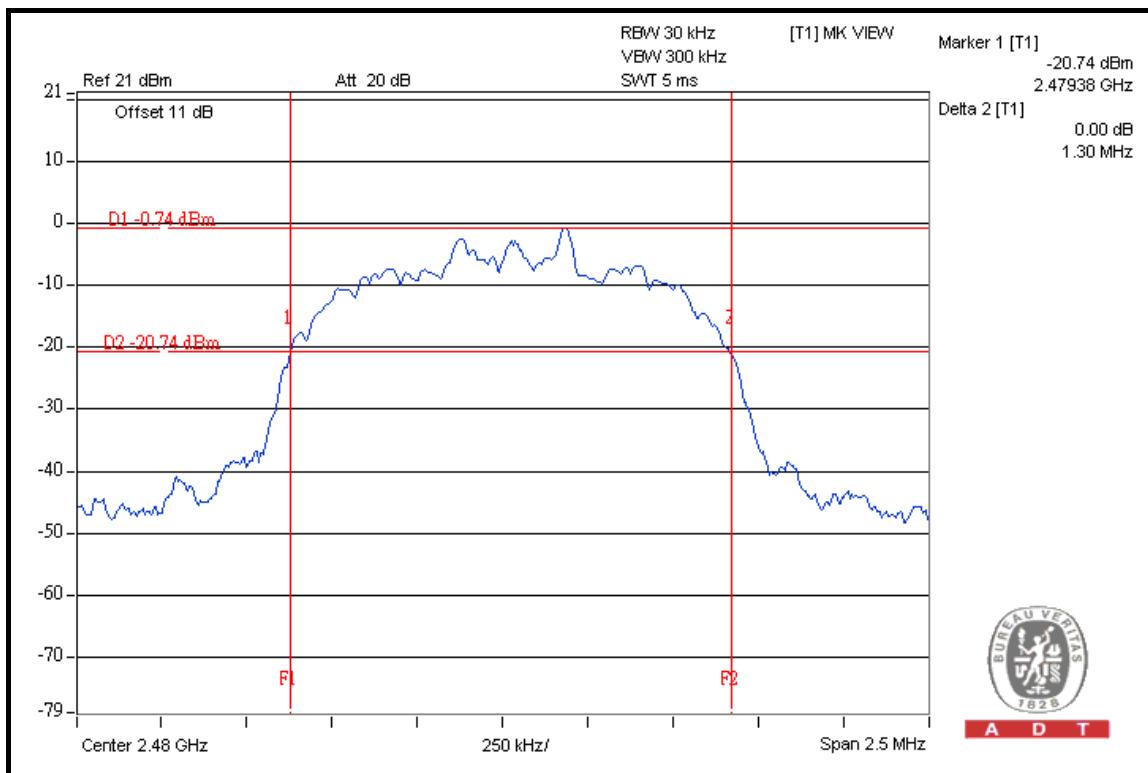


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## 8DPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	1.300
39	2441	1.300
78	2480	1.300

## CH 78





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## 4.6 HOPPING CHANNEL SEPARATION

### 4.6.1 LIMIT OF HOPPING CHANNEL SEPARATION

At least 25kHz or two-third of 20dB hopping channel bandwidth (whichever is greater).

### 4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100040	Aug. 01, 2011	Jul. 31, 2012

**NOTE:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.6.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. By using the MaxHold function record the separation of two adjacent channels.
4. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation.

### 4.6.5 TEST SETUP

Same as 4.3.5.



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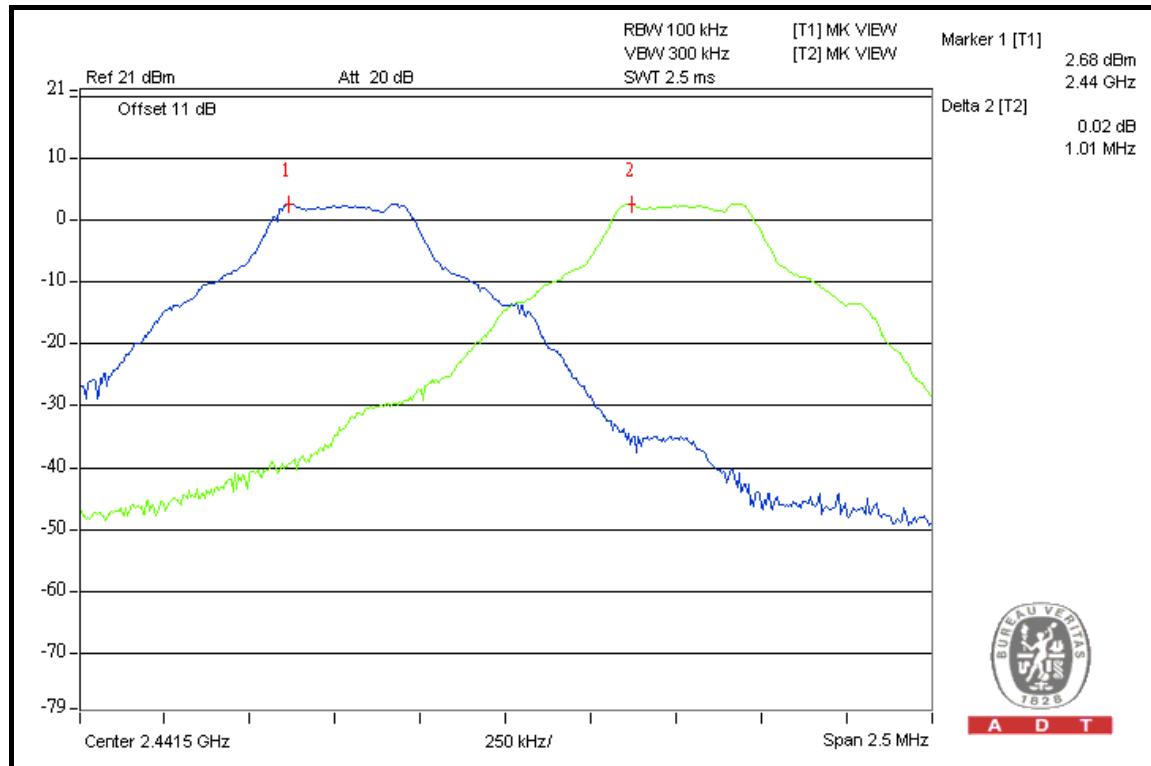
#### 4.6.6 TEST RESULTS

##### GFSK

CHANNEL	FREQUENCY (MHz)	ADJACENT CHANNEL SEPARATION (MHz)	20dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	1.000	0.963	0.642	PASS
39	2441	1.010	0.964	0.643	PASS
78	2480	1.000	0.966	0.644	PASS

NOTE: The minimum limit is two-third 20dB bandwidth.

##### CH 39





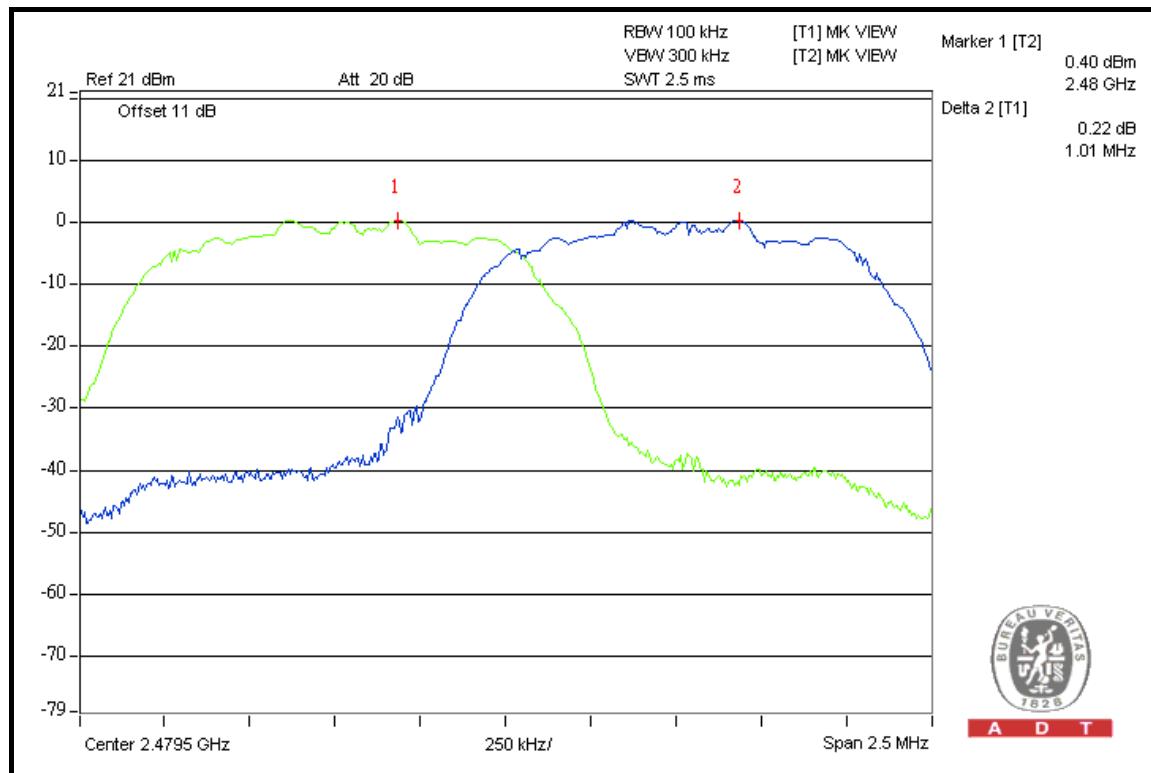
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## 8DPSK

CHANNEL	FREQUENCY (MHz)	ADJACENT CHANNEL SEPARATION (MHz)	20dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	1.010	1.300	0.867	PASS
39	2441	1.010	1.300	0.867	PASS
78	2480	1.010	1.300	0.867	PASS

**NOTE:** The minimum limit is two-third 20dB bandwidth.

## CH 78





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## 4.7 MAXIMUM OUTPUT POWER

### 4.7.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum Output Power Measurement is 125mW.

### 4.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100040	Aug. 01, 2011	Jul. 31, 2012

**NOTE:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.7.3 TEST PROCEDURES

- a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- c. The center frequency of the spectrum analyzer is set to the fundamental frequency and using 3MHz RBW and 10 MHz VBW.
- d. Measure the captured power within the band and recording the plot.
- e. Repeat above procedures until all frequencies required were complete.

### 4.7.4 DEVIATION FROM TEST STANDARD

No deviation.



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#### 4.7.5 TEST SETUP

Same as 4.3.5.

#### 4.7.6 EUT OPERATING CONDITION

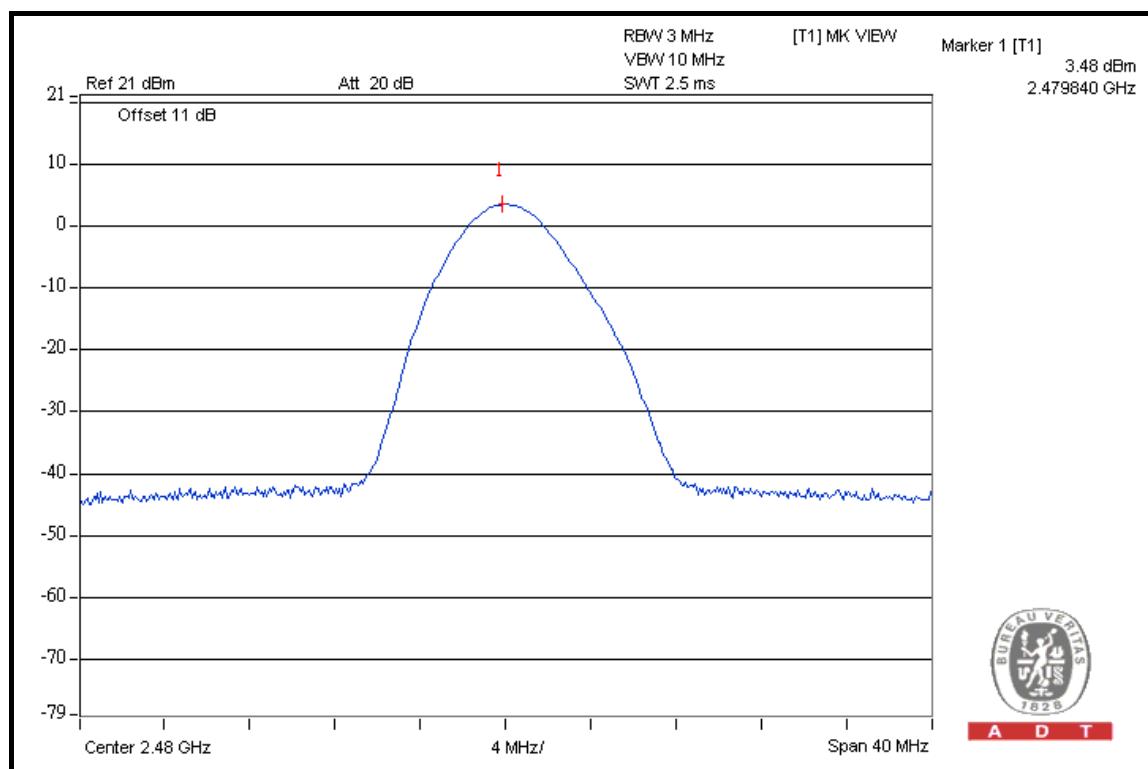
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

#### 4.7.7 TEST RESULTS

##### GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (mW)	PASS/FAIL
0	2402	1.8	2.5	125	PASS
39	2441	2.1	3.2	125	PASS
78	2480	2.2	3.5	125	PASS

##### CH 78



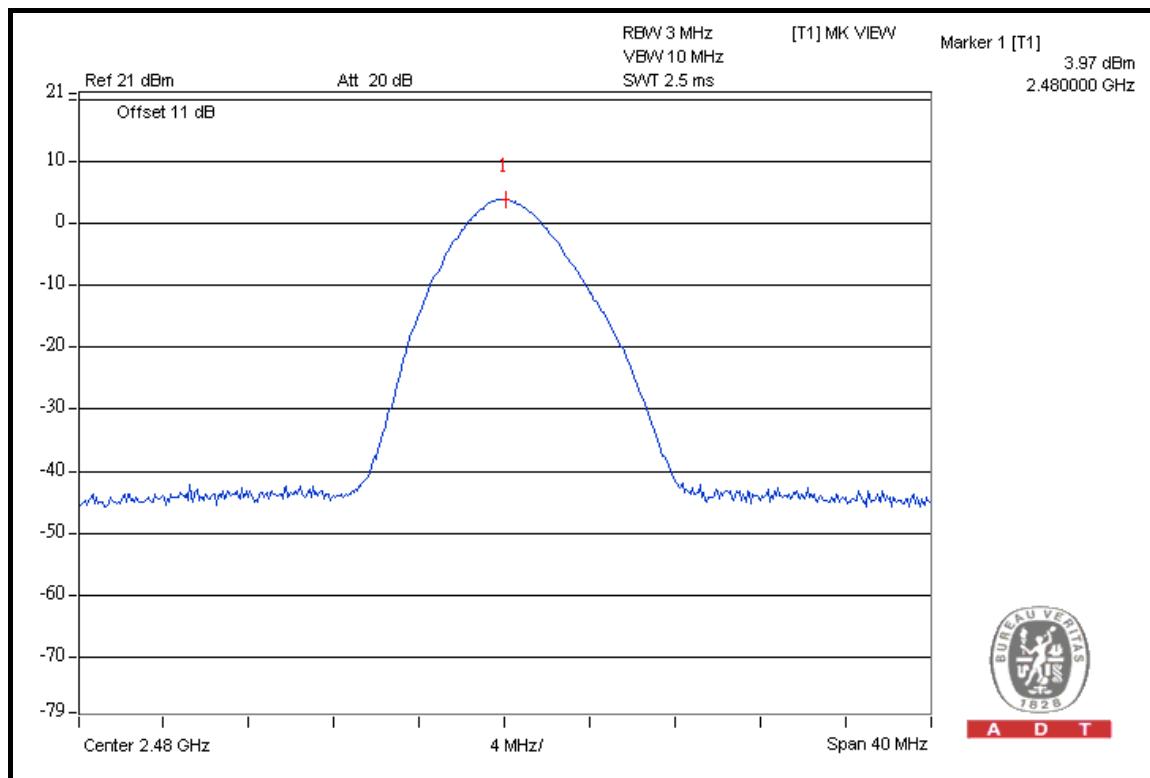


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### 8DPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (mW)	PASS/FAIL
0	2402	2.0	2.9	125	PASS
39	2441	2.3	3.6	125	PASS
78	2480	2.5	4.0	125	PASS

### CH 78





## 4.8 BAND EDGES MEASUREMENT

### 4.8.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100KHz RBW).

### 4.8.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100040	Aug. 01, 2011	Jul. 31, 2012

**NOTE:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.8.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

### 4.8.4 DEVIATION FROM TEST STANDARD

No deviation.

### 4.8.5 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.



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#### 4.8.6 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

##### GFSK

###### RESTRICT BAND (2310 ~ 2390 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2402.00 (PK)	98.9	48.94	49.96	74.00
2402.00 (AV)	-	-	19.86	54.00

###### RESTRICT BAND (2483.5 ~ 2500 MHz)

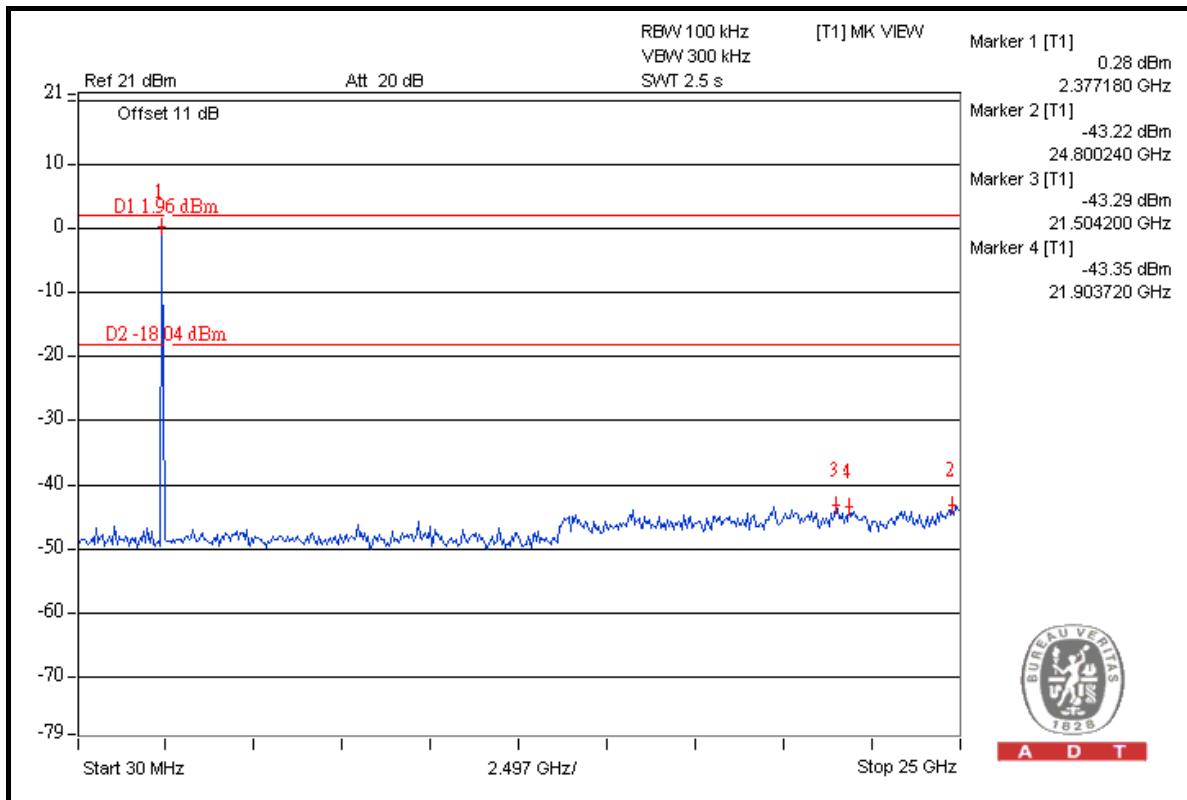
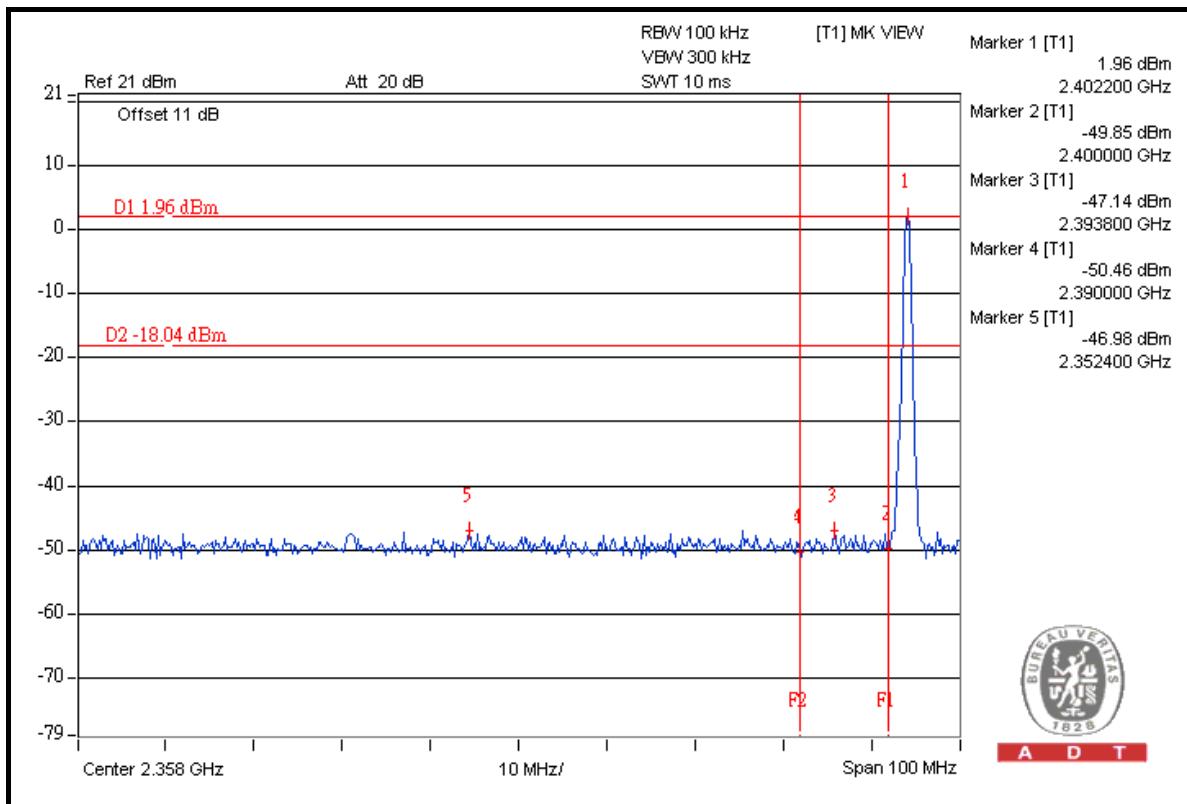
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2480.00 (PK)	99.1	49.49	49.61	74.00
2480.00 (AV)	-	-	19.51	54.00

##### NOTE:

1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 2 pages.
2. Maximum field strength in restrict band (PK value) = Fundamental emission (PK value) – Delta.
3. Average value =Peak value + 20 Log (duty cycle) = Peak value – 30.1dB.
4. The DH5 packet was the worst 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 correction factor be equal to:  $20\log(3.125/100) = -30.1$  dB.

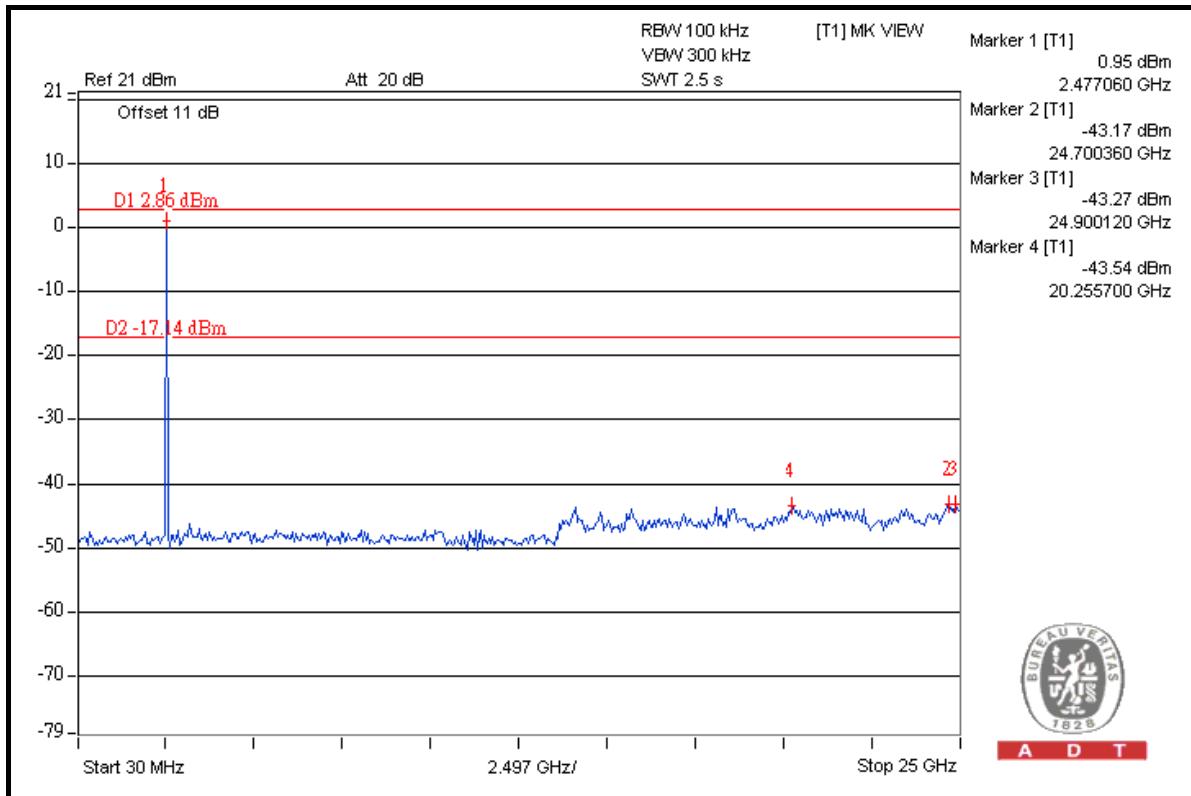
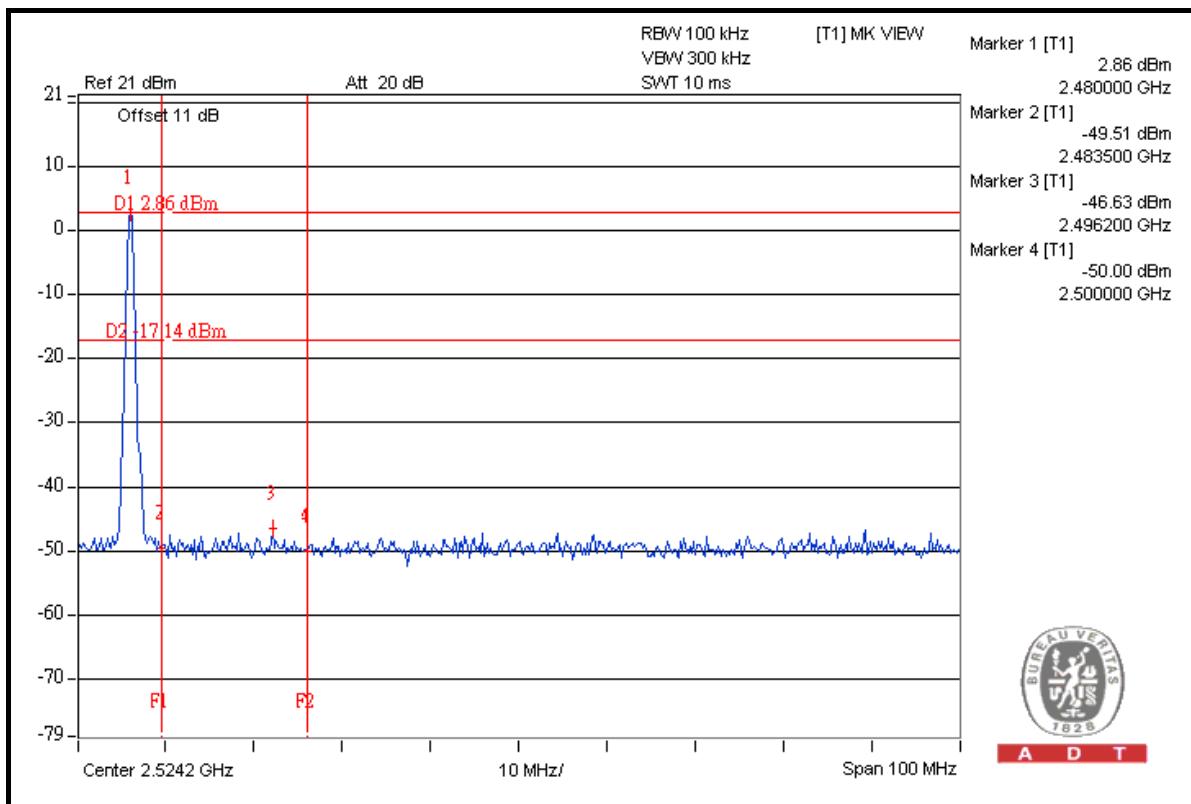


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## 8DPSK

### RESTRICT BAND (2310 ~ 2390 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2402.00 (PK)	98.7	46.11	52.59	74.00
2402.00 (AV)	-	-	22.49	54.00

### RESTRICT BAND (2483.5 ~ 2500 MHz)

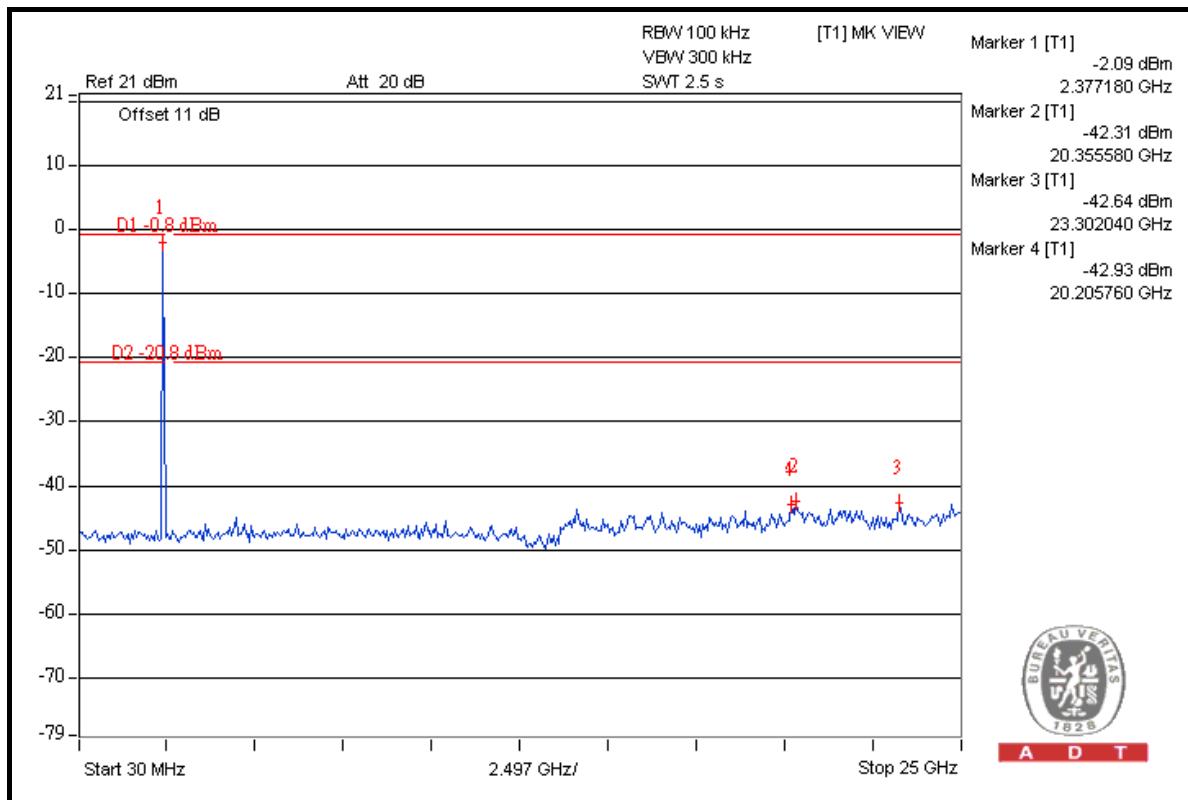
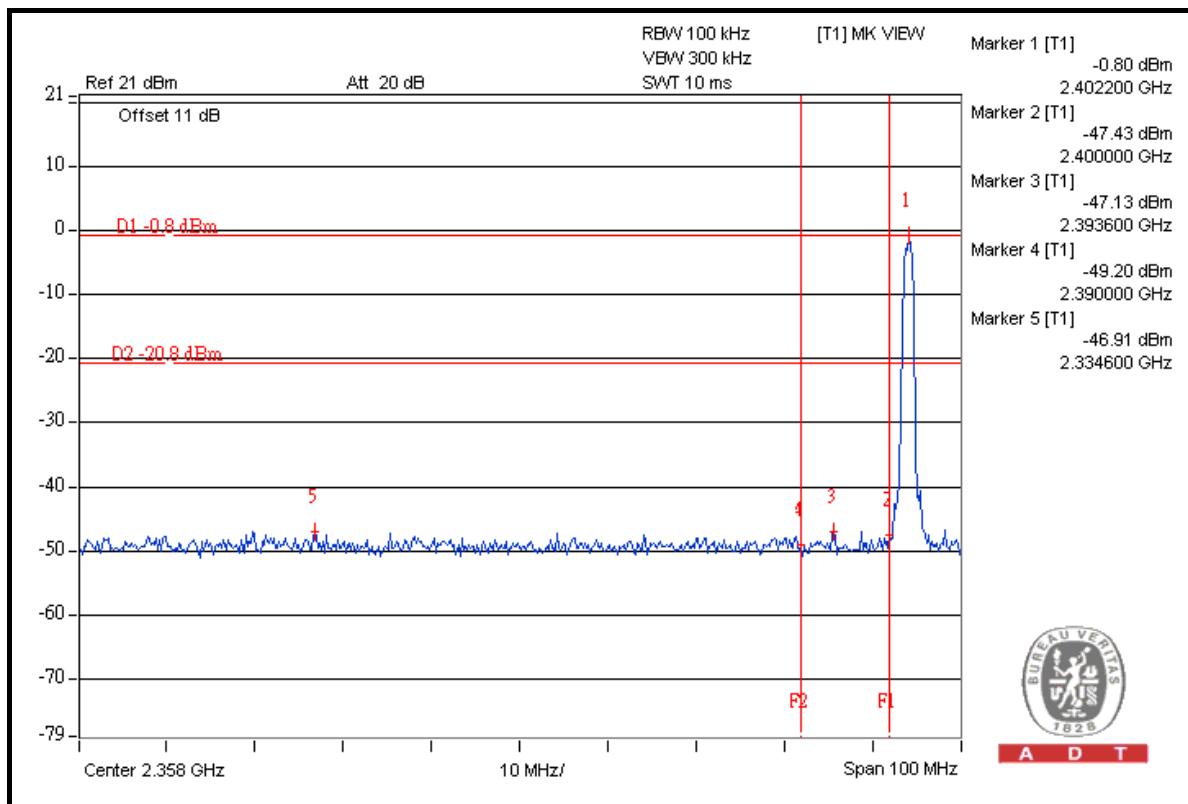
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2480.00 (PK)	99.1	46.25	52.85	74.00
2480.00 (AV)	-	-	22.75	54.00

#### NOTE:

1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 2 pages.
2. Maximum field strength in restrict band (PK value) = Fundamental emission (PK value) – Delta.
3. Average value =Peak value + 20 Log (duty cycle) = Peak value – 30.1dB.
4. The DH5 packet was the worst 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 correction factor be equal to:  $20\log(3.125/100) = -30.1 \text{ dB}$ .

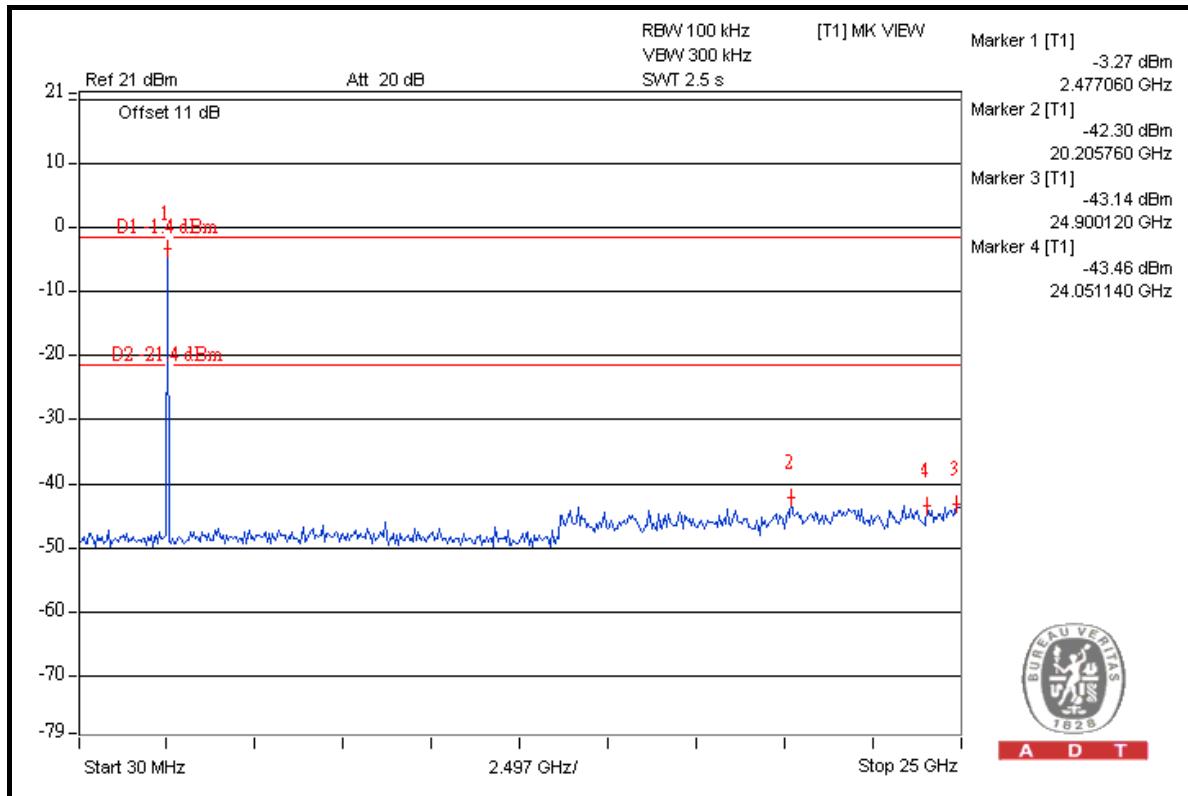
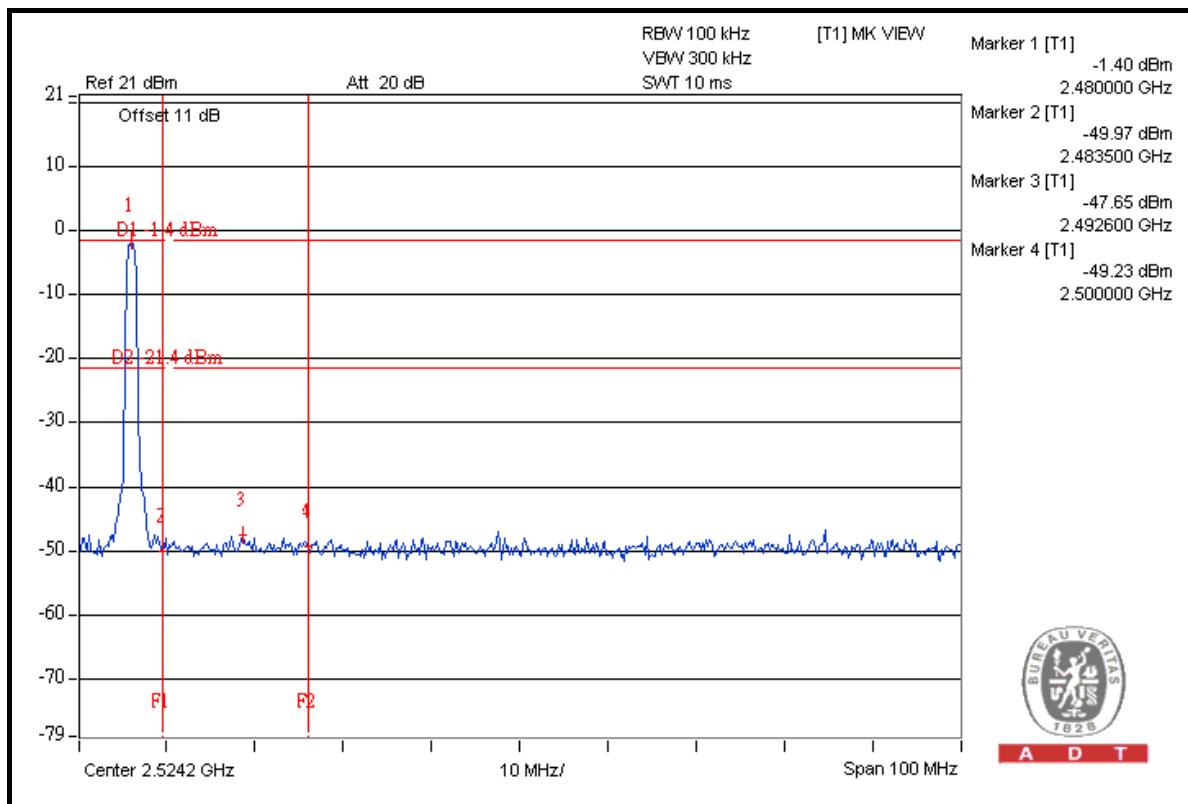


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## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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## 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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Fax: 886-2-26051924

**Hsin Chu EMC/RF Lab:**

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**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

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 any modifications are made to the EUT by the lab during the test.

**--- END ---**