FCC TEST REPORT

REPORT NO.:	RF970109L06
MODEL NO.:	BT-368 (refer to note 3.1 for more detail)
RECEIVED:	Jan. 09, 2008
TESTED:	Jan. 14 ~ Jan. 26, 2008
ISSUED:	Jan. 29, 2008

APPLICANT:	Globalsat Technology Corporation.
ADDRESS:	2-1F, No.16, Chien 8 Road Far East Century Park, Chung Ho City, Taipei Hsien 235, Taiwan

ISSUED BY:	Advance Data Technology Corporation
LAB ADDRESS:	No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou Hsiang 244, Taipei Hsien, Taiwan, R.O.C.
TEST LOCATION:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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1. CERTIFICATION

PRODUCT:	Bluetooth GPS Receiver
MODEL NO.:	BT-368 (refer to note 3.1 for more detail)
BRAND:	GlobalSat
APPLICANT:	Globalsat Technology Corporation.
TESTED:	Jan. 14 ~ Jan. 26, 2008
TEST SAMPLE:	ENGINEERING SAMPLE
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247),** ANSI C63.4-2003

The above equipment (Model: BT-368) has been tested by **Advance Data Technology Corporation,** 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 : Andrea Hsia , **DATE:** Jan. 29, 2008
Andrea Hsia / Specialist

TECHNICAL ACCEPTANCE : Long Chen , **DATE:** Jan. 29, 2008
Responsible for RF Long Chen / Senior Engineer

APPROVED BY : Gary Chang , **DATE:** Jan. 29, 2008
Gary Chang / Assistant Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is –24.41dB at 0.154MHz
15.247(a)(1)(iii)	Number of Hopping Frequency Used Spec.: At least 15 channels	PASS	Meet the requirement of limit.
15.247(a)(1)(iii)	Dwell Time on Each Channel Spec.: Max. 0.4 second within 31.6 second	PASS	Meet the requirement of limit.
15.247(a)(1)	1. Hopping Channel Separation Spec.: Min. 25 kHz or 20 dB bandwidth, whichever is greater 2. Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Spec.: max. 21dBm	PASS	Meet the requirement of limit.
15.247(d)	Transmitter Radiated Emissions Spec.: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is –5.36dB at 4804.00MHz
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.

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.

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	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.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Bluetooth GPS Receiver
MODEL NO.	BT-368
FCC ID	RIDBT-368
POWER SUPPLY	3.7Vdc from battery 5.0Vdc from car charger or AC Adapter
MODULATION TYPE	Bluetooth: GFSK, π /4-DQPSK, 8DPSK GPS: C/A code
MODULATION TECHNOLOGY	FHSS
TRANSFER RATE	Bluetooth: 1/2/3Mbps GPS: 50 bps
FREQUENCY RANGE	Bluetooth: 2402~2480 MHz GPS: 1575.42 MHz
NUMBER OF CHANNEL	Bluetooth: 79 GPS: 1
CHANNEL SPACING	1MHz
OUTPUT POWER	2.360mW
ANTENNA TYPE	Chip Antenna with 2.3dBi gain
DATA CABLE	1m shielded USB cable without core
I/O PORTS	USB
ACCESSORY DEVICES	Adapter, Battery

NOTE:

1. Bluetooth technology is used in this EUT.
2. The models as below are identical to each other except for model name and brand name due to marketing requirement.

BRAND NAME	MODEL NAME	REMARK
GlobalSat	BT-368	For Marketing different
GlobalSat	BT-368i	For Marketing different

3. The EUT was powered by the following power adapter, car charger and battery:

ADAPTER	
BRAND	SWITCHING POWER SUPPLY
MODEL	PSB05R-050Q
INPUT POWER	100~240Vac, 200mA, 50/60Hz
OUTPUT POWER	5Vdc, 1A MAX

CAR CHARGER	
MODEL	IC-D565G-YT1
INPUT POWER	12~24Vdc
OUTPUT POWER	5Vdc, 1A

BATTERY:	
RATING	3.7Vdc, 700mAh

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

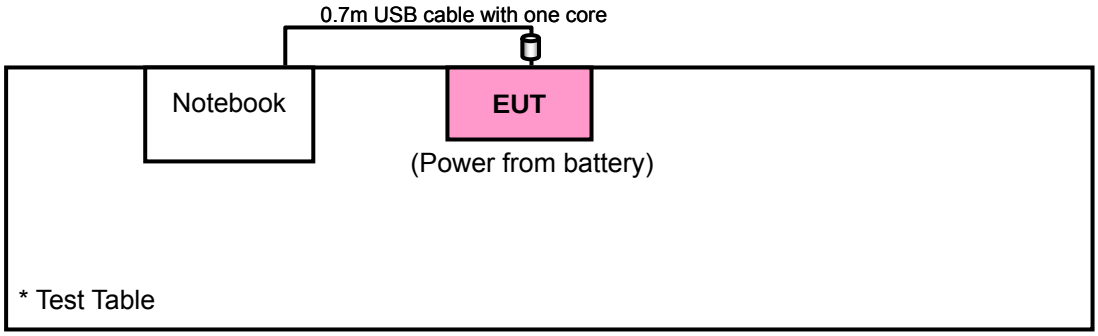
3.2 DESCRIPTION OF TEST MODES

79 channels are provided to this EUT:

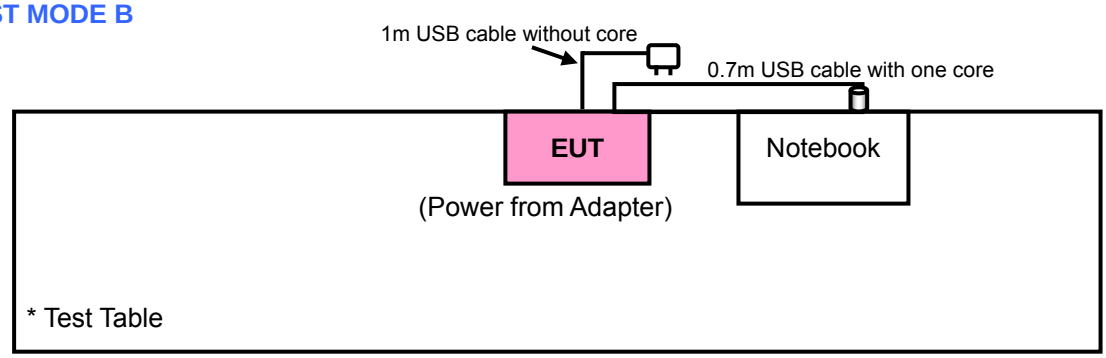
CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	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	2431	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

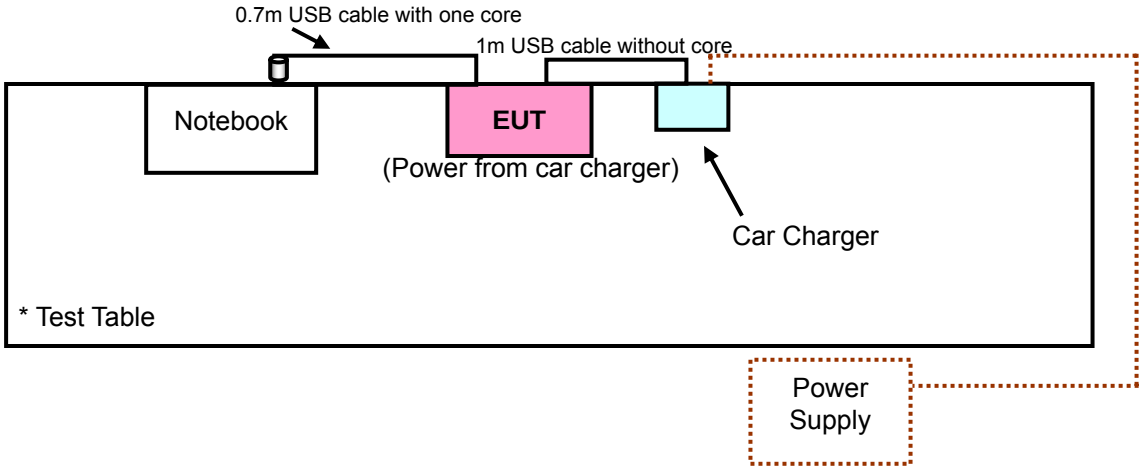
TEST MODE A



TEST MODE B



TEST MODE C



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	-	√	-	-	Battery Mode
B	-	√	√	-	Power from AC Adapter
C	√	√	-	√	Power from Car Charger

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement
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, data rates, XYZ axis, 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	AXIS
C	0 to 78	0, 39, 78	FHSS	GFSK	DH5	X
C	0 to 78	0, 39, 78	FHSS	8DPSK	DH5	X

RADIATED EMISSION TEST (BELOW 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis, 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	AXIS
A	0 to 78	0	FHSS	GFSK	DH5	X
B	0 to 78	0	FHSS	GFSK	DH5	X
C	0 to 78	0	FHSS	GFSK	DH5	X

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 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
B	0 to 78	0	FHSS	GFSK	DH5

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
C	0 to 78	0, 39, 78	FHSS	GFSK	DH5
C	0 to 78	0, 39, 78	FHSS	8DPSK	DH5

ANTENNA PORT CONDUCTED 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
C	0 to 78	0, 39, 78	FHSS	GFSK	DH5
C	0 to 78	0, 39, 78	FHSS	8DPSK	DH5

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)
ANSI C63.4-2003

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 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	DC POWER SUPPLY	TOPWARD	TF-6306A	727263	NA
2	NOTEBOOK COMPUTER	DELL	PP05L	9954115984	E2K24CLNS

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	0.7m shielded USB cable with one core

NOTE 1: All power cords of the above support units are non shielded (1.8m).

NOTE 2: The 0.7m USB cable with one core was supplied from client, only for test.

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 (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.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Jul. 27, 2008
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Aug. 05, 2008
BILOG Antenna SCHWARZBECK	VULB9168	9168-153	Jan. 03, 2009
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Jul. 30, 2008
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 06, 2009
Preamplifier Agilent	8449B	3008A01910	Sep. 19, 2008
Preamplifier Agilent	8447D	2944A10638	Dec. 19, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274039/223650	Nov. 07, 2008
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 09, 2008
Software	ADT_Radiated_V7.6	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA
Turn Table EMCO	2087-2.03	NA	NA
Antenna Tower &Turn Table Controller EMCO	2090	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 9.

3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

4. The IC Site Registration No. is IC3789B-9.

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.

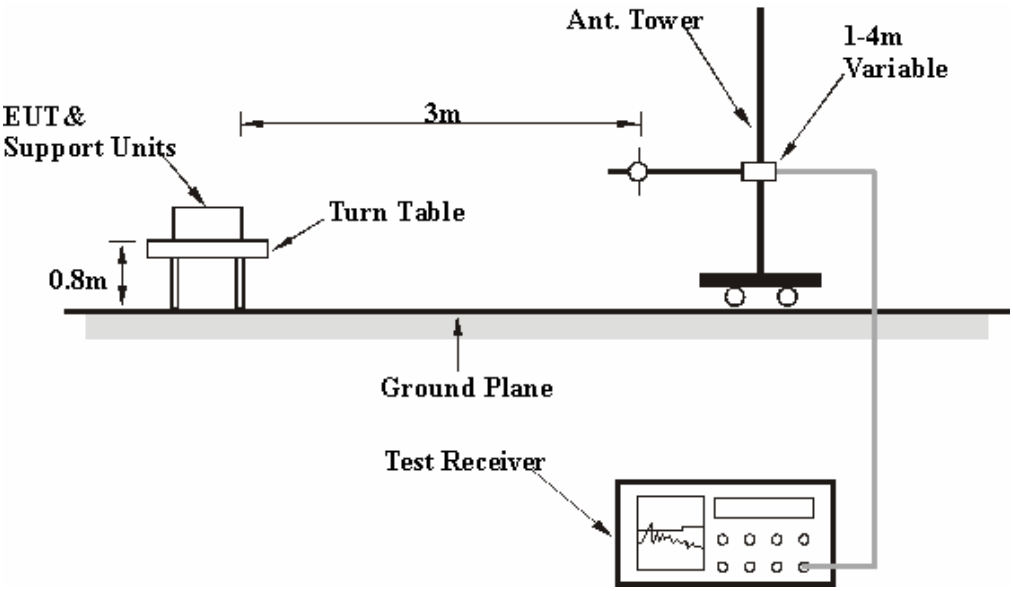
NOTE:

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. Connected the EUT to a notebook via USB cable and placed on a testing table.
b. The notebook system run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

Radiated Above 1GHz DATA: GFSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH 999hPa	TESTED BY	Lori Chiu

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	1602.00	42.46 PK	74.00	-31.54	1.22 H	147	13.54	28.92
2	1602.00	37.15 AV	54.00	-16.85	1.22 H	147	8.23	28.92
3	2390.00	35.64 PK	74.00	-38.36	1.07 H	345	3.32	32.32
4	2390.00	26.14 AV	54.00	-27.86	1.07 H	345	-6.18	32.32
5	*2402.00	96.57 PK			1.07 H	345	64.26	32.31
6	*2402.00	66.47 AV			1.07 H	345	34.16	32.31
7	4804.00	65.72 PK	74.00	-8.28	1.28 H	106	27.77	37.95
8	4804.00	35.62 AV	54.00	-18.38	1.28 H	106	-2.33	37.95
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	1602.00	42.44 PK	74.00	-31.56	1.10 V	11	13.52	28.92
2	1602.00	35.16 AV	54.00	-18.84	1.10 V	11	6.24	28.92
3	2390.00	25.91 PK	74.00	-48.09	1.06 V	83	-6.41	32.32
4	2390.00	16.41 AV	54.00	-37.59	1.06 V	83	-15.91	32.32
5	*2402.00	86.84 PK			1.06 V	83	54.53	32.31
6	*2402.00	56.74 AV			1.06 V	83	24.43	32.31
7	4804.00	58.77 PK	74.00	-15.23	1.05 V	200	20.82	37.95
8	4804.00	28.67 AV	54.00	-25.33	1.05 V	200	-9.28	37.95

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: 20log(3.125 / 100)= -30.1 dB.
7. Average value = peak reading + 20log(duty cycle).

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH 999hPa	TESTED BY	Lori Chiu

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	1627.00	42.75 PK	74.00	-31.25	1.01 H	246	13.86	28.89
2	1627.00	37.22 AV	54.00	-16.78	1.01 H	246	8.33	28.89
3	*2441.00	95.04 PK			1.05 H	340	62.69	32.35
4	*2441.00	64.94 AV			1.05 H	340	32.59	32.35
5	4882.00	65.71 PK	74.00	-8.29	1.12 H	325	27.57	38.14
6	4882.00	35.61 AV	54.00	-18.39	1.12 H	325	-2.53	38.14
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	1627.00	42.50 PK	74.00	-31.50	1.14 V	10	13.61	28.89
2	1627.00	35.33 AV	54.00	-18.67	1.14 V	10	6.44	28.89
3	*2441.00	84.56 PK			1.04 V	88	52.21	32.35
4	*2441.00	54.46 AV			1.04 V	88	22.11	32.35
5	4882.00	58.19 PK	74.00	-15.81	1.13 V	201	20.05	38.14
6	4882.00	28.09 AV	54.00	-25.91	1.13 V	201	-10.05	38.14

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: 20log(3.125 / 100)= -30.1 dB.
7. Average value = peak reading + 20log(duty cycle).

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH 999hPa	TESTED BY	Lori Chiu

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	1653.00	42.98 PK	74.00	-31.02	1.00 H	144	14.12	28.86
2	1653.00	37.32 AV	54.00	-16.68	1.00 H	144	8.46	28.86
3	*2480.00	93.64 PK			1.03 H	341	61.26	32.38
4	*2480.00	63.54 AV			1.03 H	341	31.16	32.38
5	2483.50	46.83 PK	74.00	-27.17	1.03 H	341	14.44	32.39
6	2483.50	37.33 AV	54.00	-16.67	1.03 H	341	4.94	32.39
7	4960.00	67.54 PK	74.00	-6.46	1.24 H	117	29.24	38.30
8	4960.00	37.44 AV	54.00	-16.56	1.24 H	117	-0.86	38.30
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	1653.00	42.67 PK	74.00	-31.33	1.11 V	356	13.81	28.86
2	1653.00	35.33 AV	54.00	-18.67	1.11 V	356	6.47	28.86
3	*2480.00	83.75 PK			1.05 V	79	51.37	32.38
4	*2480.00	53.65 AV			1.05 V	79	21.27	32.38
5	2483.50	36.94 PK	74.00	-37.06	1.05 V	79	4.55	32.39
6	2483.50	27.44 AV	54.00	-26.56	1.05 V	79	-4.95	32.39
7	4960.00	62.11 PK	74.00	-11.89	1.16 V	315	23.81	38.30
8	4960.00	32.01 AV	54.00	-21.99	1.16 V	315	-6.29	38.30

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: 20log(3.125 / 100)= -30.1 dB.
7. Average value = peak reading + 20log(duty cycle).

8DSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH 999hPa	TESTED BY	Lori Chiu

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	1602.00	42.57 PK	74.00	-31.43	1.16 H	167	13.65	28.92
2	1602.00	37.46 AV	54.00	-16.54	1.16 H	167	8.54	28.92
3	2390.00	34.60 PK	74.00	-39.40	1.06 H	337	2.28	32.32
4	2390.00	25.10 AV	54.00	-28.90	1.06 H	337	-7.22	32.32
5	*2402.00	94.90 PK			1.06 H	337	62.59	32.31
6	*2402.00	64.80 AV			1.06 H	337	32.49	32.31
7	**4804.00**	**68.64 PK**	**74.00**	**-5.36**	**1.16 H**	**119**	**30.69**	**37.95**
8	4804.00	38.54 AV	54.00	-15.46	1.16 H	119	0.59	37.95
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	1602.00	43.11 PK	74.00	-30.89	1.07 V	62	14.19	28.92
2	1602.00	35.27 AV	54.00	-18.73	1.07 V	62	6.35	28.92
3	2390.00	24.37 PK	74.00	-49.63	1.33 V	95	-7.95	32.32
4	2390.00	14.87 AV	54.00	-39.13	1.33 V	95	-17.45	32.32
5	*2402.00	84.67 PK			1.33 V	95	52.36	32.31
6	*2402.00	54.57 AV			1.33 V	95	22.26	32.31
7	4804.00	61.30 PK	74.00	-12.70	1.04 V	211	23.35	37.95
8	4804.00	31.20 AV	54.00	-22.80	1.04 V	211	-6.75	37.95

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: 20log(3.125 / 100)= -30.1 dB.
7. Average value = peak reading + 20log(duty cycle).

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH 999hPa	TESTED BY	Lori Chiu

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	1627.00	42.63 PK	74.00	-31.37	1.00 H	120	13.74	28.89
2	1627.00	37.55 AV	54.00	-16.45	1.00 H	120	8.66	28.89
3	*2441.00	92.76 PK			1.11 H	87	60.41	32.35
4	*2441.00	62.66 AV			1.11 H	87	30.31	32.35
5	4882.00	68.59 PK	74.00	-5.41	1.02 H	232	30.45	38.14
6	4882.00	38.49 AV	54.00	-15.51	1.02 H	232	0.35	38.14
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	1627.00	42.09 PK	74.00	-31.91	1.00 V	310	13.20	28.89
2	1627.00	35.50 AV	54.00	-18.50	1.00 V	310	6.61	28.89
3	*2441.00	82.39 PK			1.33 V	102	50.04	32.35
4	*2441.00	52.29 AV			1.33 V	102	19.94	32.35
5	4882.00	61.24 PK	74.00	-12.76	1.25 V	286	23.10	38.14
6	4882.00	31.14 AV	54.00	-22.86	1.25 V	286	-7.00	38.14

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: 20log(3.125 / 100)= -30.1 dB.
7. Average value = peak reading + 20log(duty cycle).

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH 999hPa	TESTED BY	Lori Chiu

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	1653.00	42.71 PK	74.00	-31.29	1.04 H	21	13.85	28.86
2	1653.00	37.60 AV	54.00	-16.40	1.04 H	21	8.74	28.86
3	*2480.00	91.56 PK			1.10 H	305	59.18	32.38
4	*2480.00	61.46 AV			1.10 H	305	29.08	32.38
5	2483.50	44.97 PK	74.00	-29.03	1.10 H	305	12.58	32.39
6	2483.50	35.47 AV	54.00	-18.53	1.10 H	305	3.08	32.39
7	4960.00	68.47 PK	74.00	-5.53	1.06 H	288	30.17	38.30
8	4960.00	38.37 AV	54.00	-15.63	1.06 H	288	0.07	38.30
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	1653.00	41.11 PK	74.00	-32.89	1.02 V	167	12.25	28.86
2	1653.00	35.60 AV	54.00	-18.40	1.02 V	167	6.74	28.86
3	*2480.00	81.55 PK			1.26 V	100	49.17	32.38
4	*2480.00	51.45 AV			1.26 V	100	19.07	32.38
5	2483.50	34.96 PK	74.00	-39.04	1.26 V	100	2.57	32.39
6	2483.50	25.46 AV	54.00	-28.54	1.26 V	100	-6.93	32.39
7	4960.00	61.08 PK	74.00	-12.92	1.16 V	356	22.78	38.30
8	4960.00	30.98 AV	54.00	-23.02	1.16 V	356	-7.32	38.30

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: 20log(3.125 / 100)= -30.1 dB.
7. Average value = peak reading + 20log(duty cycle).

BELOW 1GHz WORST-CASE DATA：GFSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH 999hPa	TEST MODE	A
TESTED BY	Kevin Liang		

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	80.45	31.55 QP	40.00	-8.45	1.50 H	220	20.53	11.02
2	167.94	31.23 QP	43.50	-12.27	1.50 H	76	17.32	13.90
3	311.82	33.04 QP	46.00	-12.96	1.00 H	277	17.99	15.05
4	399.31	32.29 QP	46.00	-13.71	1.00 H	10	14.97	17.31
5	731.79	29.84 QP	46.00	-16.16	1.00 H	298	4.22	25.62
6	860.11	27.43 QP	46.00	-18.57	1.00 H	337	0.12	27.32
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	82.40	30.83 QP	40.00	-9.17	1.50 V	211	20.28	10.55
2	167.94	33.59 QP	43.50	-9.91	1.00 V	58	19.69	13.90
3	311.82	27.26 QP	46.00	-18.74	2.00 V	163	12.21	15.05
4	432.37	28.21 QP	46.00	-17.79	1.50 V	190	9.86	18.35
5	665.68	35.75 QP	46.00	-10.25	2.00 V	247	11.18	24.57
6	908.72	39.36 QP	46.00	-6.64	1.50 V	88	11.31	28.05

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH 999hPa	TEST MODE	B
TESTED BY	Kevin Liang		

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	96.01	27.46 QP	43.50	-16.04	2.00 H	94	17.92	9.54
2	164.06	36.34 QP	43.50	-7.16	1.50 H	307	22.23	14.11
3	202.94	33.55 QP	43.50	-9.95	1.00 H	103	22.08	11.47
4	263.21	36.73 QP	46.00	-9.27	1.00 H	346	22.74	13.99
5	407.09	33.33 QP	46.00	-12.67	1.00 H	94	15.78	17.55
6	933.99	30.68 QP	46.00	-15.32	1.00 H	184	2.34	28.34
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	96.01	27.27 QP	43.50	-16.23	2.00 V	100	17.73	9.54
2	167.94	34.28 QP	43.50	-9.22	2.00 V	292	20.38	13.90
3	263.21	36.52 QP	46.00	-9.48	1.00 V	346	22.54	13.99
4	335.15	33.96 QP	46.00	-12.04	1.00 V	337	18.29	15.66
5	527.64	32.99 QP	46.00	-13.01	1.50 V	358	11.75	21.24
6	933.99	32.05 QP	46.00	-13.95	1.50 V	181	3.72	28.34

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	21deg. C, 69%RH 999hPa	TEST MODE	C
TESTED BY	Kevin Liang		

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	119.34	26.04 QP	43.50	-17.46	1.00 H	10	13.89	12.15
2	142.67	30.99 QP	43.50	-12.51	1.00 H	10	17.18	13.81
3	239.88	25.80 QP	46.00	-20.20	1.00 H	10	12.57	13.23
4	311.82	25.79 QP	46.00	-20.21	1.00 H	10	10.74	15.05
5	420.70	27.97 QP	46.00	-18.03	1.00 H	10	9.99	17.98
6	953.44	35.20 QP	46.00	-10.80	1.00 H	10	6.64	28.56
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	38.58	29.46 QP	40.00	-10.54	1.00 V	259	16.95	12.51
2	133.08	36.87 QP	43.50	-6.63	1.50 V	250	23.86	13.01
3	162.38	35.80 QP	43.50	-7.70	1.00 V	192	21.60	14.20
4	399.37	31.05 QP	46.00	-14.95	1.25 V	249	13.74	17.31
5	667.68	31.49 QP	46.00	-14.51	1.00 V	33	6.88	24.61
6	953.44	34.84 QP	46.00	-11.16	1.00 V	287	6.28	28.56

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.

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 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 0.50 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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Dec. 06, 2008
RF signal cable Woken	5D-FB	Cable-HYC01-01	Jan. 06, 2009
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Feb. 13, 2008
LISN ROHDE & SCHWARZ	NNBL 8226-2	8226-142	May 07, 2008
Software ADT	ADT_Cond_V3	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 1.

3. The VCCI Site Registration No. is C-2040.

4.2.3 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.

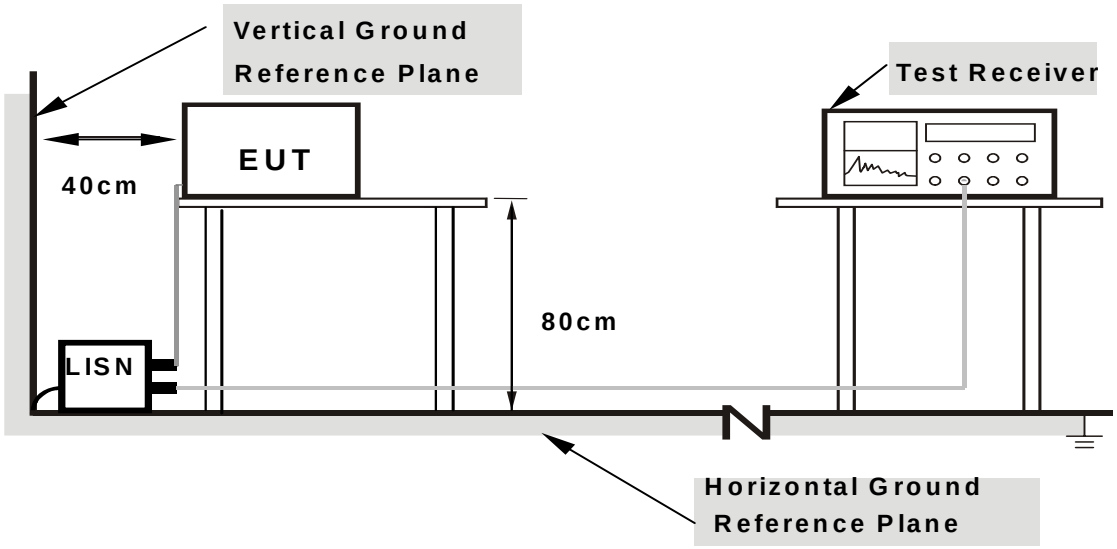
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 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 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

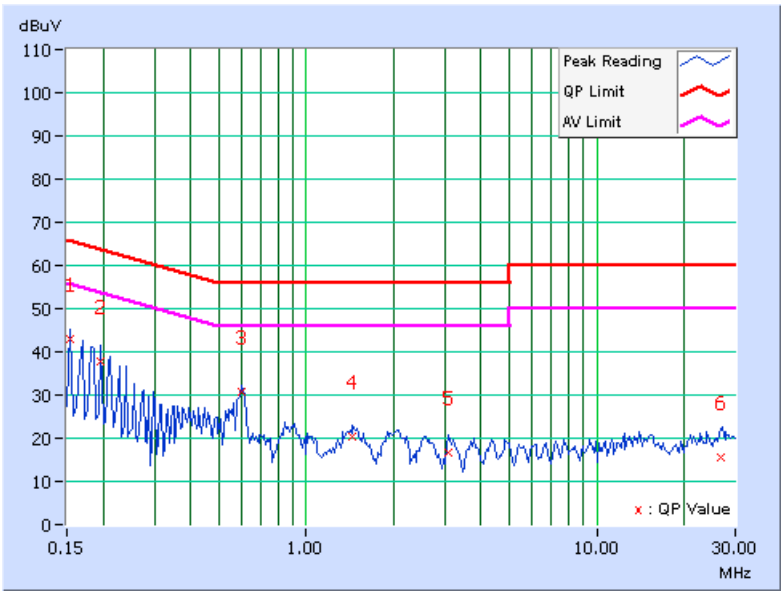
4.2.7 TEST RESULTS

CONDUCTED WORST CASE DATA: GFSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	**PHASE**	Line 1
ENVIRONMENTAL CONDITIONS	20deg. C, 60% RH, 991hPa	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TEST MODE**	B
TESTED BY	Kevin Liang		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		**Factor**	**[dB (uV)]**		**[dB (uV)]**		**[dB (uV)]**		**(dB)**	
	[MHz]	**(dB)**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	**0.154**	**0.21**	**41.17**	**-**	**41.38**	**-**	**65.79**	**55.79**	**-24.41**	**-**
2	0.197	0.21	36.23	-	36.44	-	63.74	53.74	-27.30	-
3	0.599	0.22	29.07	-	29.29	-	56.00	46.00	-26.71	-
4	1.447	0.25	18.61	-	18.86	-	56.00	46.00	-37.14	-
5	3.086	0.33	15.12	-	15.45	-	56.00	46.00	-40.55	-
6	26.766	1.63	14.02	-	15.65	-	60.00	50.00	-44.35	-

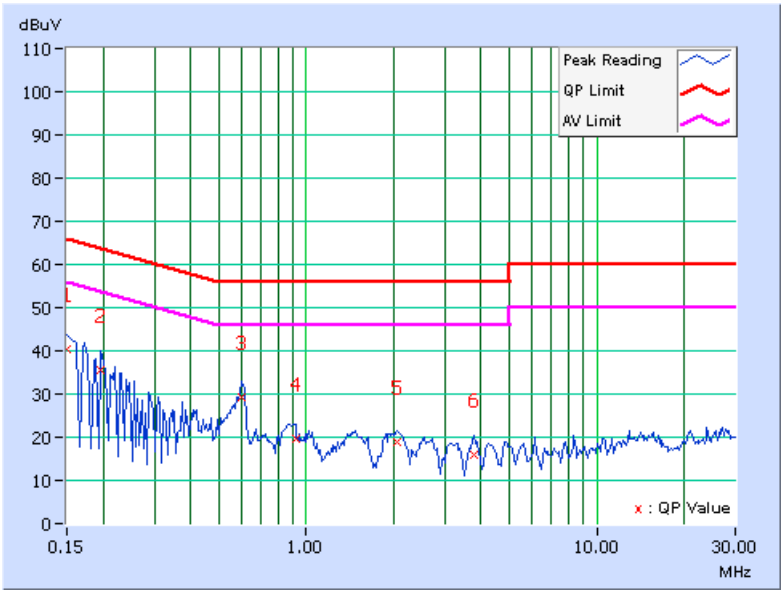
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	PHASE	Line 2
ENVIRONMENTAL CONDITIONS	20deg. C, 60% RH, 991hPa	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TEST MODE	B
TESTED BY	Kevin Liang		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.21	40.05	-	40.26	-	66.00	56.00	-25.74	-
2	0.197	0.21	35.22	-	35.43	-	63.74	53.74	-28.31	-
3	0.599	0.22	28.97	-	29.19	-	56.00	46.00	-26.81	-
4	0.920	0.24	19.20	-	19.44	-	56.00	46.00	-36.56	-
5	2.064	0.26	18.63	-	18.89	-	56.00	46.00	-37.11	-
6	3.762	0.37	15.70	-	16.07	-	56.00	46.00	-39.93	-

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.



4.3 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.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSPB50	100040	Jun. 28, 2008

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.

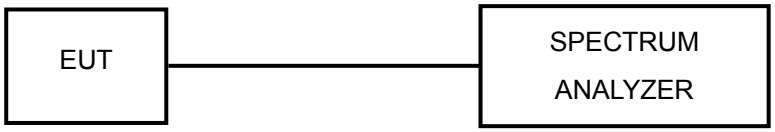
d. Set the SA on View mode and then plot the result on SA screen.

e. Repeat above procedures until all frequencies measured were complete.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

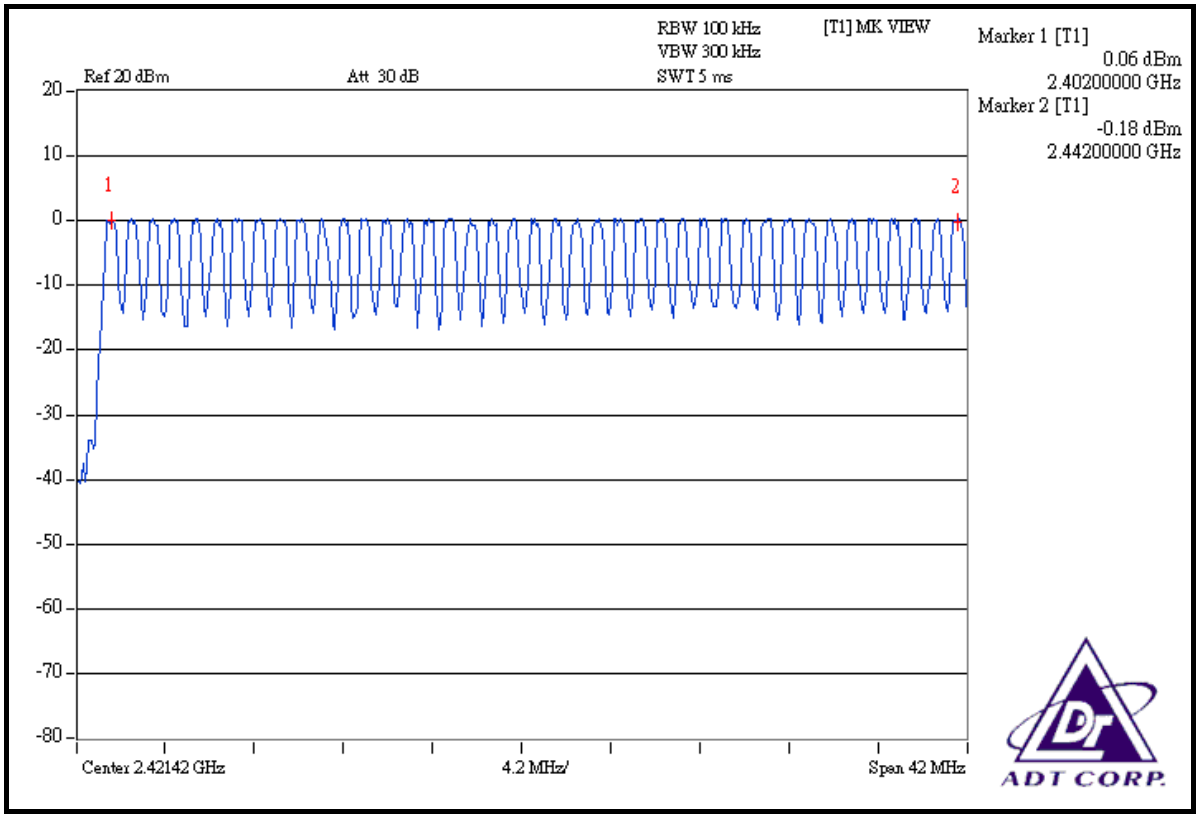
4.3.5 TEST SETUP

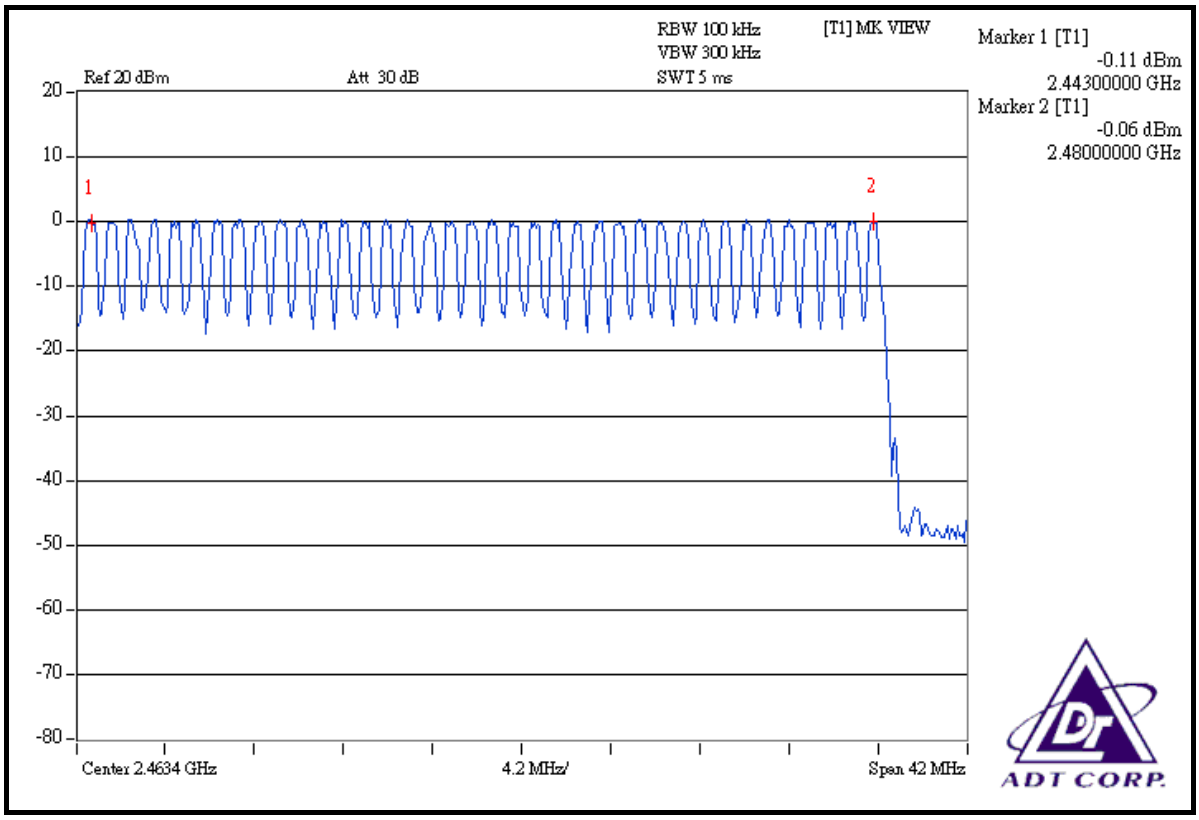


4.3.6 TEST RESULTS

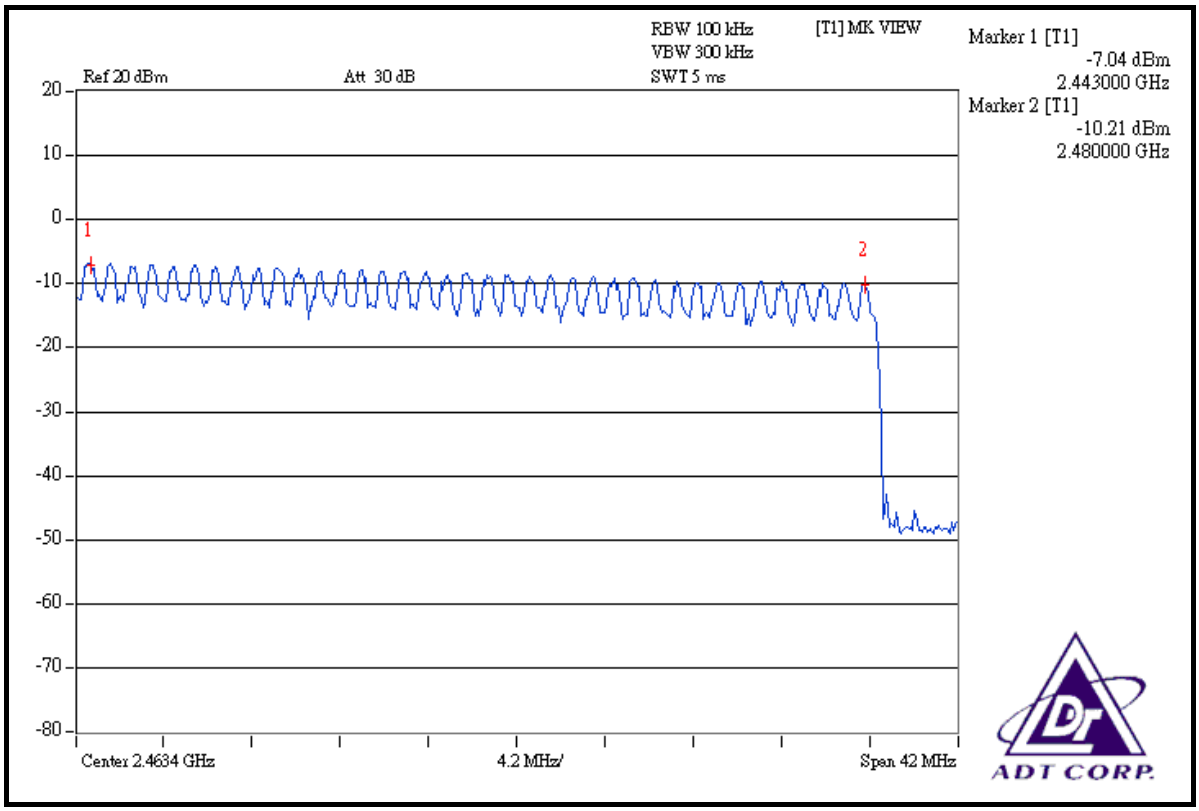
There are 79 hopping frequencies in the hopping mode. Please refer to next two pages for the test result. On the plots, it shows that the hopping frequencies are equally spaced.

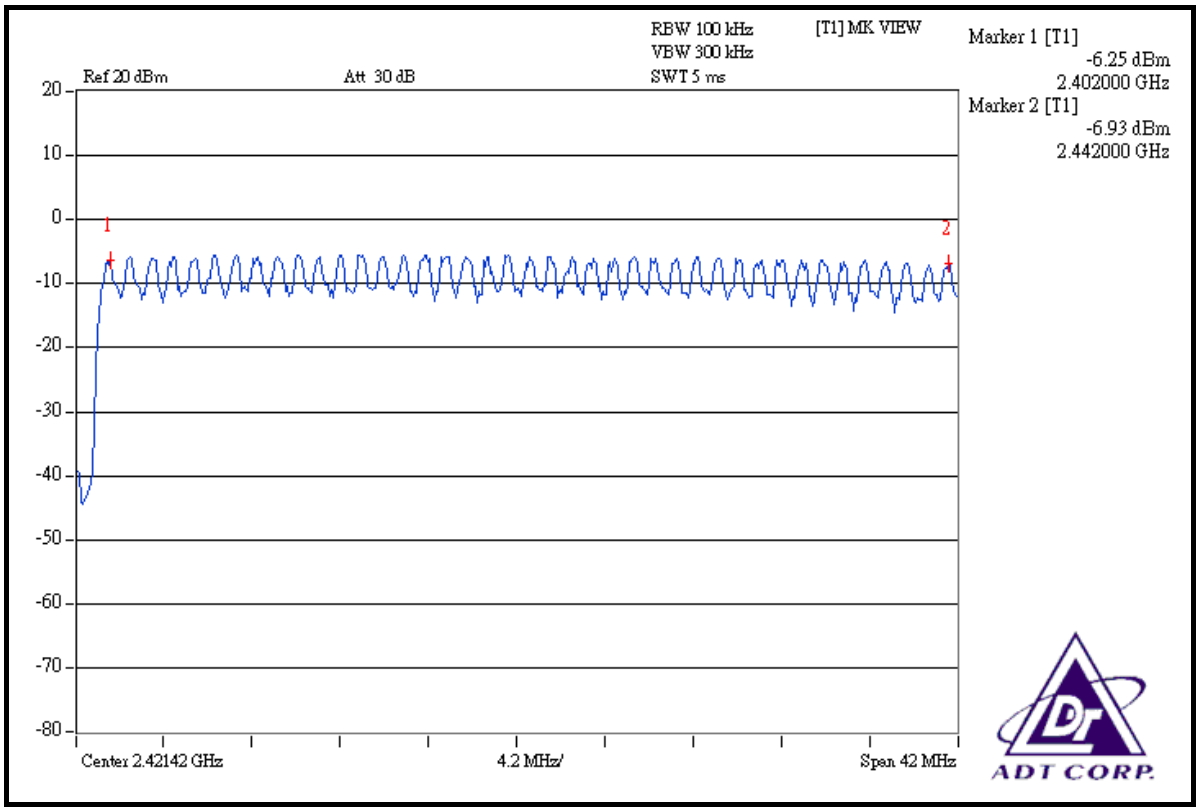
GFSK MODULATION





8DPSK MODULATION





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.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSPB50	100040	Jun. 28, 2008

NOTES: 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 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.

4.4.5 TEST SETUP

Same as 4.3.5.

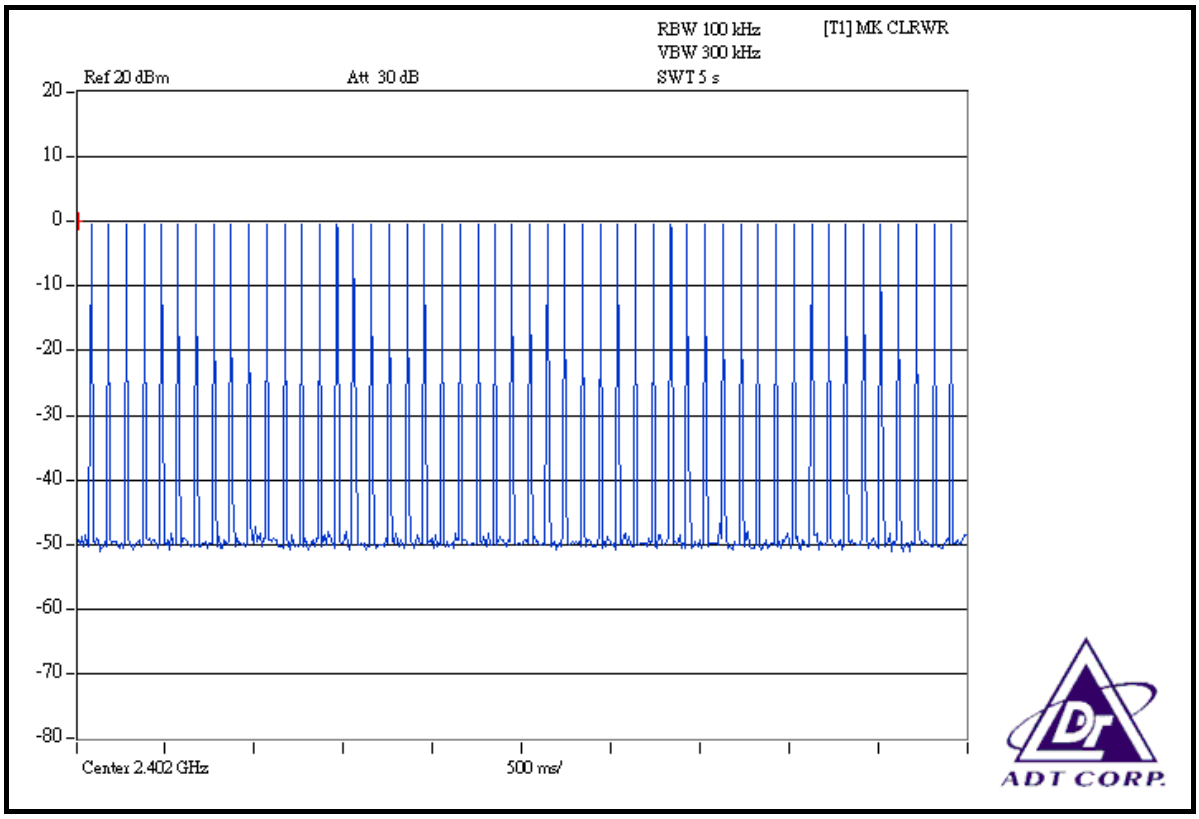
4.4.6 TEST RESULTS

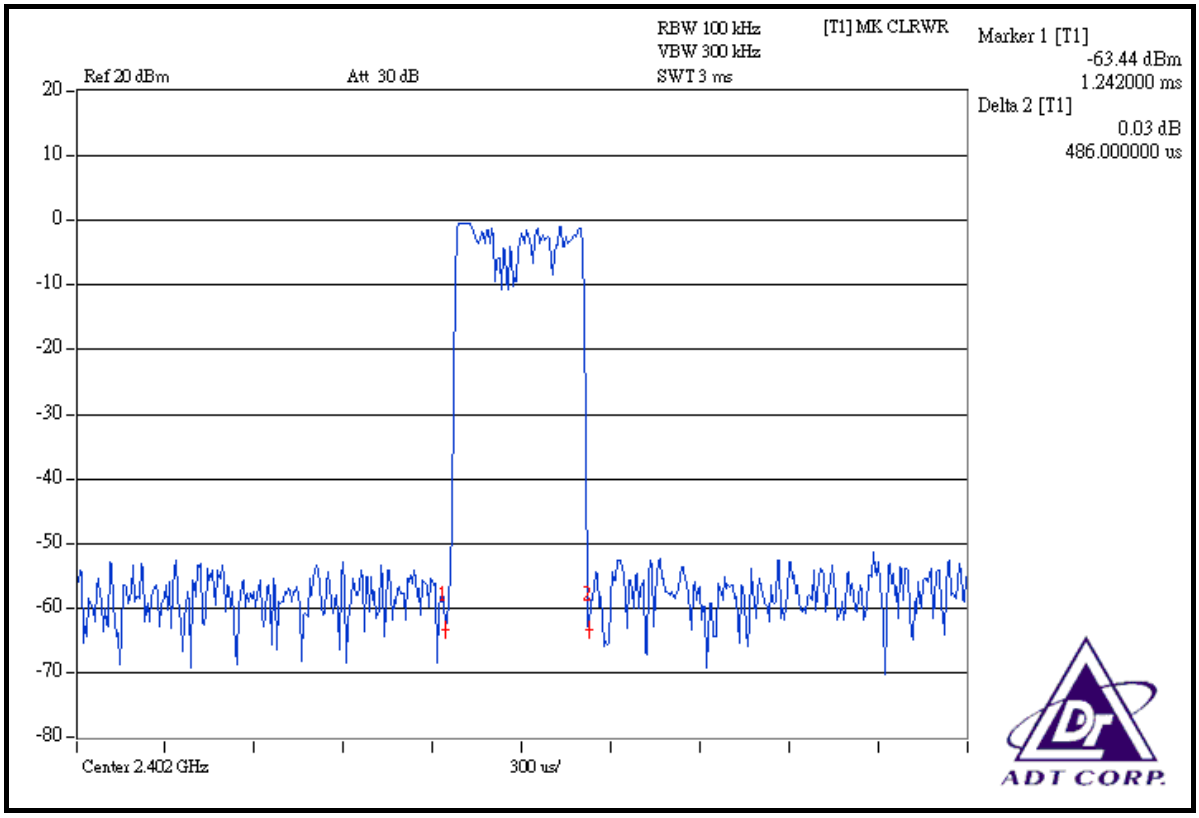
GFSK MODULATION

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	0.486	153.576	400
DH3	25 (times / 5 sec) * 6.32 = 158.00 times	1.758	277.764	400
DH5	17 (times / 5 sec) * 6.32 = 107.44 times	2.990	321.246	400

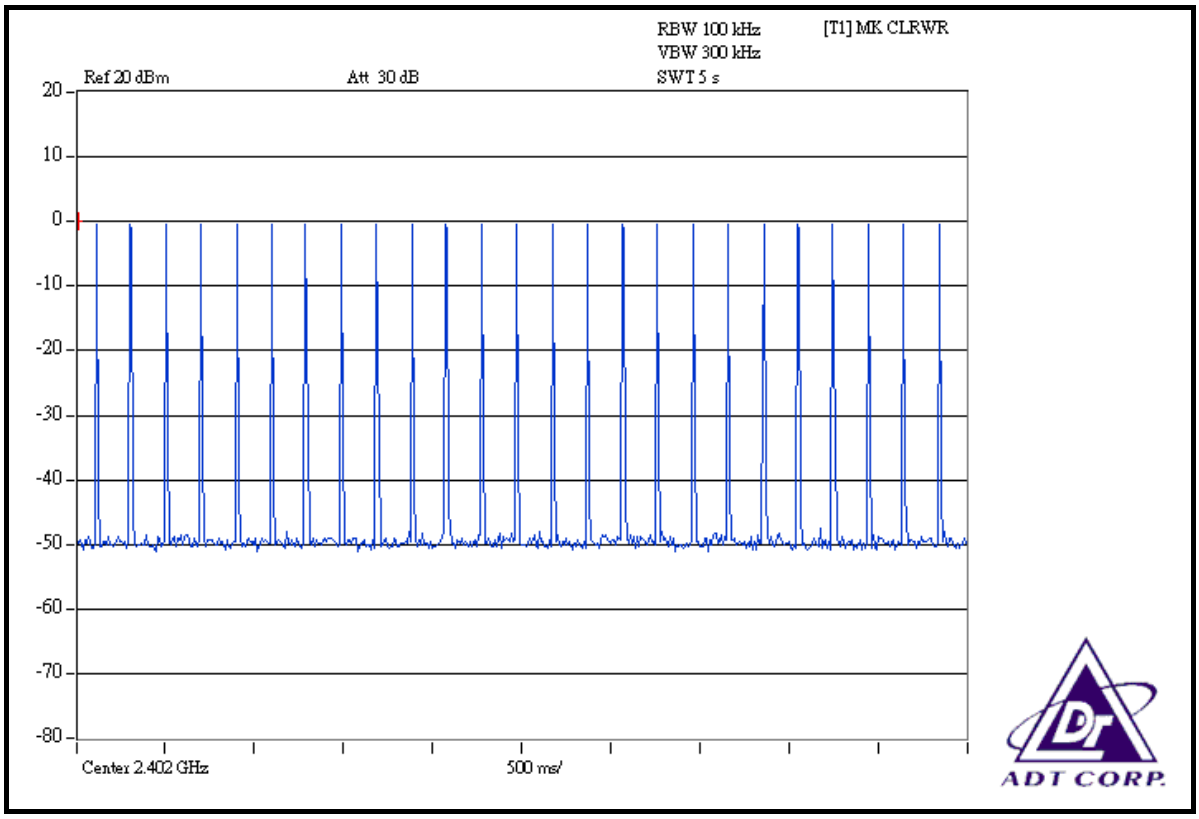
NOTE: Test plots of the transmitting time slot are shown on next 3 pages.

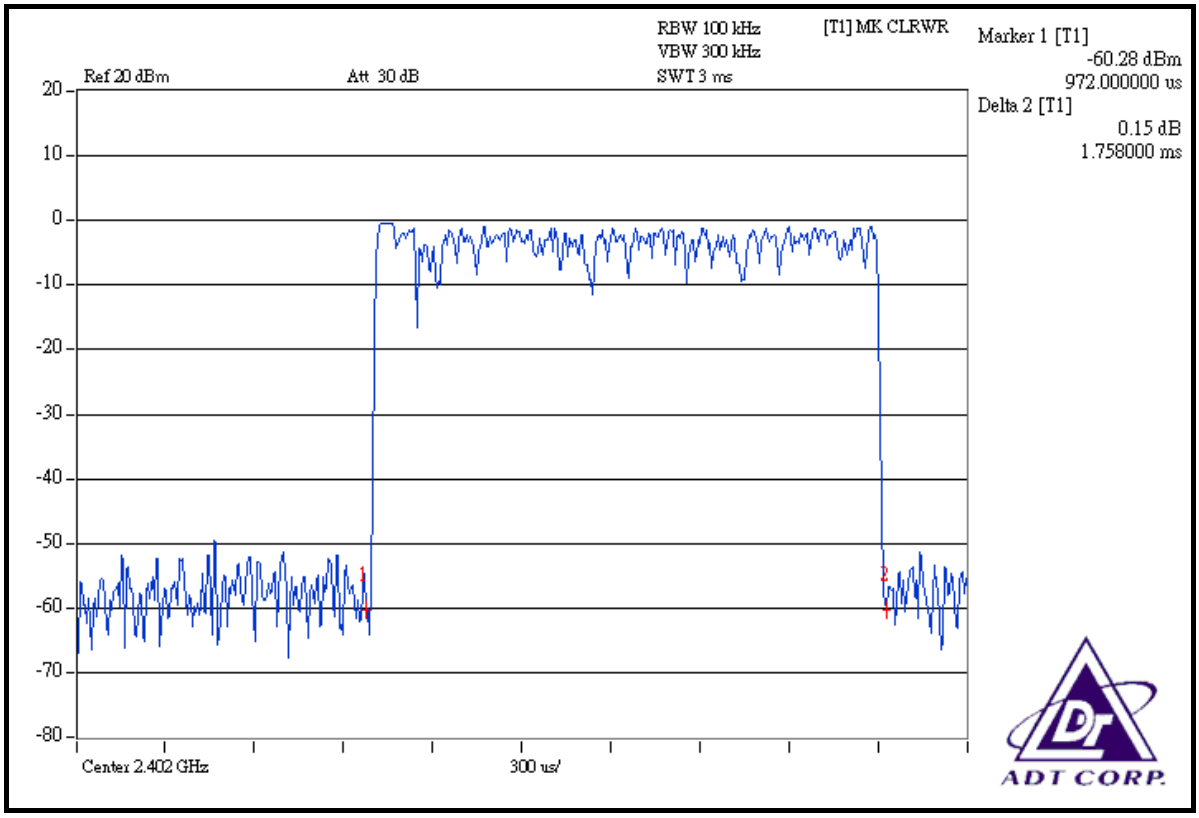
DH1


RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MK CLRWR
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
500 ms/
ADT CORP.

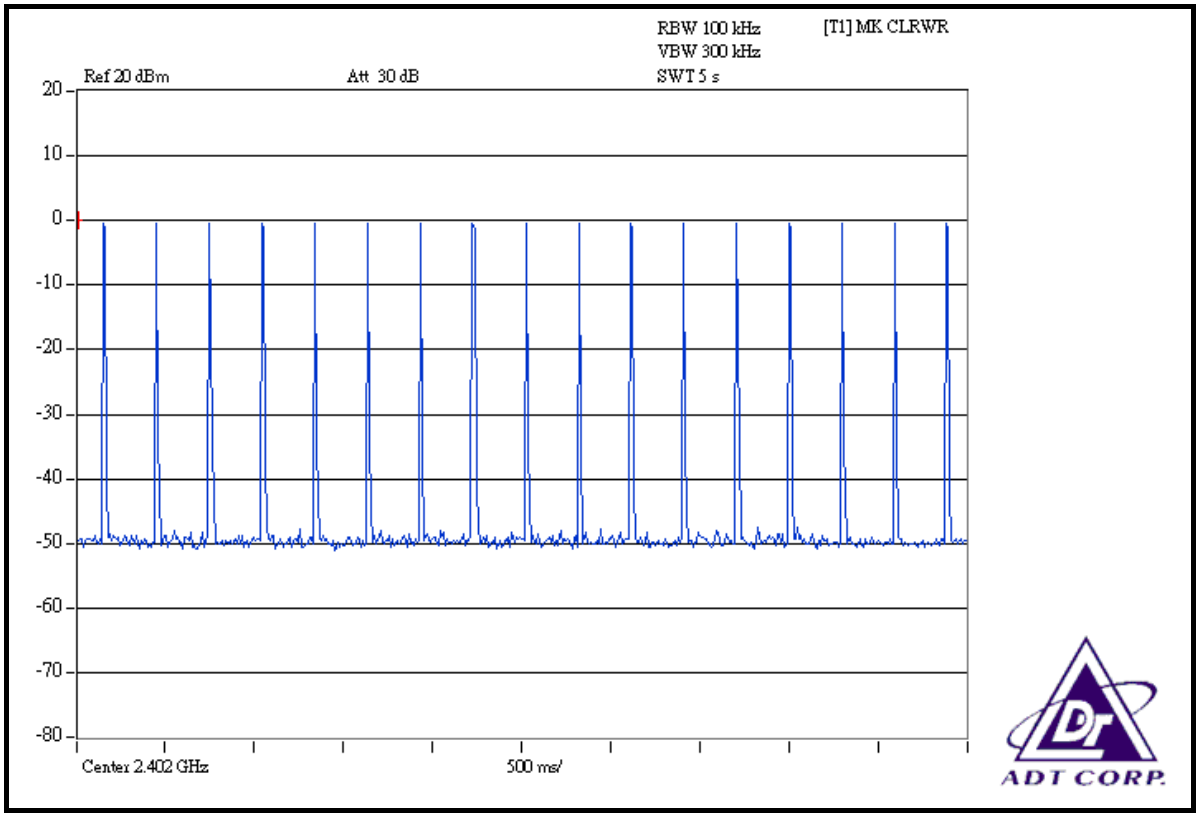

RBW 100 kHz
VBW 300 kHz
SWT 3 ms
[T1] MK CLRWR
Marker 1 [T1]
-63.44 dBm
1.242000 ms
Delta 2 [T1]
0.03 dB
486.000000 us
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
300 us/
ADT CORP.

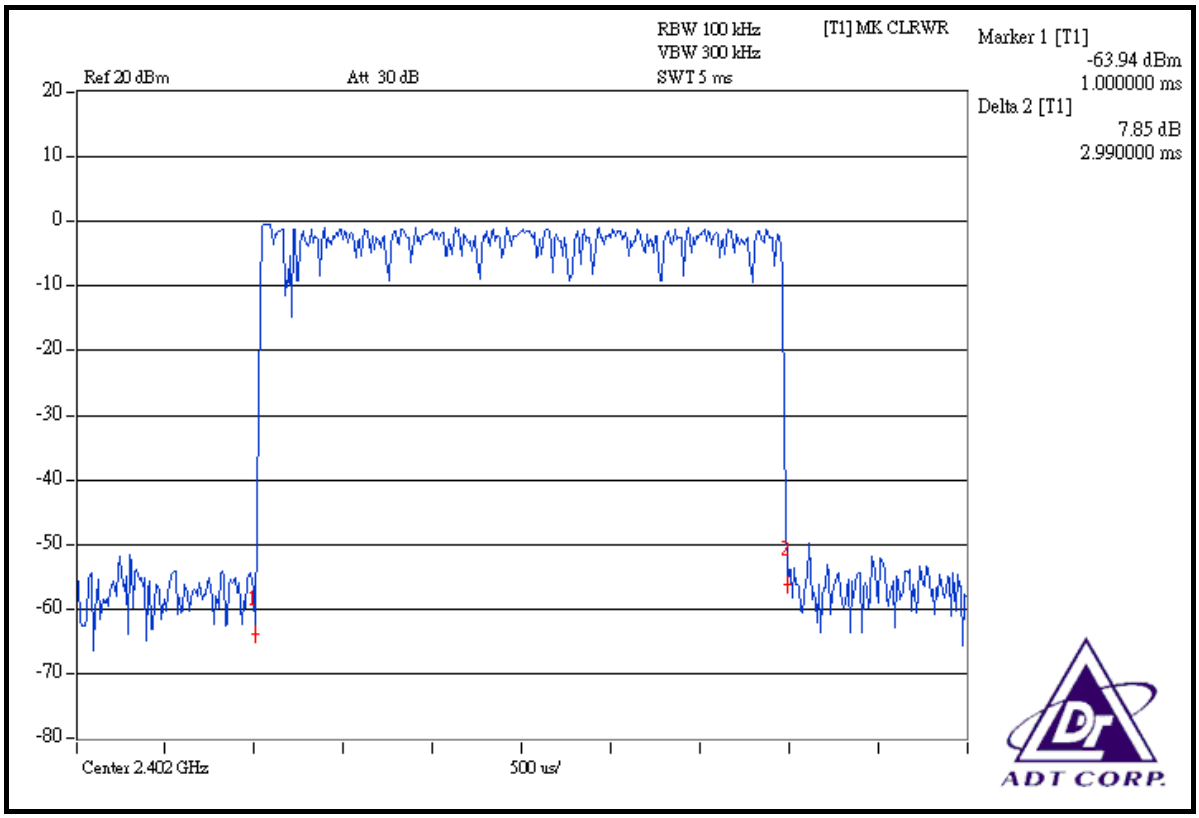
DH3


RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MK CLRWR
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
500 ms/
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 3 ms
[T1] MK CLRWR
Marker 1 [T1]
-60.28 dBm
972.000000 us
Delta 2 [T1]
0.15 dB
1.758000 ms
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
300 us/
ADT CORP.

DH5


RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MK CLRWR
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
500 ms/
ADT CORP.

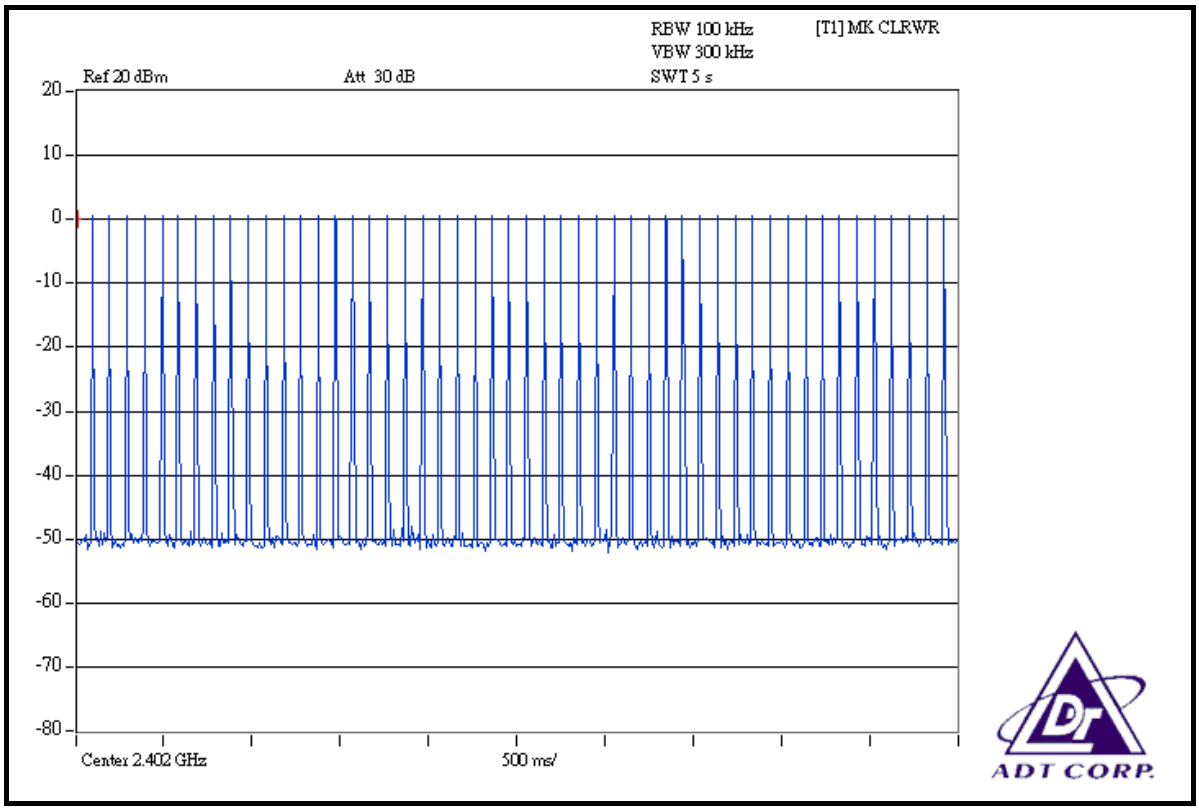

RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK CLRWR
Marker 1 [T1]
-63.94 dBm
1.000000 ms
Delta 2 [T1]
7.85 dB
2.990000 ms
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
500 us/
ADT CORP.

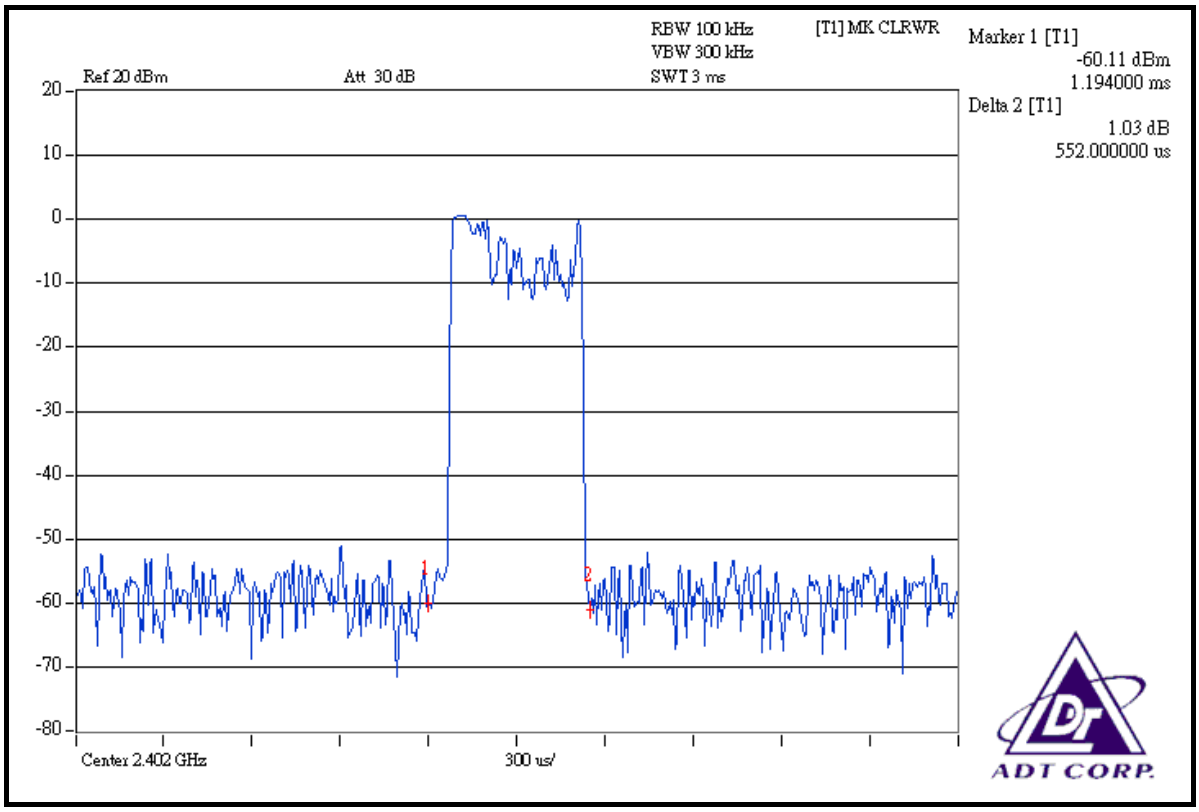
8DPSK MODULATION

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	0.552	174.432	400
DH3	25 (times / 5 sec) * 6.32 = 158.00 times	1.770	279.660	400
DH5	17 (times / 5 sec) * 6.32 = 107.44 times	3.040	326.618	400

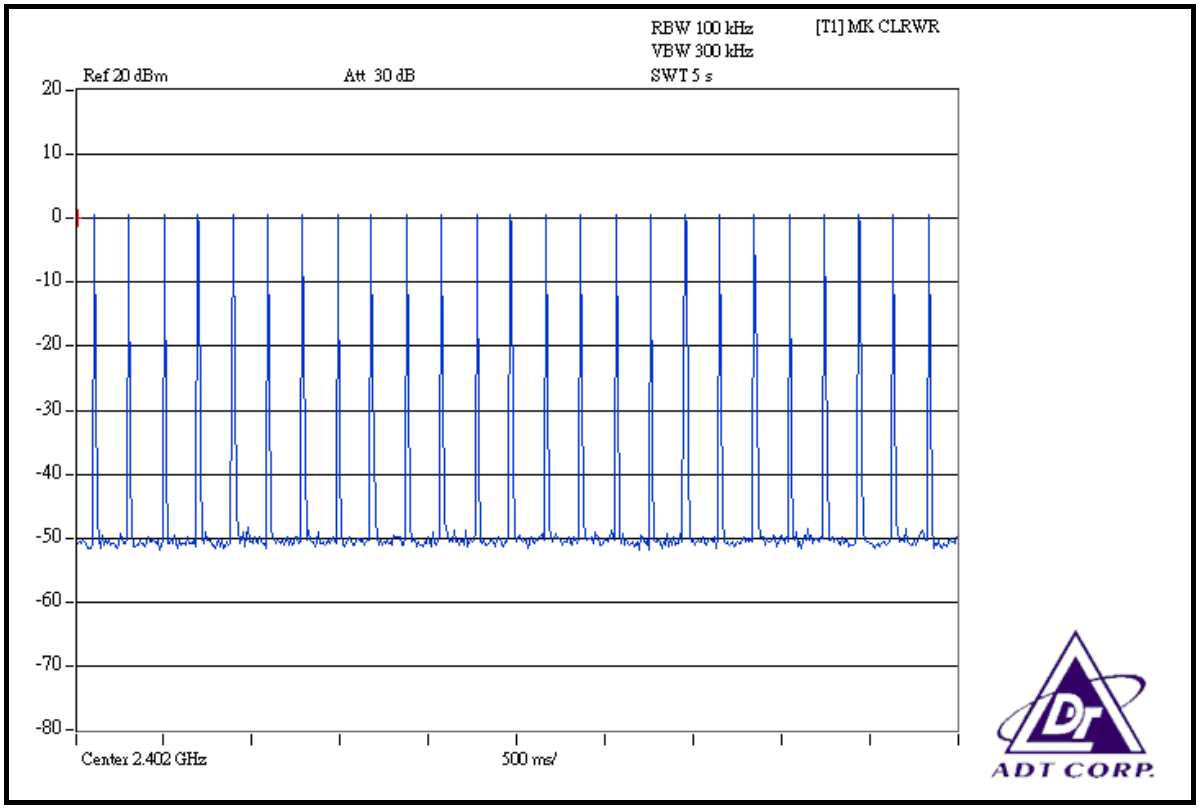
NOTE: Test plots of the transmitting time slot are shown on next 3 pages.

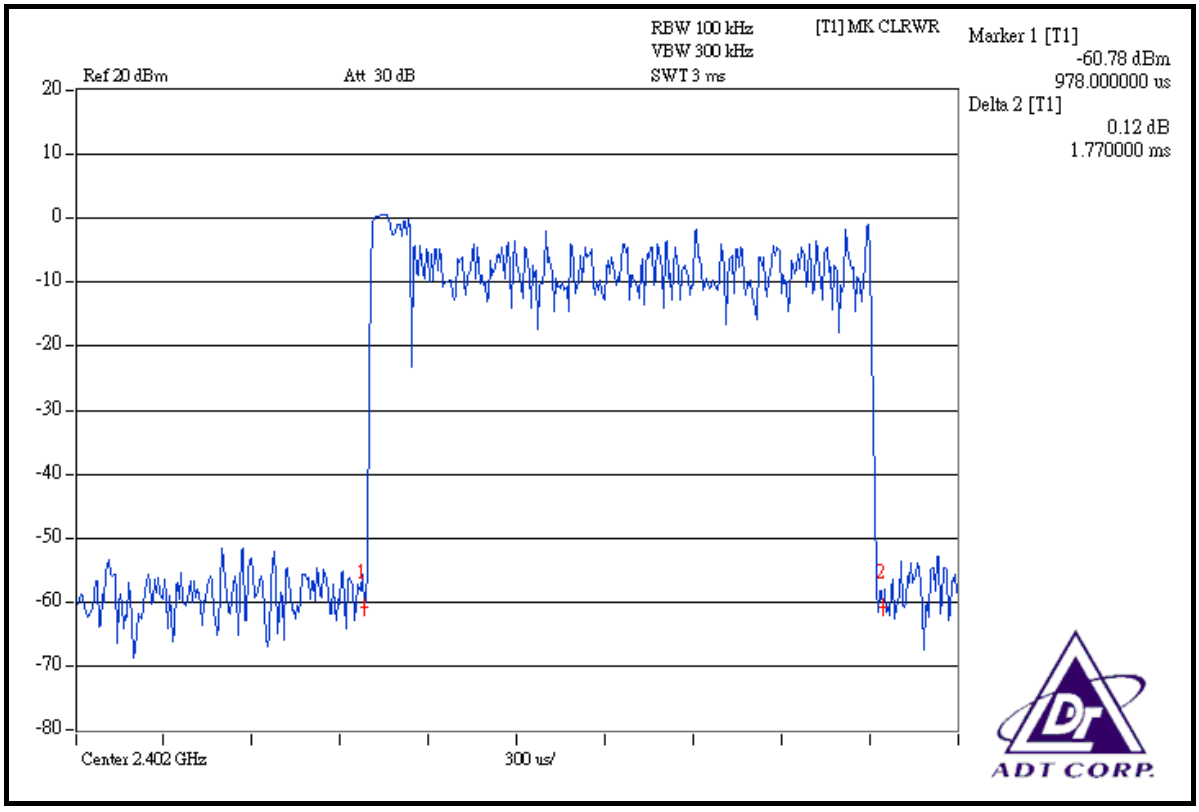
DH1


RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MK CLRWR
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
500 ms/
ADT CORP.

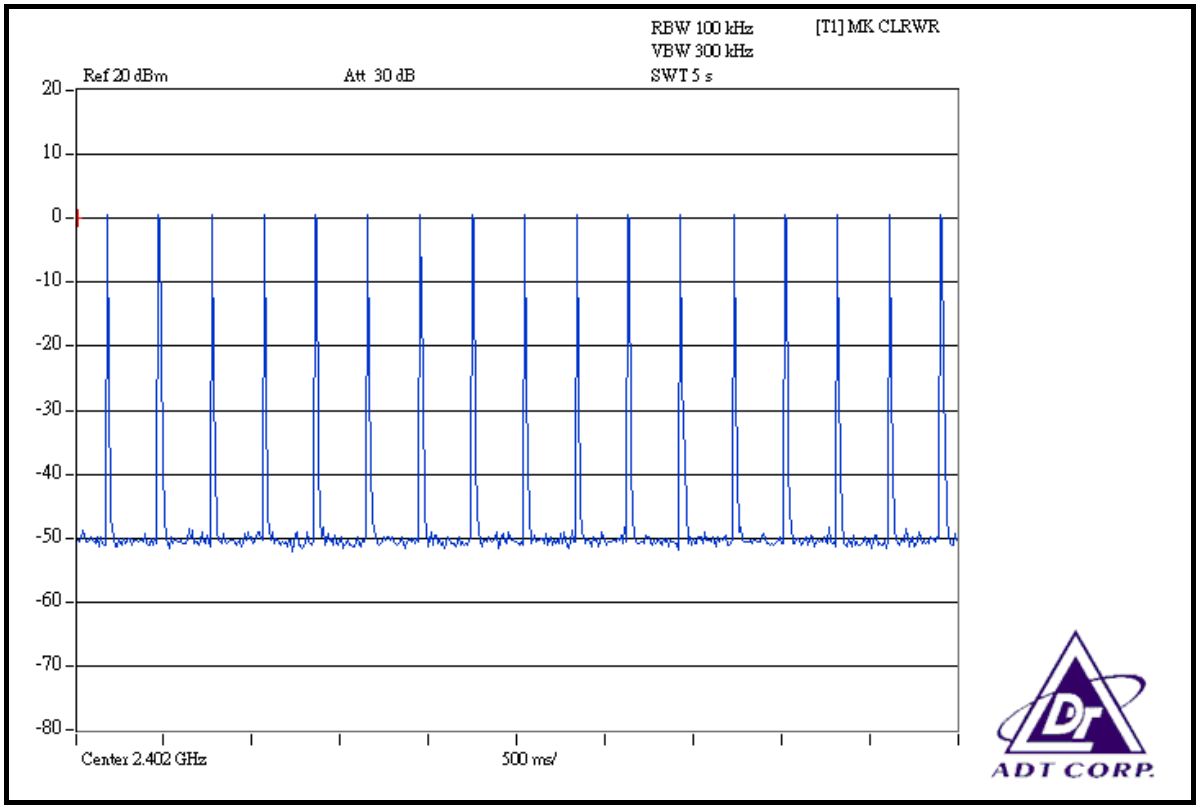

RBW 100 kHz
VBW 300 kHz
SWT 3 ms
[T1] MK CLRWR
Marker 1 [T1]
-60.11 dBm
1.194000 ms
Delta 2 [T1]
1.03 dB
552.000000 us
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
300 us/
ADT CORP.

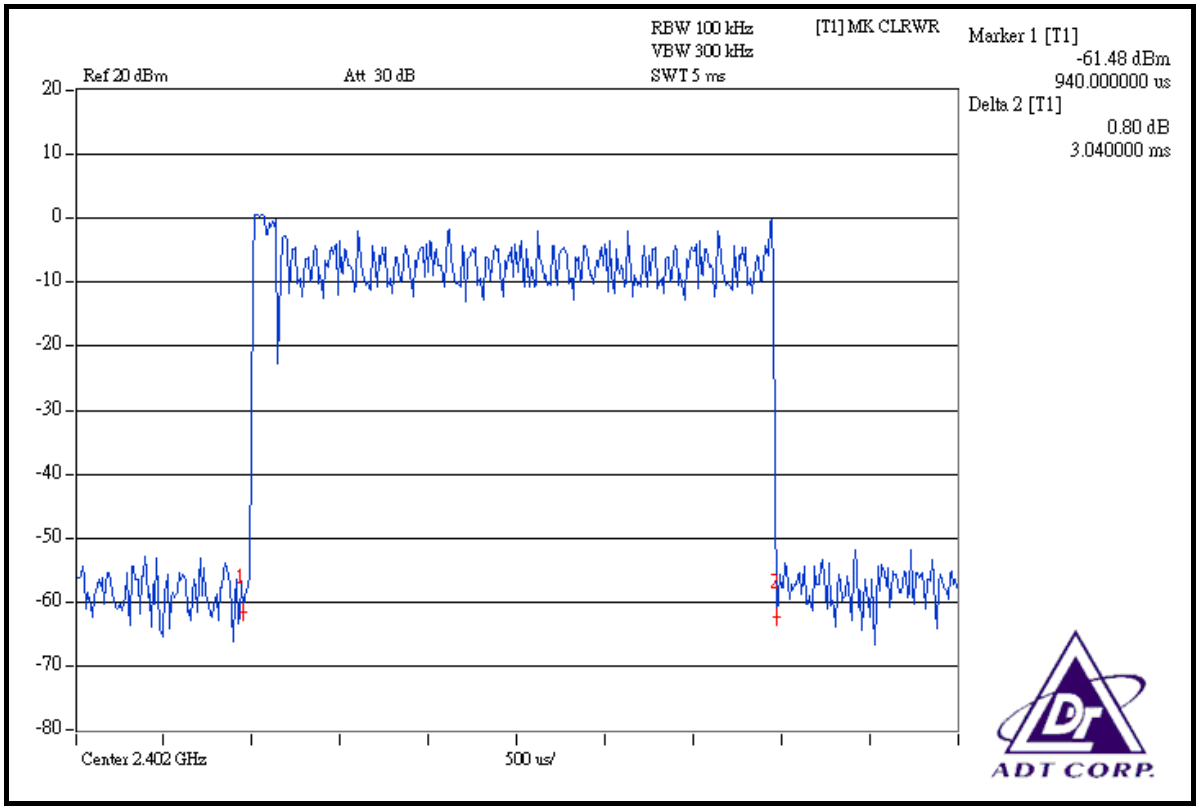
DH3


RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MK CLRWR
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
500 ms/
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 3 ms
[T1] MK CLRWR
Marker 1 [T1]
-60.78 dBm
978.000000 us
Delta 2 [T1]
0.12 dB
1.770000 ms
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
300 us/
ADT CORP.

DH5


RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MK CLRWR
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
500 ms/
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK CLRWR
Marker 1 [T1]
-61.48 dBm
940.000000 us
Delta 2 [T1]
0.80 dB
3.040000 ms
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
500 us/
ADT CORP.

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 20dBbandwidth of hopping channel shell be a minimum limit for the hopping channel separation.

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSPB50	100040	Jun. 28, 2008

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.

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.

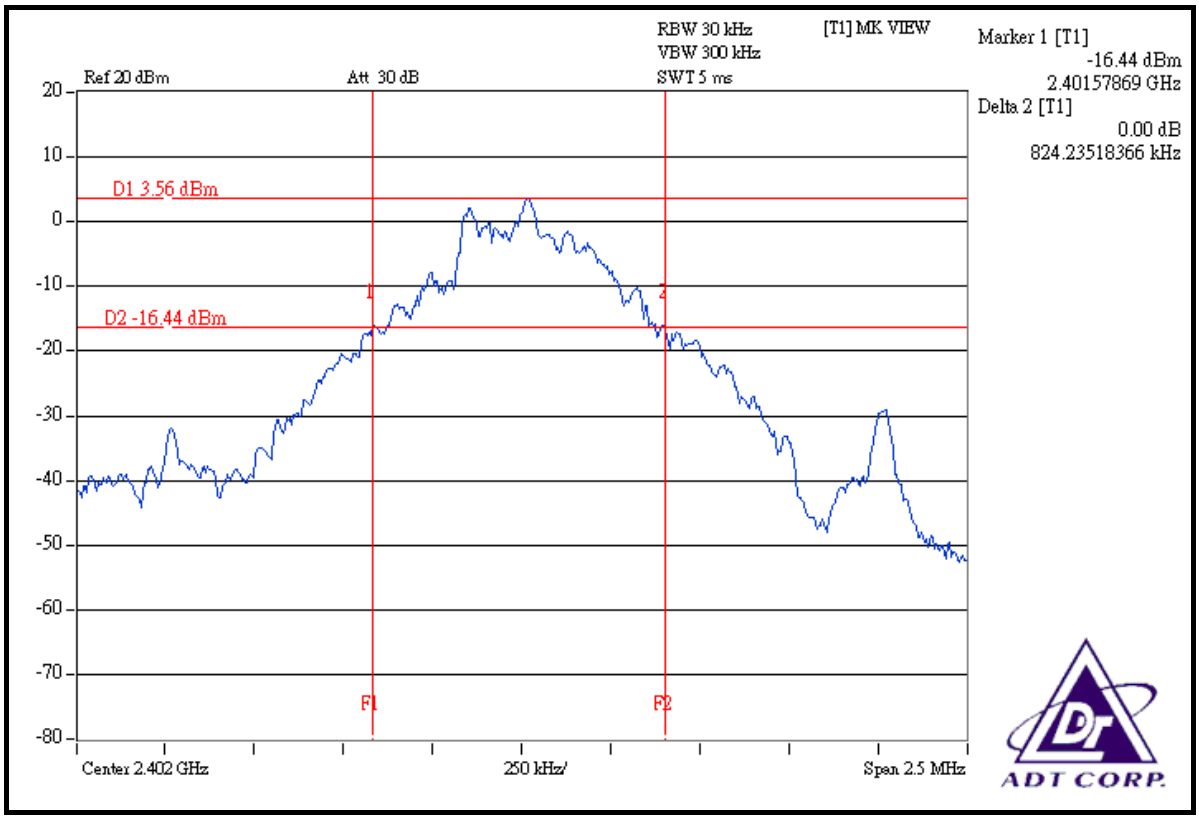
4.5.7 TEST RESULTS

GFSK MODULATION

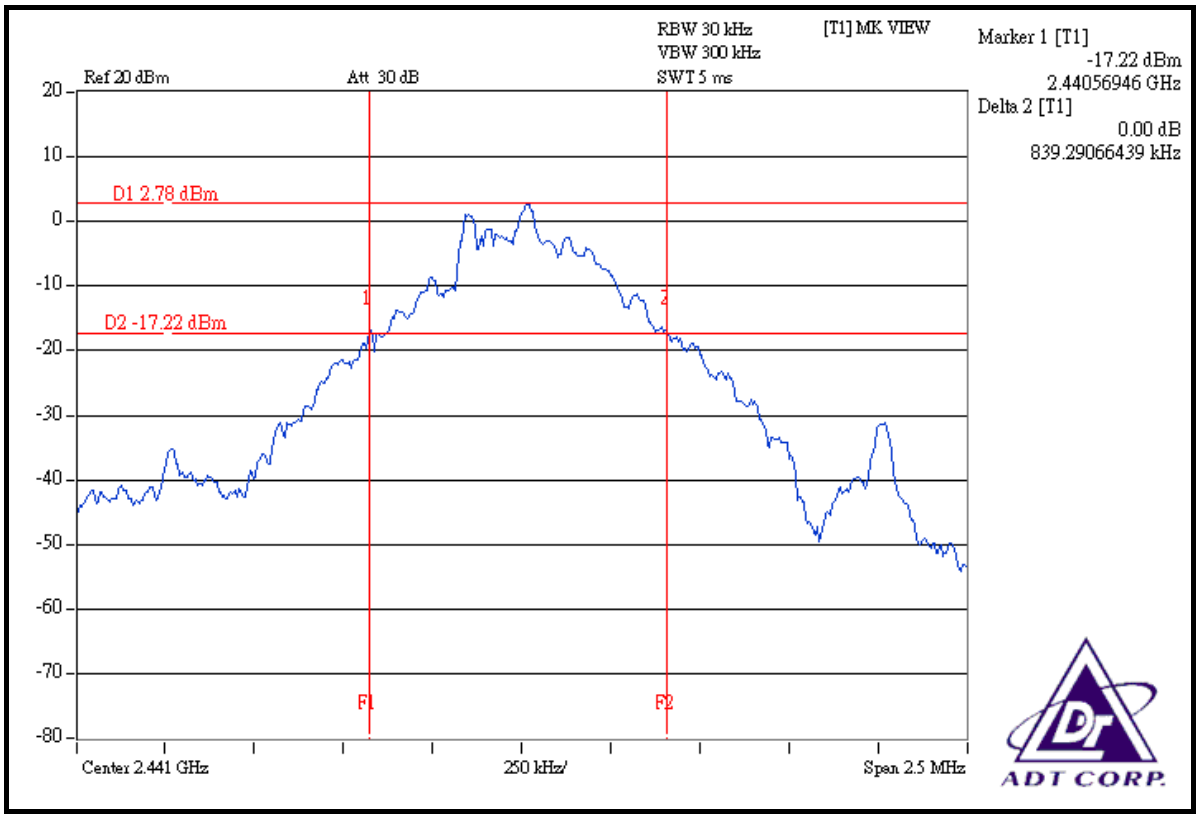
MODULATION TYPE	GFSK	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Brad Wu

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	0.824
39	2441	0.839
78	2480	0.836

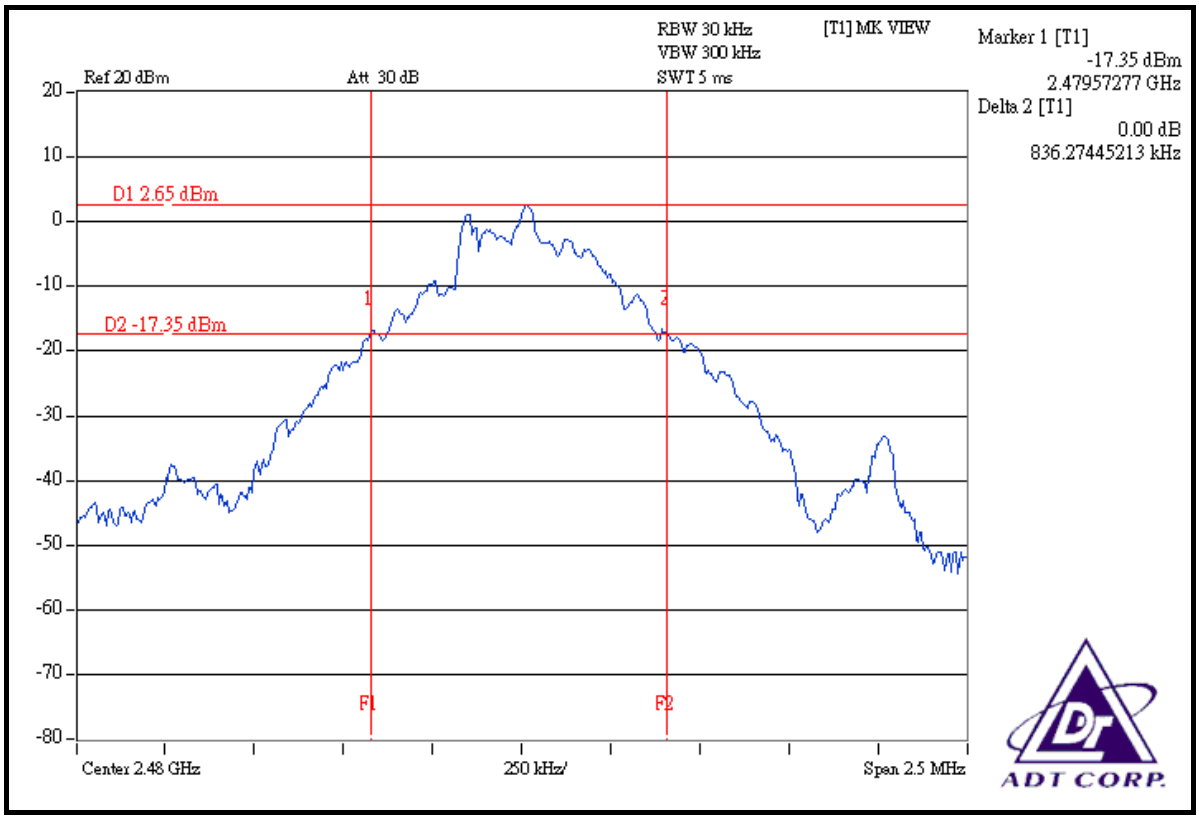
CH 0



CH 39


RBW 30 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-17.22 dBm
2.44056946 GHz
Delta 2 [T1]
0.00 dB
839.29066439 kHz
Ref 20 dBm
Att 30 dB
D1 2.78 dBm
D2 -17.22 dBm
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 2.441 GHz
250 kHz/
Span 2.5 MHz
ADT CORP.

CH 78

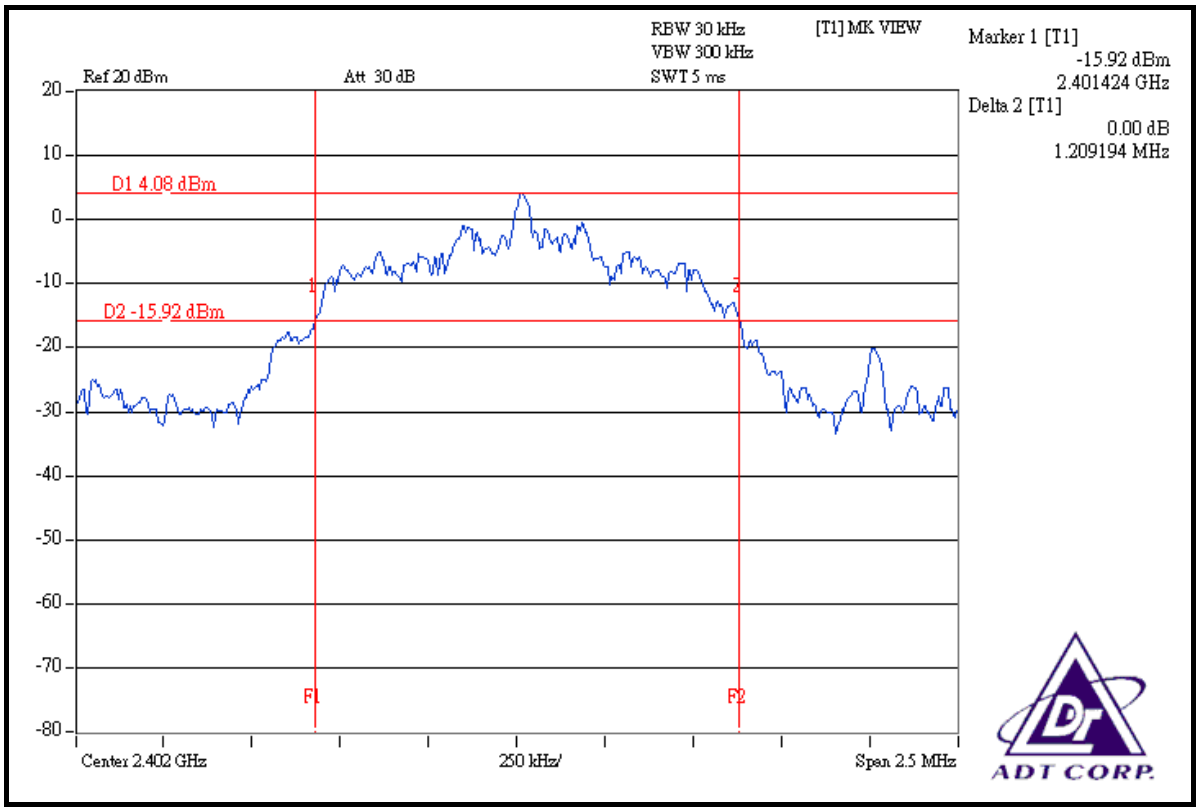

RBW 30 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-17.35 dBm
2.47957277 GHz
Delta 2 [T1]
0.00 dB
836.27445213 kHz
Ref 20 dBm
Att 30 dB
D1 2.65 dBm
D2 -17.35 dBm
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 2.48 GHz
250 kHz/
Span 2.5 MHz
ADT CORP.

8DPSK MODULATION

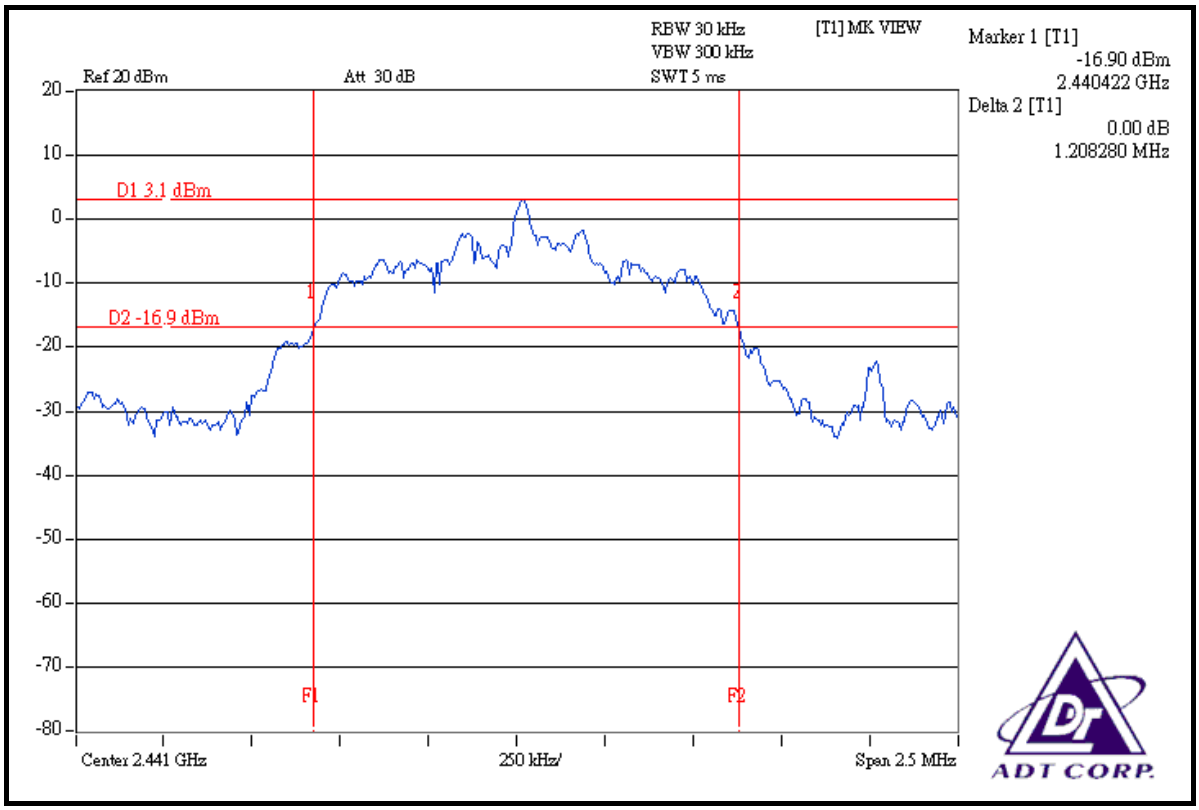
MODULATION TYPE	8DPSK	**ENVIRONMENTAL CONDITIONS**	23deg. C, 61%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Brad Wu

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	1.209
39	2441	1.208
78	2480	1.212

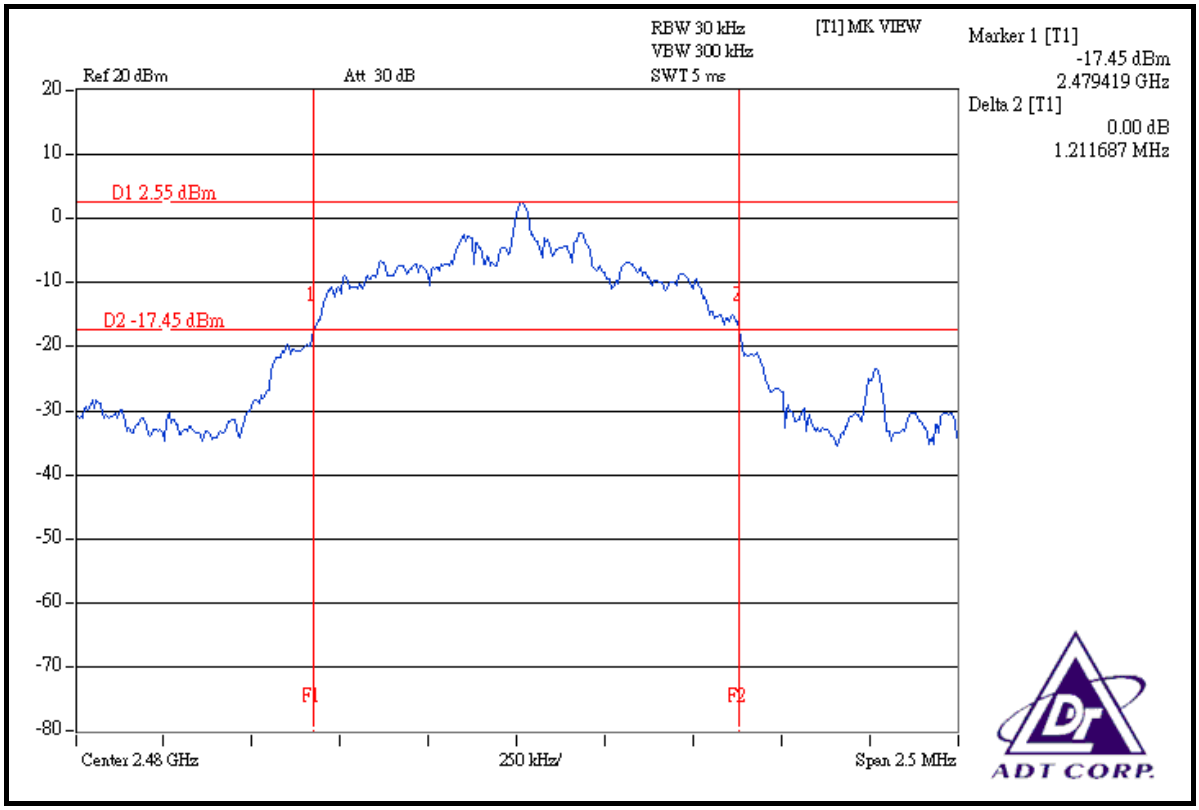
CH 0



CH 39


RBW 30 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-16.90 dBm
2.440422 GHz
Delta 2 [T1]
0.00 dB
1.208280 MHz
Ref 20 dBm
Att 30 dB
D1 3.1 dBm
D2 -16.9 dBm
F1
F2
Center 2.441 GHz
250 kHz/
Span 2.5 MHz
ADT CORP.

CH 78


RBW 30 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-17.45 dBm
2.479419 GHz
Delta 2 [T1]
0.00 dB
1.211687 MHz
Ref 20 dBm
Att 30 dB
D1 2.55 dBm
D2 -17.45 dBm
F1
F2
Center 2.48 GHz
250 kHz/
Span 2.5 MHz
ADT CORP.

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.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSPB50	100040	Jun. 28, 2008

NOTES: 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

4.6.6 TEST RESULTS

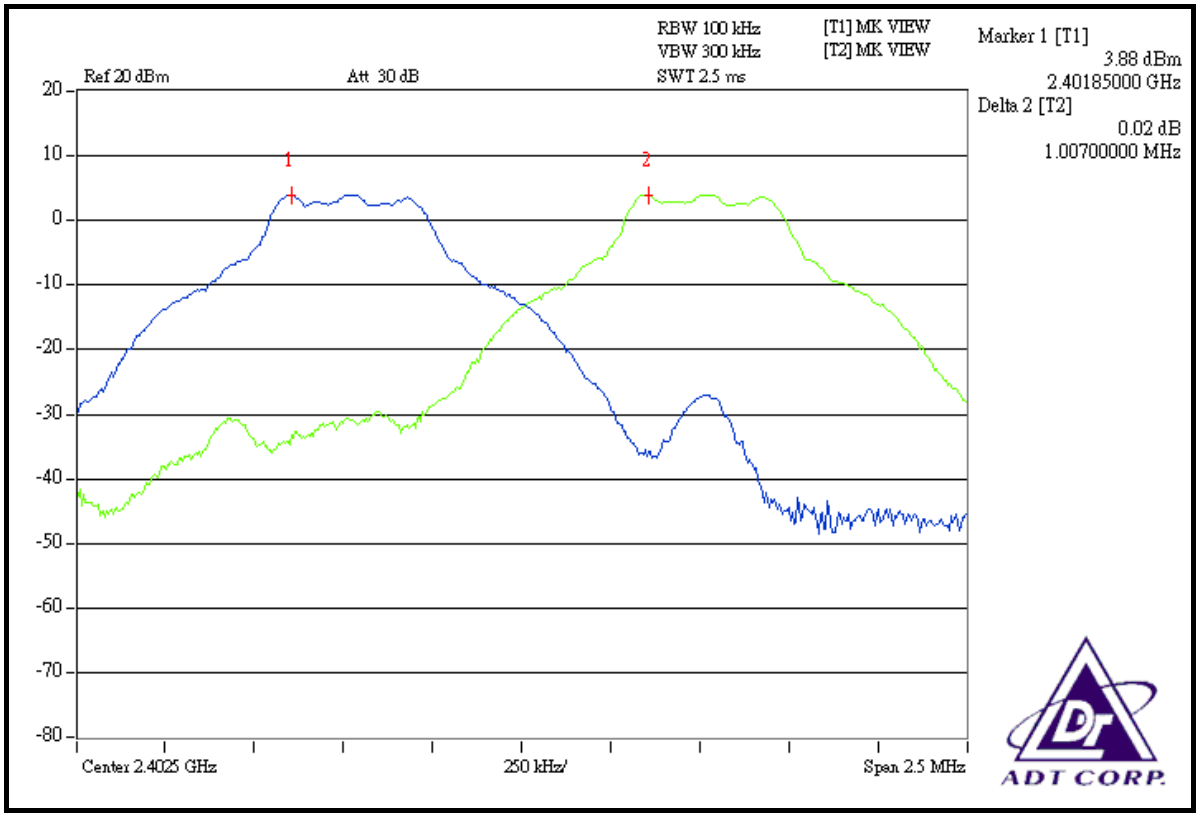
GFSK MODULATION

MODULATION TYPE	GFSK	ENVIRONMENTAL CONDITIONS	23deg. C, 61%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Brad Wu

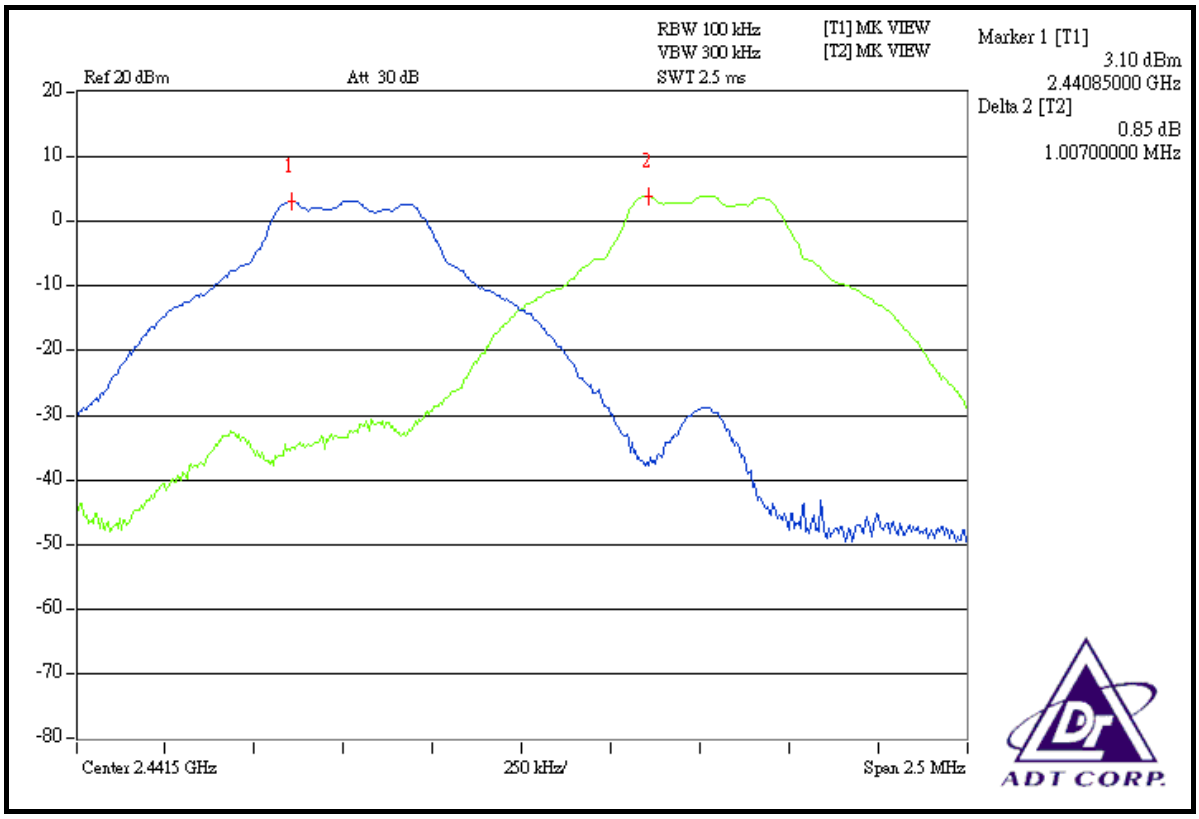
CHANNEL	FREQUENCY (MHz)	ADJACENT CHANNEL SEPARATION (MHz)	20dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	1.007	0.824	0.549	PASS
39	2441	1.007	0.839	0.559	PASS
78	2480	1.002	0.836	0.557	PASS

NOTE: The minimum limit is two-third 20dB bandwidth. Test results please refer to next two pages.

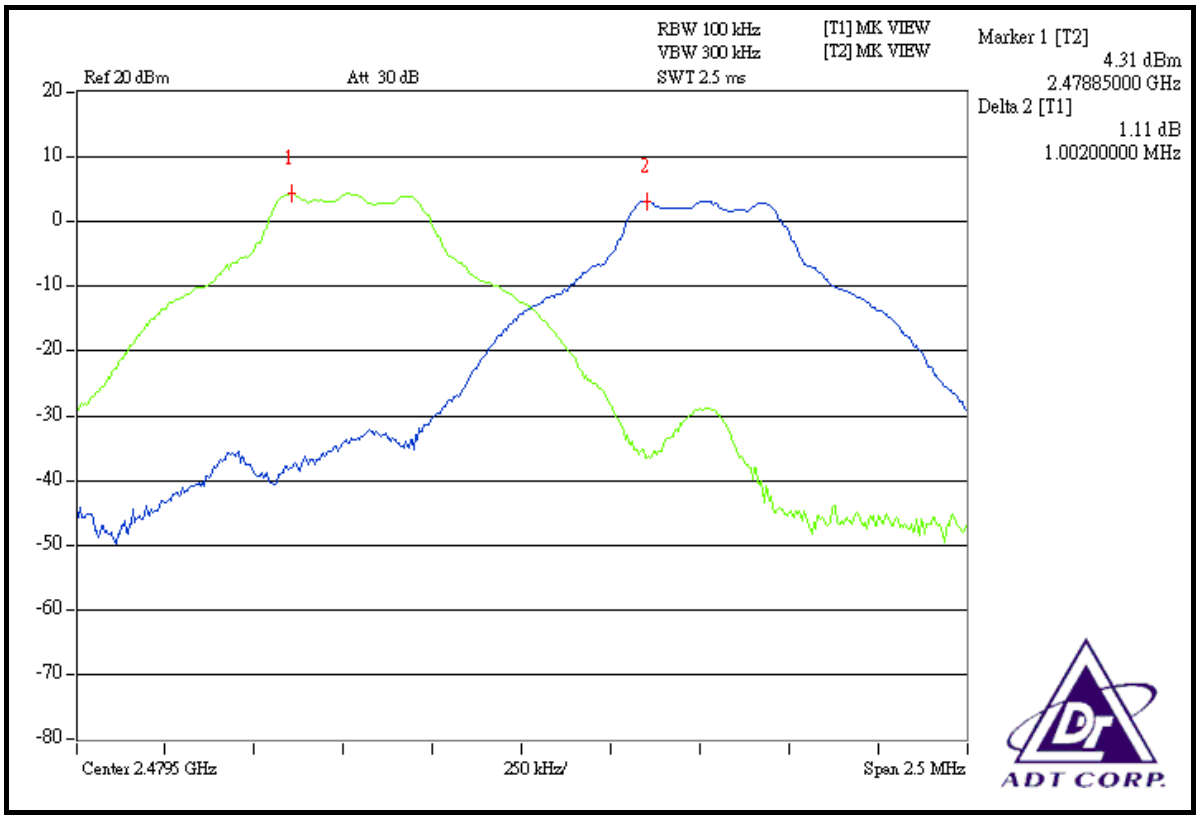
CH 0



CH 39


RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
[T2] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
3.10 dBm
2.44085000 GHz
Delta 2 [T2]
0.85 dB
1.00700000 MHz
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.4415 GHz
250 kHz/
Span 2.5 MHz
ADT CORP.

CH 78


RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
[T2] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T2]
4.31 dBm
2.47885000 GHz
Delta 2 [T1]
1.11 dB
1.00200000 MHz
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.4795 GHz
250 kHz/
Span 2.5 MHz
ADT CORP.

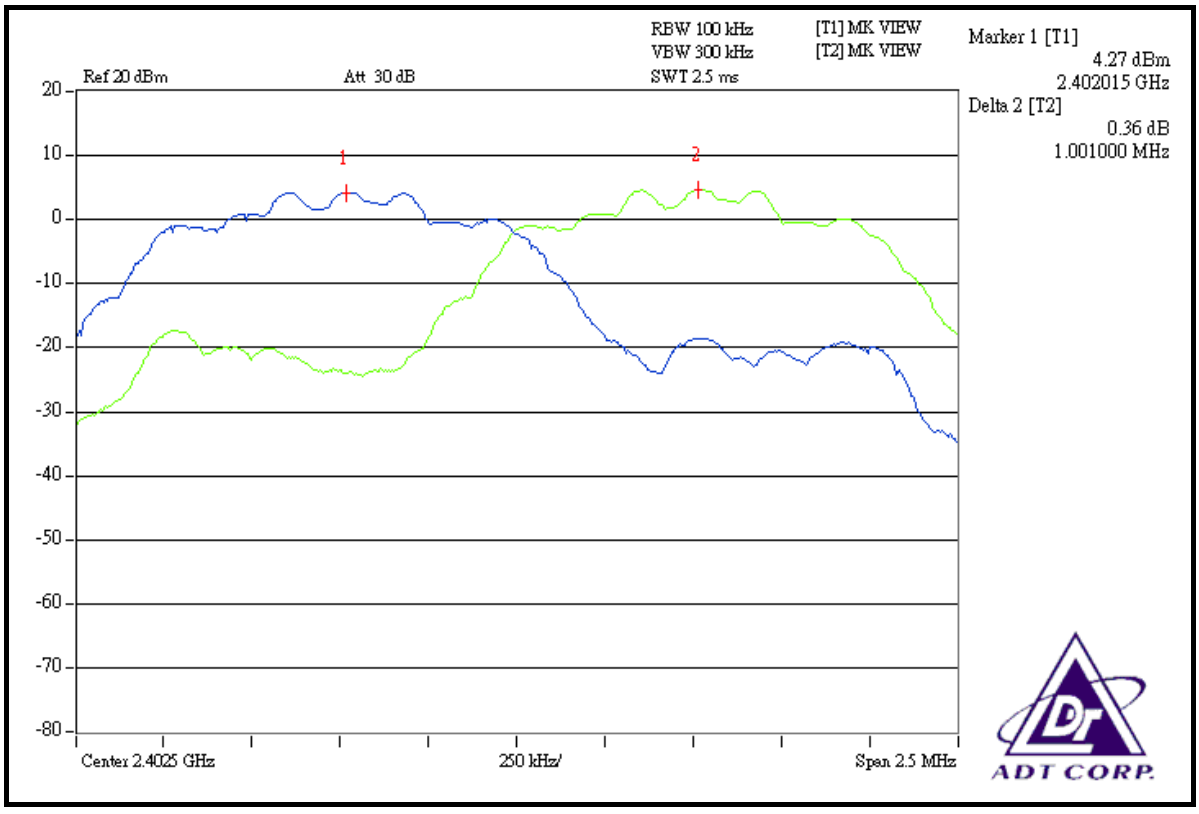
8DPSK MODULATION

MODULATION TYPE	8DPSK	**ENVIRONMENTAL CONDITIONS**	23deg. C, 61%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Brad Wu

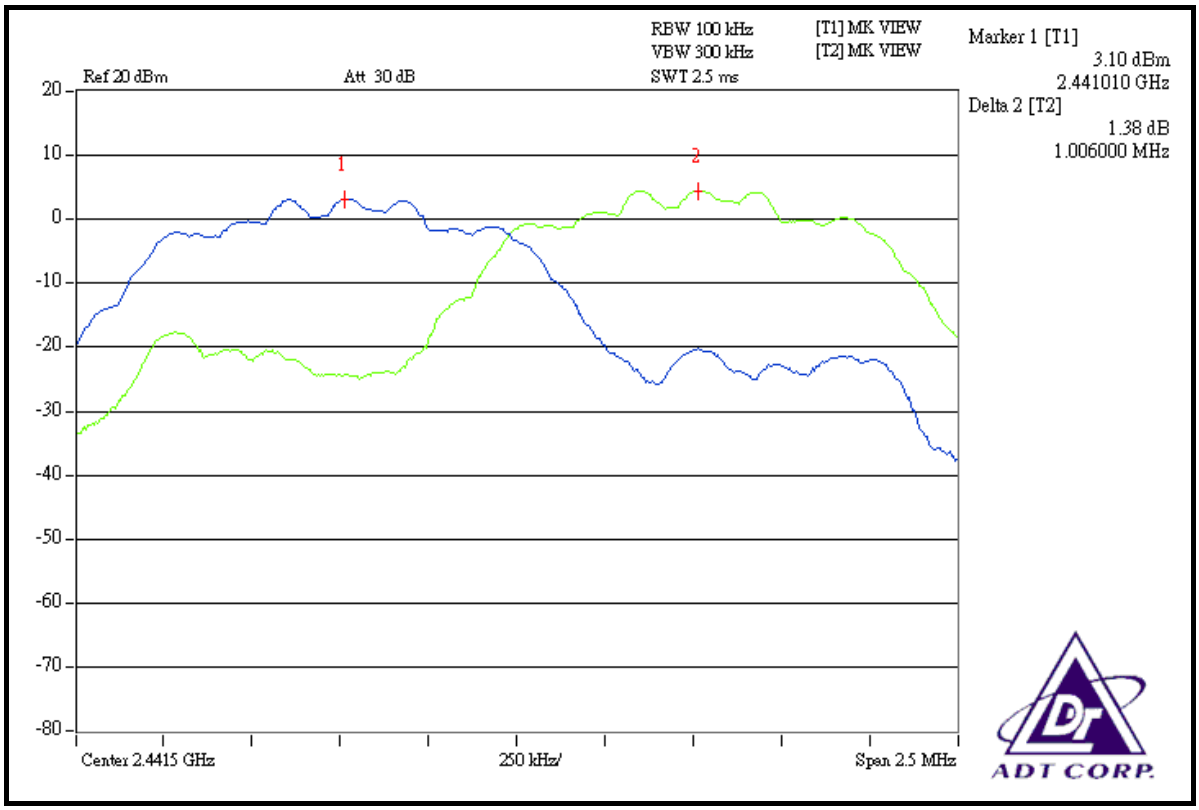
CHANNEL	FREQUENCY (MHz)	ADJACENT CHANNEL SEPARATION (MHz)	20dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	1.001	1.209	0.806	PASS
39	2441	1.006	1.208	0.805	PASS
78	2480	1.007	1.212	0.808	PASS

NOTE: The minimum limit is two-third 20dB bandwidth. Test results please refer to next two pages.

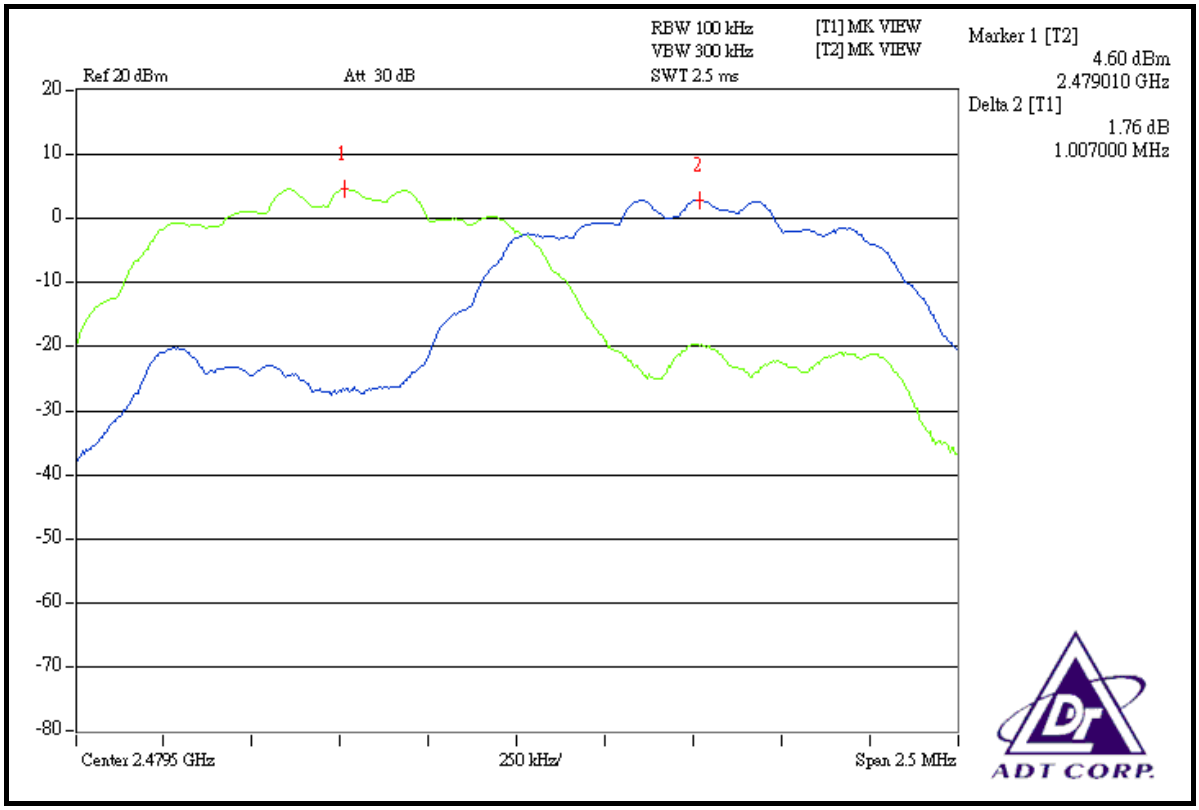
CH 0



CH 39


RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
[T2] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
3.10 dBm
2.441010 GHz
Delta 2 [T2]
1.38 dB
1.006000 MHz
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.4415 GHz
250 kHz/
Span 2.5 MHz
ADT CORP.

CH 78


RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
[T2] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T2]
4.60 dBm
2.479010 GHz
Delta 2 [T1]
1.76 dB
1.007000 MHz
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.4795 GHz
250 kHz/
Span 2.5 MHz
ADT CORP.

4.7 MAXIMUM PEAK OUTPUT POWER

4.7.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 125mW.

4.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
SPECTRUM ANALYEER	FSPB50	100040	Jun. 28, 2008

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

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.

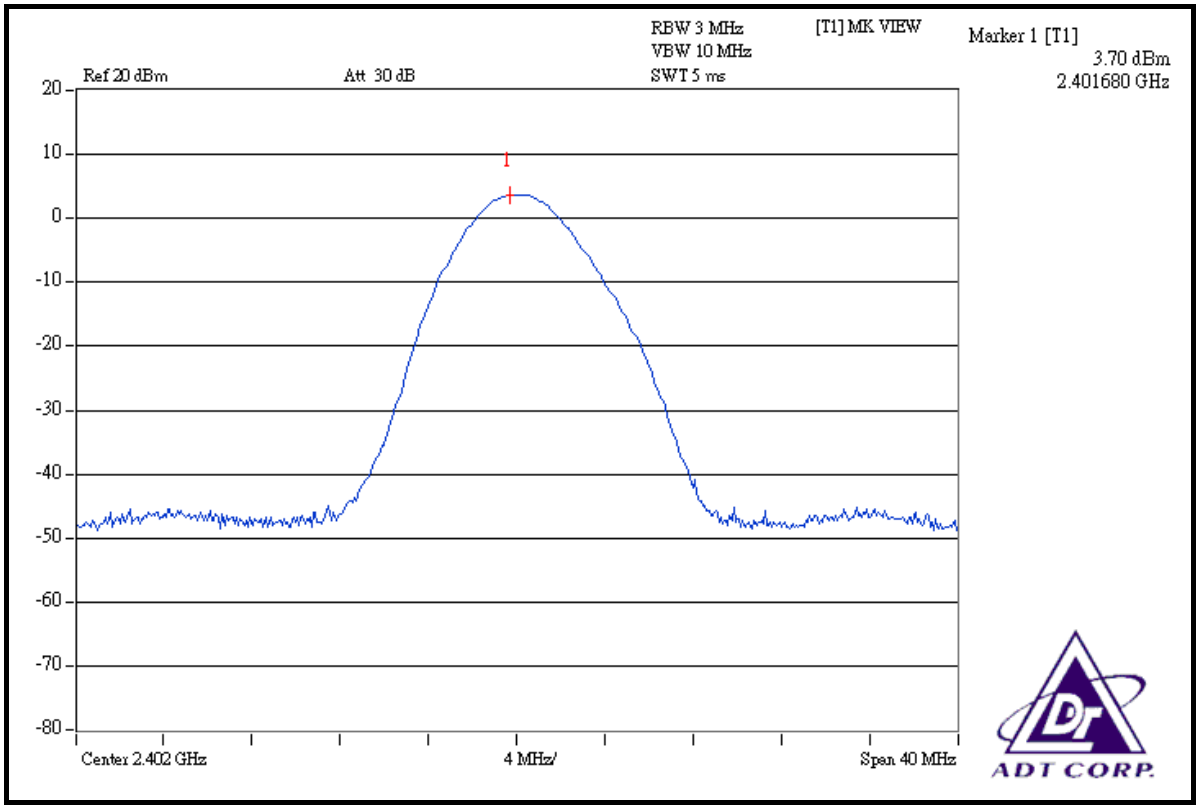
4.7.7 TEST RESULTS

GFSK MODULATION

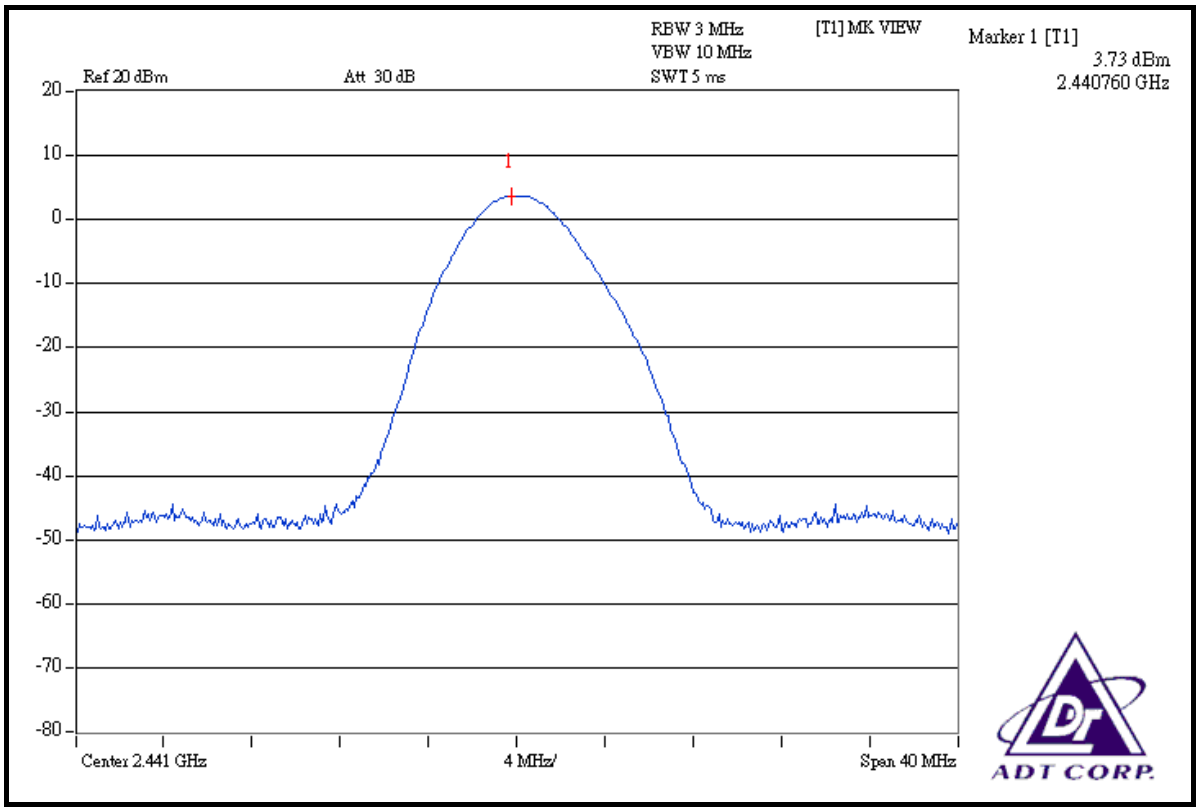
MODULATION TYPE	GFSK	**ENVIRONMENTAL CONDITIONS**	23deg. C, 61%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Brad Wu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	2402	2.344	3.70	125	PASS
39	2441	2.360	3.73	125	PASS
78	2480	2.296	3.61	125	PASS

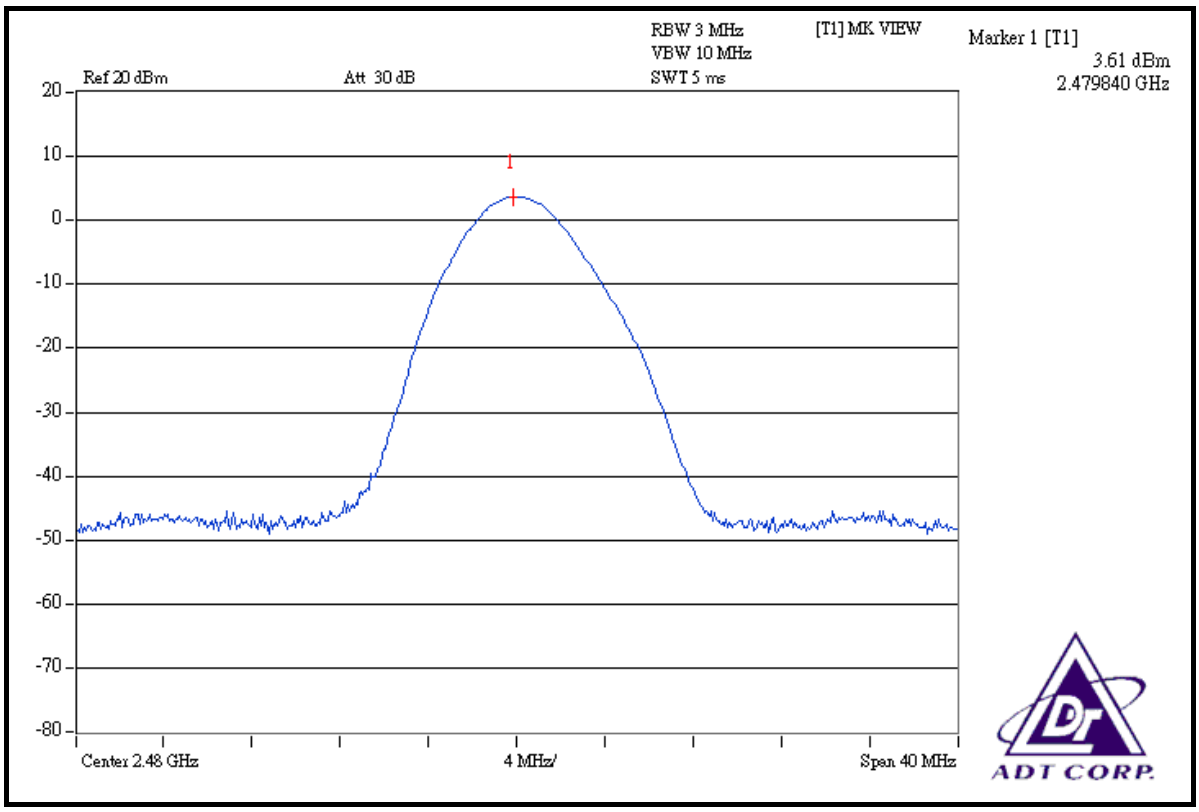
CH 0


RBW 3 MHz
VBW 10 MHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
3.70 dBm
2.401680 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 39


RBW 3 MHz
VBW 10 MHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
3.73 dBm
2.440760 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.441 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 78

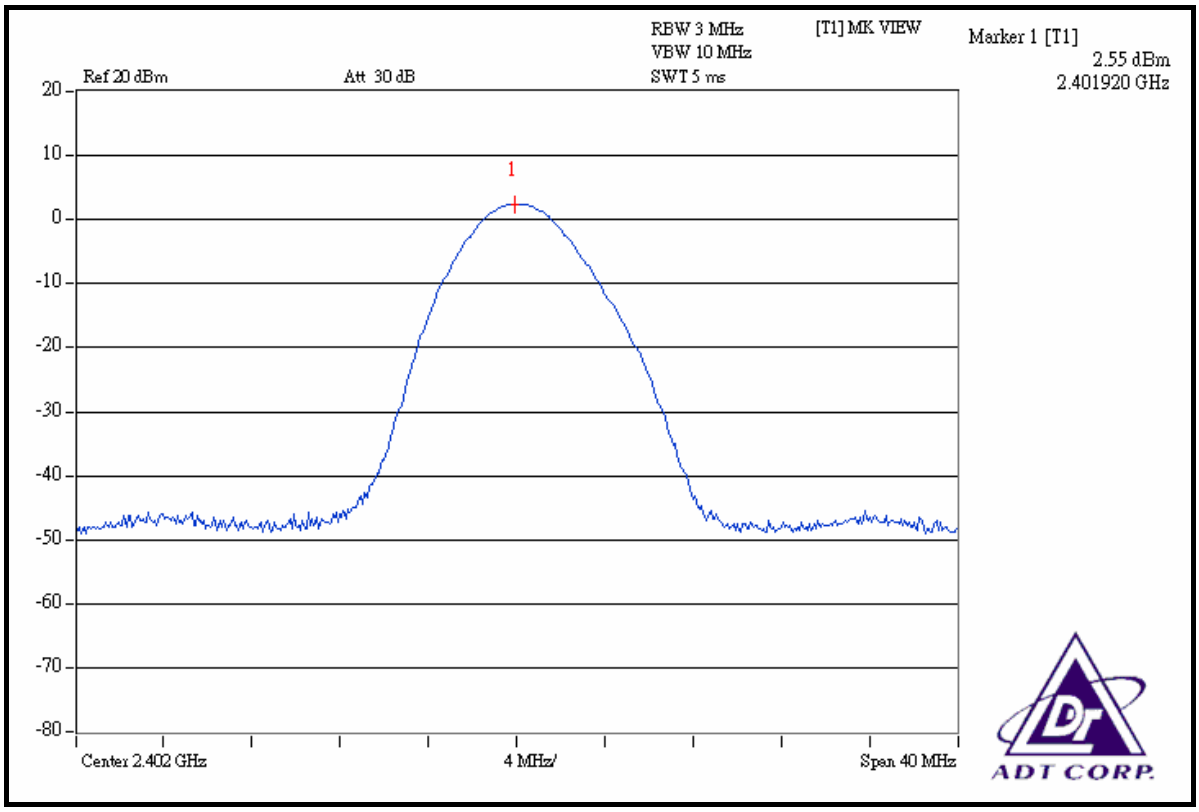

RBW 3 MHz
VBW 10 MHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
3.61 dBm
2.479840 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.48 GHz
4 MHz/
Span 40 MHz
ADT CORP.

8DPSK MODULATION

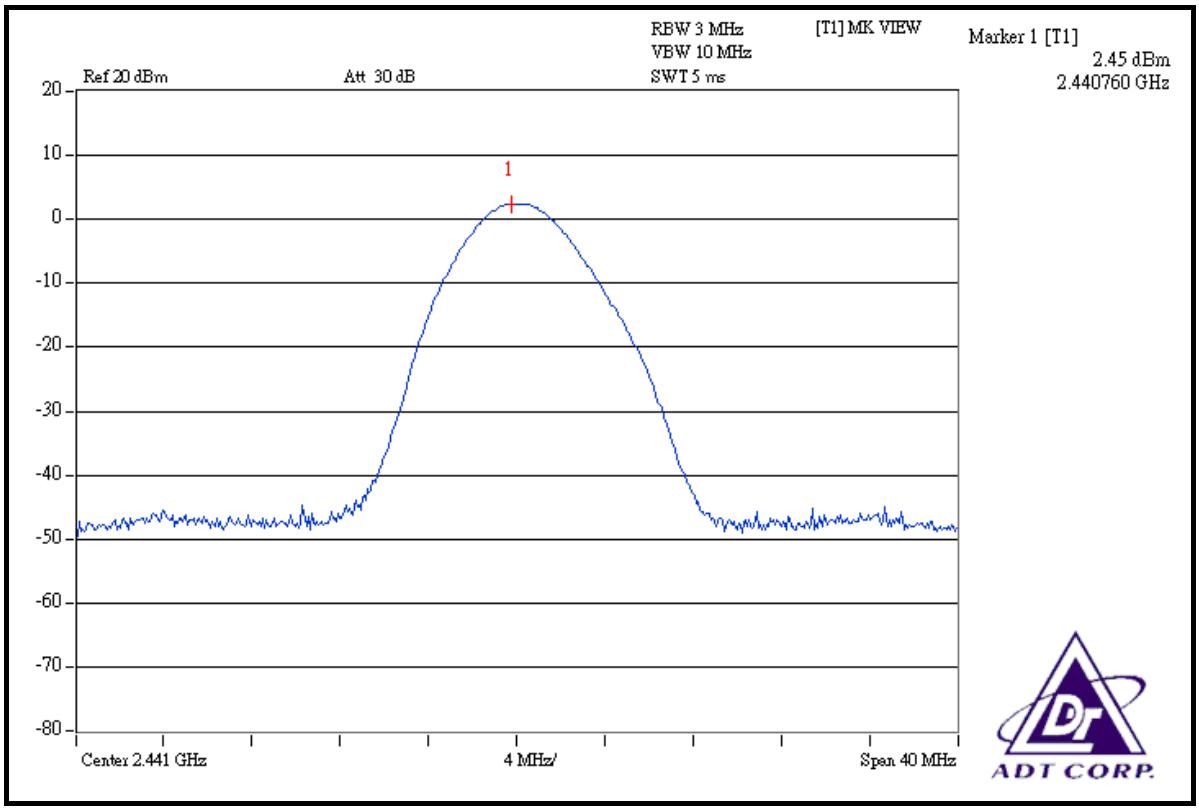
MODULATION TYPE	8DPSK	**ENVIRONMENTAL CONDITIONS**	23deg. C, 61%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Brad Wu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	2402	1.799	2.55	125	PASS
39	2441	1.758	2.45	125	PASS
78	2480	1.718	2.35	125	PASS

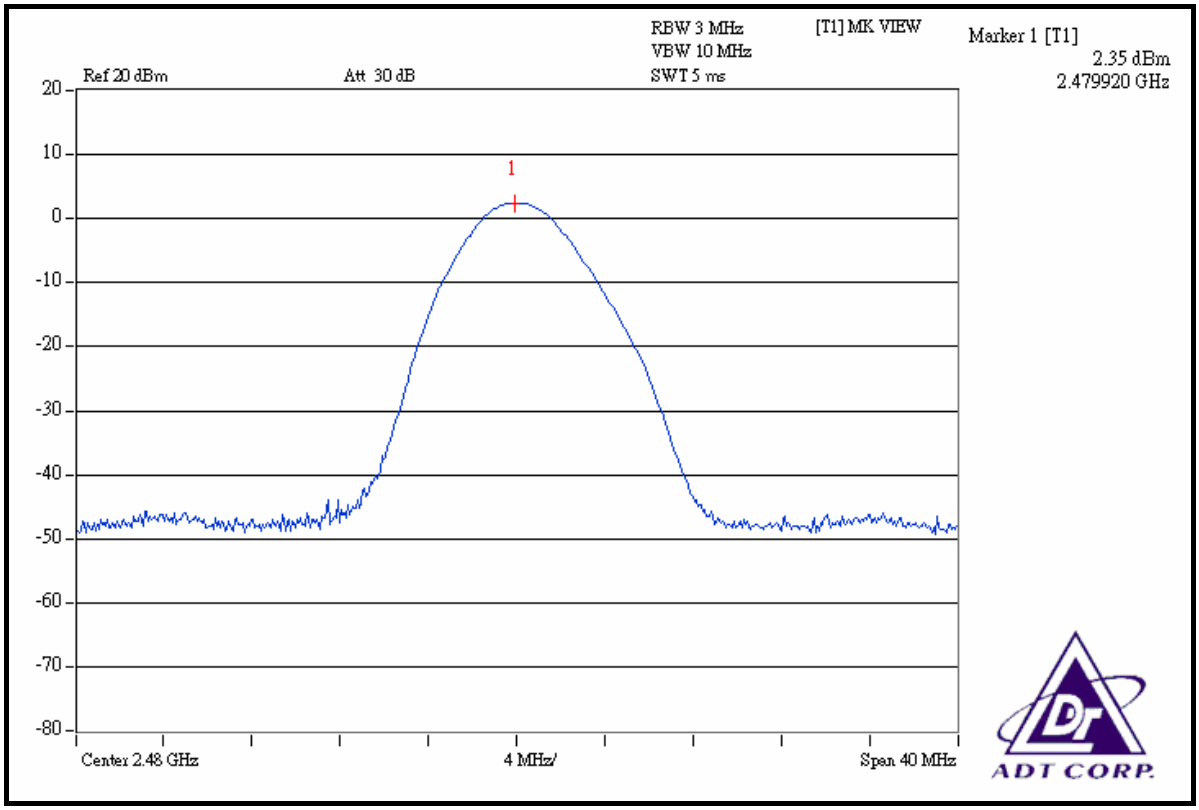
CH 0



CH 39


RBW 3 MHz
VBW 10 MHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
2.45 dBm
2.440760 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 2.441 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 78


RBW 3 MHz
VBW 10 MHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
2.35 dBm
2.479920 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 2.48 GHz
4 MHz/
Span 40 MHz
ADT CORP.

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.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSPB50	100040	Jun. 28, 2008

NOTES: 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 lose 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.

4.8.6 TEST RESULTS

The spectrum plots are attached on the following 8 images. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

GFSK MODULATION

NOTE 1: The band edge emission plot on the next page shows 51.35dBc between carrier maximum power and local maximum emission in restrict band (2.3460GHz). The emission of carrier strength list in the test result of channel 0 at the item 4.2.7 is 96.57dBuV/m (Peak), so the maximum field strength in restrict band is 96.57 – 51.35 = 45.22dBuV/m, which is under 74dBuV/m limit.

Average value = 45.22 – 30.10 = 15.12dBuV/m, which is under 54dBuV/m limit.

*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 correction factor be equal to: 20log(3.125/100)= -30.1 dB.

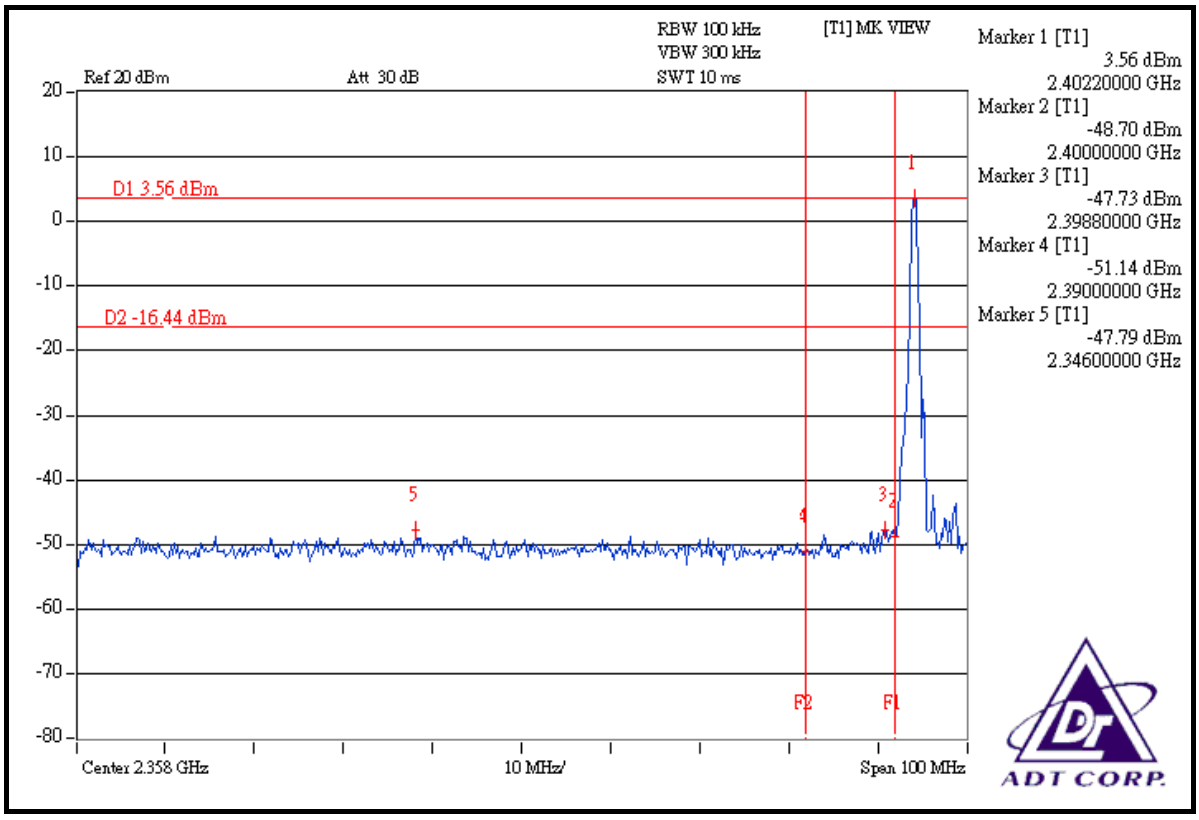
Average value = peak reading – 30.1

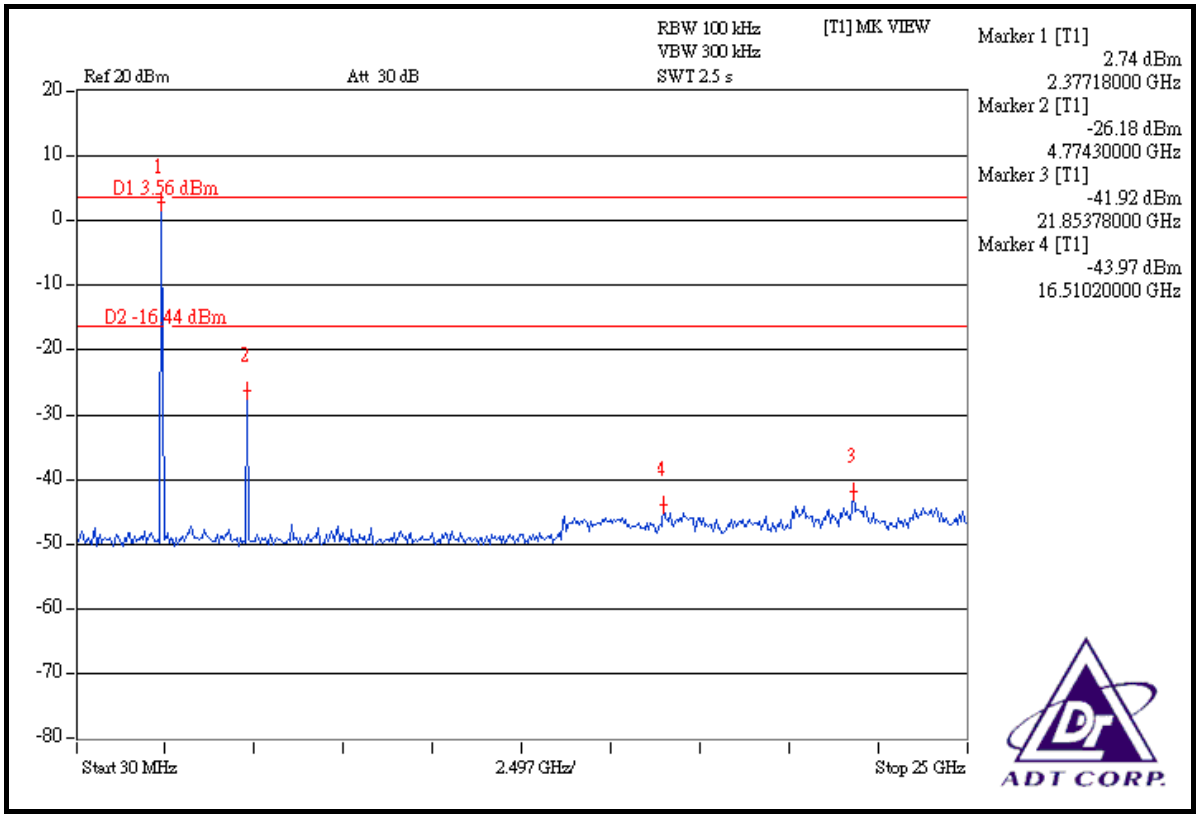
NOTE 2: The band edge emission plot on the next second page shows 45.46dBc between carrier maximum power and local maximum emission in restrict band (2.4846GHz). The emission of carrier strength list in the test result of channel 78 at the item 4.2.7 is 93.64dBuV/m (Peak), so the maximum field strength in restrict band is 93.64 – 45.46 = 48.18dBuV/m, which is under 74 dBuV/m limit.

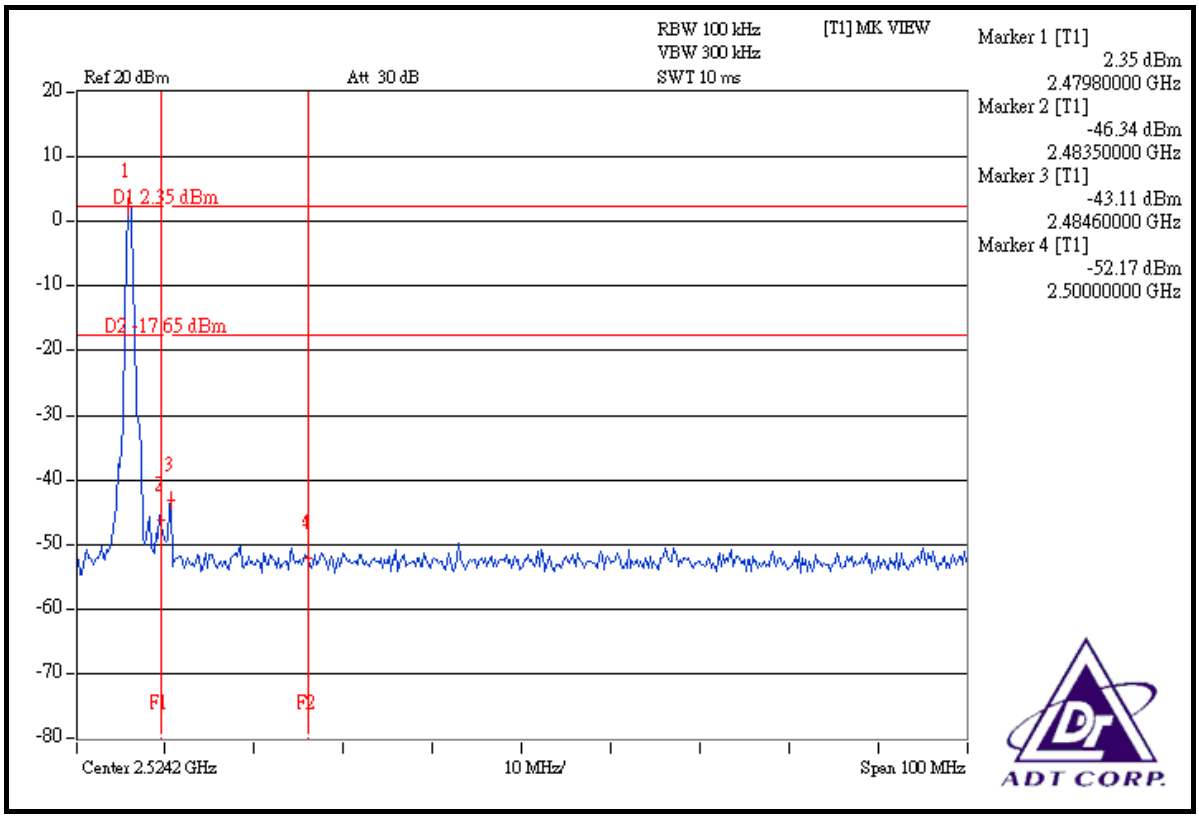
Average value =48.18 – 30.10 = 18.08dBuV/m, which is under 54dBuV/m limit.

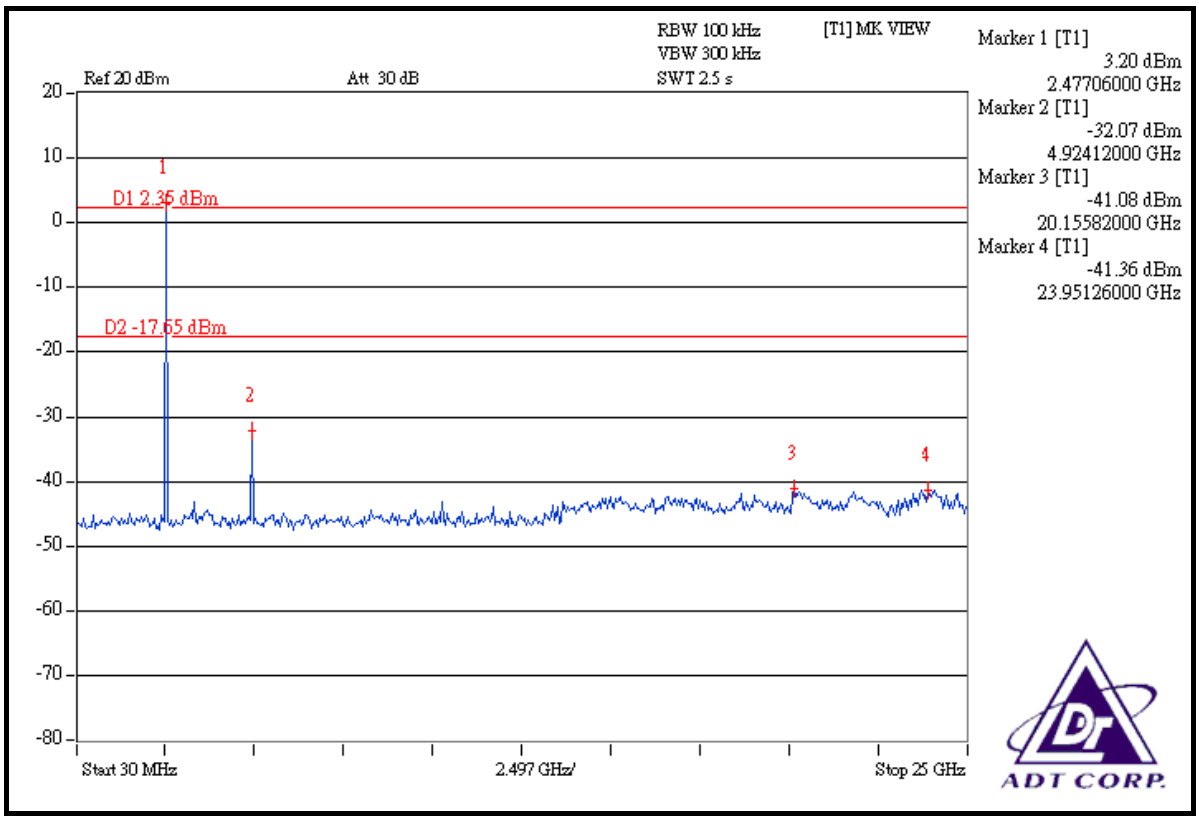
*The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correction factor be equal to: 20log(3.125/100)= -30.1 dB.

Average value = peak reading – 30.1


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 3.56 dBm
D2 -16.44 dBm
Marker 1 [T1]
3.56 dBm
2.40220000 GHz
Marker 2 [T1]
-48.70 dBm
2.40000000 GHz
Marker 3 [T1]
-47.73 dBm
2.39880000 GHz
Marker 4 [T1]
-51.14 dBm
2.39000000 GHz
Marker 5 [T1]
-47.79 dBm
2.34600000 GHz
F2
F1
Center 2.358 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 3.56 dBm
D2 -16.44 dBm
Marker 1 [T1]
2.74 dBm
2.37718000 GHz
Marker 2 [T1]
-26.18 dBm
4.77430000 GHz
Marker 3 [T1]
-41.92 dBm
21.85378000 GHz
Marker 4 [T1]
-43.97 dBm
16.51020000 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 2.35 dBm
D2 -17.65 dBm
F1
F2
Center 2.5242 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
2.35 dBm
2.47980000 GHz
Marker 2 [T1]
-46.34 dBm
2.48350000 GHz
Marker 3 [T1]
-43.11 dBm
2.48460000 GHz
Marker 4 [T1]
-52.17 dBm
2.50000000 GHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 2.35 dBm
D2 -17.65 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz
Marker 1 [T1]
3.20 dBm
2.47706000 GHz
Marker 2 [T1]
-32.07 dBm
4.92412000 GHz
Marker 3 [T1]
-41.08 dBm
20.15582000 GHz
Marker 4 [T1]
-41.36 dBm
23.95126000 GHz
ADT CORP.

8DPSK MODULATION

NOTE 1: The band edge emission plot on the next page shows 51.28dBc between carrier maximum power and local maximum emission in restrict band (2.3830GHz). The emission of carrier strength list in the test result of channel 0 at the item 4.2.7 is 94.90dBuV/m (Peak), so the maximum field strength in restrict band is 94.90 – 51.28 = 43.62dBuV/m, which is under 74 dBuV/m limit.

Average value = 43.62 – 30.10 = 13.52dBuV/m, which is under 54dBuV/m limit.

*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 be equal to: 20log(3.125/100)= -30.1 dB.

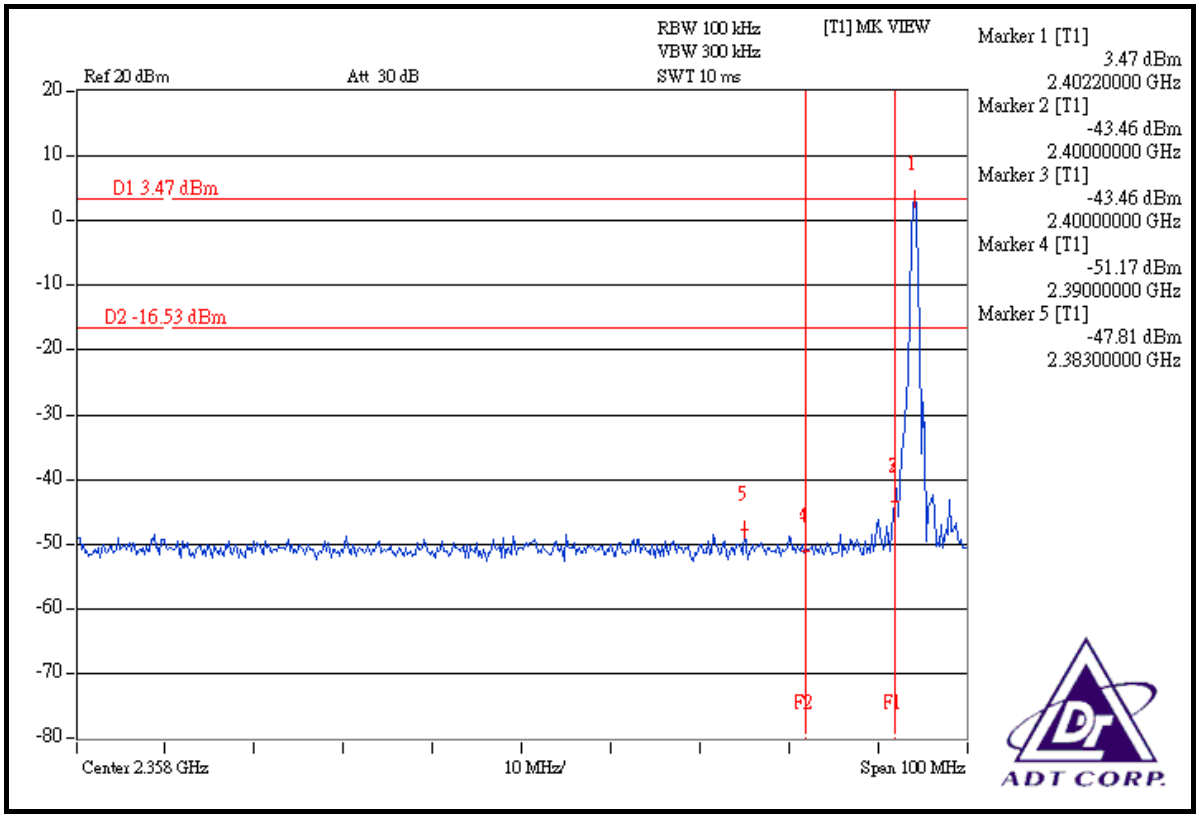
Average value = peak reading – 30.1

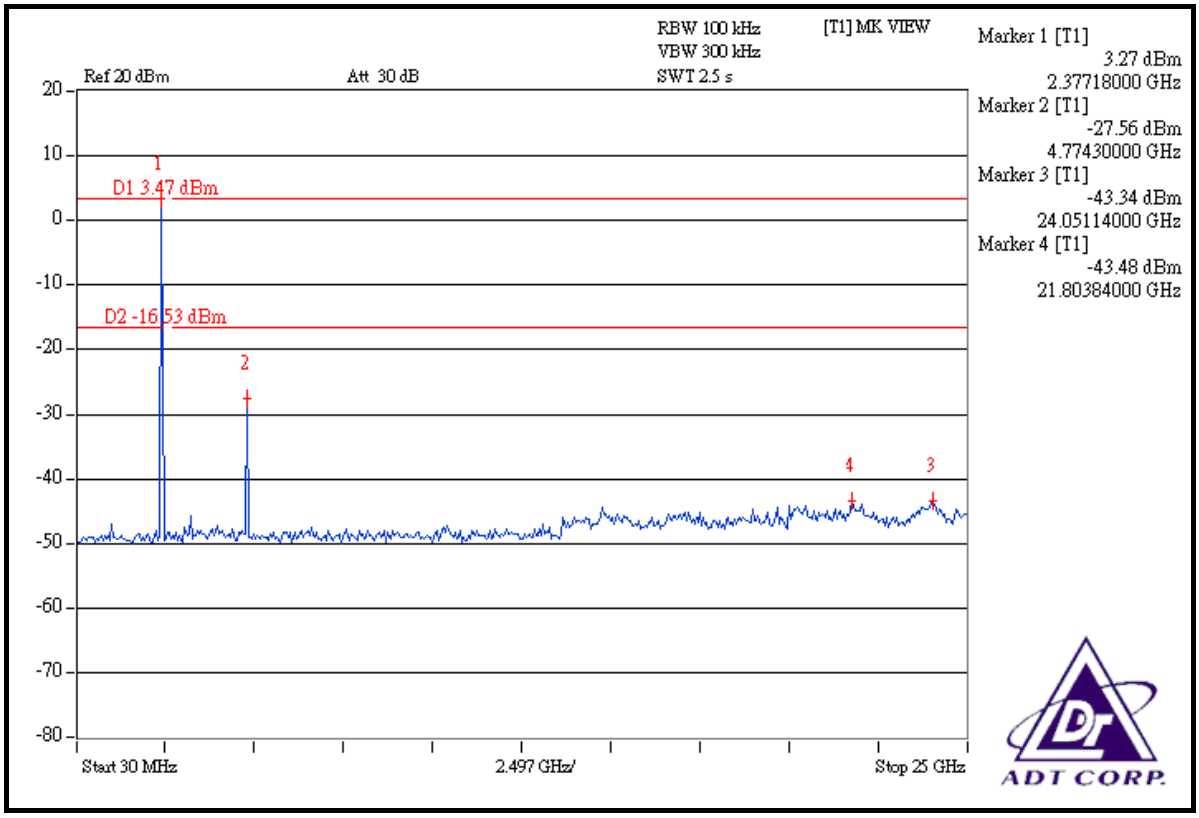
NOTE 2: The band edge emission plot on the next second page shows 45.28dBc between carrier maximum power and local maximum emission in restrict band (2.4840GHz). The emission of carrier strength list in the test result of channel 78 at the item 4.2.7 is 91.56dBuV/m (Peak), so the maximum field strength in restrict band is 91.56 – 45.28 = 46.28dBuV/m, which is under 74 dBuV/m limit.

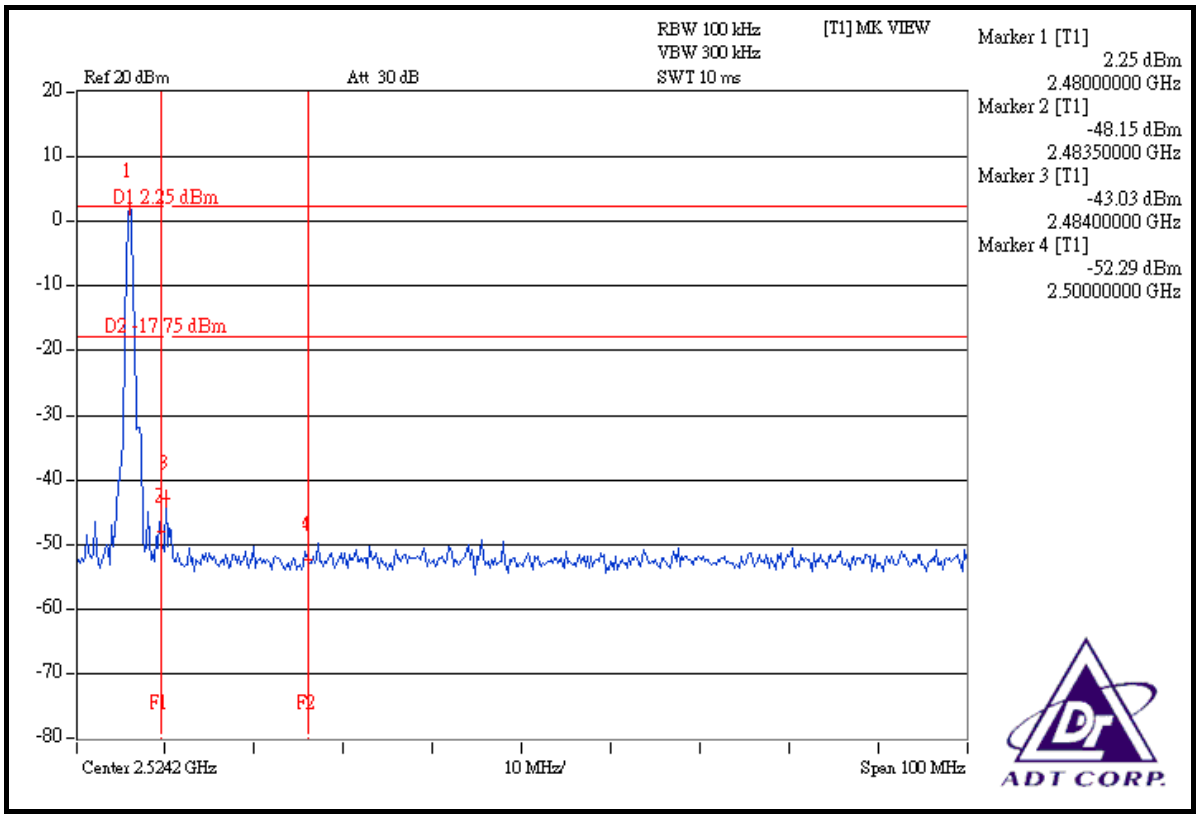
Average value = 46.28 – 30.10 = 16.18dBuV/m, which is under 54dBuV/m limit.

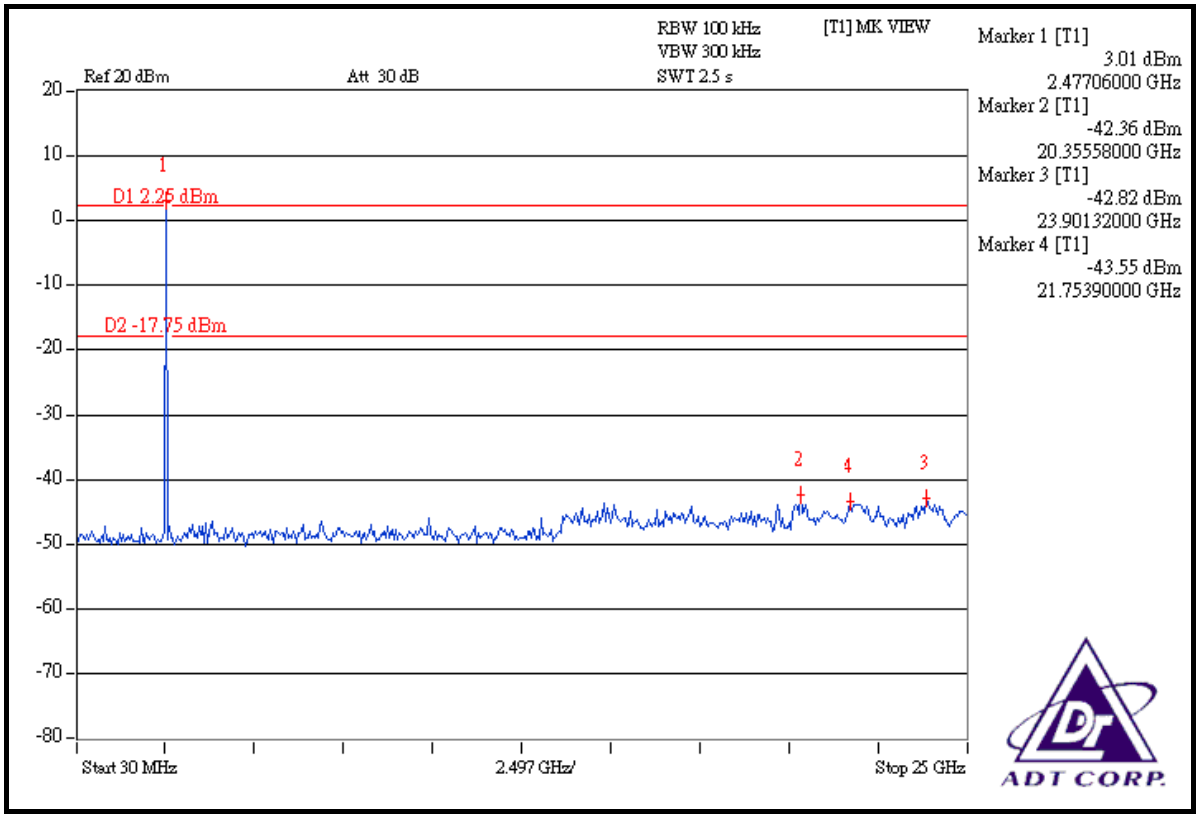
*The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle be equal to: 20log(3.125/100)= -30.1 dB.

Average value = peak reading – 30.1


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 3.47 dBm
D2 -16.53 dBm
Marker 1 [T1]
3.47 dBm
2.40220000 GHz
Marker 2 [T1]
-43.46 dBm
2.40000000 GHz
Marker 3 [T1]
-43.46 dBm
2.40000000 GHz
Marker 4 [T1]
-51.17 dBm
2.39000000 GHz
Marker 5 [T1]
-47.81 dBm
2.38300000 GHz
F2
F1
Center 2.358 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 3.47 dBm
D2 -16.53 dBm
Marker 1 [T1]
3.27 dBm
2.37718000 GHz
Marker 2 [T1]
-27.56 dBm
4.77430000 GHz
Marker 3 [T1]
-43.34 dBm
24.05114000 GHz
Marker 4 [T1]
-43.48 dBm
21.80384000 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 2.25 dBm
D2 -17.75 dBm
F1
F2
Center 2.5242 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
2.25 dBm
2.48000000 GHz
Marker 2 [T1]
-48.15 dBm
2.48350000 GHz
Marker 3 [T1]
-43.03 dBm
2.48400000 GHz
Marker 4 [T1]
-52.29 dBm
2.50000000 GHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 2.25 dBm
D2 -17.75 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz
Marker 1 [T1]
3.01 dBm
2.47706000 GHz
Marker 2 [T1]
-42.36 dBm
20.35558000 GHz
Marker 3 [T1]
-42.82 dBm
23.90132000 GHz
Marker 4 [T1]
-43.55 dBm
21.75390000 GHz

4.9 ANTENNA REQUIREMENT

4.9.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.9.2 ANTENNA CONNECTED CONSTRUCTION

The antennas used in this product is Chip antenna that without antenna connector. The maximum gain of this antenna is 2.3dBi.

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	TAF, BSMI, NCC
Netherlands	Telefication
Singapore	GOST-ASIA(MOU)
Russia	CERTIS(MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Web Site: www.adt.com.tw

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

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.