



A D T

FCC TEST REPORT

REPORT NO.: RF110309E06-2

MODEL NO.: ARS263

FCC ID: PPD-ARS263

RECEIVED: Mar. 09, 2011

TESTED: Mar. 24 to Apr. 07, 2011

ISSUED: Apr. 15, 2011

APPLICANT: Atheros Communications, Inc.

ADDRESS: 1700 Technology Drive, San Jose, CA 95110

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

LAB ADDRESS: No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

TEST LOCATION (1): No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

TEST LOCATION (2): No.49, Ln. 206, Wende Rd., Shangshan Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

This test report consists of 128 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by TAF or any government agencies. The test results in the report only apply to the tested sample.



TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1 CERTIFICATION	5
2 SUMMARY OF TEST RESULTS.....	6
2.1 MEASUREMENT UNCERTAINTY	7
3 GENERAL INFORMATION	8
3.1 GENERAL DESCRIPTION OF EUT.....	8
3.2 DESCRIPTION OF ANTENNA.....	10
3.3 DESCRIPTION OF TEST MODES.....	11
3.4 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:	12
3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS	15
3.6 DESCRIPTION OF SUPPORT UNITS	16
3.7 CONFIGURATION OF SYSTEM UNDER TEST.....	17
4 TEST PROCEDURES AND RESULTS	18
4.1 CONDUCTED EMISSION MEASUREMENT	18
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	18
4.1.2 TEST INSTRUMENTS.....	18
4.1.3 TEST PROCEDURES	19
4.1.4 TEST SETUP	19
4.1.5 EUT OPERATING CONDITIONS.....	20
4.1.6 TEST RESULTS	21
4.2 NUMBER OF HOPPING FREQUENCY USED	23
4.2.1 LIMIT OF HOPPING FREQUENCY USED.....	23
4.2.2 TEST INSTRUMENTS.....	23
4.2.3 TEST PROCEDURES	23
4.2.4 DEVIATION FROM TEST STANDARD	23
4.2.5 TEST SETUP	24
4.2.6 TEST RESULTS	24
4.3 DWELL TIME ON EACH CHANNEL	29
4.3.1 LIMIT OF DWELL TIME USED	29
4.3.2 TEST INSTRUMENTS.....	29
4.3.3 TEST PROCEDURES	30
4.3.4 DEVIATION FROM TEST STANDARD	30
4.3.5 TEST SETUP	30
4.3.6 TEST RESULTS	31
4.4 CHANNEL BANDWIDTH	45
4.4.1 LIMITS OF CHANNEL BANDWIDTH	45
4.4.2 TEST INSTRUMENTS.....	45
4.4.3 TEST PROCEDURE.....	45
4.4.4 DEVIATION FROM TEST STANDARD	45
4.4.5 TEST SETUP	46
4.4.6 EUT OPERATING CONDITION.....	46
4.4.7 TEST RESULTS	47
4.5 HOPPING CHANNEL SEPARATION	55
4.5.1 LIMIT OF HOPPING CHANNEL SEPARATION.....	55

**A D T**

4.5.2	TEST INSTRUMENTS.....	55
4.5.3	TEST PROCEDURES	55
4.5.4	DEVIATION FROM TEST STANDARD	56
4.5.5	TEST SETUP	56
4.5.6	TEST RESULTS	57
4.6	MAXIMUM PEAK OUTPUT POWER	65
4.6.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	65
4.6.2	INSTRUMENTS	65
4.6.3	TEST PROCEDURES	65
4.6.4	DEVIATION FROM TEST STANDARD	65
4.6.5	TEST SETUP	66
4.6.6	EUT OPERATING CONDITION	66
4.6.7	TEST RESULTS	67
4.7	AVERAGE OUTPUT POWER.....	75
4.7.1	FOR REFERENCE	75
4.7.2	INSTRUMENTS	75
4.7.3	TEST PROCEDURES	75
4.7.4	TEST SETUP	75
4.7.5	EUT OPERATING CONDITION	75
4.7.6	TEST RESULTS	76
4.8	RADIATED EMISSION MEASUREMENT	77
4.8.1	LIMITS OF RADIATED EMISSION MEASUREMENT	77
4.8.2	TEST INSTRUMENTS.....	79
4.8.3	TEST PROCEDURES	81
4.8.4	DEVIATION FROM TEST STANDARD	81
4.8.5	TEST SETUP	82
4.8.6	TEST RESULTS (FOR TRANSMITTER PART).....	83
4.8.6.1	TEST RESULTS (BLUETOOTH TRADITIONAL GFSK/ $\pi/4$ -DQPSK/ 8DPSK)	83
4.8.6.2	TEST RESULTS (BLUETOOTH ADDITIONAL GFSK)	98
4.8.7	TEST RESULTS (FOR RECEIVER PART).....	106
4.8.7.1	TEST RESULTS (BLUETOOTH TRADITIONAL GFSK/ $\pi/4$ -DQPSK/ 8DPSK)	106
4.8.7.2	TEST RESULTS (BLUETOOTH ADDITIONAL GFSK)	110
4.9	CONDUCTED OUT-BAND EMISSION MEASUREMENT.....	114
4.8.1	LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT.....	114
4.8.2	TEST INSTRUMENTS.....	114
4.8.3	TEST PROCEDURE.....	114
4.8.4	DEVIATION FROM TEST STANDARD	114
4.9.1	TEST SETUP	114
4.8.5	EUT OPERATING CONDITION	114
4.8.6	TEST RESULTS	115
5	INFORMATION ON THE TESTING LABORATORIES.....	127
6	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	128



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	NA	Apr. 15, 2011



A D T

1 CERTIFICATION

PRODUCT : 1x1 802.11a/b/g/n +BT SDIO-WLAN/USB-BT Card
BRAND NAME : Atheros
MODEL NO. : ARS263
TEST SAMPLE : R&D SAMPLE
APPLICANT : Atheros Communications, Inc.
TESTED : Mar. 24 to Apr. 07, 2011
STANDARDS : FCC Part 15, Subpart C (Section 15.247),
ANSI C63.4-2003
ANSI C63.10-2009
Canada RSS-210 Issue 8 (2010-12)
Canada RSS-Gen Issue 3 (2010-12)

The above equipment (Model: ARS263) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and was in 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 : Carol Liao , **DATE:** Apr. 15, 2011
(Carol Liao, Specialist)

APPROVED BY : May Chen , **DATE:** Apr. 15, 2011
(May Chen, Deputy Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C, Canada RSS-210/ RSS-GEN					
Standard Section			Test Type and Limit	Result	REMARK
RSS-210	RSS-Gen	FCC Part 15			
-	7.2.4	15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -33.87dB at 3.324MHz
A8.1(d)	-	15.247(a)(1)(I)-(ii)	Number of Hopping Frequency Used Spec.: At least 15 channels	PASS	Meet the requirement of limit
A8.1(d)	-	15.247(a)(1)(ii)	Dwell Time on Each Channel Spec. : Max. 0.4 second within 30 second	PASS	Meet the requirement of limit
A8.1(b)	-	15.247(a)(1)(I)-(ii)	Hopping Channel Separation Spec. : Min. 25 kHz or two-thirds of 20 dB bandwidth, which ever is greater	PASS	Meet the requirement of limit
-	4.6	15.247(a)(2)	Spectrum Bandwidth of a Frequency Hopping Spread Spectrum System	PASS	Meet the requirement of limit
A8.4(2)	-	15.247(b)	Maximum Peak Output Power Spec.: max. 125mW	PASS	Meet the requirement of limit
A8.5	4.9	15.247(c)	Transmitter Radiated Emissions FCC Limit: Table 15.209 RSS-Gen Limit: Table 5, 6	PASS	Meet the requirement of limit Minimum passing margin is -1.2dB at 298.00MHz
-	6.1	-	Receiver Radiated Emissions RSS-Gen Limit: Table 2	PASS	Meet the requirement of limit Minimum passing margin is -1.2dB at 298.00MHz
A8.5	-	15.247(c)	Conducted Out-Band Emission Measurement	PASS	Meet the requirement of limit
	7.1.4	15.203	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.45 dB
Radiated emissions (30MHz-1GHz)	3.76 dB
Radiated emissions (1GHz -18GHz)	2.19 dB
Radiated emissions (18GHz -40GHz)	2.55 dB

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	1x1 802.11a/b/g/n +BT SDIO-WLAN/USB-BT Card
MODEL NO.	ARS263
FCC ID	PPD-ARS263
IC ID	4104A-ARS263
POWER SUPPLY	DC 3.3V from host equipment
MODULATION TYPE	GFSK, $\pi/4$ -DQPSK, 8DPSK
MODULATION TECHNOLOGY	FHSS
OPRTAING FREQUENCY	2402MHz ~ 2480MHz
NUMBER OF CHANNEL	For Bluetooth 2.1+ EDR: 79 For Bluetooth 4.0: 40 (37 hopping + 3 advertising channel)
MAXIMUM OUTPUT POWER	GFSK: 8.1 mW 8DPSK: 16.2 mW $\pi/4$ – DQPSK: 14.5 mW
ANTENNA TYPE	See item 3.2
ANTENNA CONNECTOR	See item 3.2
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. There are Bluetooth technology and WLAN technology used for the EUT. <the WLAN test data please refer "RF990309E06 and RF990309E06-1">
2. The Bluetooth version 4.0 supports traditional GFSK and additional GFSK modulation.
3. There are two versions of EUT, The only difference is version 132C has SFLASH installed. And there is no SFLASH in version 132A. The worst-case scenario has been investigated with the same power level and found no difference. The test data reflects the worst-case scenarios.

4. For radiated : The EUT's antenna was pre-tested under the following modes:

Test Mode	Description
Mode A	X-Y axis
Mode B	Y-Z axis
Mode C	X-Z axis

From the above modes, the worst case was found in **Mode A**. Therefore only the test data of the mode was recorded in this report.

5. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

3.2 DESCRIPTION OF ANTENNA

There are two sets of antennas provided to this EUT, please refer to the following table:

Set 1:

No.	Brand	Model	Antenna Type	Connector	Antenna Gain (dBi)< included cable loss>			
					For 2.4GHz	For 5GHz (5.15~5.35)	For 5GHz (5.47~5.725)	For 5GHz (5.725~5.85)
1&2	WNC	81-EBJ15.005	PIFA	IPEX	3.62	3.08	4.76	4.76

Cable Loss:

No.	Brand	Model	Cable Loss(dB)				Cable Length
			For 2.4GHz	For 5GHz (5.15~5.35)	For 5GHz (5.47~5.725)	For 5GHz (5.725~5.85)	
1&2	WNC	81-EBJ15.005	1.15	1.70	1.74	1.79	300

Set 2:

No.	Brand	Model	Antenna Type	Connector	Antenna Gain (dBi)< included cable loss>			
					For 2.4GHz	For 5GHz (5.15~5.35)	For 5GHz (5.47~5.725)	For 5GHz (5.725~5.85)
1&2	WNC	81.ED415.001	PIFA	IPEX	1.48	5.56	5.34	3.14

Cable Loss:

No.	Brand	Model	Cable Loss(dB)				Cable Length
			For 2.4GHz	For 5GHz (5.15~5.35)	For 5GHz (5.47~5.725)	For 5GHz (5.725~5.85)	
1&2	WNC	81.ED415.001	0.96	1.29	1.36	1.38	300

Note:

1. Above antenna gains of antenna are Total (H+V).
2. All of antenna can be application for WLAN and Bluetooth.
3. Antenna (model: 81-EBJ15.005) was chosen for Bluetooth, 2.4GHz & 5GHz (Band 4) final test.
4. Antenna (model: 81.ED415.001) was chosen for 5GHz (Band 1~3) final test.

3.3 DESCRIPTION OF TEST MODES

For Bluetooth 2.1+ EDR: 79

Seventy-nine 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		

For Bluetooth 4.0: 40 (37 hopping + 3 advertising channel)

Forty channels are provided to this EUT.

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

3.4 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	
A	√	√	√	√	Bluetooth traditional
B		√	√	√	Bluetooth Additional

Where **PLC**: Power Line Conducted Emission

RE < 1G: Radiated Emission below 1GHz

RE ≥ 1G: Radiated Emission above 1GHz

APCM: Antenna Port Conducted Measurement

Power Line Conducted Emission Test:

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

Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type
0 to 78	78	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, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Radiated Emission Test Below 1GHz: The receiving mode has shown equal or better performance than Tx mode during the pre-scan and hence the Tx mode data is re-used for.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type	EUT CONFIGURE MODE
0 to 78	78	FHSS	8DPSK	DH5	A
0 to 39	39	FHSS	Additional GFSK	-	B

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 and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type	EUT CONFIGURE MODE
0 to 78	0, 39, 78	FHSS	GFSK	DH5	A
0 to 78	0, 39, 78	FHSS	8DPSK	DH5	A
0 to 39	0, 19, 39	FHSS	Additional GFSK	-	B
Receiver	0, 39, 78	FHSS	-	-	-
Receiver	0, 19, 39	FHSS			

Conducted Out-Band Measurement:

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

Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type	EUT CONFIGURE MODE
0 to 78	0, 78	FHSS	GFSK	DH5	A
0 to 78	0, 78	FHSS	8DPSK	DH5	A
0 to 78	0, 78	FHSS	$\pi/4$ -DQPSK	DH5	A
0 to 39	0, 39	FHSS	Additional GFSK	-	B

Antenna Port Conducted Measurement:

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

Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type	EUT CONFIGURE MODE
0 to 78	0, 39, 78	FHSS	GFSK	DH5	A
0 to 78	0, 39, 78	FHSS	8DPSK	DH5	A
0 to 78	0, 39, 78	FHSS	$\pi/4$ -DQPSK	DH5	A
0 to 39	0, 19, 39	FHSS	Additional GFSK	-	B



A D T

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE ³ 1G	22deg. C, 67%RH, 1022 hPa	120Vac, 60Hz	Kent Liu
RE<1G	19deg. C, 66%RH, 1022 hPa	120Vac, 60Hz	Rex Huang
PLC	23deg. C, 69%RH, 1022 hPa	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH, 1022 hPa	120Vac, 60Hz	Kent Liu

3.5 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

ANSI C63.10-2009

Canada RSS-210 Issue 8 (2010-12)

Canada RSS-Gen Issue 3 (2010-12)

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

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



3.6 DESCRIPTION OF SUPPORT UNITS

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

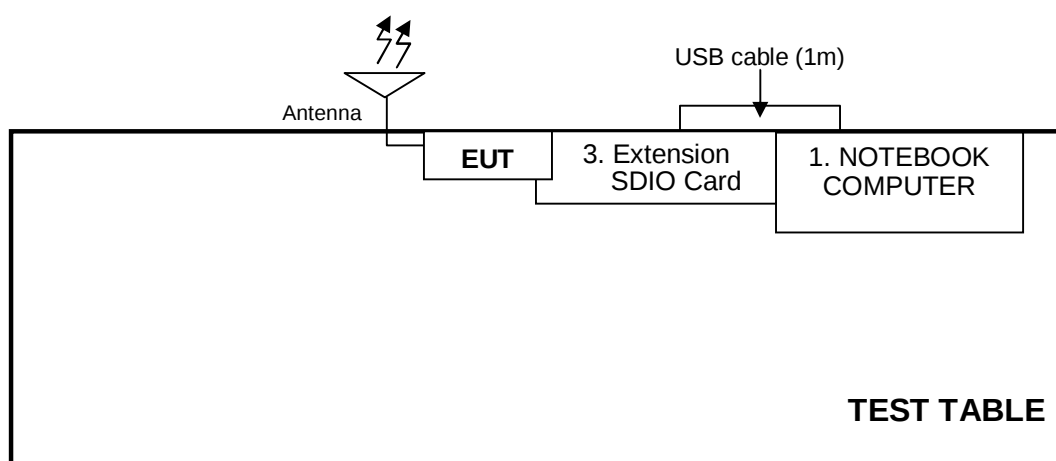
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	Notebook Computer	Lenovo	T61	L3Z9538	FCC DoC
2	ExpressCard Adapter	Atheros	NA	NA	NA
3	Extension SDIO Card	Atheros	NA	NA	NA

No.	Signal cable description
1	NA
2	NA
3	NA

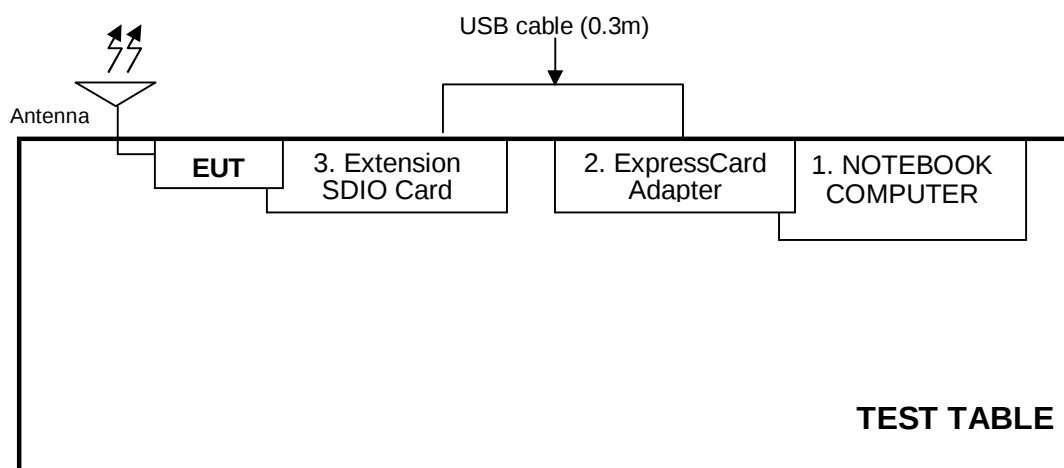
Note: The power cords of the above support units were unshielded (1.8m).

3.7 CONFIGURATION OF SYSTEM UNDER TEST

For conducted test:



For other test items:



4 TEST PROCEDURES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ 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. All emanations from a class B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 09, 2011	Mar. 08, 2012
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-522	Sep. 08, 2010	Sep. 07, 2011
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 03, 2010	Nov. 02, 2011
RF Cable (JYEBAO)	5DFB	COCCAB-002	Aug. 30, 2010	Aug. 29, 2011
50 ohms Terminator	50	3	Nov. 03, 2010	Nov. 02, 2011
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

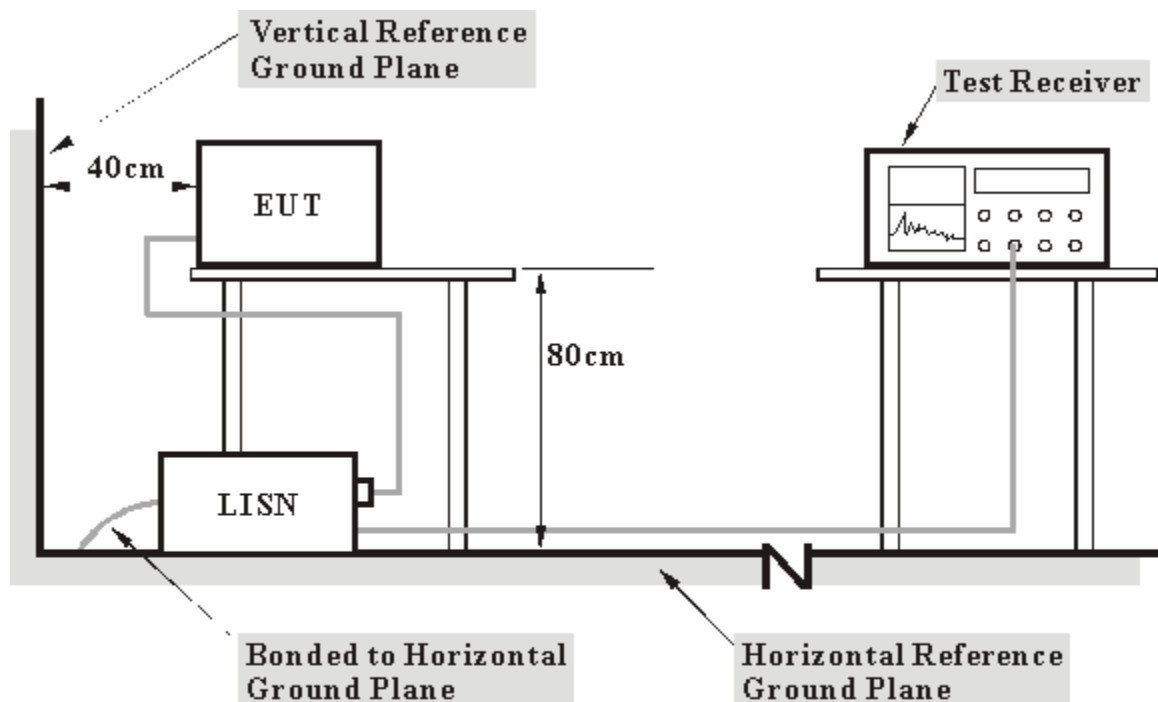
Note:

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 Shielded Room No. C.
- 3 The VCCI Con C Registration No. is C-3611.

4.1.3 TEST PROCEDURES

- The EUT/HOST was placed 0.4 meters from the conducting wall of the shielded room with EUT/HOST 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/HOST were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

4.1.4 TEST SETUP



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

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.1.5 EUT OPERATING CONDITIONS

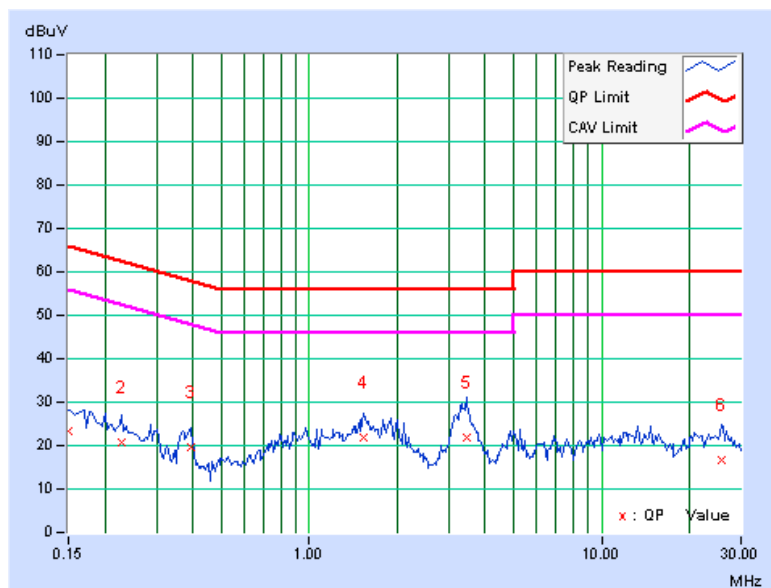
1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “BtTest_SHSys_V4_16_Egret_2p2” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.6 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
-------	----------	---------------	-------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	23.07	-	23.17	-	66.00	56.00	-42.83	-
2	0.228	0.13	20.73	-	20.86	-	62.52	52.52	-41.66	-
3	0.392	0.13	19.67	-	19.80	-	58.02	48.02	-38.22	-
4	1.543	0.15	21.72	-	21.87	-	56.00	46.00	-34.13	-
5	3.461	0.19	21.59	-	21.78	-	56.00	46.00	-34.22	-
6	25.805	0.85	15.85	-	16.70	-	60.00	50.00	-43.30	-

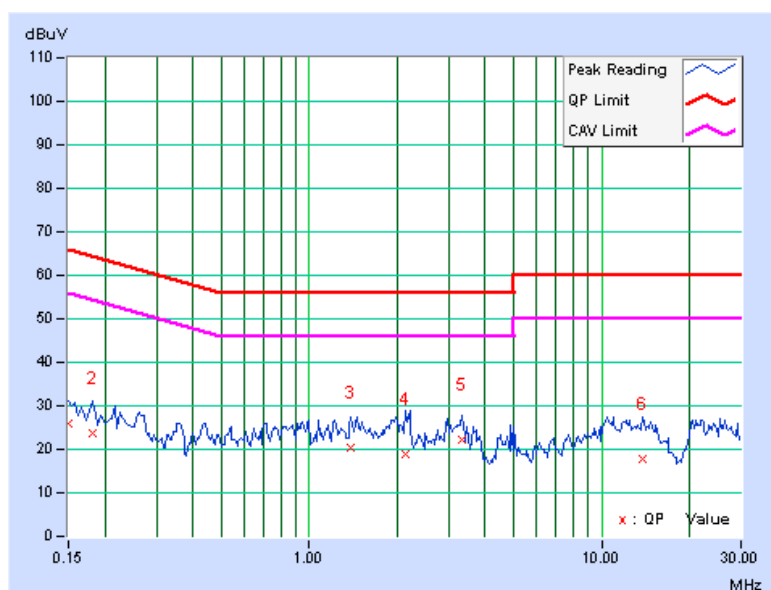
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
-------	-------------	---------------	-------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		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	0.12	25.64	-	25.76	-	66.00	56.00	-40.24	-
2	0.181	0.13	23.45	-	23.58	-	64.43	54.43	-40.85	-
3	1.395	0.17	20.27	-	20.44	-	56.00	46.00	-35.56	-
4	2.141	0.20	18.74	-	18.94	-	56.00	46.00	-37.06	-
5	3.324	0.25	21.88	-	22.13	-	56.00	46.00	-33.87	-
6	13.871	1.05	16.72	-	17.77	-	60.00	50.00	-42.23	-

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



4.2 NUMBER OF HOPPING FREQUENCY USED

4.2.1 LIMIT OF HOPPING FREQUENCY USED

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

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

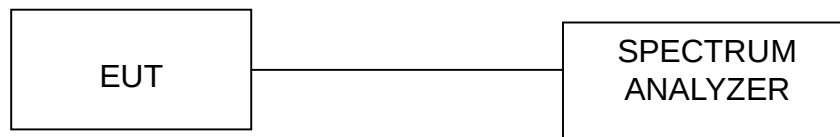
4.2.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. 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.
3. 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.
4. Set the SA on View mode and then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

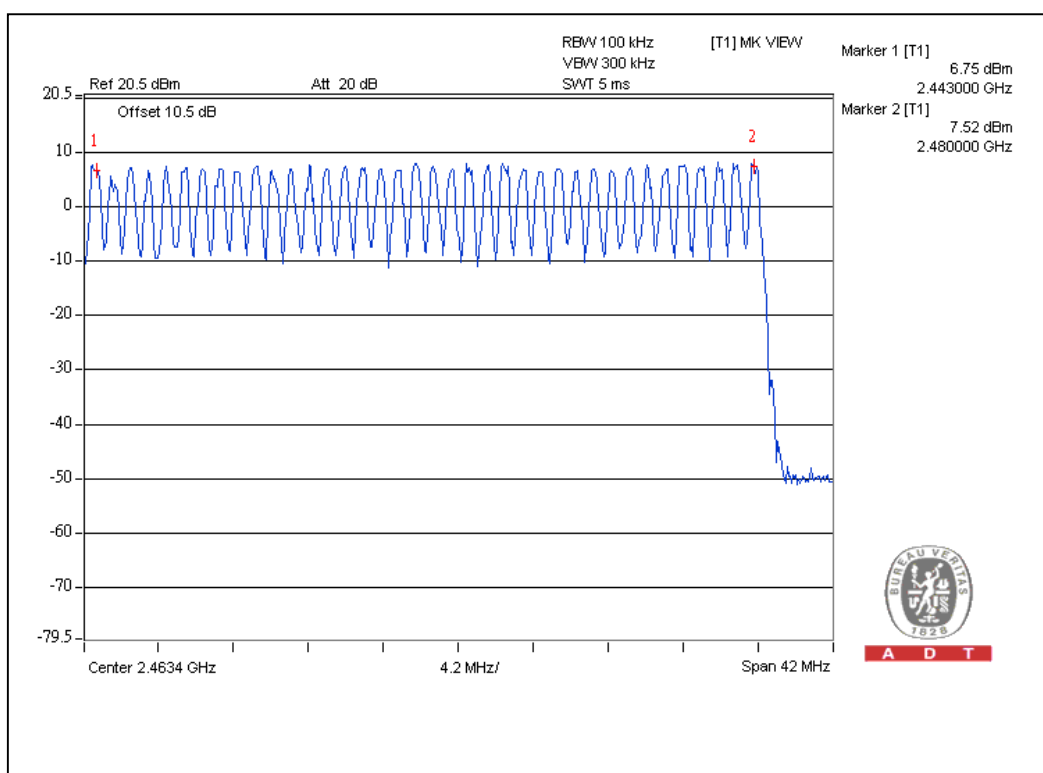
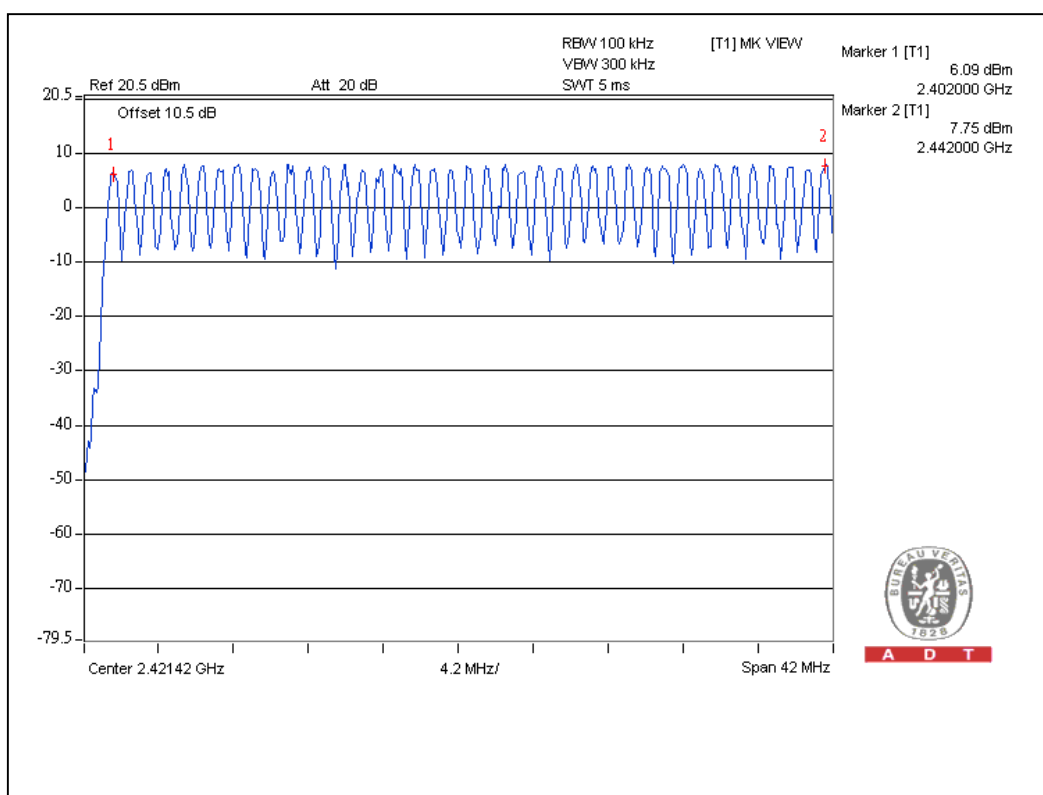
4.2.5 TEST SETUP



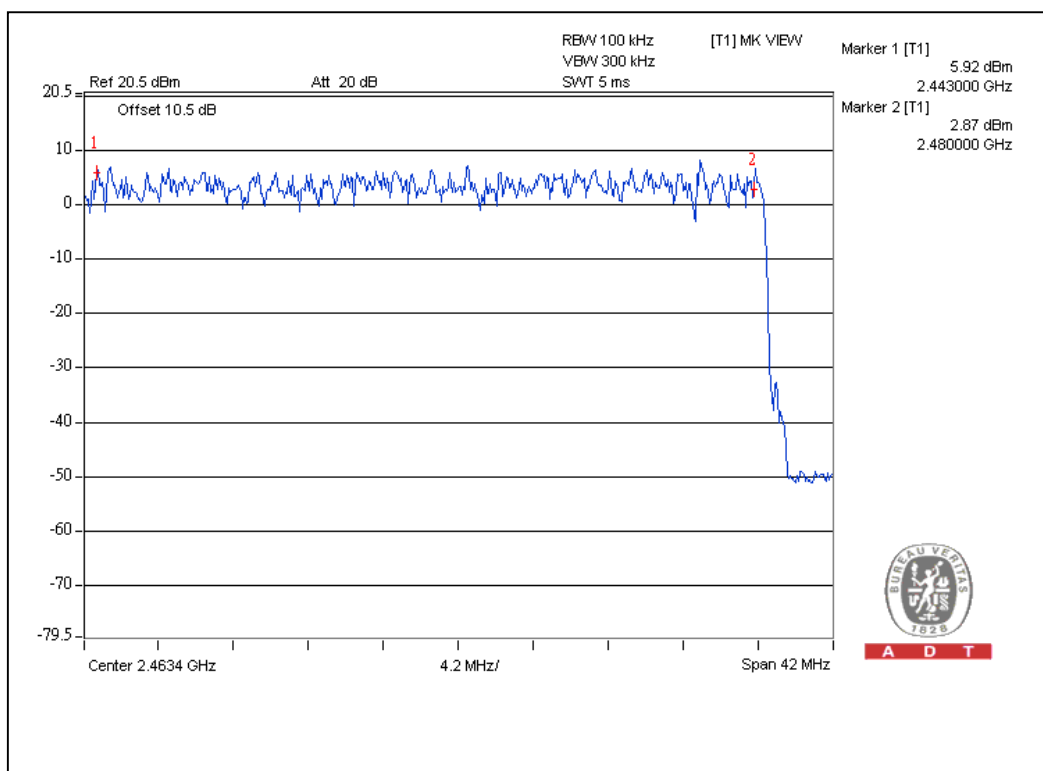
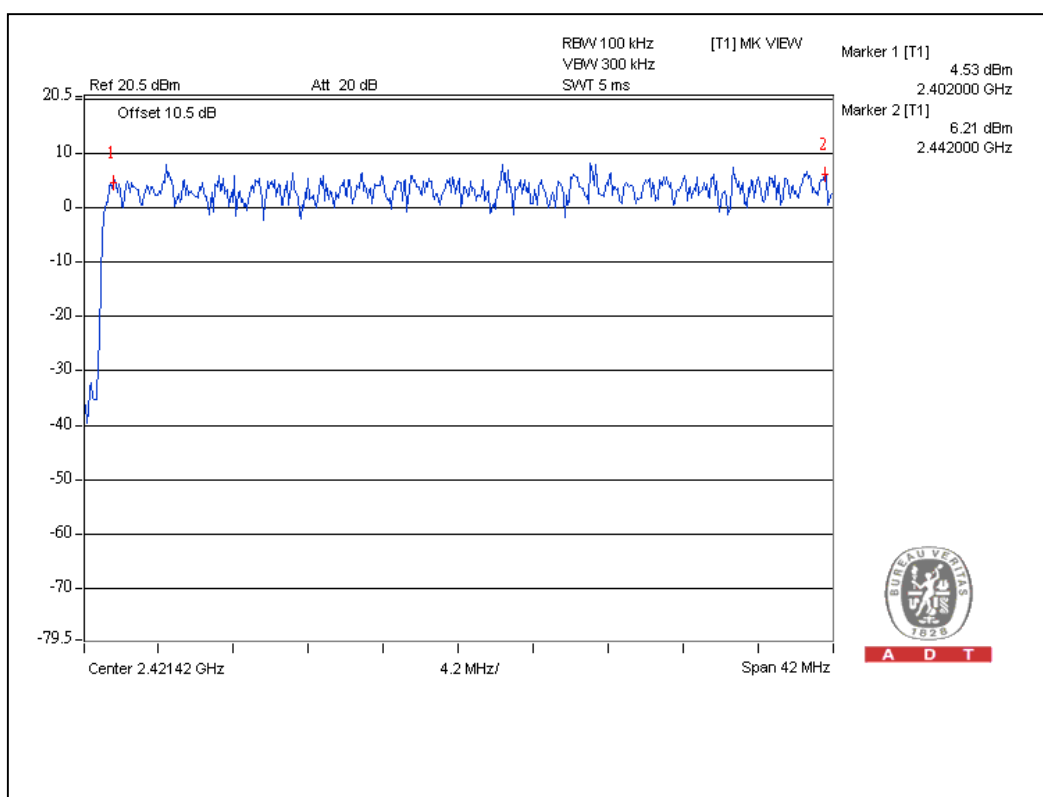
4.2.6 TEST RESULTS

There are 79 hopping frequencies for Bluetooth 2.1+ EDR and 40 hopping frequencies for Bluetooth 4.0 in the hopping mode. Please refer to next pages for the test result. On the plots, it shows that the hopping frequencies are equally spaced.

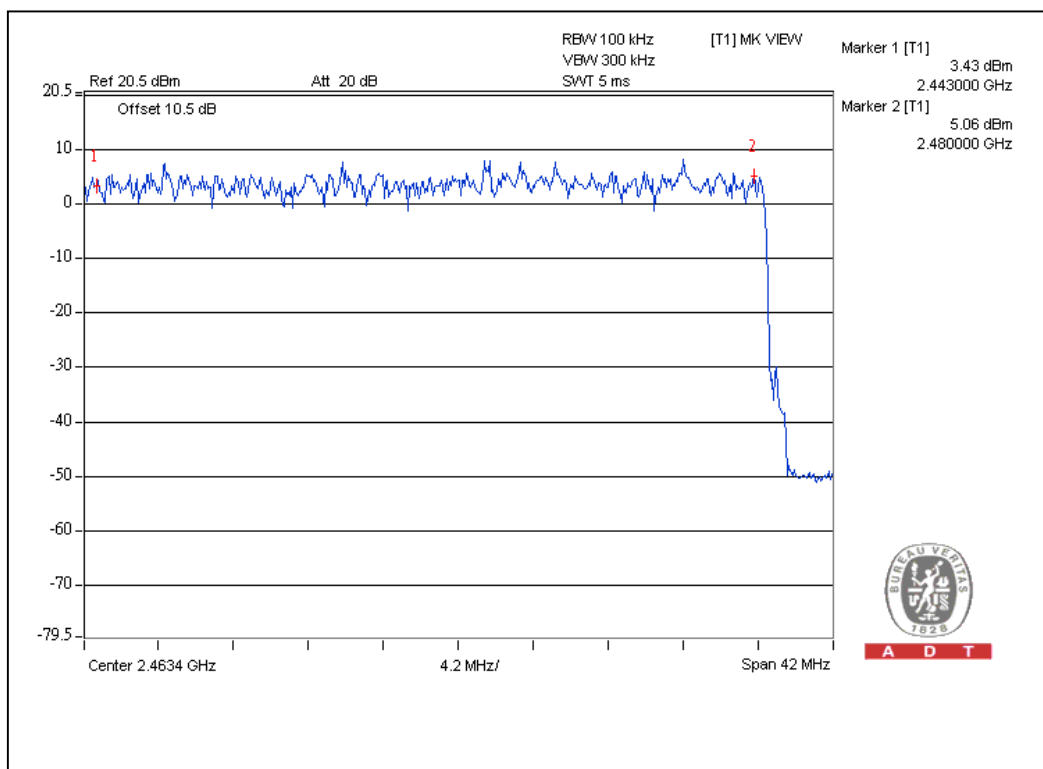
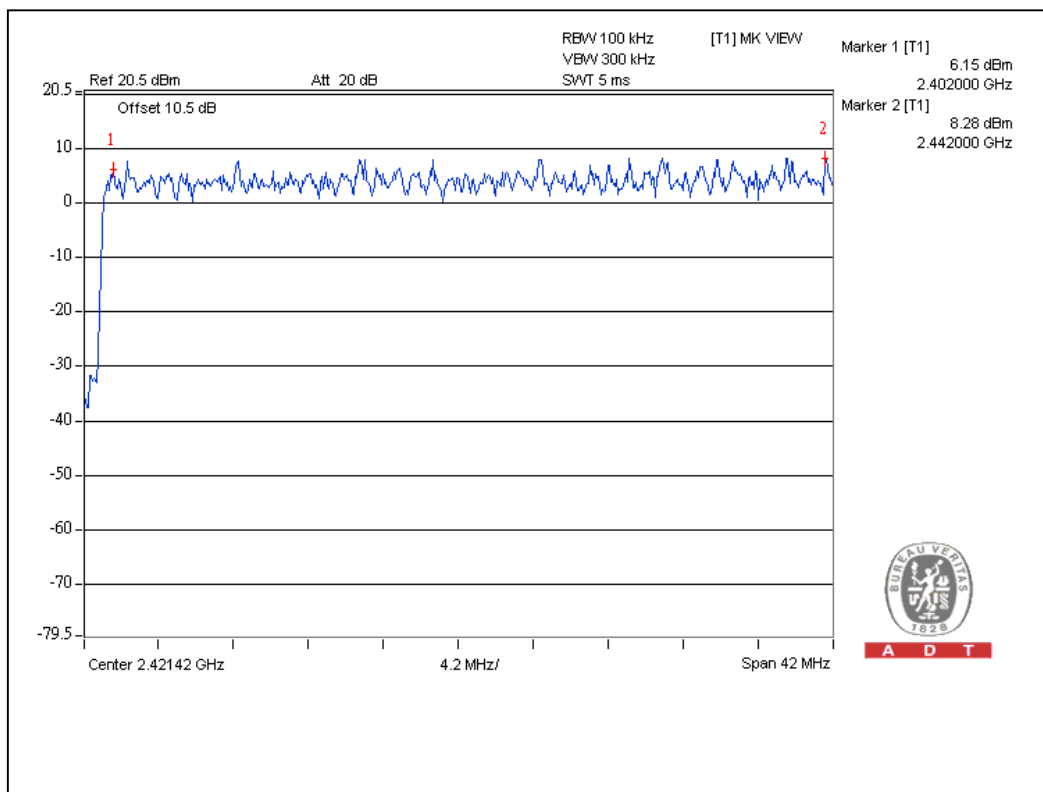
For GFSK:



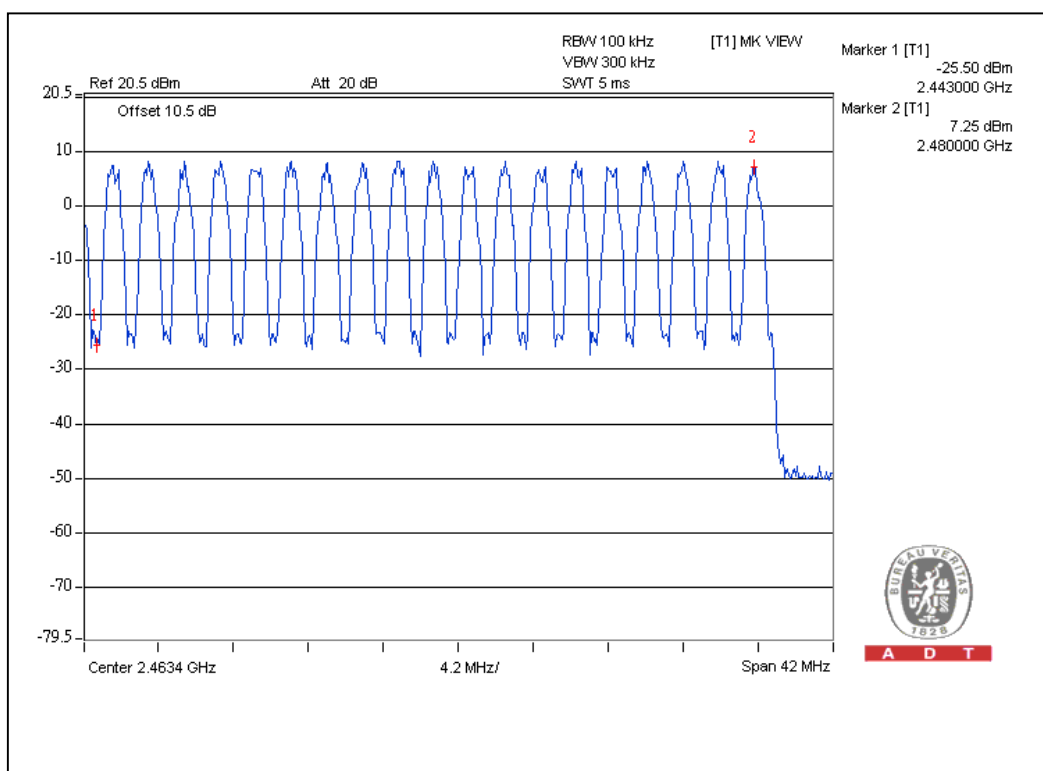
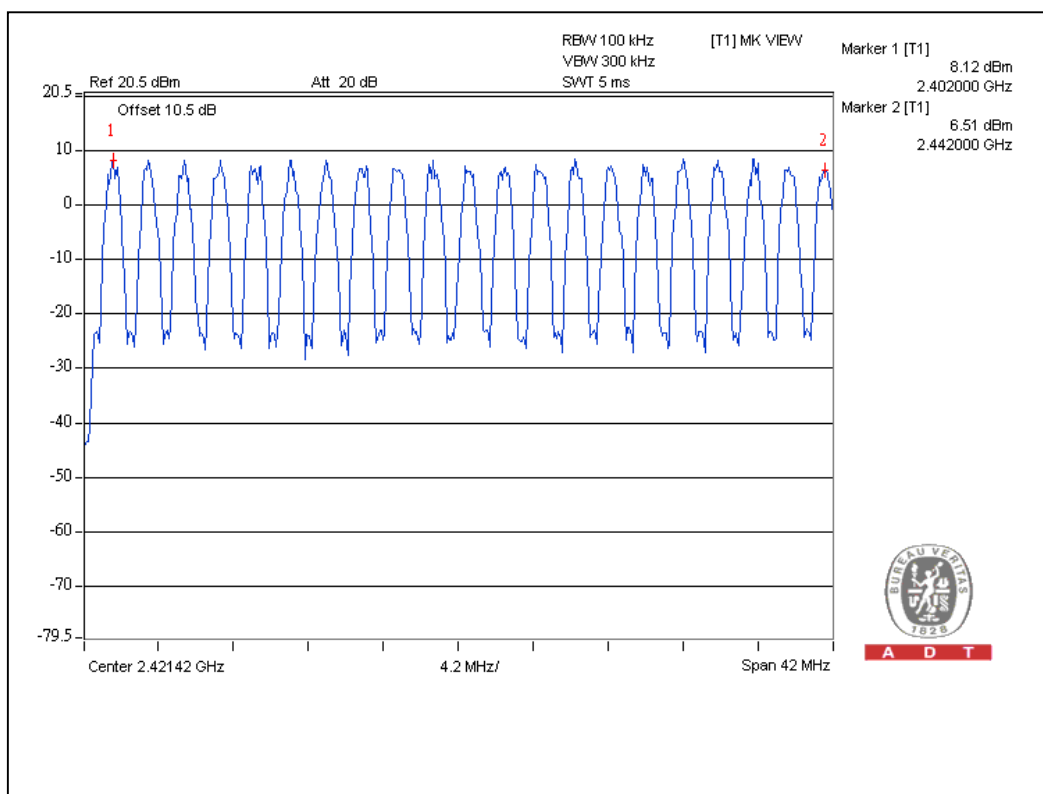
For 8DPSK:



For $\pi/4$ -DQPSK :



For additional GFSK:



4.3 DWELL TIME ON EACH CHANNEL

4.3.1 LIMIT OF DWELL TIME USED

For FHSS, 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.

Note:

The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 31.6 second period for traditional GFSK/(π /4-DQPSK) /8DPSK. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 16 second period for additional GFSK

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

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

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. 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.
3. 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.
4. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
5. 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

For GFSK:

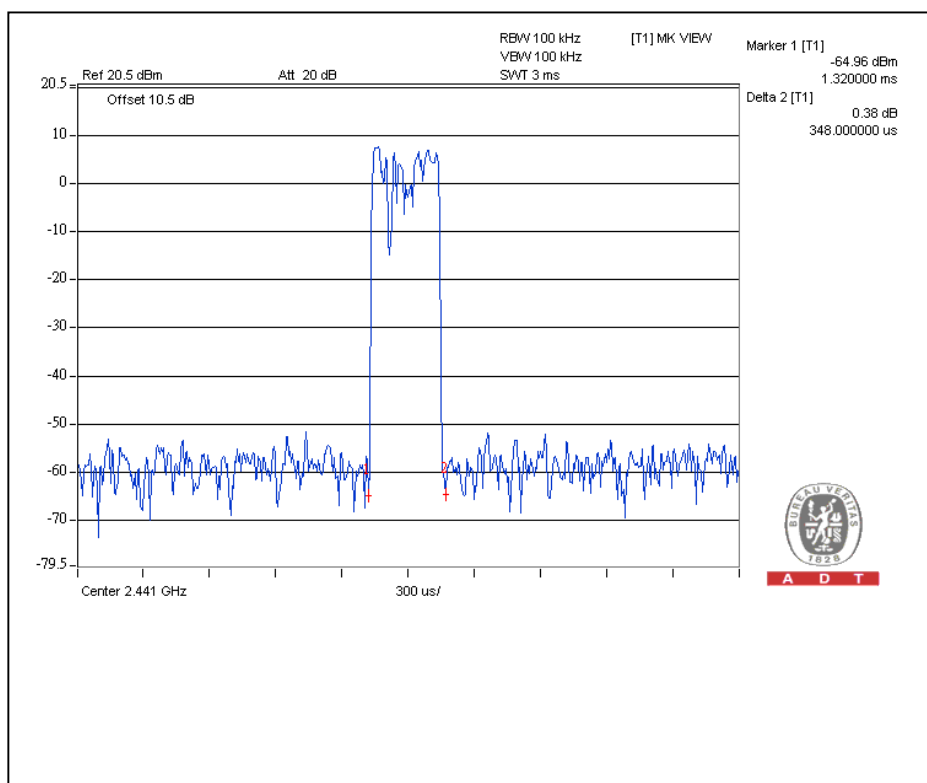
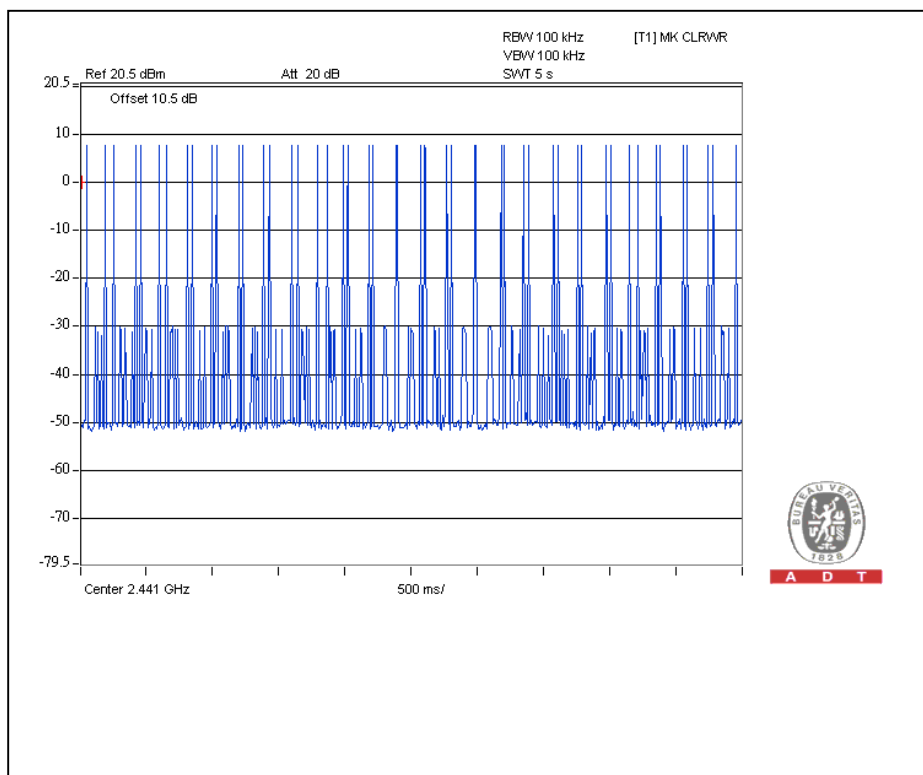
Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	48 (times / 5 sec) *6.32=303.36 times	0.348	105.57	400
DH3	26 (times / 5 sec) *6.32=164.32 times	1.716	281.97	400
DH5	18 (times / 5 sec) *6.32=113.76 times	2.990	340.14	400

Test plots of the transmitting time slot are shown on next three pages.



A D T

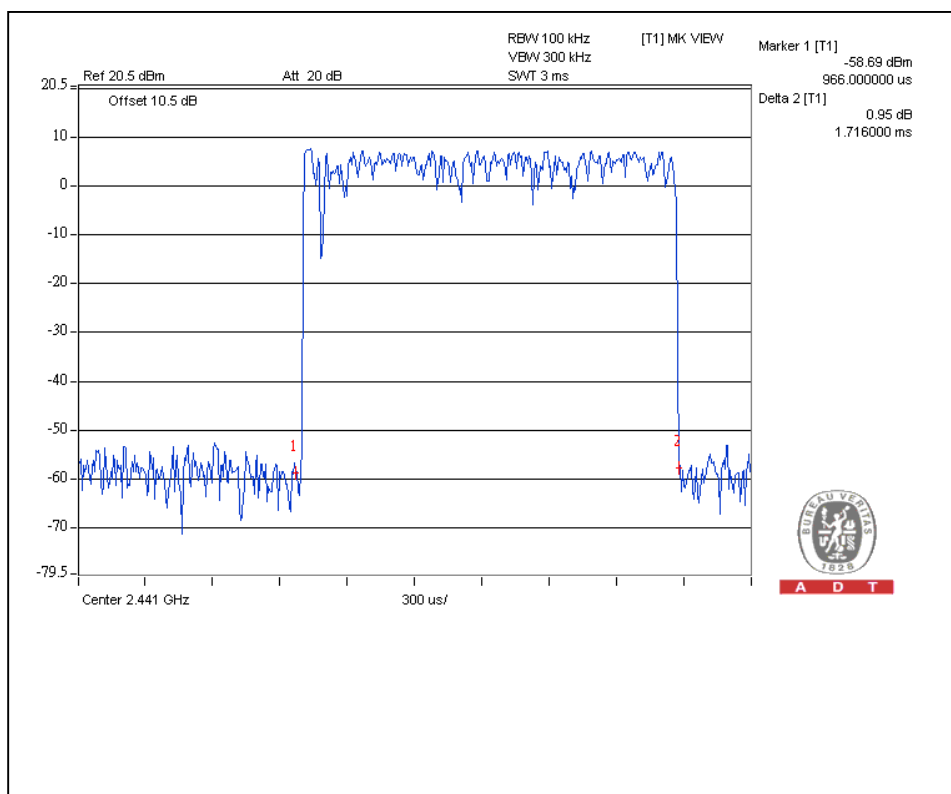
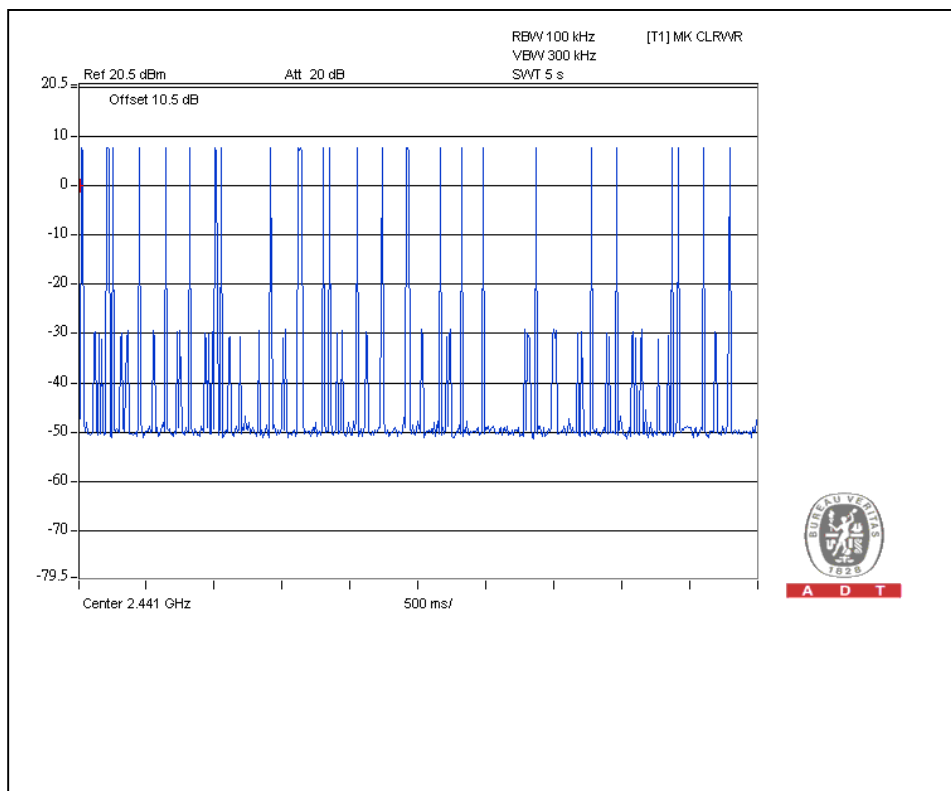
DH1





A D T

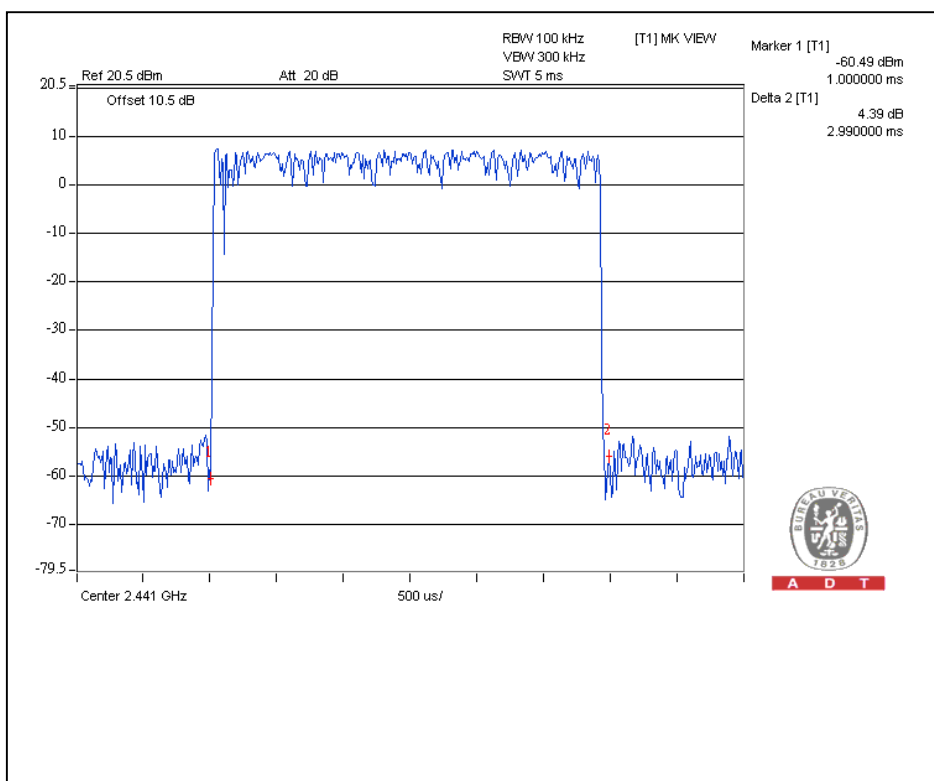
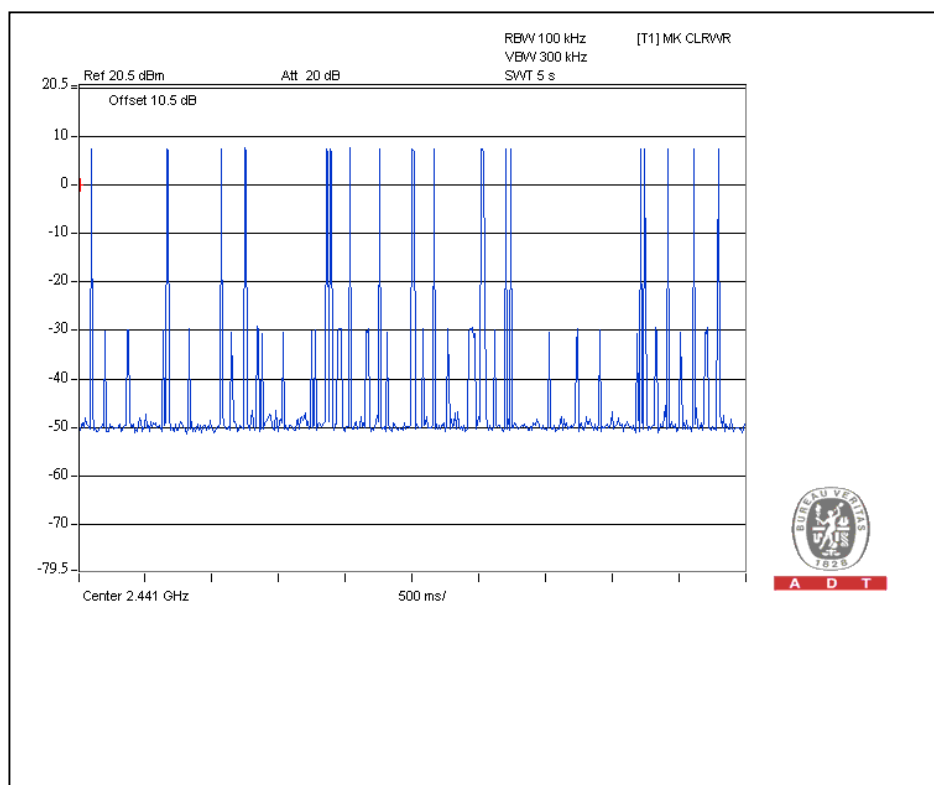
DH3





A D T

DH5

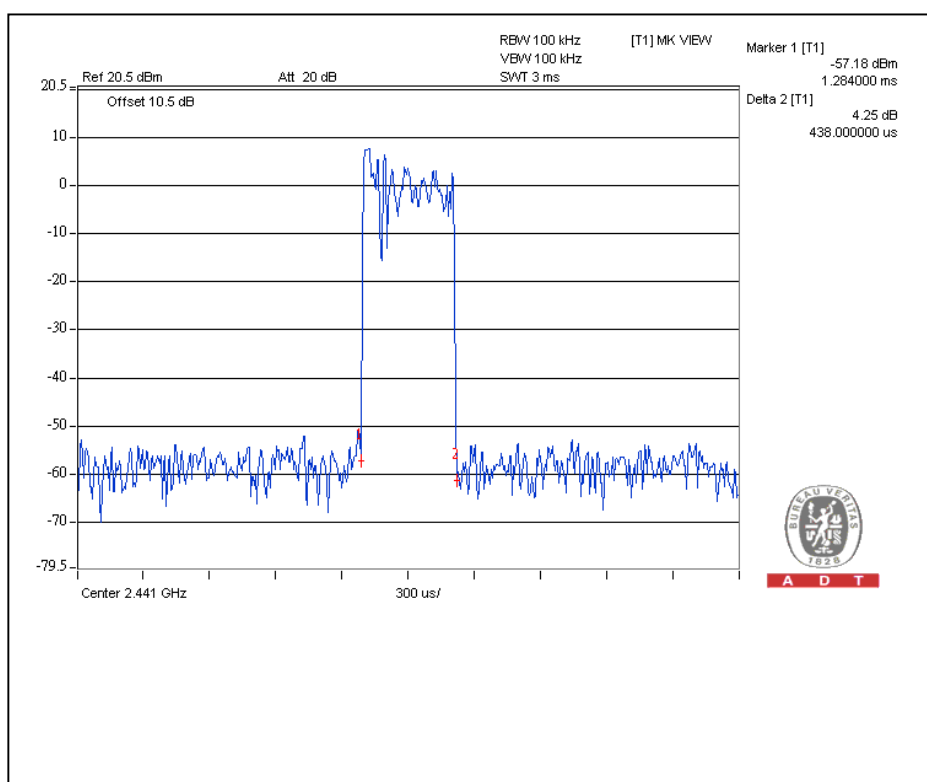
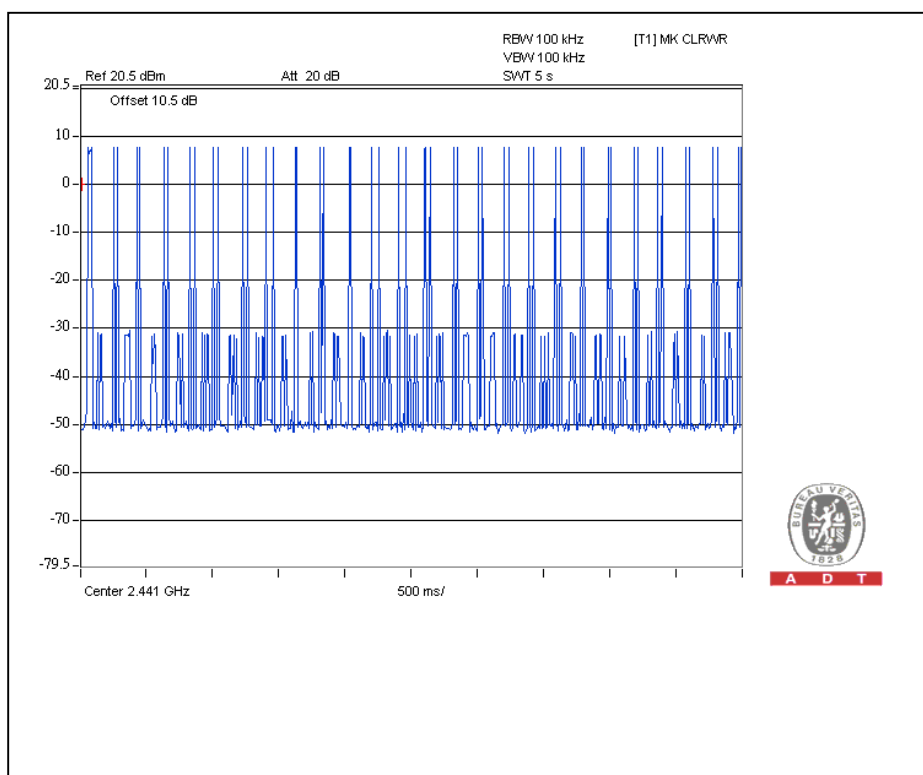


**A D T****For 8DPSK:**

Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	49 (times / 5 sec) *6.32=309.68 times	0.438	135.64	400
DH3	25 (times / 5 sec) *6.32=158 times	1.728	273.02	400
DH5	14 (times / 5 sec) *6.32=88.44 times	2.960	261.90	400

Test plots of the transmitting time slot are shown on next three pages.

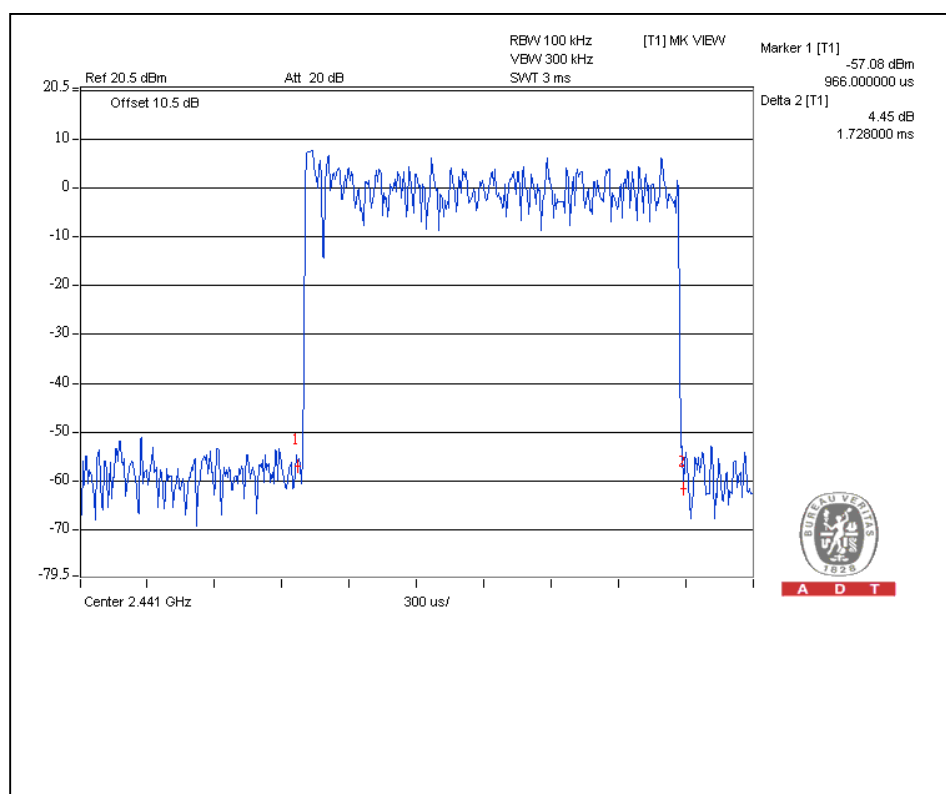
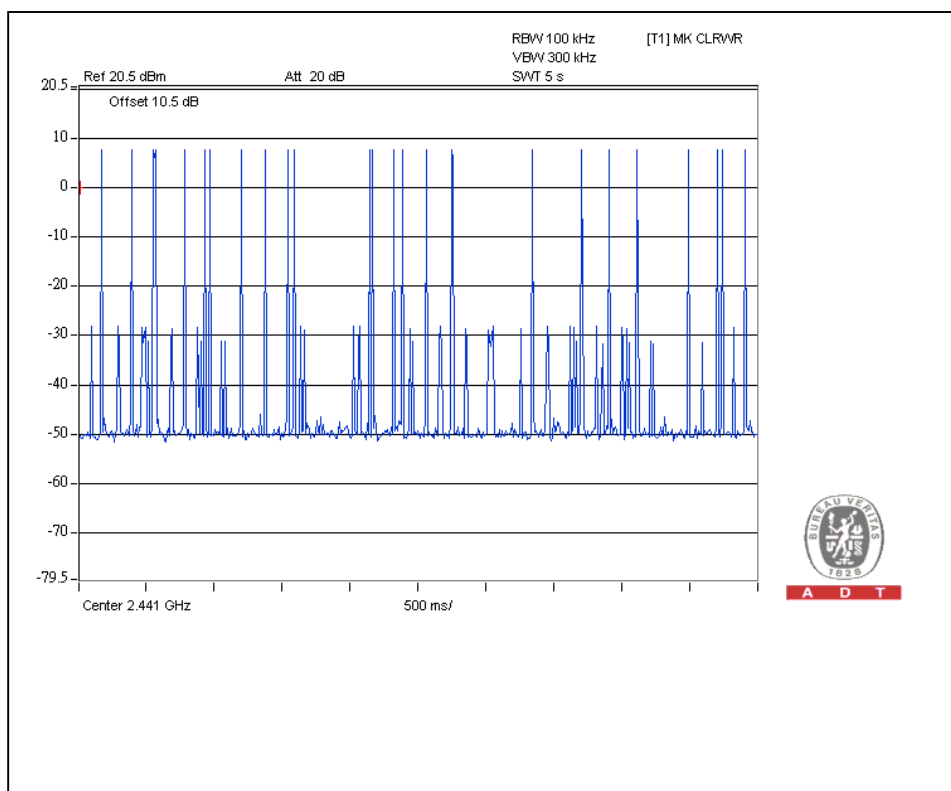
DH1





A D T

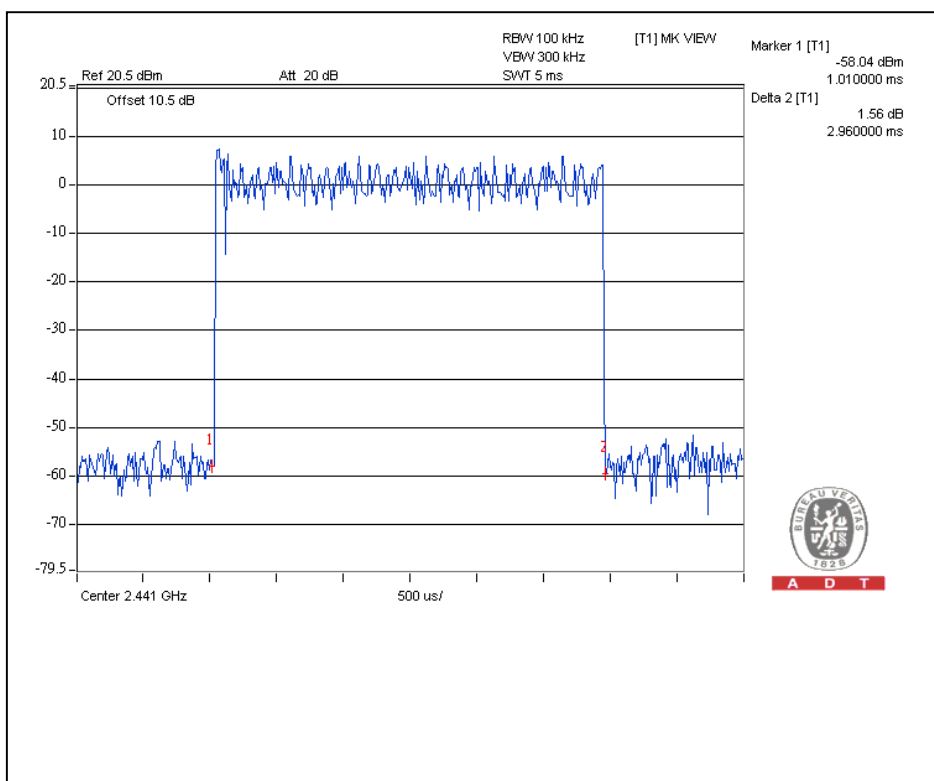
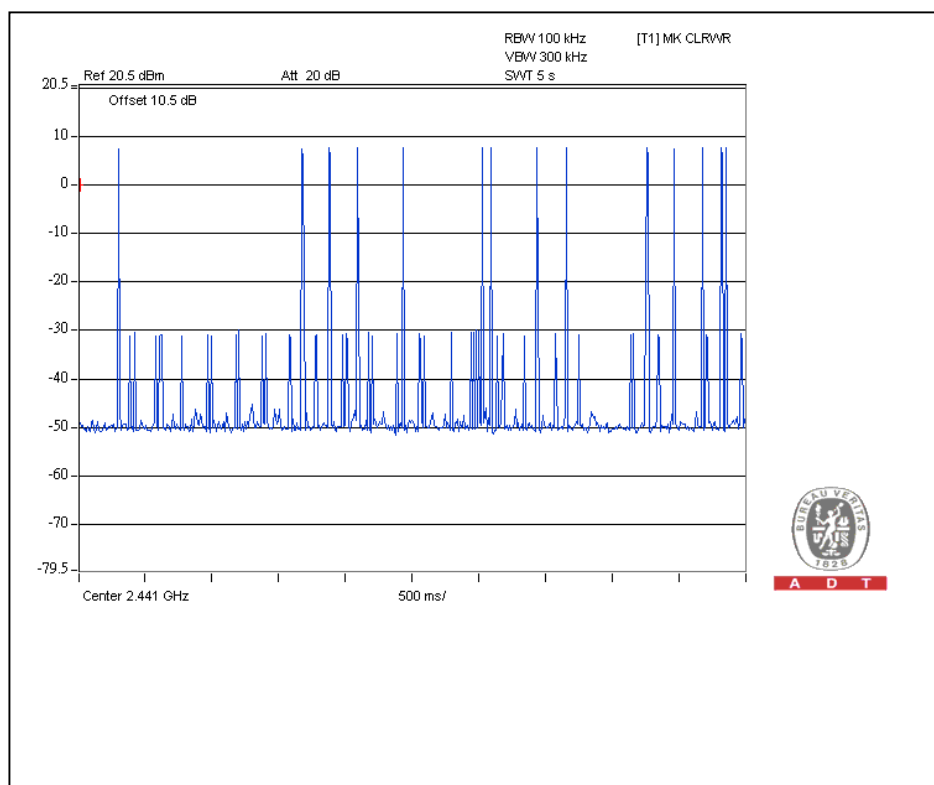
DH3





A D T

DH5



For $\pi/4$ – DQPSK :

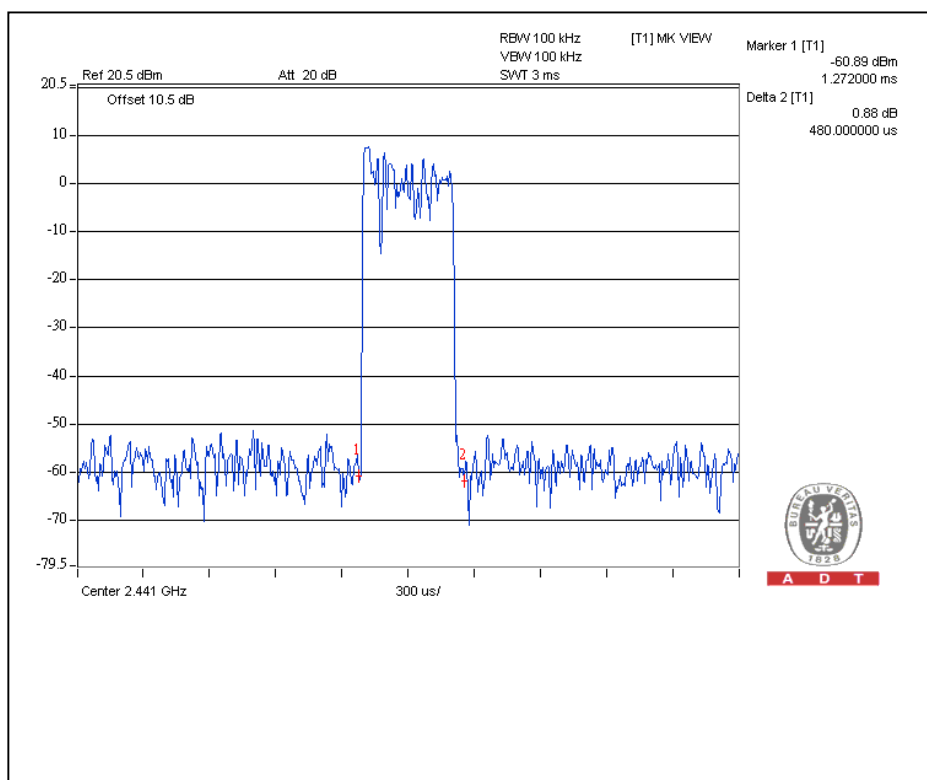
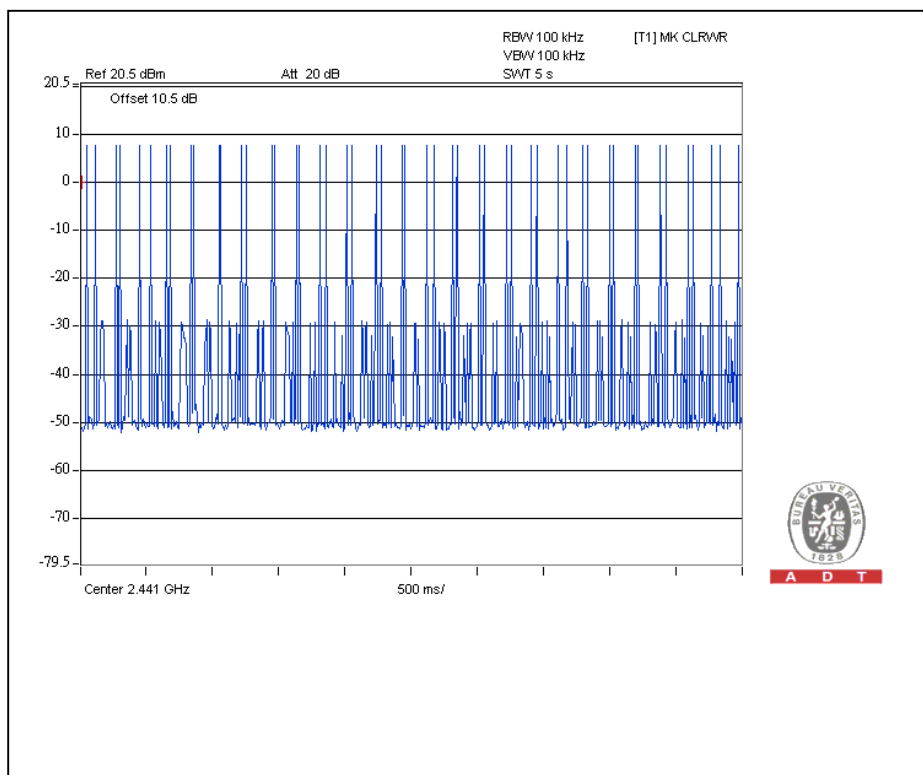
Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	50 (times / 5 sec) *6.32=316 times	0.48	151.68	400
DH3	25 (times / 5 sec) *6.32=158 times	1.698	268.28	400
DH5	18 (times / 5 sec) *6.32=113.76 times	2.96	336.73	400

Test plots of the transmitting time slot are shown on next three pages.

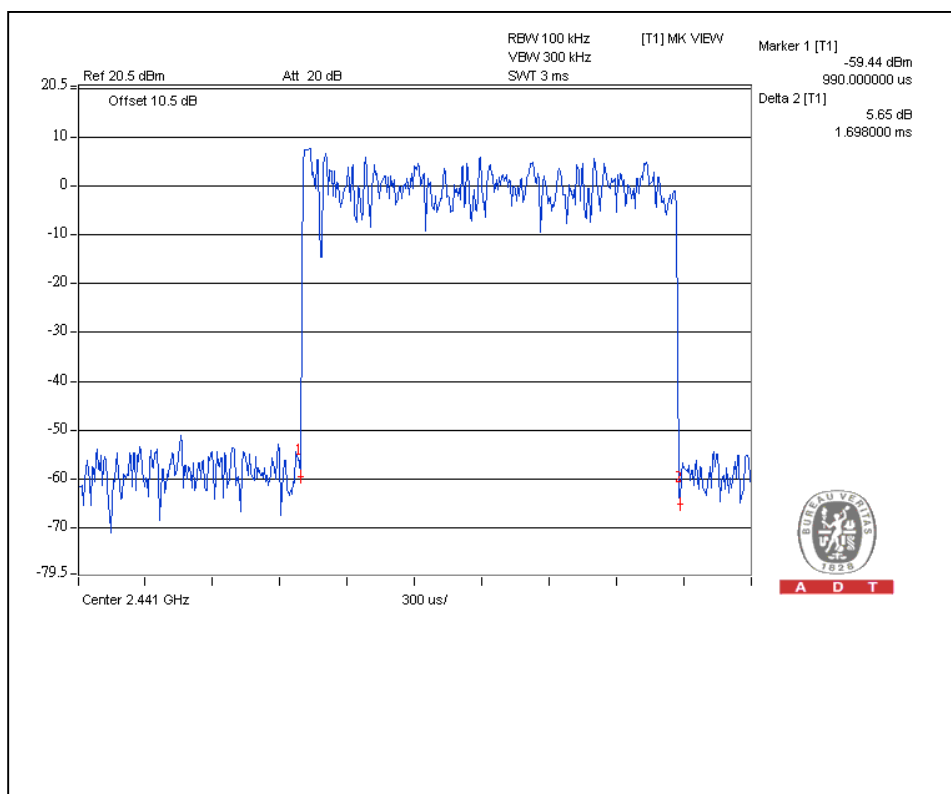
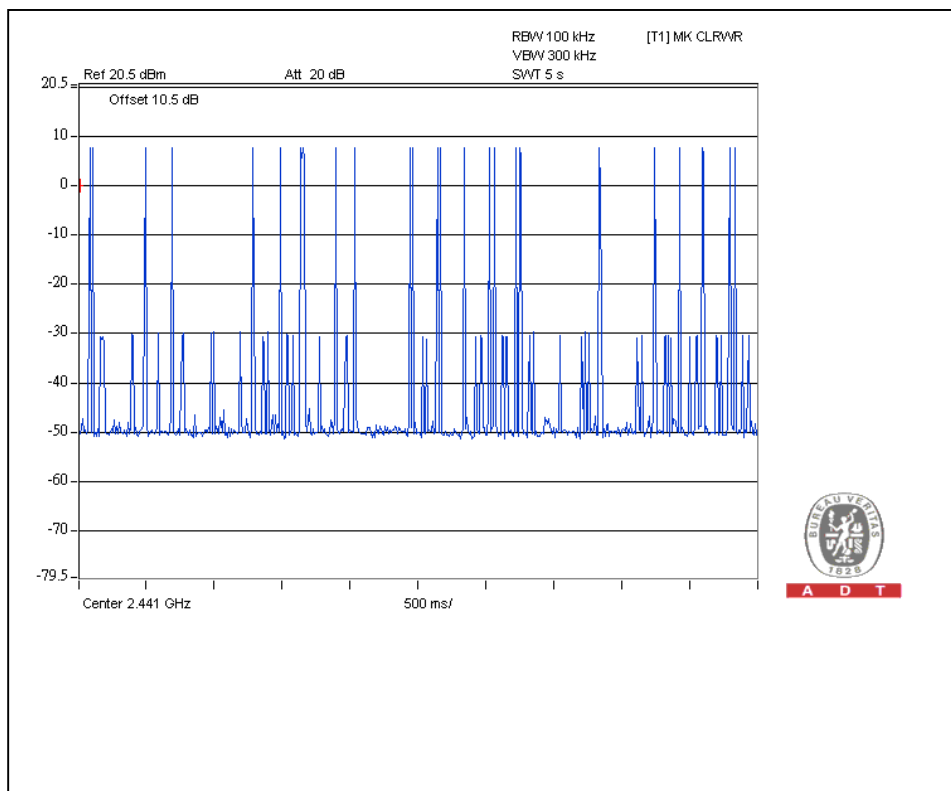


A D T

DH1



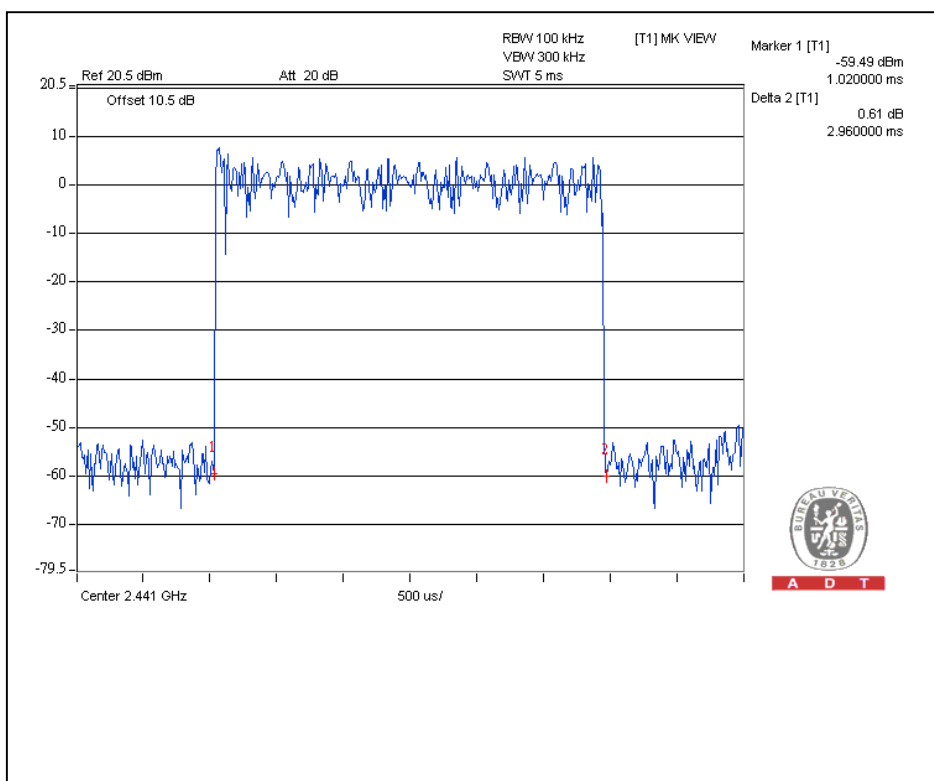
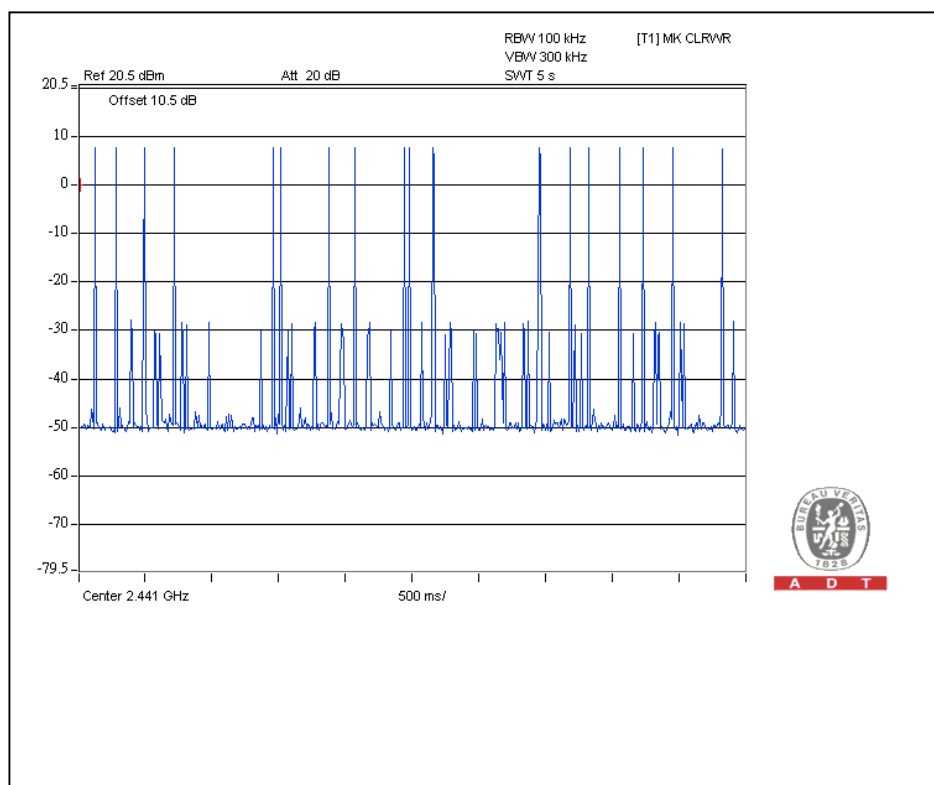
DH3





A D T

DH5





A D T

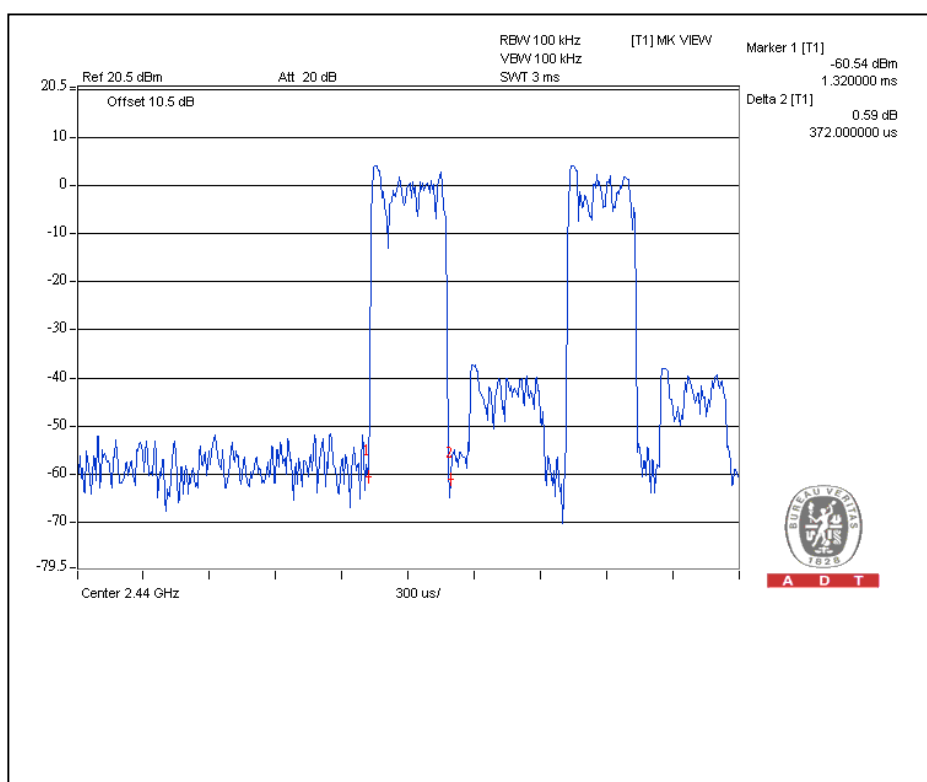
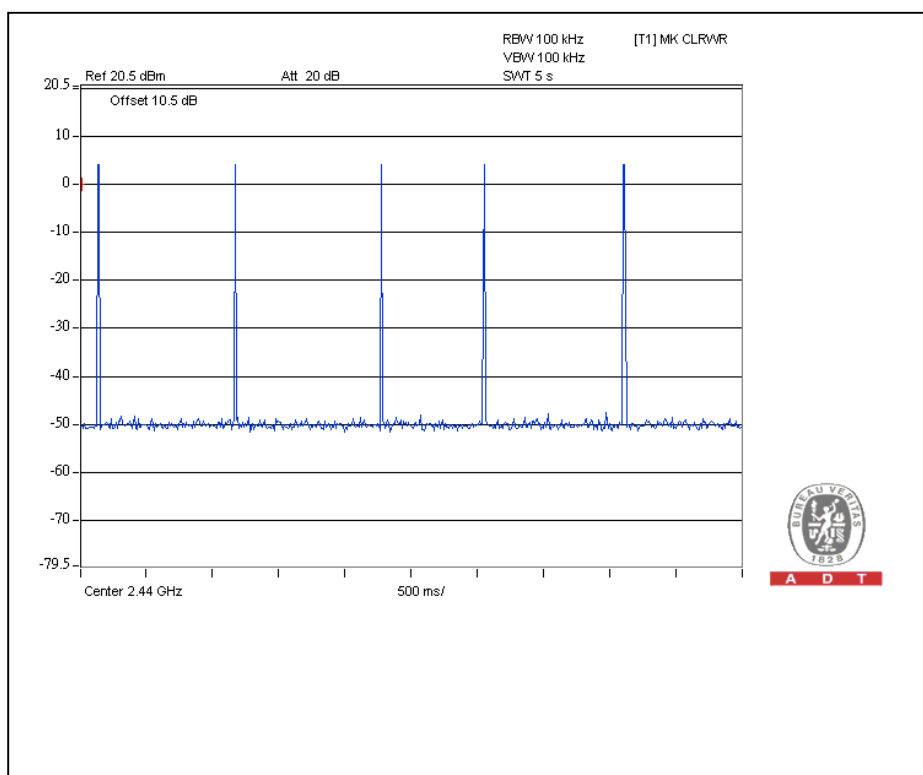
For additional GFSK:

Mode	Number of transmission in a 16 (40Hopping*0.4)	Length of transmission time (msec)*	Result (msec)	Limit (msec)
DH1	5 (times / 5 sec) *3.2=16 times	0.744	11.90	400

*There are two burst signal during transmission time period.

Test plots of the transmitting time slot are shown on next page.

DH1



4.4 CHANNEL BANDWIDTH

4.4.1 LIMITS OF CHANNEL BANDWIDTH

For frequency hopping system operating in the 2400-2483.5MHz, If the two-thirds 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.

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

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 PROCEDURE

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. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITION

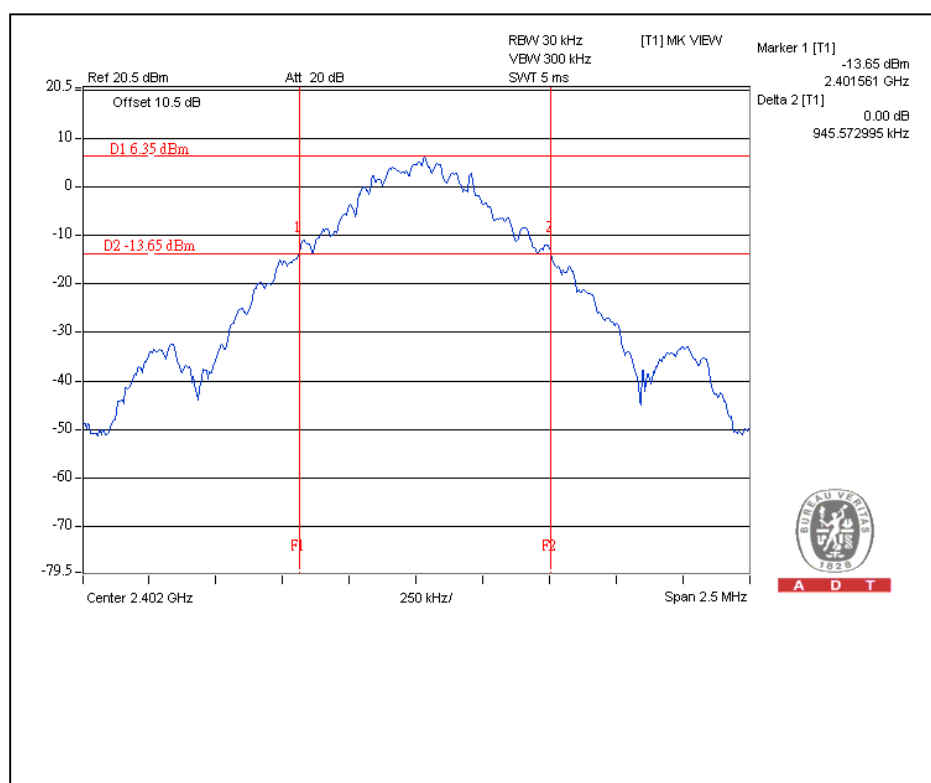
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.4.7 TEST RESULTS

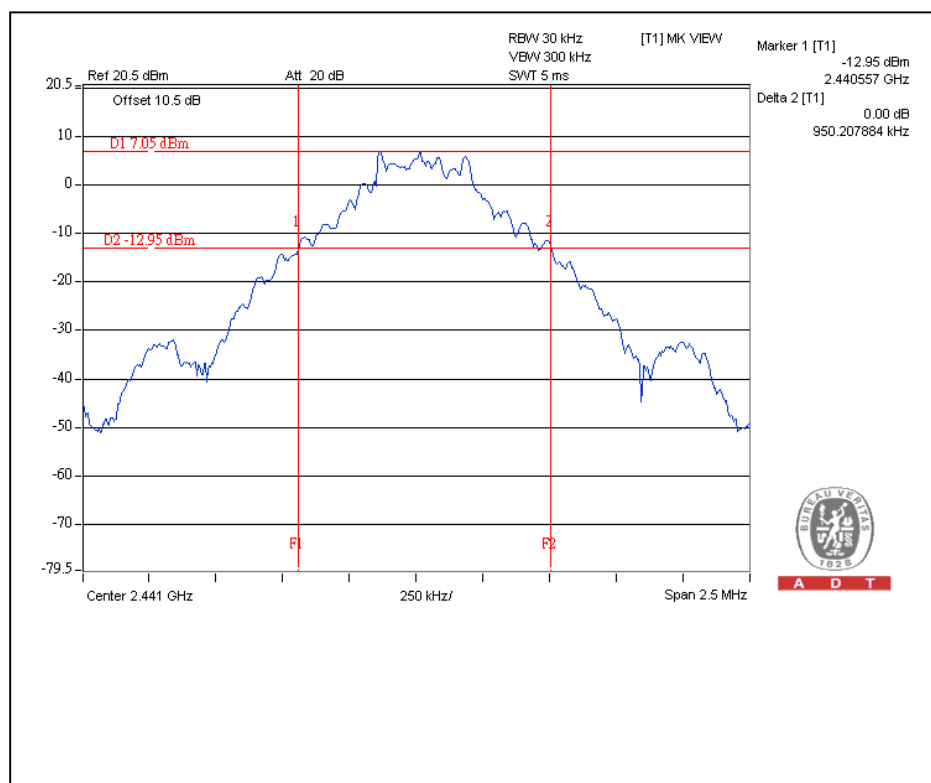
For GFSK:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	0.94
39	2441	0.95
78	2480	1.02

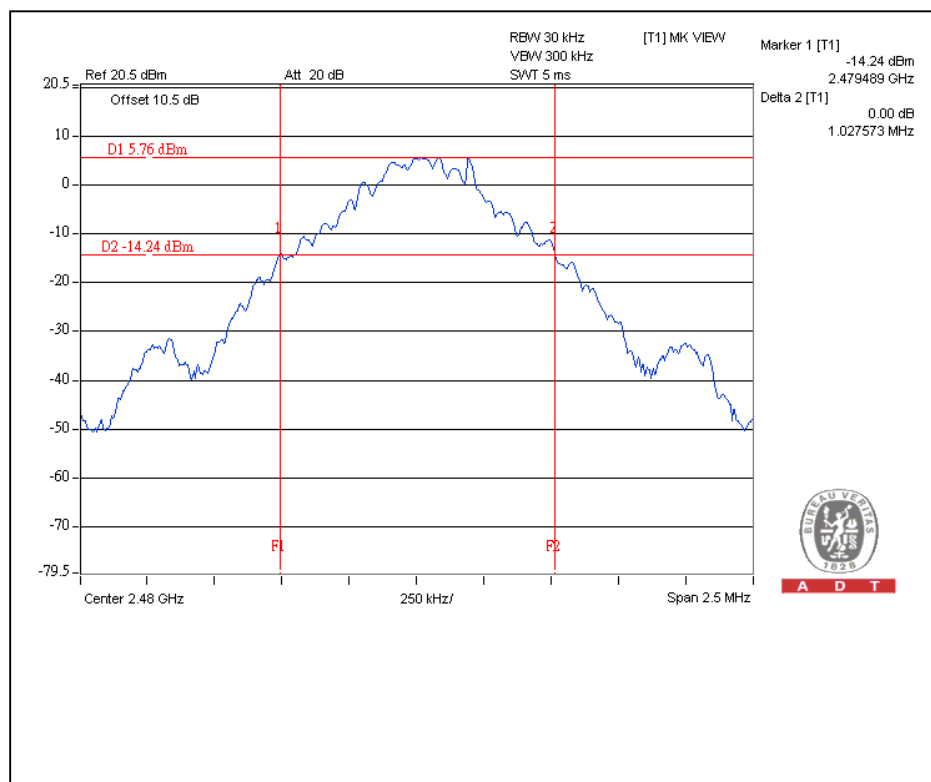
Channel 0



Channel 39



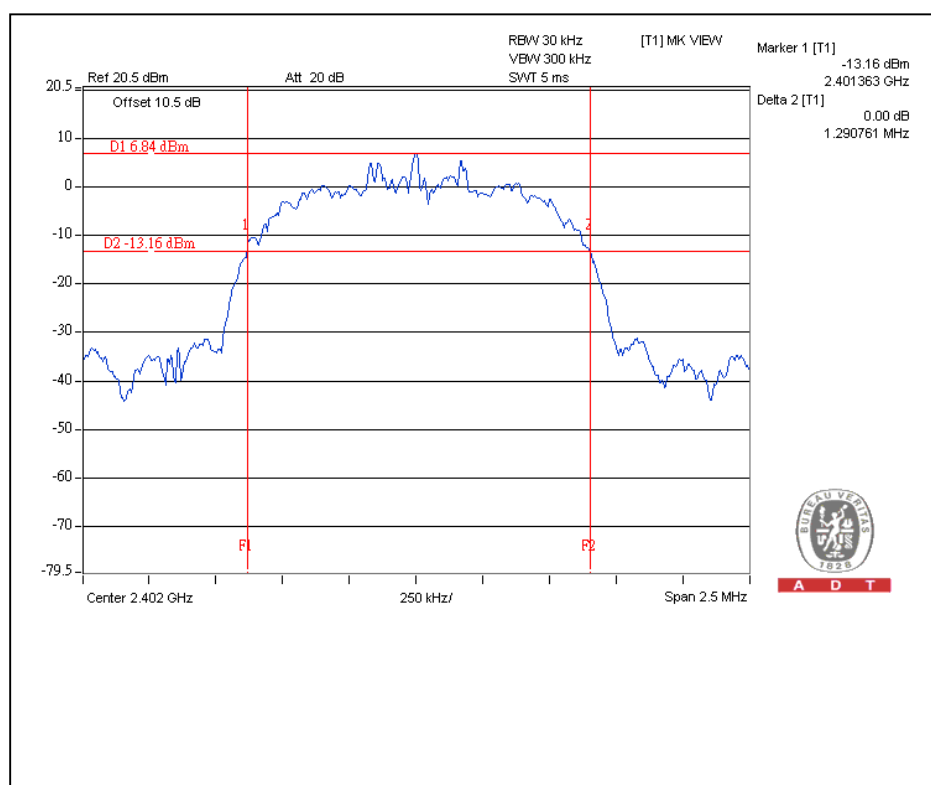
Channel 78



For 8DPSK:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	1.29
39	2441	1.28
78	2480	1.29

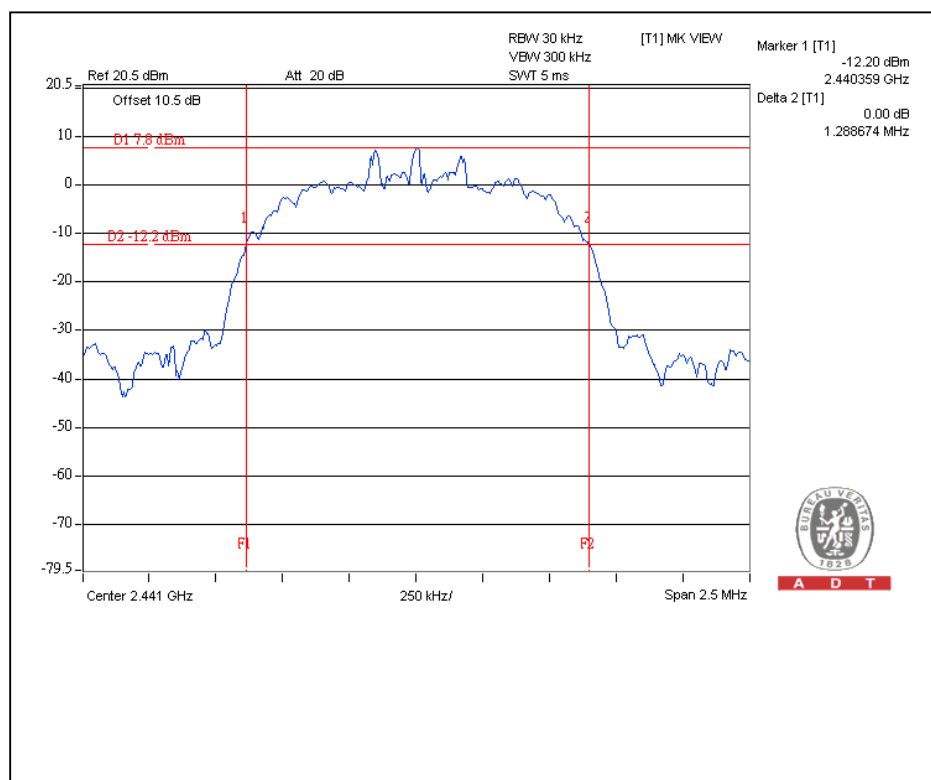
Channel 0



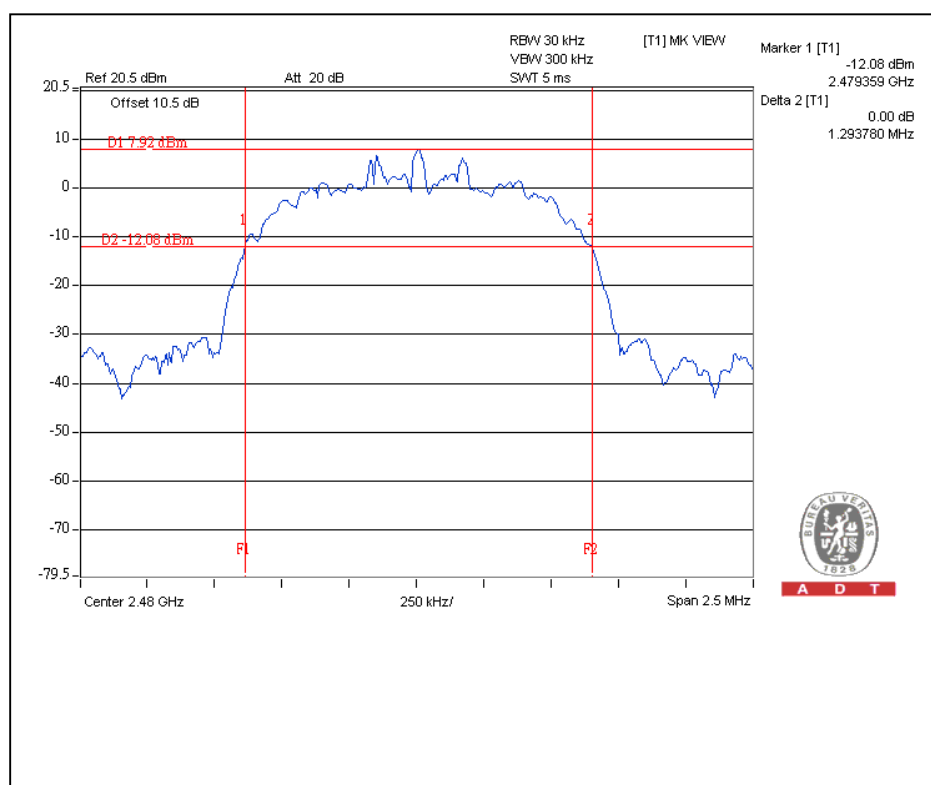


A D T

Channel 39



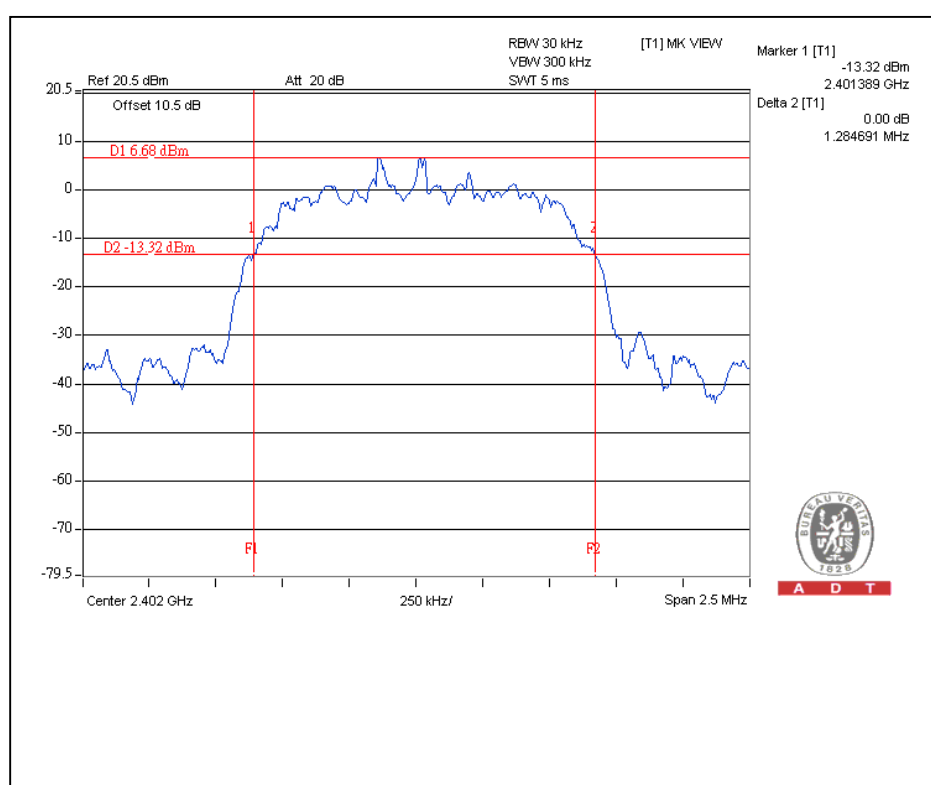
Channel 78



For $\pi/4$ -DQPSK:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	1.28
39	2441	1.28
78	2480	1.28

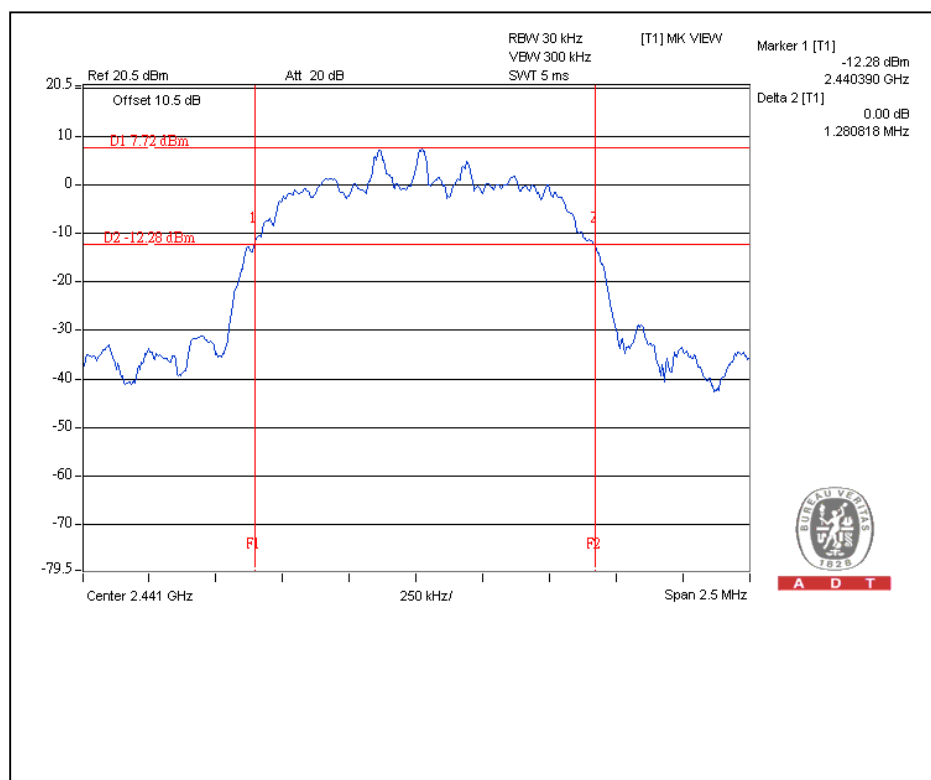
Channel 0





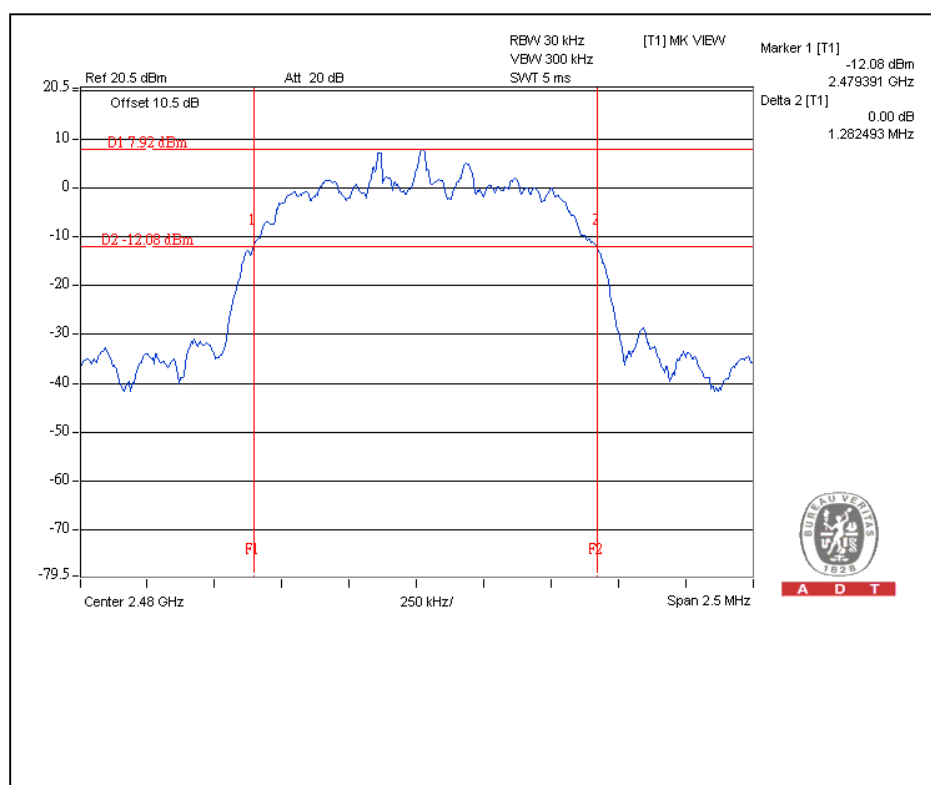
A D T

Channel 39



A D T

Channel 78

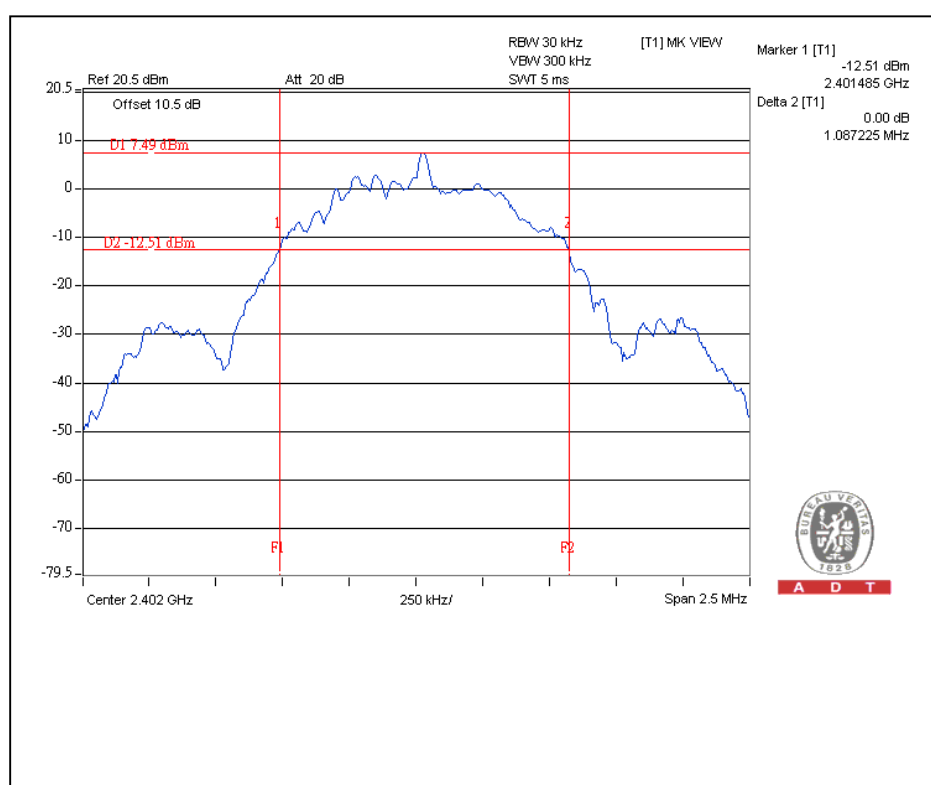


A D T

For additional GFSK:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	1.08
19	2440	1.08
39	2480	1.08

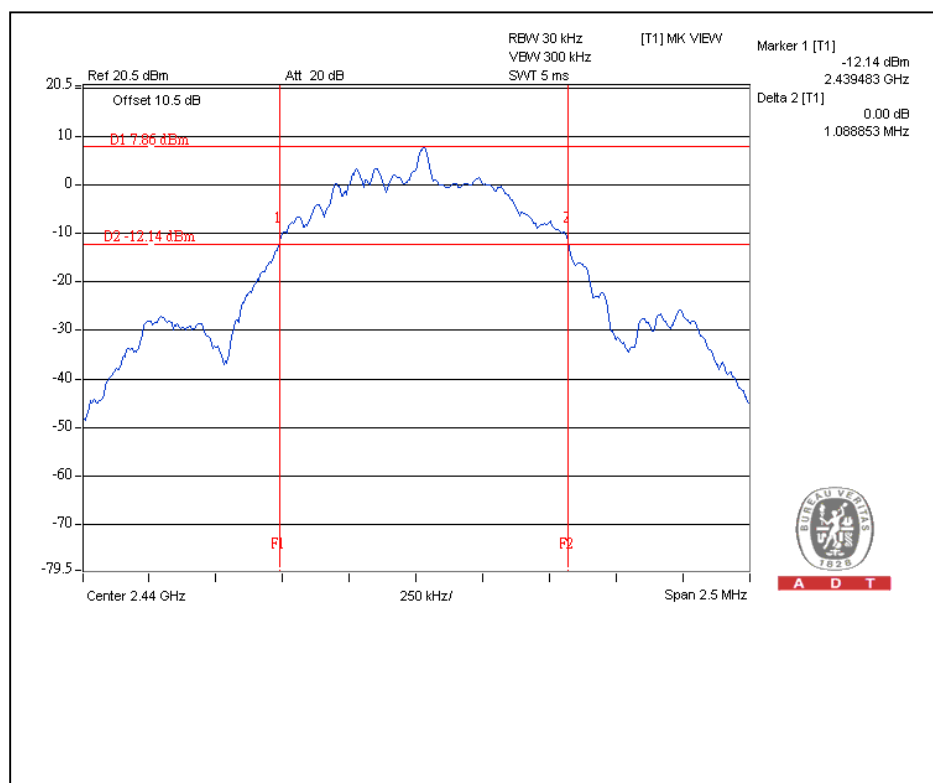
Channel 0



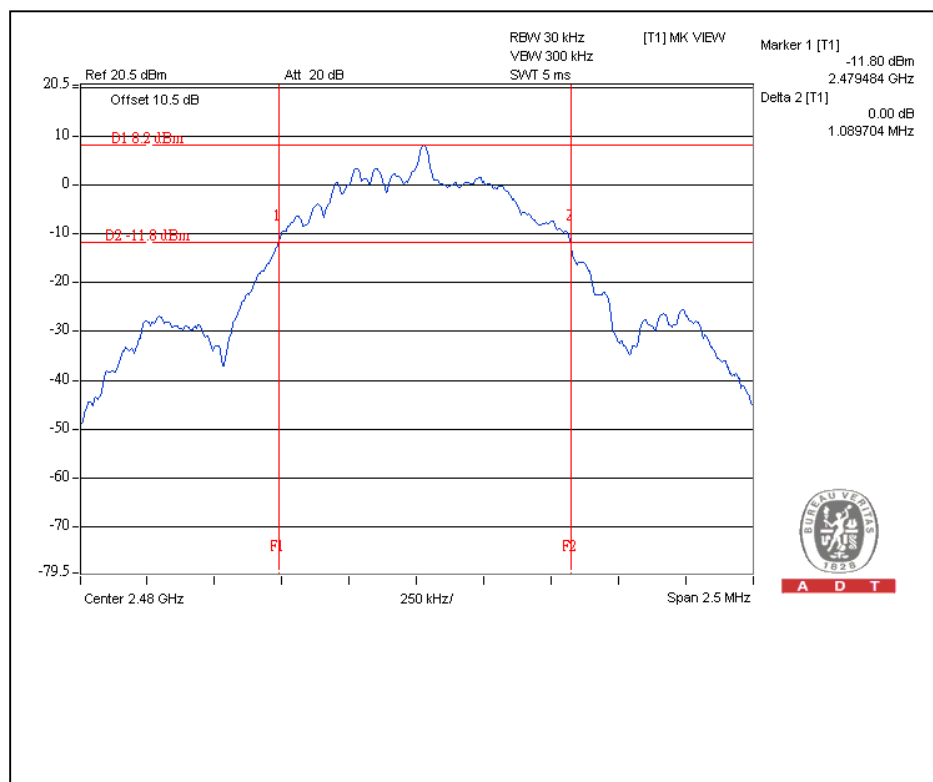


A D T

Channel 19



Channel 39



4.5 HOPPING CHANNEL SEPARATION

4.5.1 LIMIT OF HOPPING CHANNEL SEPARATION

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

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
PSA Series Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

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

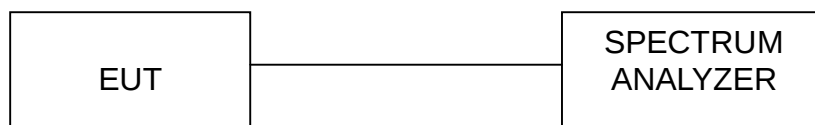
4.5.3 TEST PROCEDURES

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.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



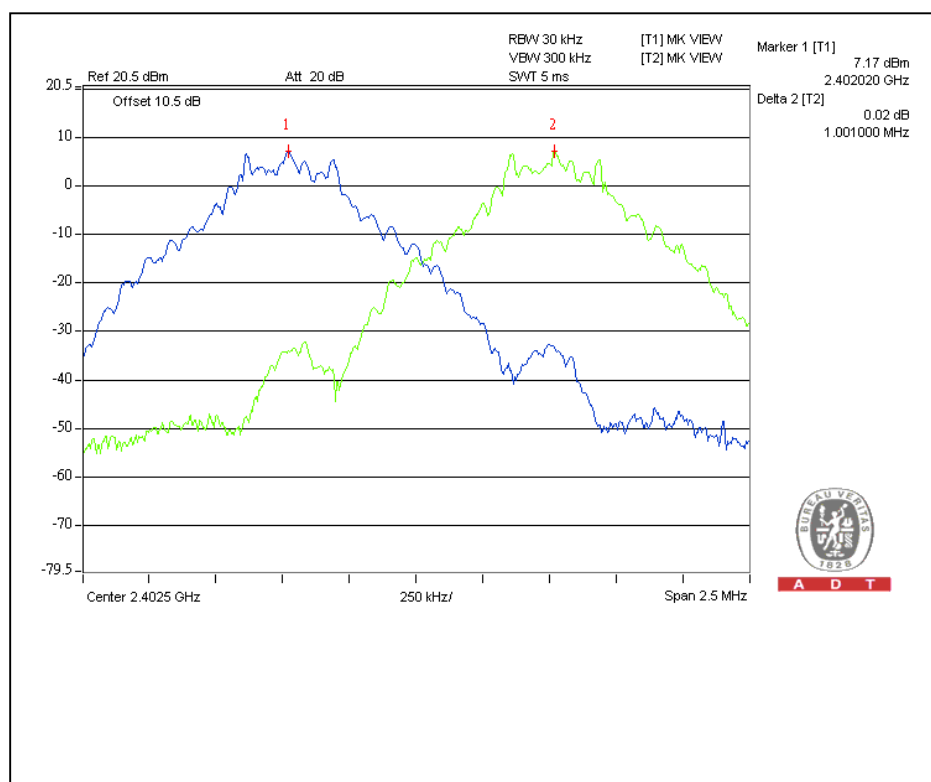
4.5.6 TEST RESULTS

For GFSK

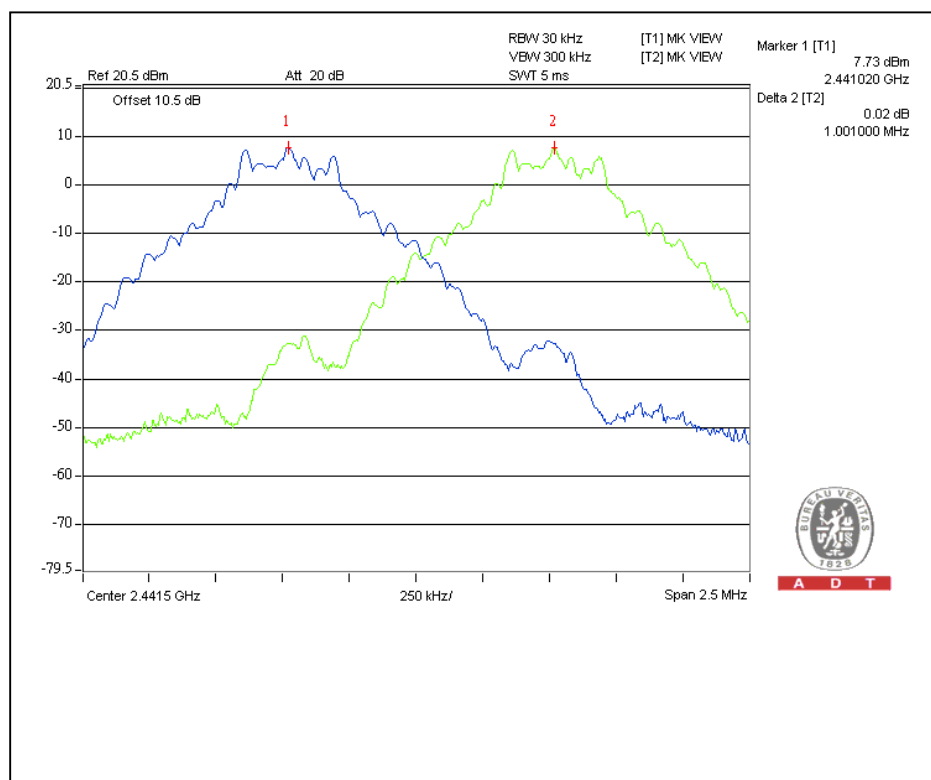
Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.001	0.627	PASS
39	2441	1.001	0.633	PASS
78	2480	1.002	0.680	PASS

The minimum limit is two-thirds of 20dB bandwidth. Test results please refer to below pages.

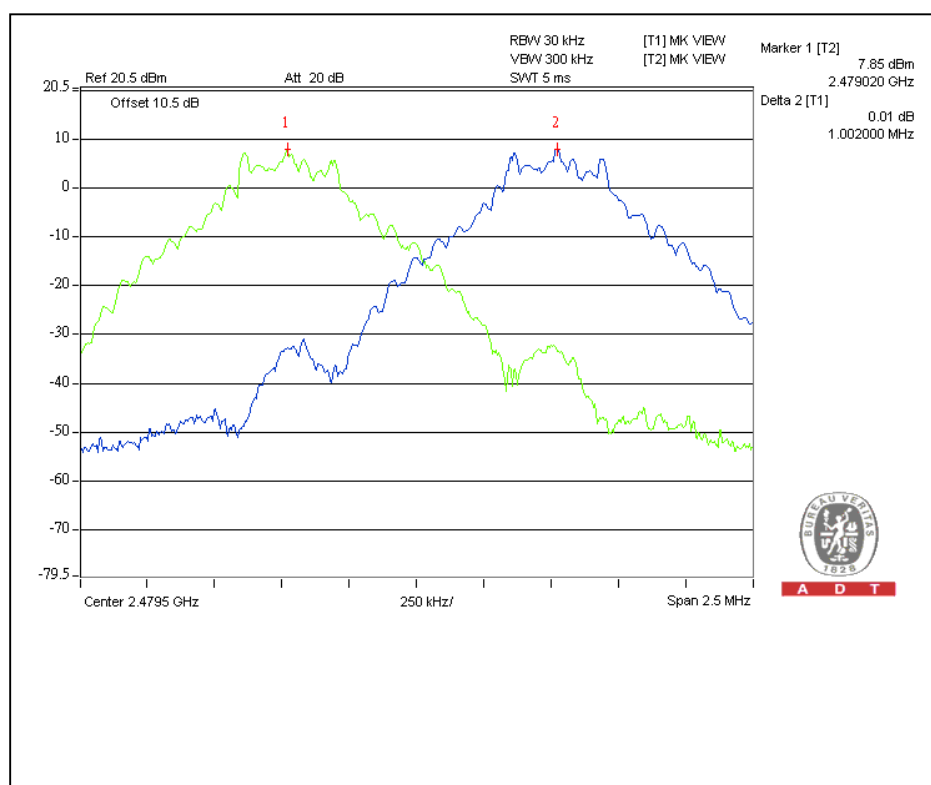
Channel 0



Channel 39



Channel 78

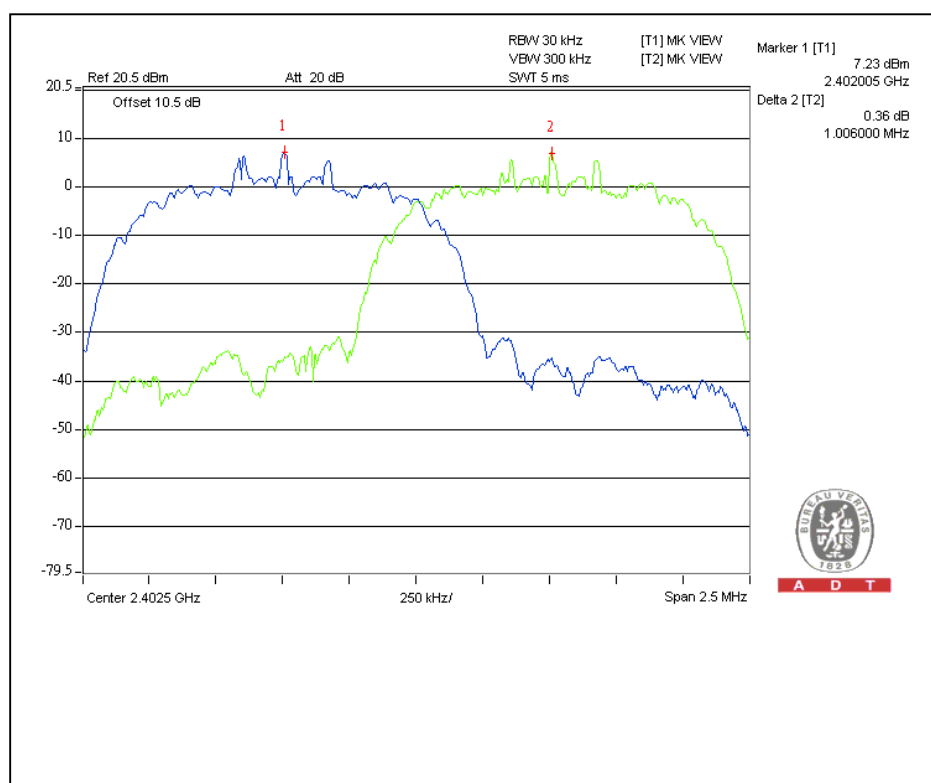


For 8DPSK

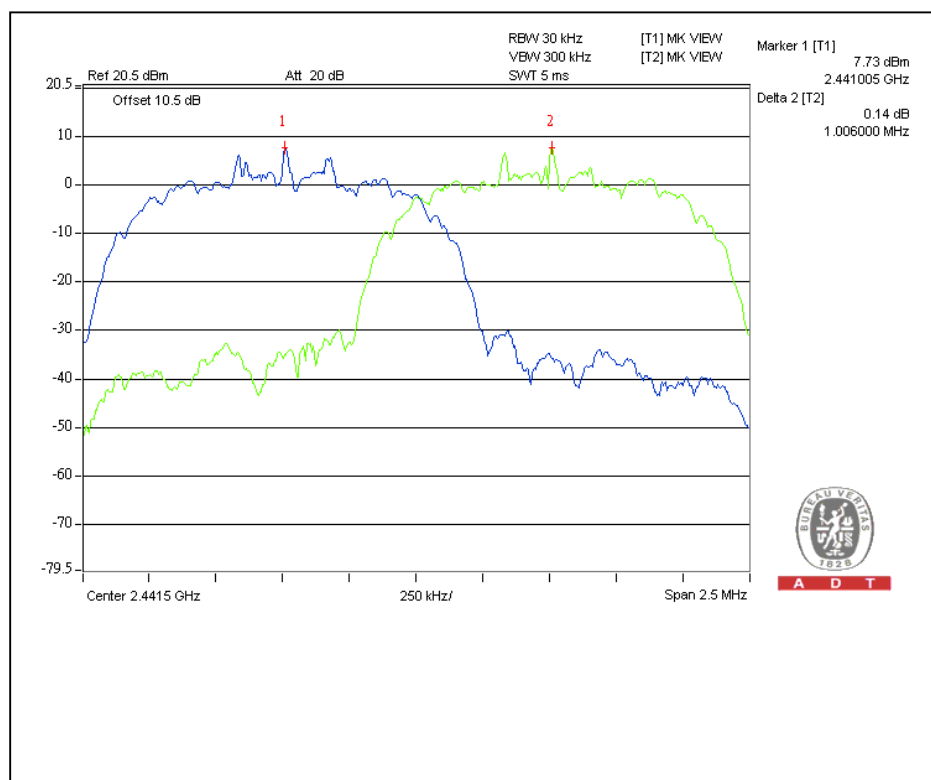
Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.006	0.860	PASS
39	2441	1.006	0.853	PASS
78	2480	1.007	0.860	PASS

The minimum limit is two-thirds of 20dB bandwidth. Test results please refer to below pages.

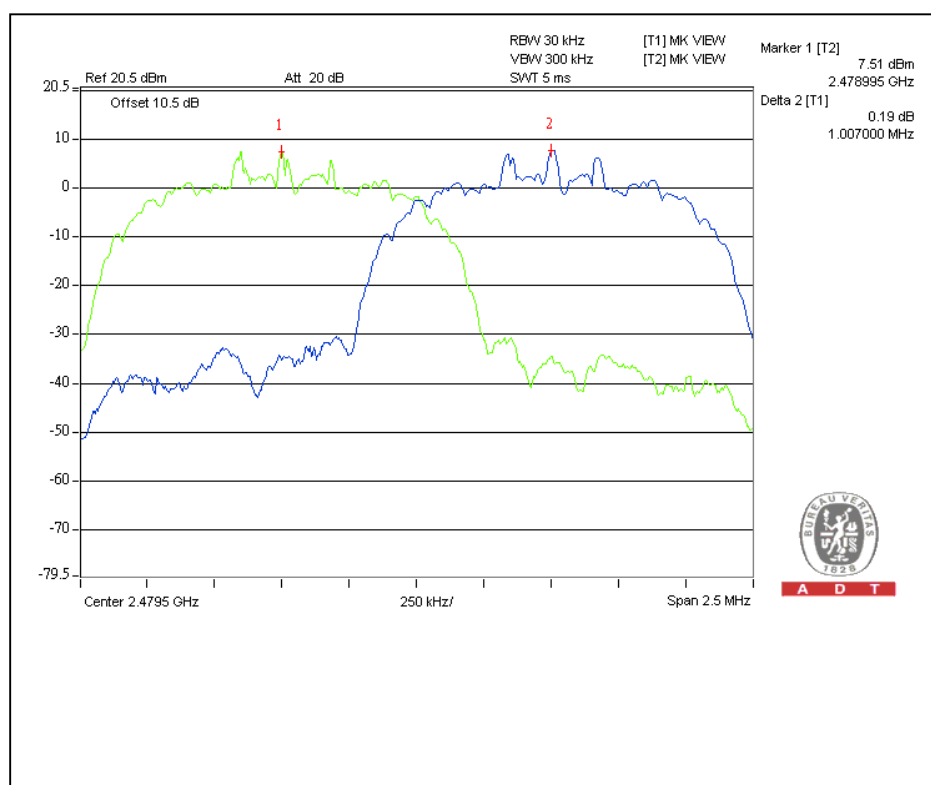
Channel 0



Channel 39



Channel 78

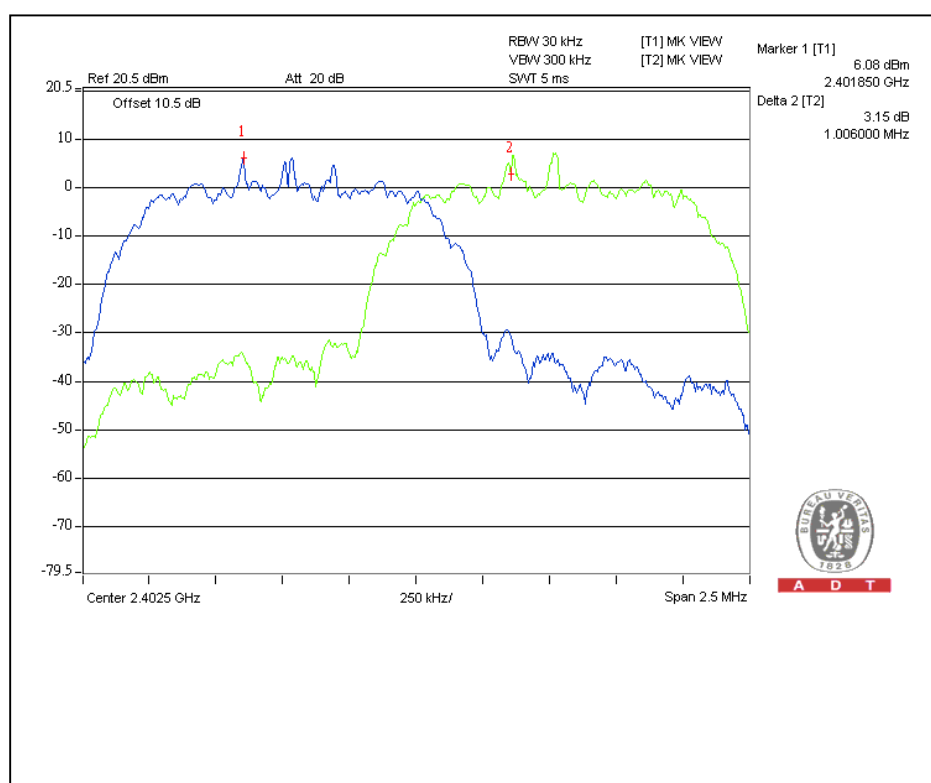


For $\pi/4$ -DQPSK

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.006	0.853	PASS
39	2441	1.004	0.853	PASS
78	2480	1.006	0.853	PASS

The minimum limit is two-thirds of 20dB bandwidth. Test results please refer to below pages.

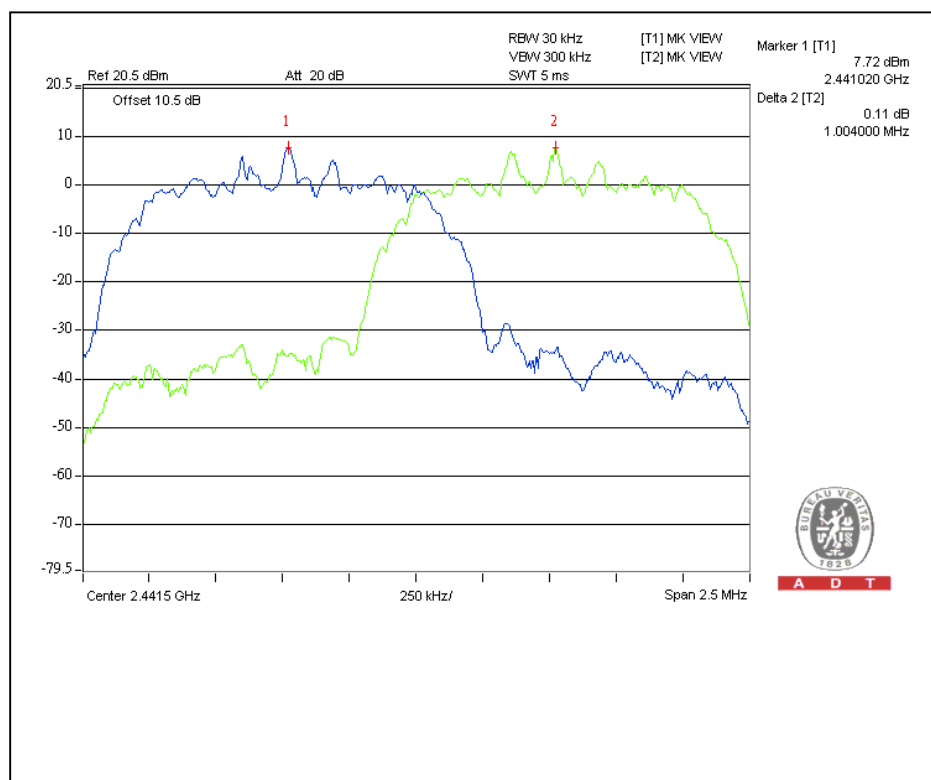
Channel 0





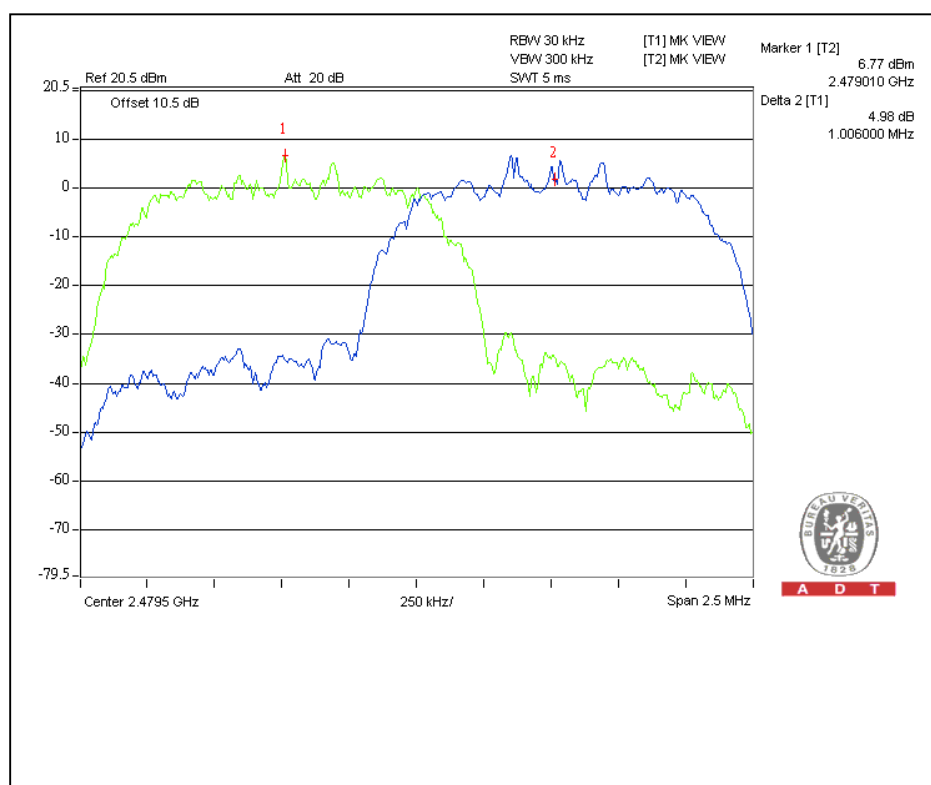
A D T

Channel 39



A D T

Channel 78



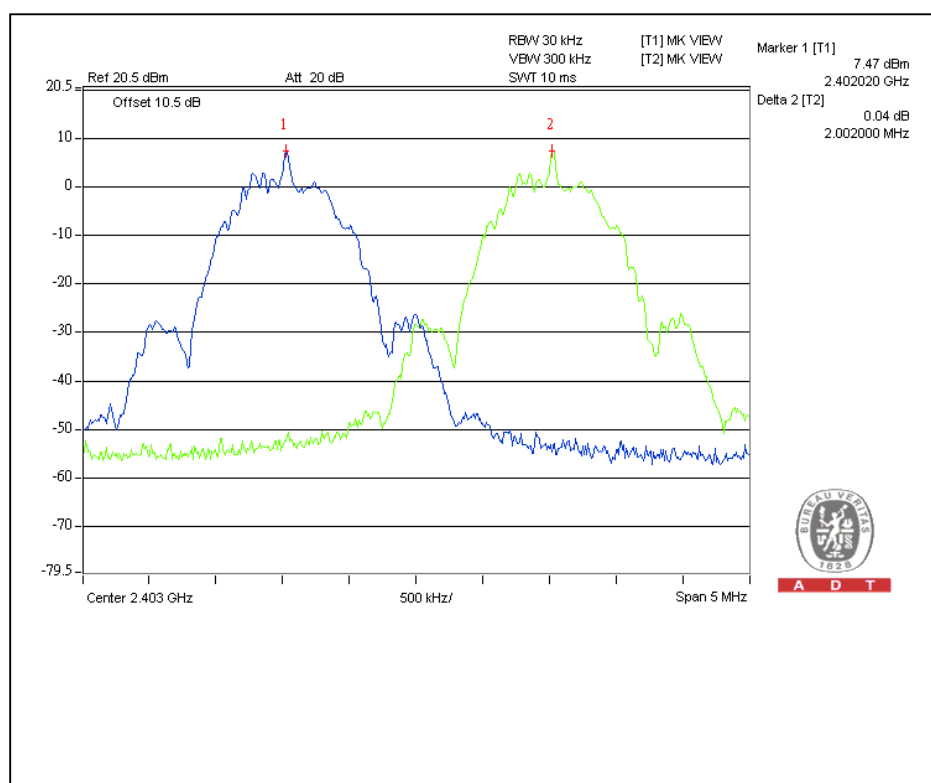
A D T

For additional GFSK

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	2.008	0.720	PASS
19	2440	2.008	0.720	PASS
39	2480	2.008	0.720	PASS

The minimum limit is two-thirds of 20dB bandwidth. Test results please refer to below pages.

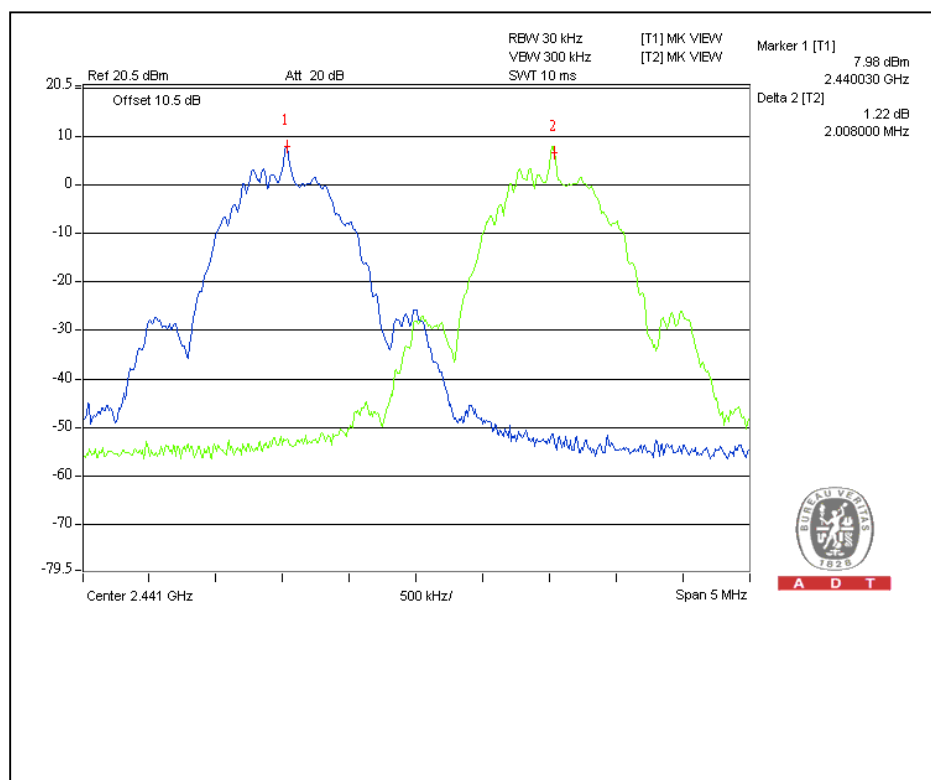
Channel 0



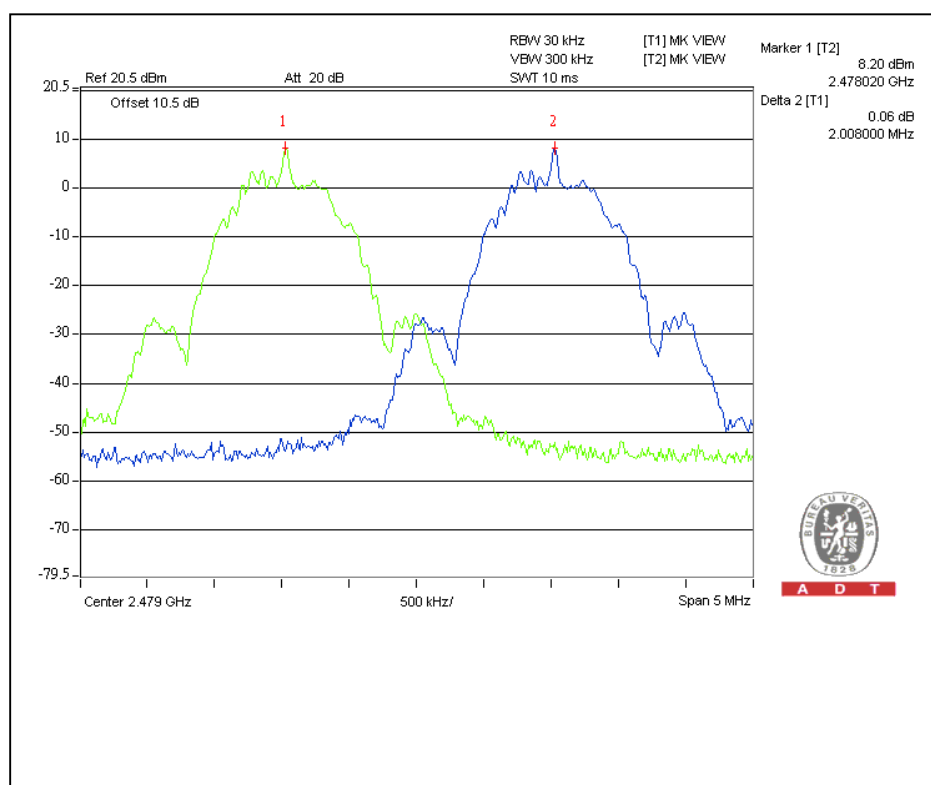


A D T

Channel 19



Channel 39



4.6 MAXIMUM PEAK OUTPUT POWER

4.6.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Limit is 125mW.

4.6.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

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

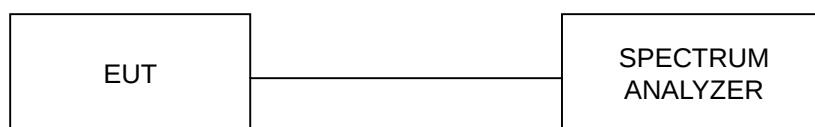
4.6.3 TEST PROCEDURES

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. Set a reference level on the measuring instrument equal to the highest peak value.
3. The center frequency of the spectrum analyzer is set to the fundamental frequency and using 3 MHz RBW and 10 MHz VBW.
4. Measure the captured power within the band and recording the plot.
5. Repeat above procedures until all frequencies measured were complete.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

4.6.6 EUT OPERATING CONDITION

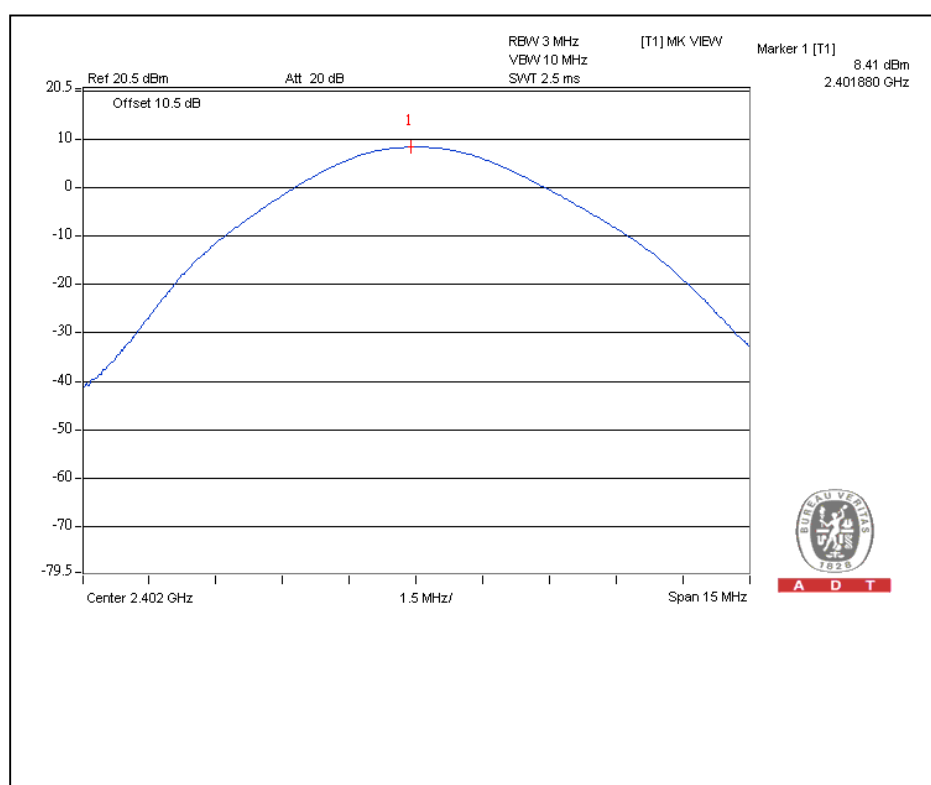
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.6.7 TEST RESULTS

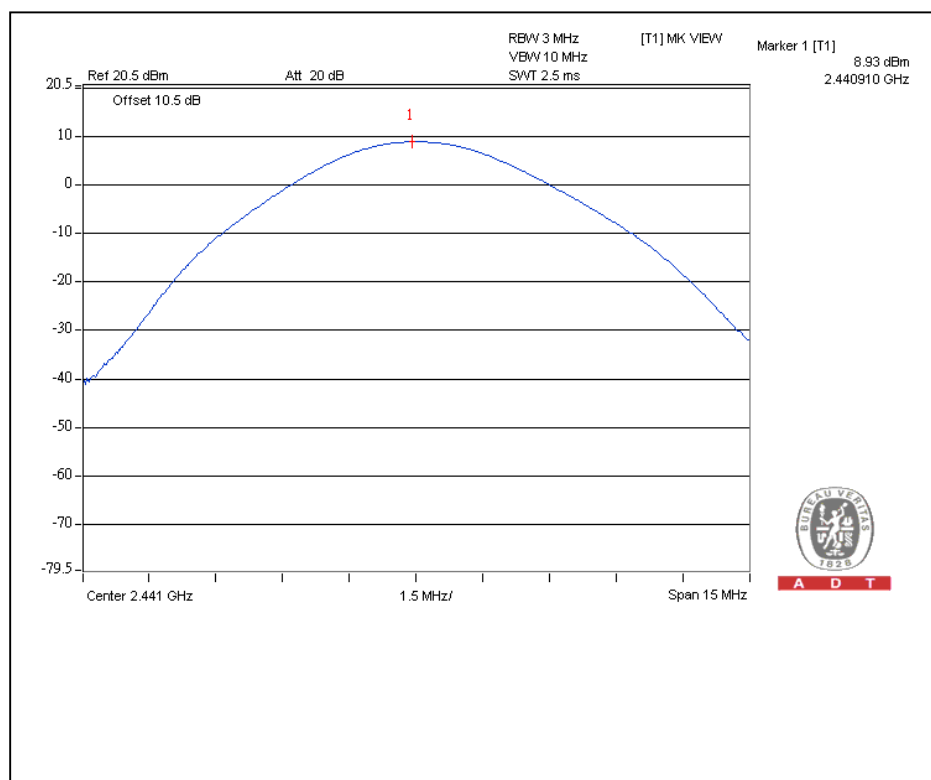
For GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	2402	8.4	6.9	125	PASS
39	2441	8.9	7.8	125	PASS
78	2480	9.1	8.1	125	PASS

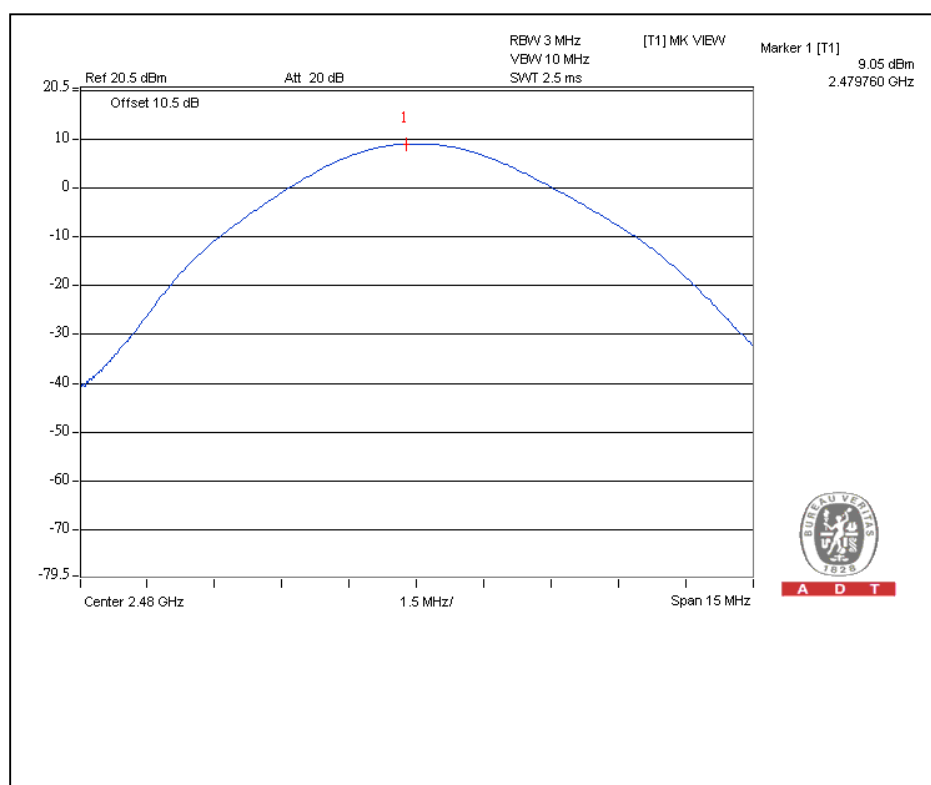
Channel 0



Channel 39



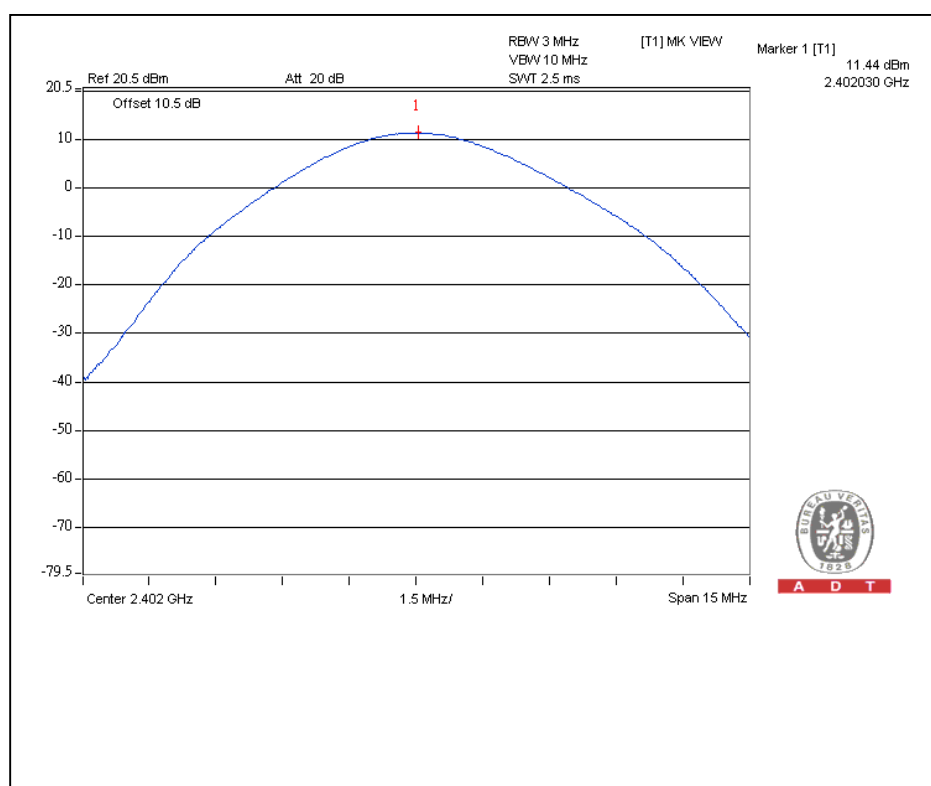
Channel 78



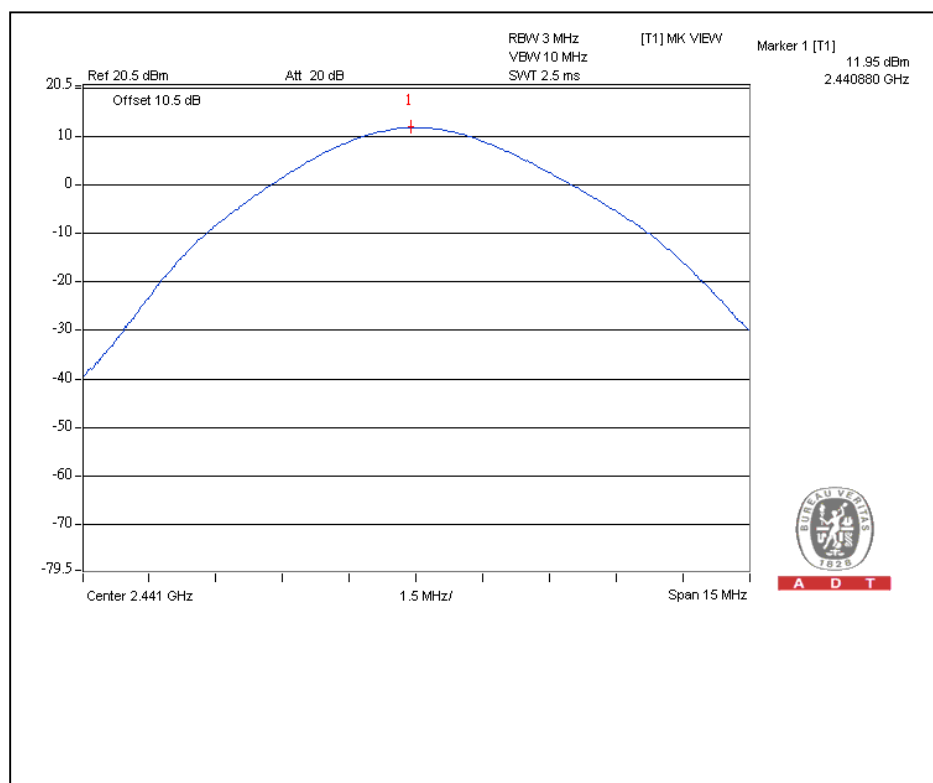
For 8DPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	2402	11.4	13.8	125	PASS
39	2441	12.0	15.8	125	PASS
78	2480	12.1	16.2	125	PASS

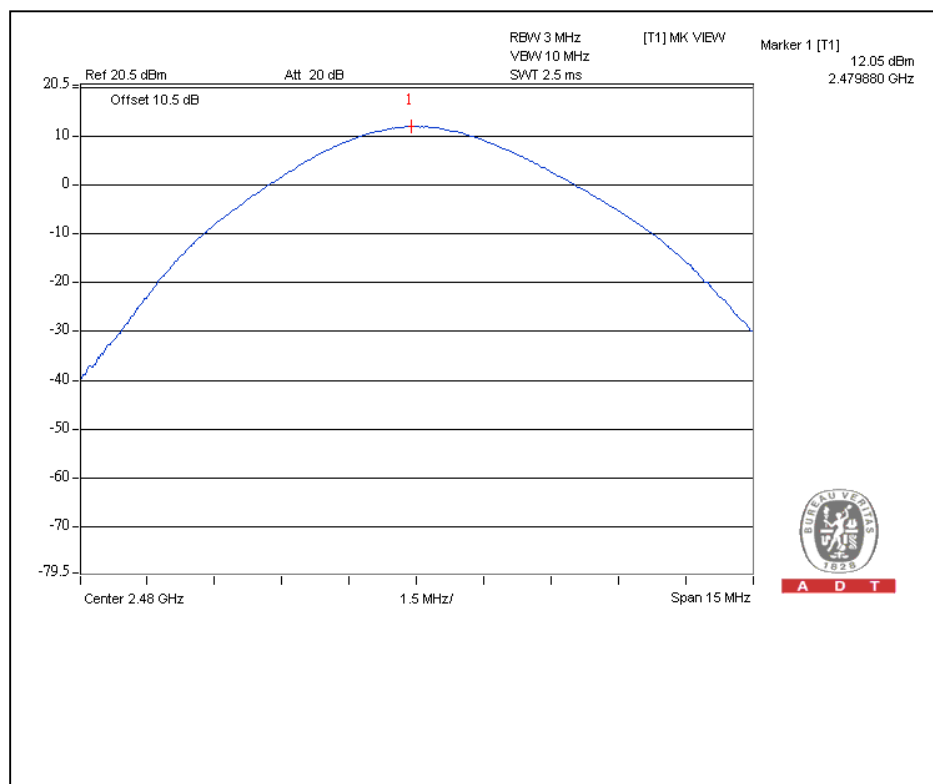
Channel 0



Channel 39



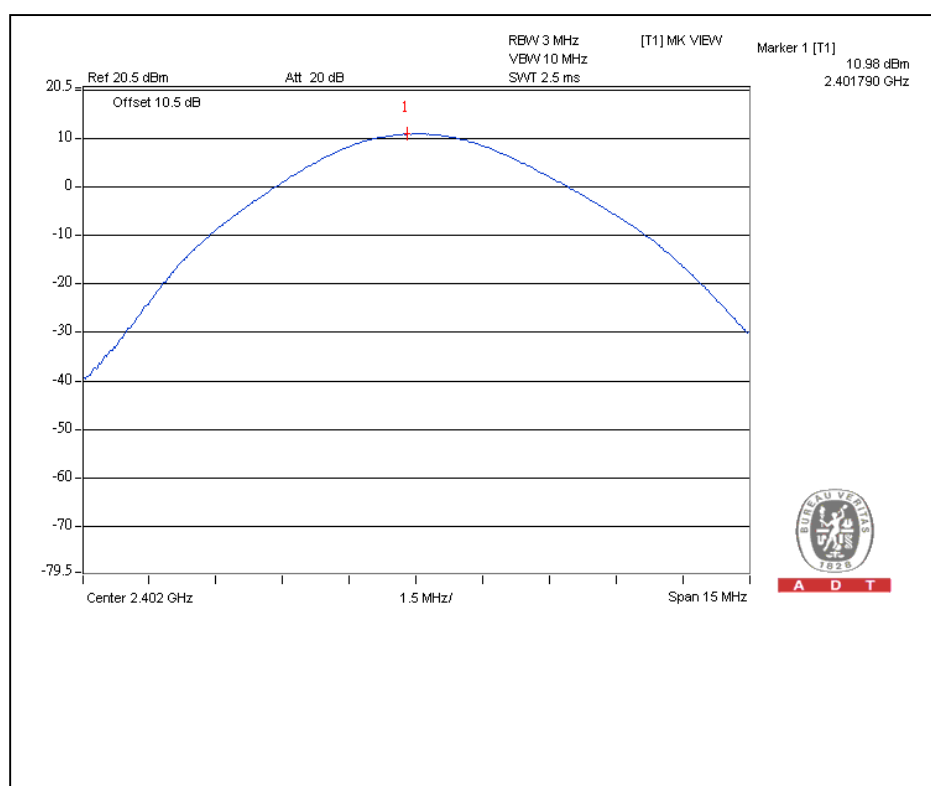
Channel 78



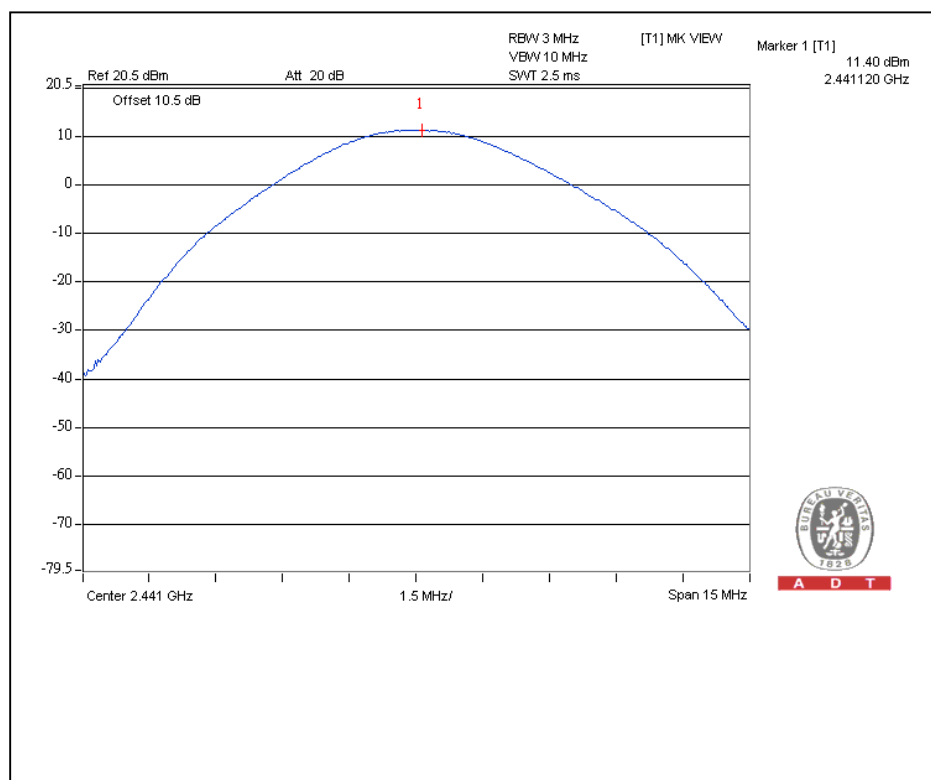
For $\pi/4$ -DQPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	2402	11.0	12.6	125	PASS
39	2441	11.4	13.8	125	PASS
78	2480	11.6	14.5	125	PASS

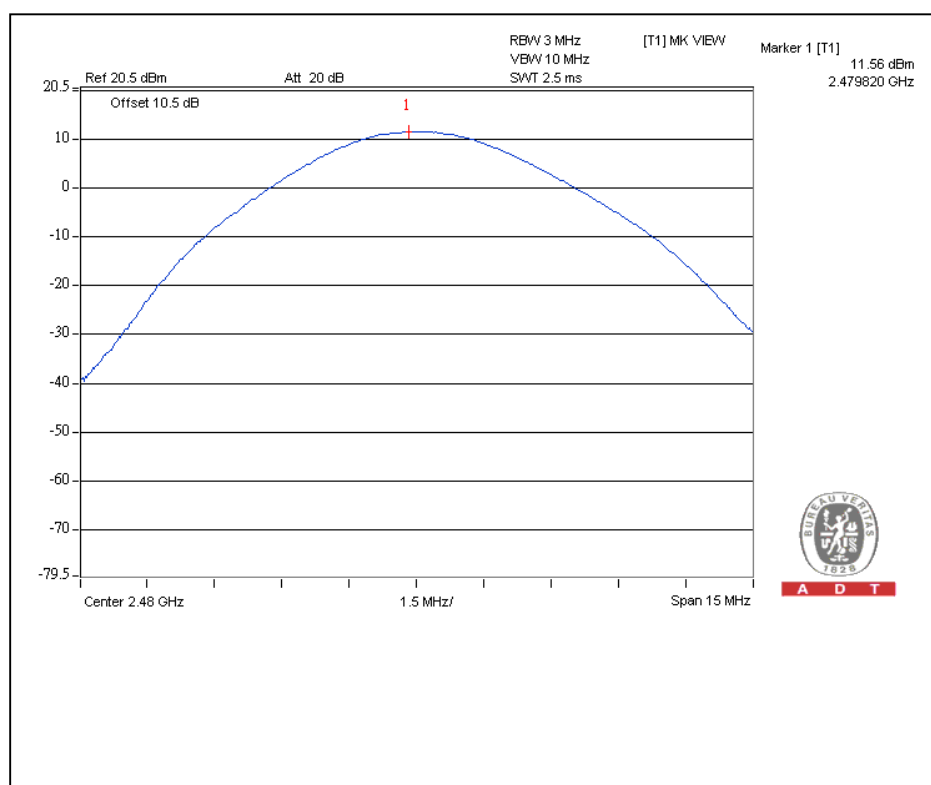
Channel 0



Channel 39



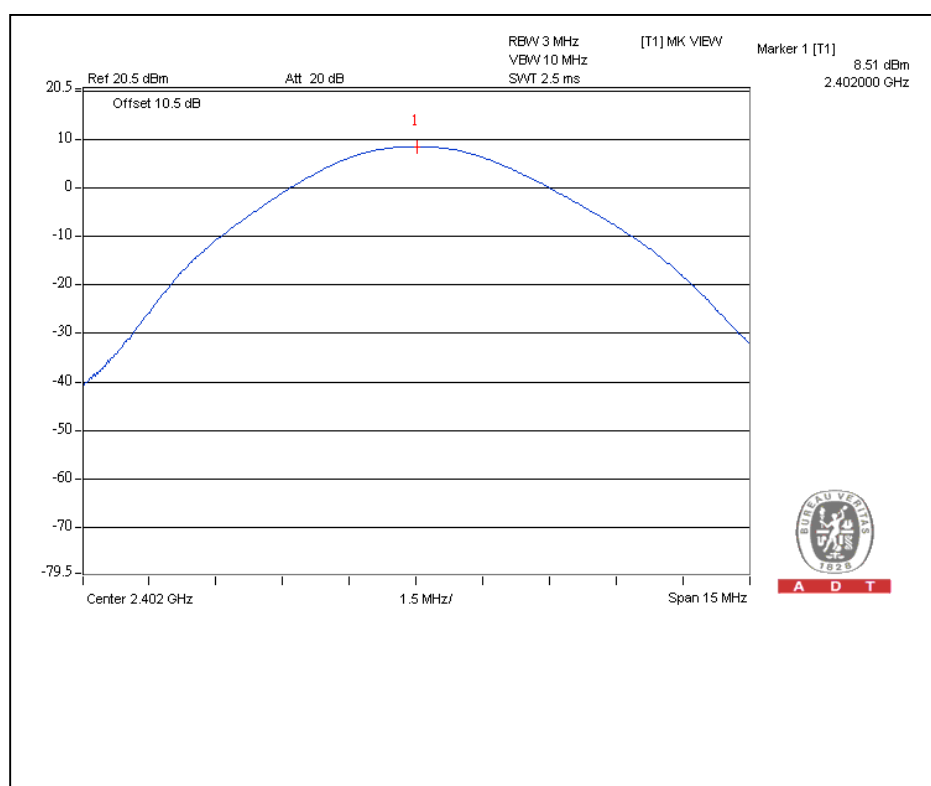
Channel 78



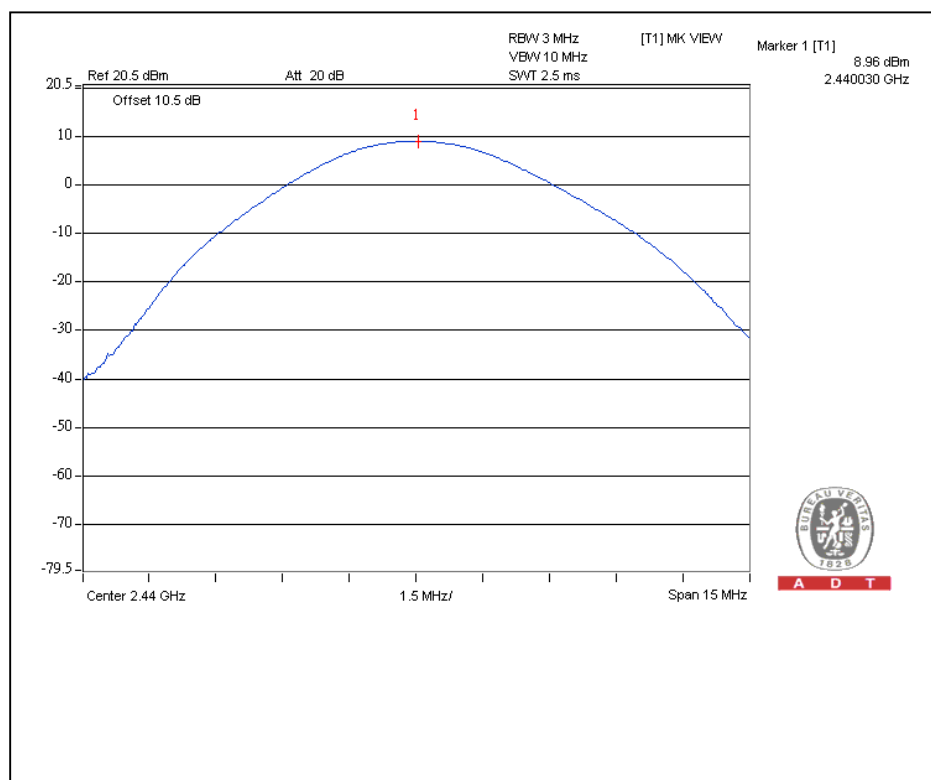
For additional GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	2402	8.5	7.1	125	PASS
19	2440	9.0	7.9	125	PASS
39	2480	9.1	8.1	125	PASS

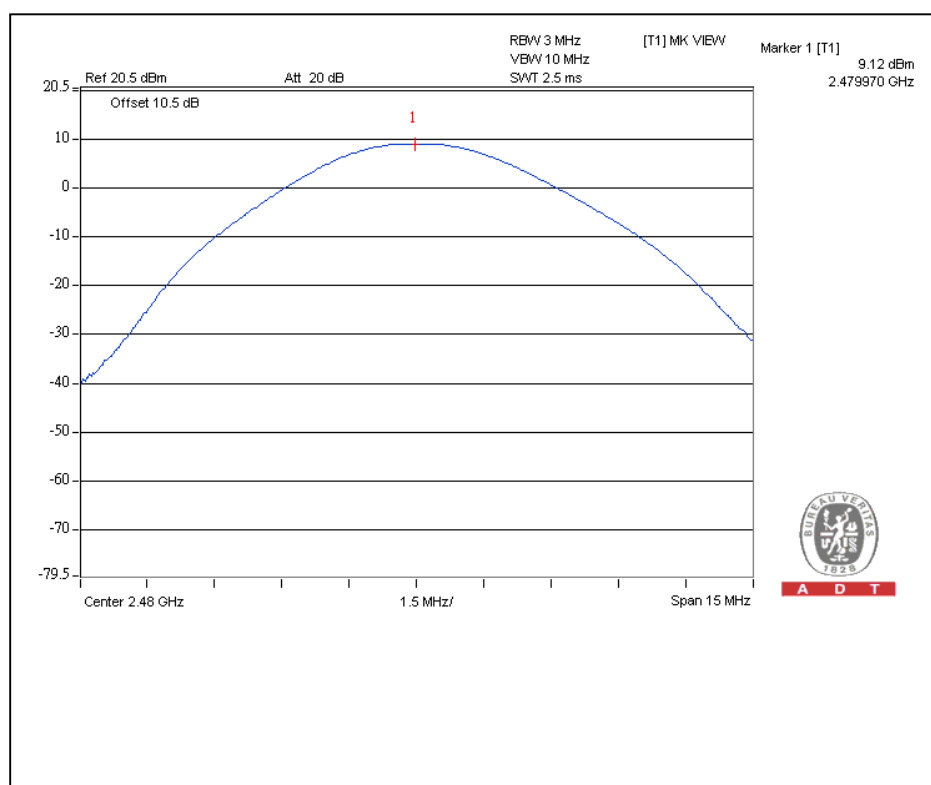
Channel 0



Channel 19



Channel 39



4.7 AVERAGE OUTPUT POWER

4.7.1 FOR REFERENCE.

4.7.2 INSTRUMENTS

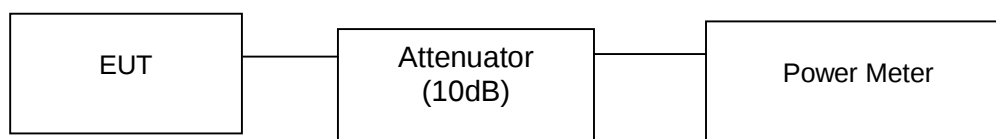
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Peak Power Meter	ML2495A	0824006	May 04, 2010	May 03, 2011
Power Sensor	MA2411B	0738172	May 04, 2010	May 03, 2011

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

1. The transmitter output was connected to the power meter through an attenuator, the bandwidth of the fundamental frequency was measured with the power meter.
2. Record the average power level.

4.7.4 TEST SETUP



4.7.5 EUT OPERATING CONDITION

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

4.7.6 TEST RESULTS

For GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)
0	2402	7.3
39	2441	7.4
78	2480	7.9

For 8DPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)
0	2402	7.6
39	2441	8.0
78	2480	8.2

For $\pi/4$ -DQPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)
0	2402	7.6
39	2441	8.0
78	2480	8.2

For additional GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)
0	2402	7.4
19	2440	7.8
39	2480	8.0

4.8 RADIATED EMISSION MEASUREMENT

4.8.1 LIMITS OF RADIATED EMISSION MEASUREMENT

For transmitter part:

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209(RSS-Gen table 5, 6) 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. 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.

For receiver part:

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in RSS-Gen table 2 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

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

**A D T**

4.8.2 TEST INSTRUMENTS

For Below 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250253	Aug. 23, 2010	Aug. 22, 2011
Agilent Pre-Selector	N9039A	MY46520310	Aug. 23, 2010	Aug. 22, 2011
Agilent Signal Generator	N5181A	MY49060347	July 30, 2010	July 29, 2011
LIG NEX1 Test Receiver	ER-265	L09068005	Oct. 25, 2010	Oct. 24, 2011
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-04	Nov. 16, 2010	Nov. 15, 2011
Agilent Pre-Amplifier	8449B	3008A02465	Feb. 28, 2011	Feb. 27, 2012
Miteq Pre-Amplifier	AFS33-1800265 0-30-8P-44	881786	NA	NA
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-361	Apr. 28, 2010	Apr. 27, 2011
AISI Horn_Antenna	AIH.8018	0000220091110	Nov. 22, 2010	Nov. 21, 2011
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 08, 2010	Oct. 07, 2011
RF CABLE	NA	RF104-205 RF104-207 RF104-202	Dec. 28, 2010	Dec. 27, 2011
RF Cable	NA	CHHCAB_001	NA	NA
Software	ADT_Radiated_ V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	NA	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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

3. The test was performed in 966 Chamber No. H.

4. The FCC Site Registration No. is 797305.

5. The CANADA Site Registration No. is IC 7450H-3.

**A D T****For Above 1GHz:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 14, 2010	July 13, 2011
Agilent Pre-Selector	N9039A	MY46520311	July 14, 2010	July 13, 2011
Agilent Signal Generator	N5181A	MY49060517	July 14, 2010	July 13, 2011
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 16, 2010	Nov. 15, 2011
Agilent Pre-Amplifier	8449B	3008A02578	July 05, 2010	July 04, 2011
Miteq Pre-Amplifier	AFS33-1800265 0-30-8P-44	881786	NA	NA
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 29, 2010	Apr. 28, 2011
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 12, 2010	Nov. 11, 2011
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 08, 2010	Oct. 07, 2011
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 27, 2010	Dec. 26, 2011
RF Cable	NA	CHGCAB_001	NA	NA
Software	ADT_Radiated_ V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	NA	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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

3. The test was performed in 966 Chamber No. G.

4. The FCC Site Registration No. is 966073.

5. The VCCI Site Registration No. is G-137.

6. The CANADA Site Registration No. is IC 7450H-2.

4.8.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna 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.
- a. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

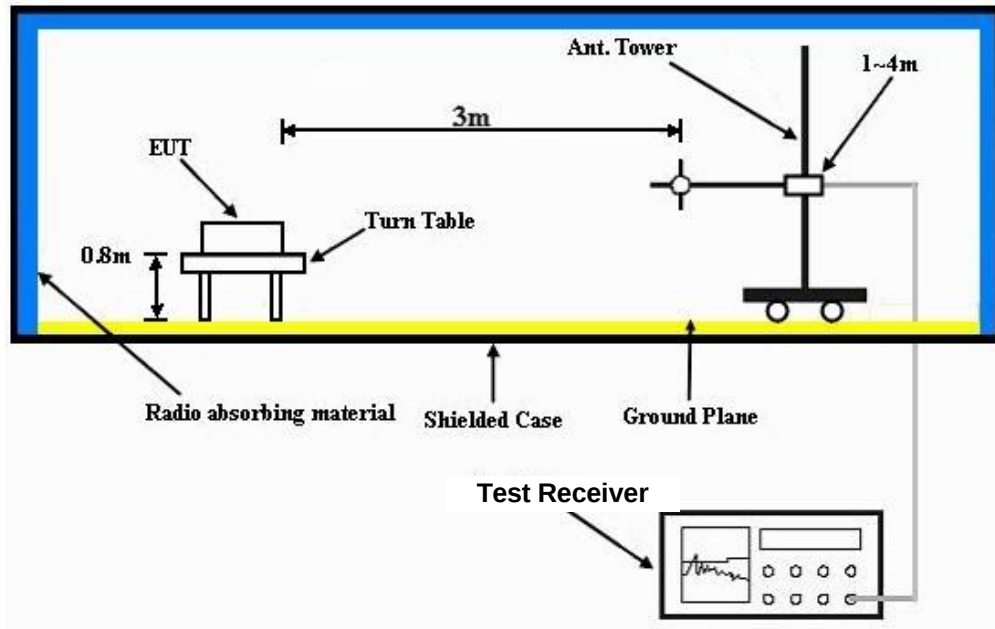
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

4.8.4 DEVIATION FROM TEST STANDARD

No deviation

4.8.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.8.6 TEST RESULTS (FOR TRANSMITTER PART)

4.8.6.1 TEST RESULTS (Bluetooth traditional GFSK/ π /4-DQPSK/ 8DPSK)

BELOW 1GHz WORST-CASE DATA : 8DPSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	19deg. C, 66%RH 1022 hPa	TESTED BY	Rex Huang

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	87.42	38.0 QP	40.0	-2.0	2.00 H	298	28.40	9.58
2	187.33	36.9 QP	43.5	-6.6	1.75 H	95	24.82	12.12
3	236.73	40.0 QP	46.0	-6.0	1.00 H	270	27.57	12.44
4	261.53	39.0 QP	46.0	-7.0	1.25 H	259	25.59	13.37
5	299.75	44.6 QP	46.0	-1.4	1.00 H	184	29.69	14.92
6	398.00	43.0 QP	46.0	-3.0	1.00 H	233	25.17	17.80
7	497.11	39.3 QP	46.0	-6.7	2.00 H	242	19.39	19.90
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	87.49	28.7 QP	40.0	-11.3	1.00 V	341	19.08	9.58
2	97.20	33.8 QP	43.5	-9.7	2.00 V	291	24.06	9.78
3	187.27	28.4 QP	43.5	-15.1	2.00 V	174	16.24	12.13
4	236.95	31.0 QP	46.0	-15.0	1.00 V	215	18.51	12.45
5	261.66	31.0 QP	46.0	-15.0	1.75 V	207	17.60	13.37
6	299.46	35.9 QP	46.0	-10.1	1.00 V	260	20.95	14.91
7	399.38	37.1 QP	46.0	-8.9	2.00 V	283	19.30	17.84
8	799.35	33.1 QP	46.0	-12.9	1.25 V	242	8.23	24.85

- 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

ABOVE 1GHz WORST-CASE 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	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

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	55.9 PK	74.0	-18.1	1.62 H	278	24.24	31.66
2	2390.00	43.6 AV	54.0	-10.4	1.62 H	278	11.94	31.66
3	*2402.00	110.1 PK			1.62 H	278	78.40	31.70
4	*2402.00	97.7 AV			1.62 H	278	66.00	31.70
5	4804.00	52.6 PK	74.0	-21.4	1.07 H	53	13.70	38.90
6	4804.00	43.8 AV	54.0	-10.2	1.07 H	53	4.90	38.90
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	56.5 PK	74.0	-17.5	1.34 V	79	24.84	31.66
2	2390.00	43.6 AV	54.0	-10.4	1.34 V	79	11.94	31.66
3	*2402.00	107.2 PK			1.34 V	79	75.50	31.70
4	*2402.00	93.6 AV			1.34 V	79	61.90	31.70
5	4804.00	52.2 PK	74.0	-21.8	1.05 V	340	13.30	38.90
6	4804.00	40.4 AV	54.0	-13.6	1.05 V	340	1.50	38.90

- 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.



A D T

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	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	109.4 PK			1.58 H	280	77.57	31.83
2	*2441.00	97.3 AV			1.58 H	280	65.47	31.83
3	4882.00	53.9 PK	74.0	-20.1	1.04 H	49	14.73	39.17
4	4882.00	45.1 AV	54.0	-8.9	1.04 H	49	5.93	39.17
5	7323.00	55.2 PK	74.0	-18.8	1.33 H	191	8.57	46.63
6	7323.00	41.4 AV	54.0	-12.6	1.33 H	191	-5.23	46.63
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	106.9 PK			1.39 V	79	75.07	31.83
2	*2441.00	93.4 AV			1.39 V	79	61.57	31.83
3	4882.00	52.6 PK	74.0	-21.4	1.04 V	339	13.43	39.17
4	4882.00	41.2 AV	54.0	-12.8	1.04 V	339	2.03	39.17
5	7323.00	54.3 PK	74.0	-19.7	1.11 V	241	7.67	46.63
6	7323.00	41.5 AV	54.0	-12.5	1.11 V	241	-5.13	46.63

- 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.



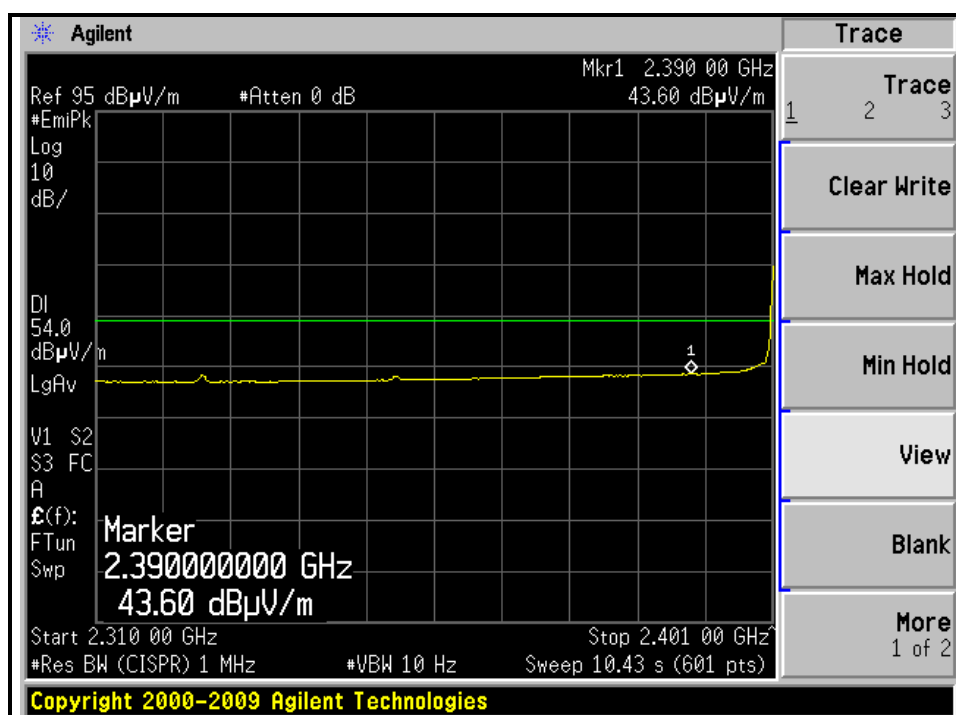
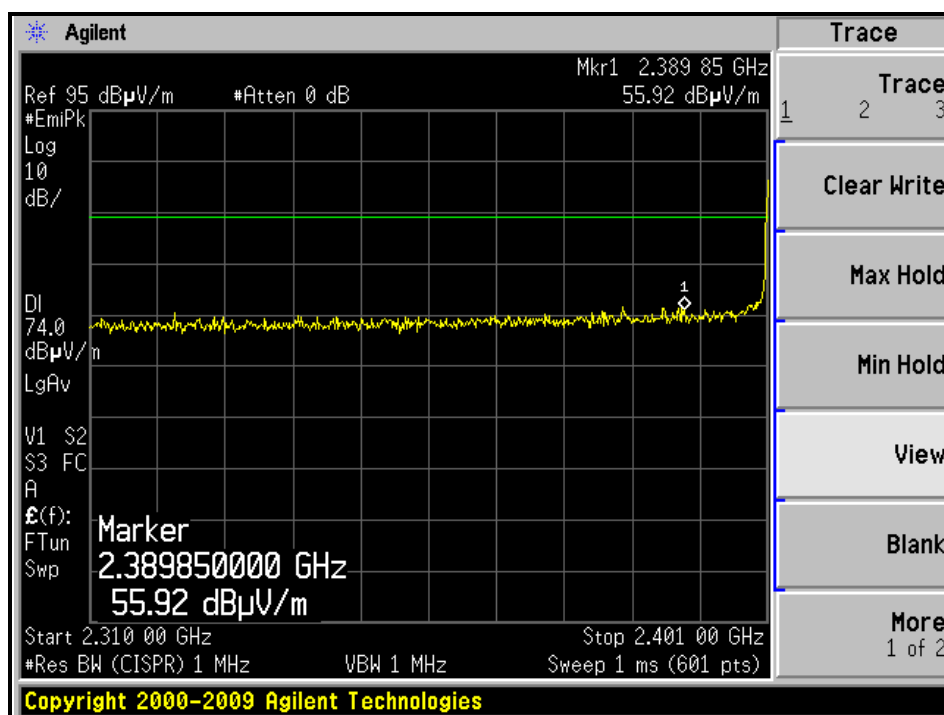
A D T

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	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

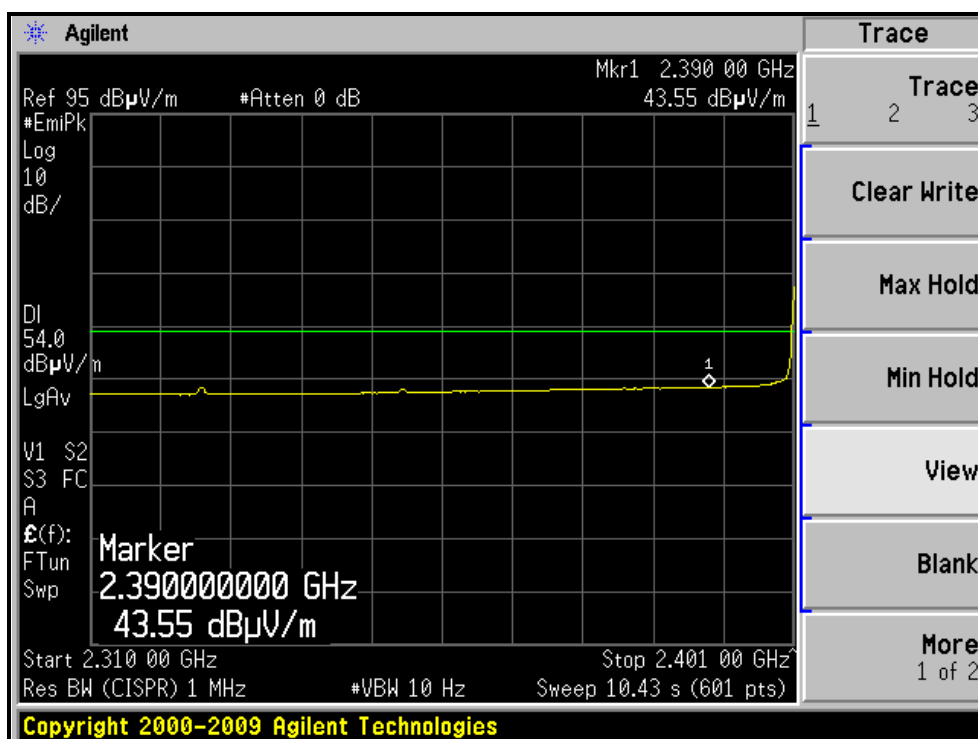
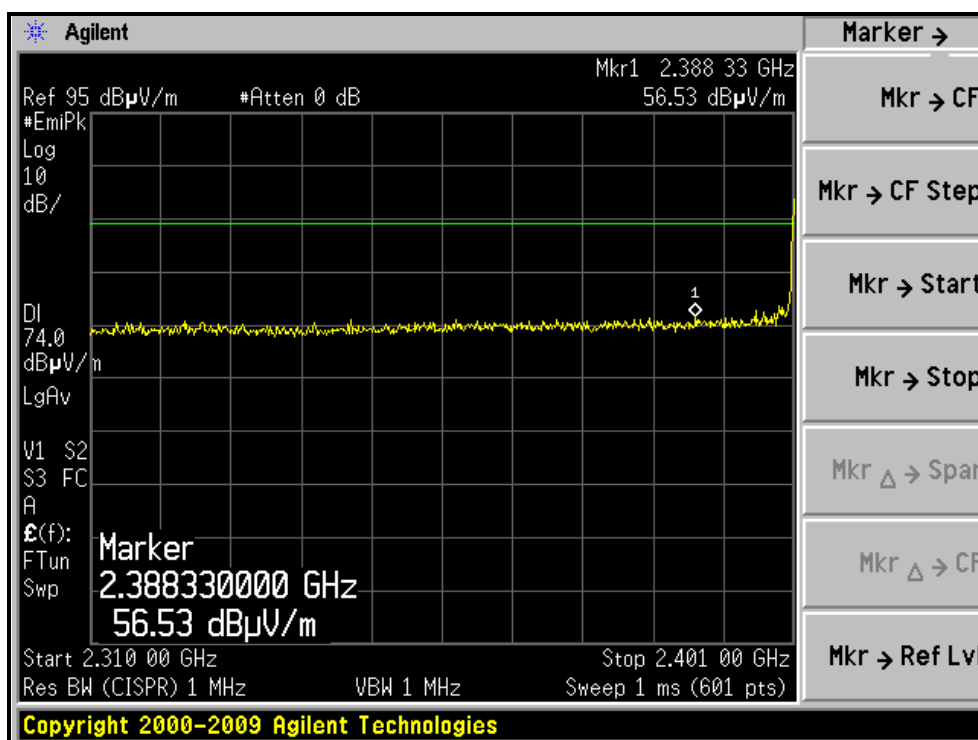
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	108.9 PK			1.52 H	280	76.95	31.95
2	*2480.00	96.8 AV			1.52 H	280	64.85	31.95
3	2483.50	57.3 PK	74.0	-16.7	1.51 H	278	25.33	31.97
4	2483.50	44.4 AV	54.0	-9.6	1.51 H	278	12.43	31.97
5	4960.00	55.1 PK	74.0	-18.9	1.03 H	49	15.68	39.42
6	4960.00	47.0 AV	54.0	-7.0	1.03 H	49	7.58	39.42
7	7440.00	55.1 PK	74.0	-18.9	1.31 H	192	8.54	46.56
8	7440.00	41.5 AV	54.0	-12.5	1.31 H	192	-5.06	46.56
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	*2480.00	106.7 PK			1.51 V	84	74.75	31.95
2	*2480.00	93.1 AV			1.51 V	84	61.15	31.95
3	2483.50	57.1 PK	74.0	-16.9	1.51 V	84	25.13	31.97
4	2483.50	43.8 AV	54.0	-10.2	1.51 V	84	11.83	31.97
5	4960.00	53.5 PK	74.0	-20.5	1.03 V	326	14.08	39.42
6	4960.00	41.9 AV	54.0	-12.1	1.03 V	326	2.48	39.42
7	7440.00	54.8 PK	74.0	-19.2	1.12 V	204	8.24	46.56
8	7440.00	41.6 AV	54.0	-12.4	1.12 V	204	-4.96	46.56

- 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.
 5. “ * “: Fundamental frequency.

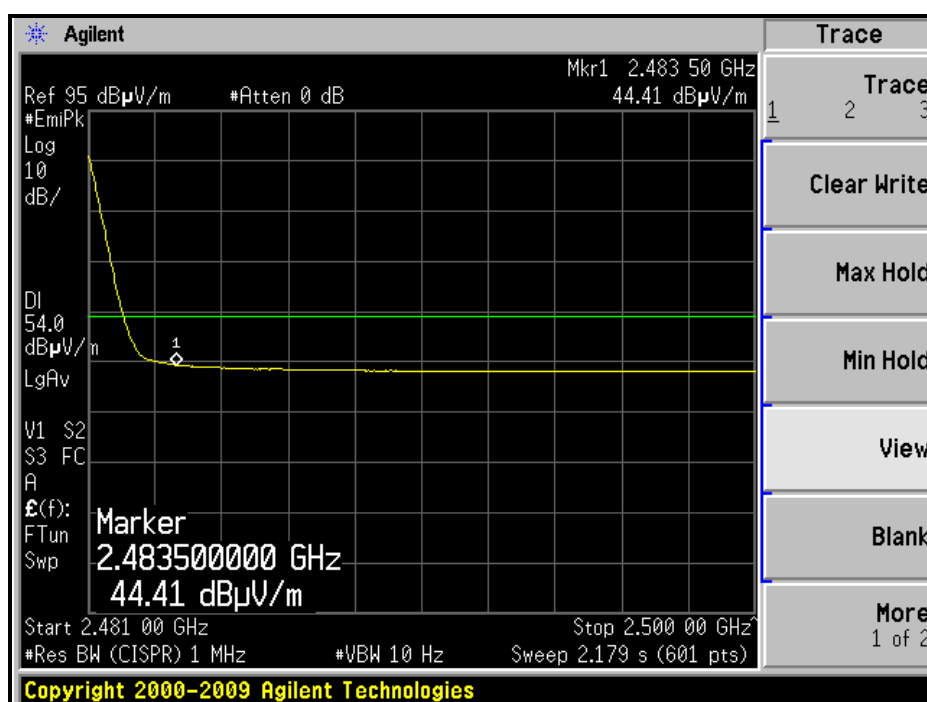
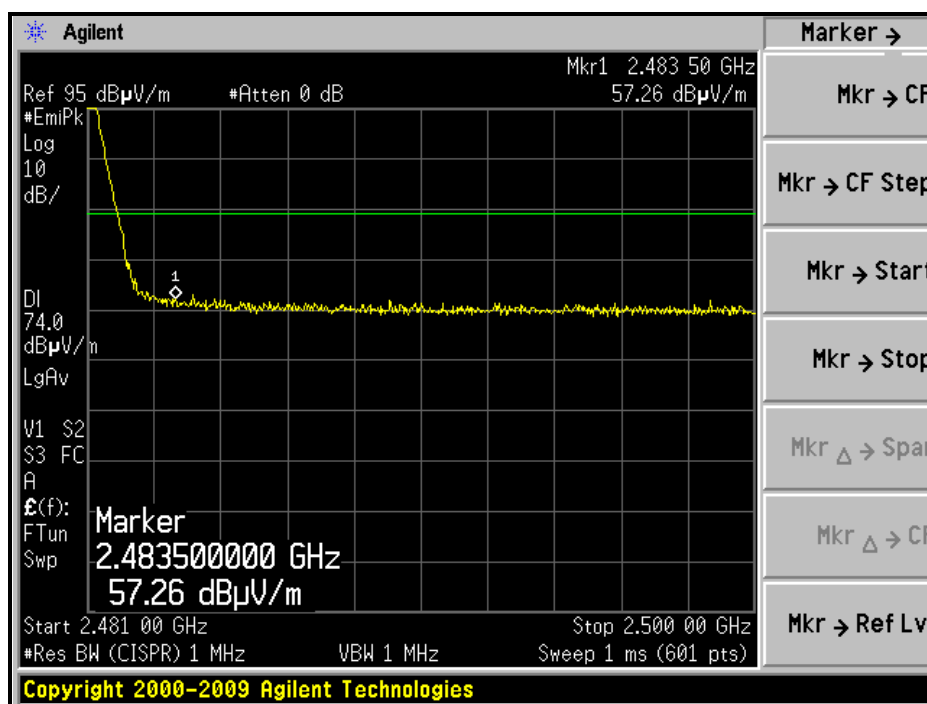
RESTRICTED BANDEDGE (GFSK MODE, CH0, HORIZONTAL)



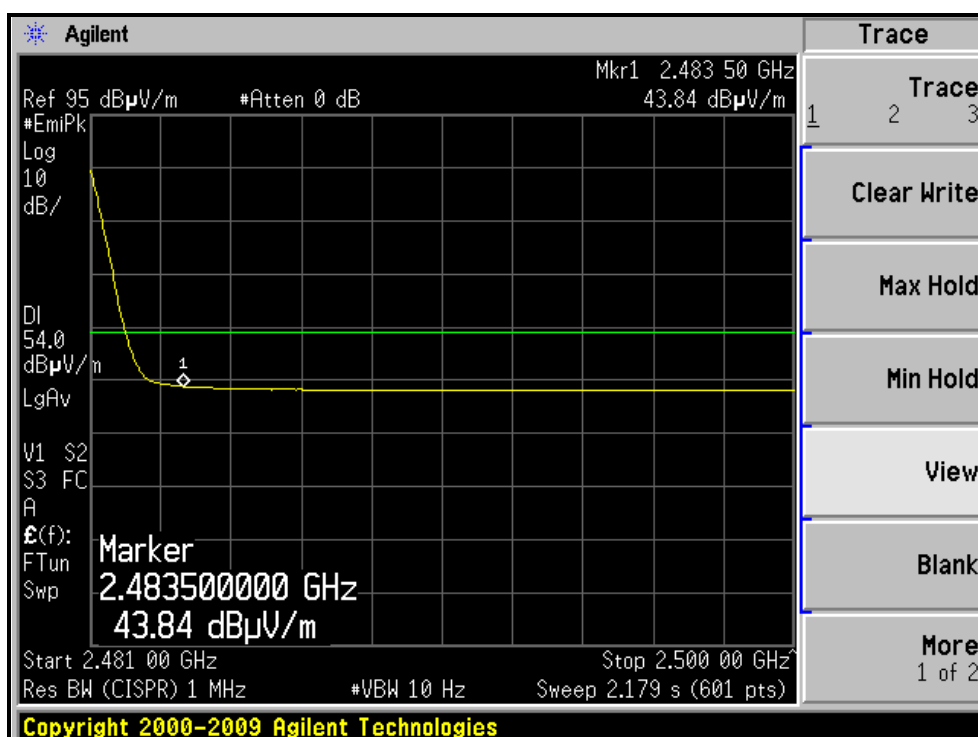
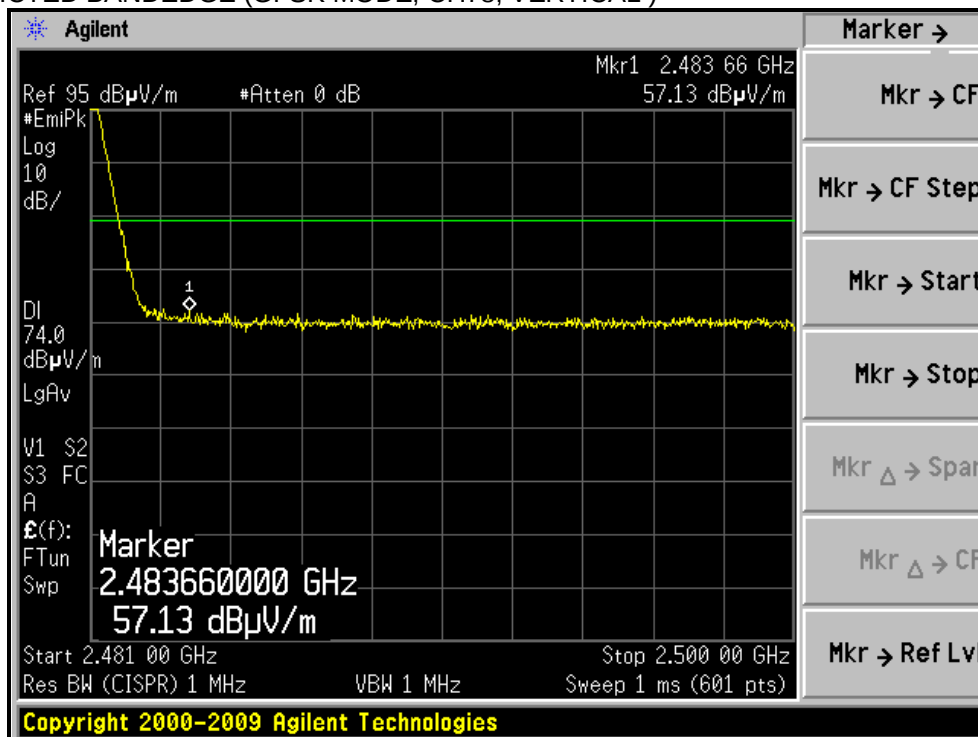
RESTRICTED BANDEDGE (GFSK MODE, CH0, VERTICAL)



RESTRICTED BANDEDGE (GFSK MODE, CH78, HORIZONTAL)



RESTRICTED BANDEDGE (GFSK MODE, CH78, VERTICAL)





A D T

8DPSK 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	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

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	56.4 PK	74.0	-17.6	1.62 H	278	24.74	31.66
2	2390.00	43.6 AV	54.0	-10.4	1.62 H	278	11.94	31.66
3	*2402.00	110.8 PK			1.62 H	278	79.10	31.70
4	*2402.00	96.3 AV			1.62 H	278	64.60	31.70
5	4804.00	54.5 PK	74.0	-19.5	1.07 H	53	15.60	38.90
6	4804.00	42.8 AV	54.0	-11.2	1.07 H	53	3.90	38.90
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	57.6 PK	74.0	-16.4	1.34 V	79	25.94	31.66
2	2390.00	43.6 AV	54.0	-10.4	1.34 V	79	11.94	31.66
3	*2402.00	108.7 PK			1.34 V	79	77.00	31.70
4	*2402.00	94.6 AV			1.34 V	79	62.90	31.70
5	4804.00	52.3 PK	74.0	-21.7	1.05 V	340	13.40	38.90
6	4804.00	40.8 AV	54.0	-13.2	1.05 V	340	1.90	38.90

- 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.



A D T

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	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	110.5 PK			1.57 H	280	78.67	31.83
2	*2441.00	96.4 AV			1.57 H	280	64.57	31.83
3	4882.00	56.7 PK	74.0	-17.3	1.05 H	49	17.53	39.17
4	4882.00	45.5 AV	54.0	-8.5	1.05 H	49	6.33	39.17
5	7323.00	55.1 PK	74.0	-18.9	1.32 H	192	8.47	46.63
6	7323.00	41.5 AV	54.0	-12.5	1.32 H	192	-5.13	46.63
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	108.4 PK			1.38 V	78	76.57	31.83
2	*2441.00	94.5 AV			1.38 V	78	62.67	31.83
3	4882.00	53.4 PK	74.0	-20.6	1.05 V	337	14.23	39.17
4	4882.00	41.6 AV	54.0	-12.4	1.05 V	337	2.43	39.17
5	7323.00	54.5 PK	74.0	-19.5	1.12 V	243	7.87	46.63
6	7323.00	41.5 AV	54.0	-12.5	1.12 V	243	-5.13	46.63

- 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.



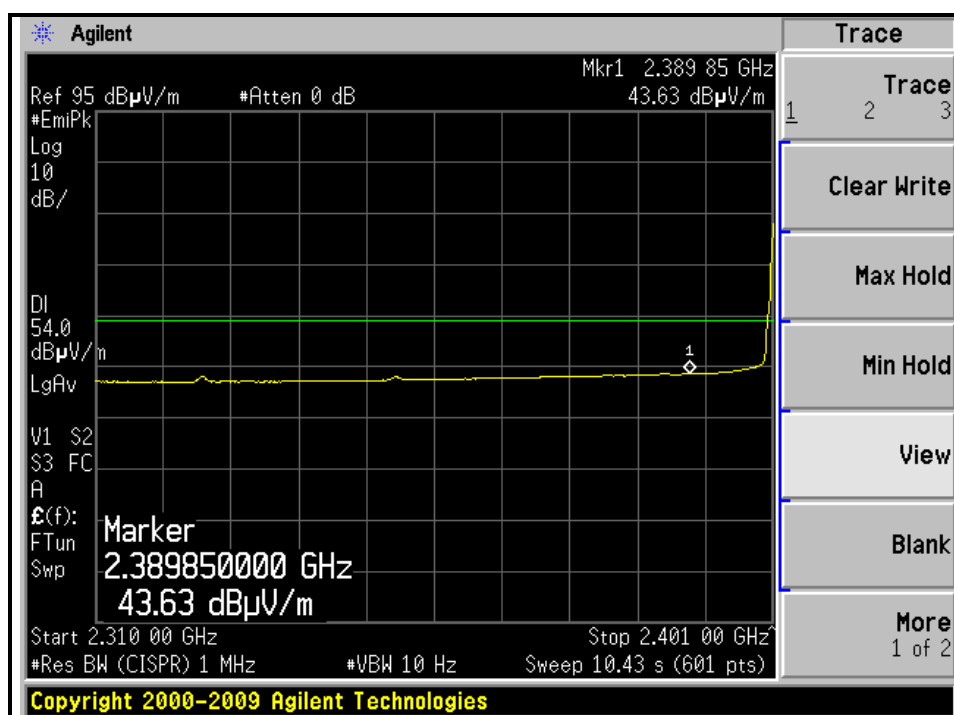
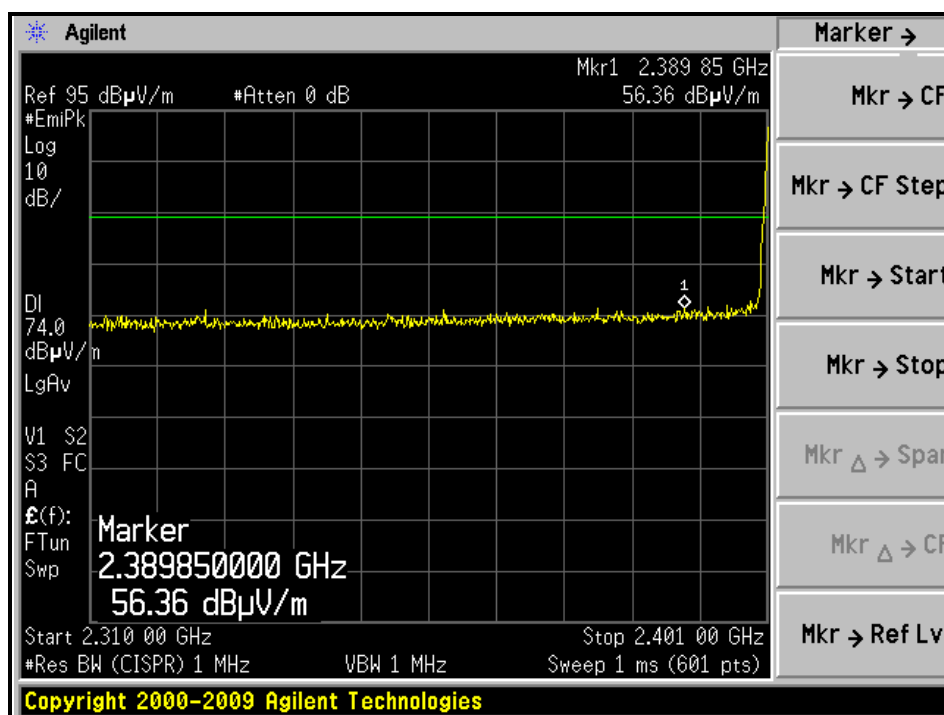
A D T

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	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

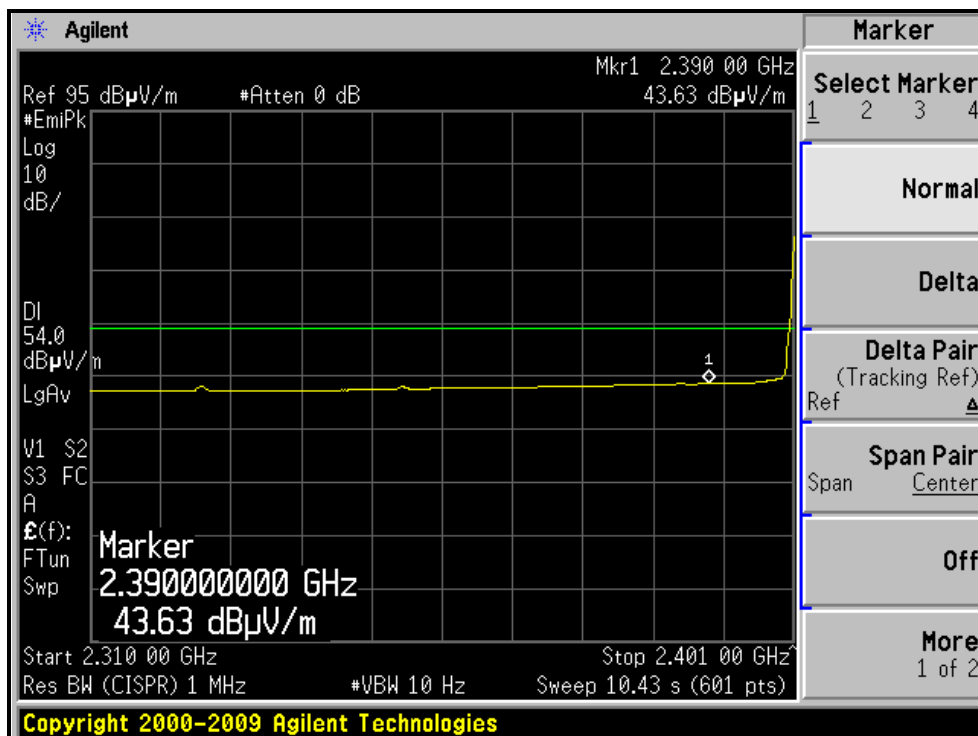
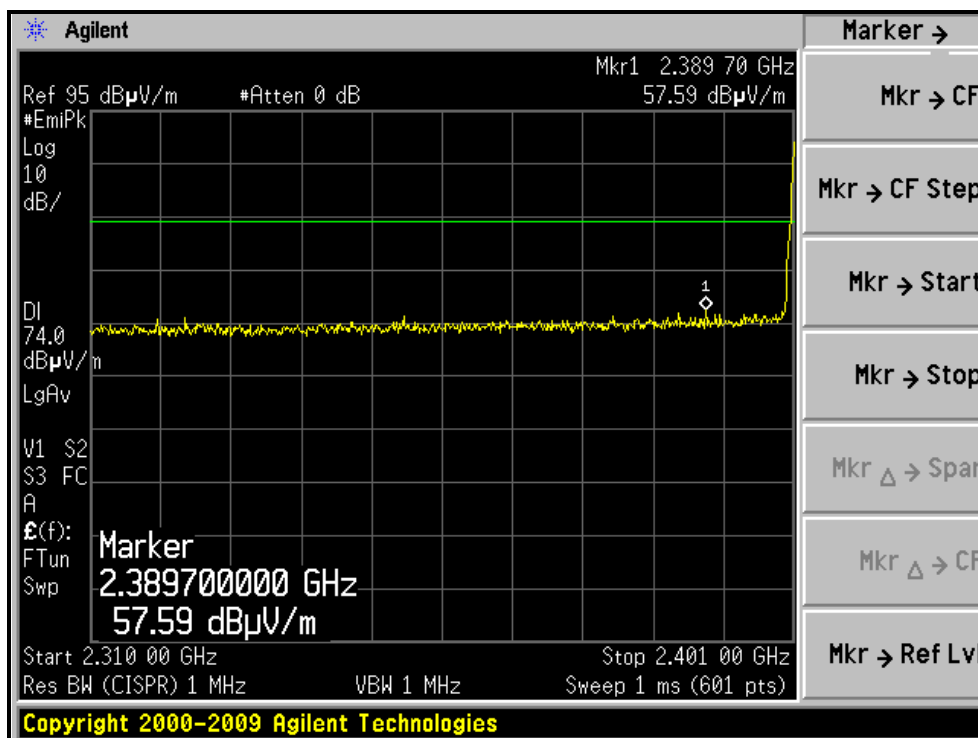
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	110.1 PK			1.51 H	278	78.15	31.95
2	*2480.00	96.5 AV			1.51 H	278	64.55	31.95
3	2483.50	57.3 PK	74.0	-16.7	1.51 H	278	25.33	31.97
4	2483.50	44.6 AV	54.0	-9.4	1.51 H	278	12.63	31.97
5	4960.00	56.8 PK	74.0	-17.2	1.03 H	49	17.38	39.42
6	4960.00	45.9 AV	54.0	-8.1	1.03 H	49	6.48	39.42
7	7440.00	54.9 PK	74.0	-19.1	1.31 H	196	8.34	46.56
8	7440.00	41.6 AV	54.0	-12.4	1.31 H	196	-4.96	46.56
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	*2480.00	108.1 PK			1.51 V	84	76.15	31.95
2	*2480.00	94.8 AV			1.51 V	84	62.85	31.95
3	2483.50	56.2 PK	74.0	-17.8	1.51 V	84	24.23	31.97
4	2483.50	43.9 AV	54.0	-10.1	1.51 V	84	11.93	31.97
5	4960.00	53.3 PK	74.0	-20.7	1.03 V	327	13.88	39.42
6	4960.00	41.4 AV	54.0	-12.6	1.03 V	327	1.98	39.42
7	7440.00	54.9 PK	74.0	-19.1	1.12 V	204	8.34	46.56
8	7440.00	41.6 AV	54.0	-12.4	1.12 V	204	-4.96	46.56

- 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.
 5. “ * “: Fundamental frequency.

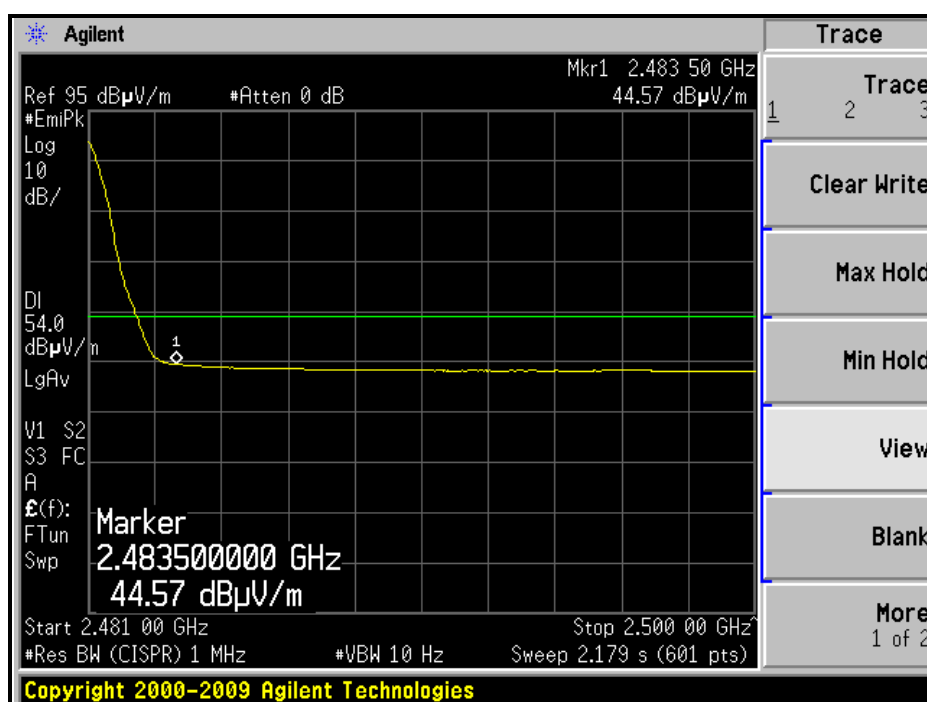
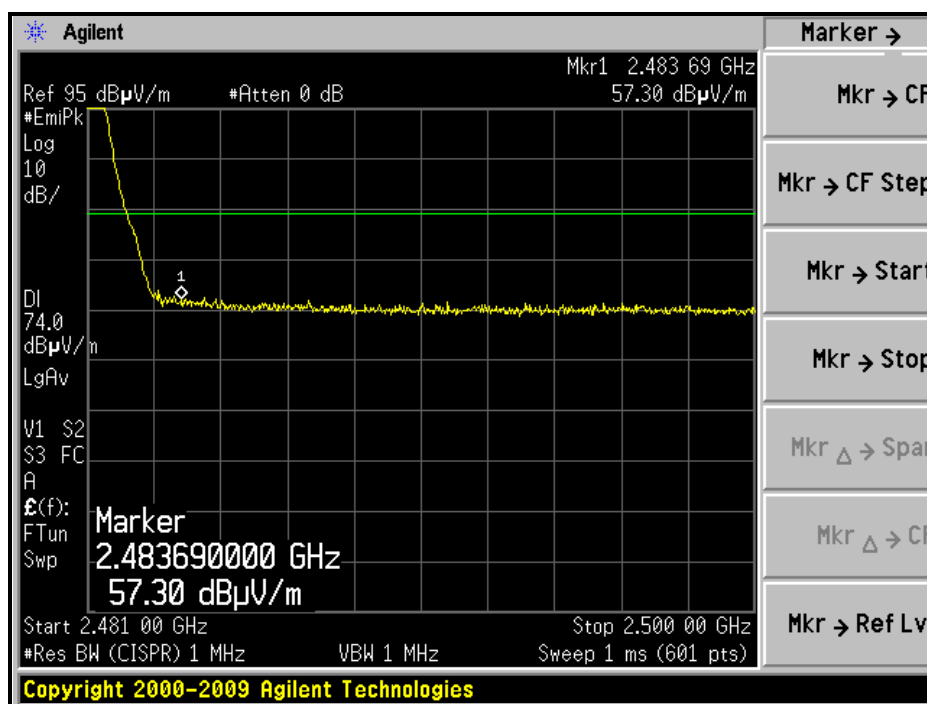
RESTRICTED BANDEDGE (8DPSK MODE, CH0, HORIZONTAL)



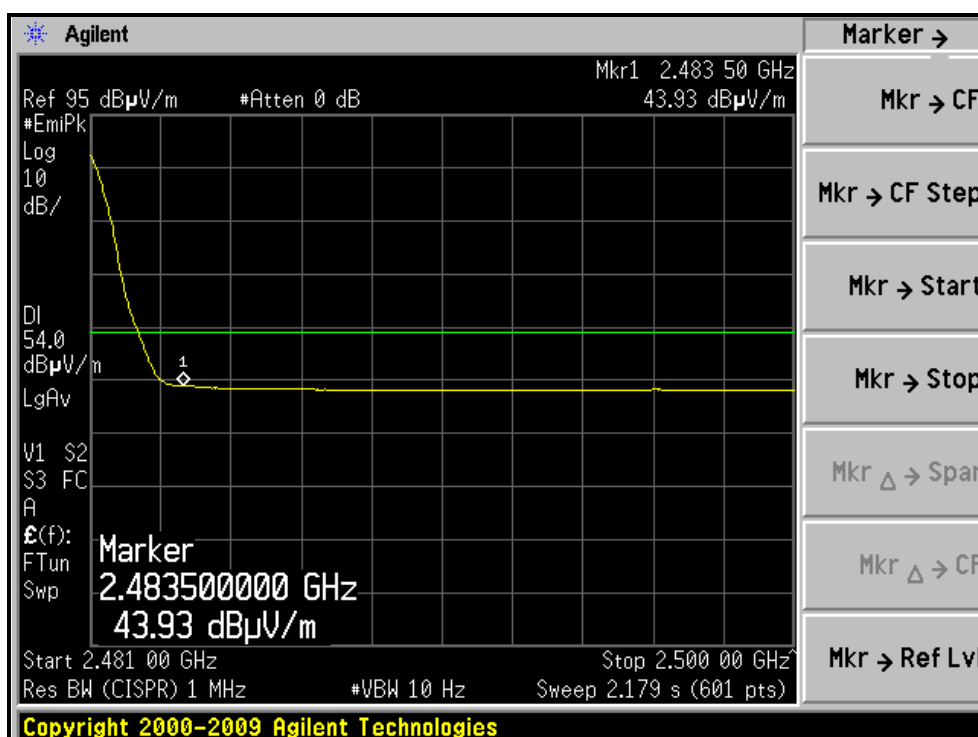
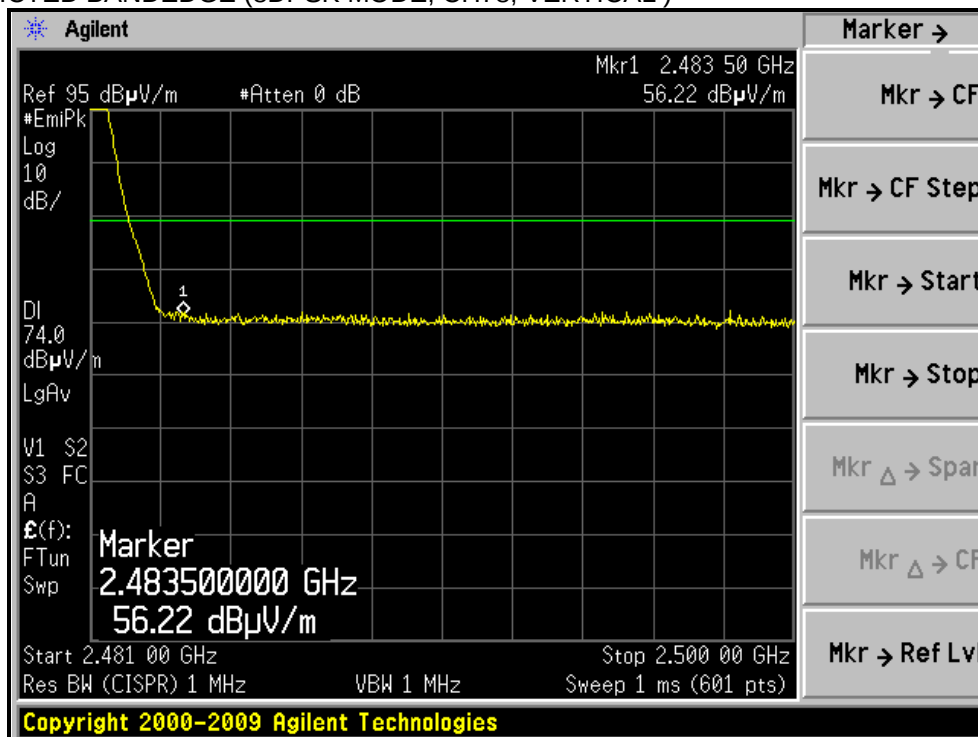
RESTRICTED BANDEDGE (8DPSK MODE, CH0, VERTICAL)



RESTRICTED BANDEDGE (8DPSK MODE, CH78, HORIZONTAL)



RESTRICTED BANDEDGE (8DPSK MODE, CH78, VERTICAL)





A D T

4.8.6.2 TEST RESULTS (Bluetooth additional GFSK)

BELOW 1GHz WORST-CASE DATA :

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	19deg. C, 66%RH 1022 hPa	TESTED BY	Rex Huang

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	87.30	38.1 QP	40.0	-1.9	2.00 H	298	28.48	9.58
2	187.35	36.9 QP	43.5	-6.6	1.75 H	95	24.77	12.12
3	236.60	40.0 QP	46.0	-6.1	1.02 H	274	27.51	12.44
4	261.30	38.7 QP	46.0	-7.3	1.25 H	261	25.37	13.36
5	298.00	44.8 QP	46.0	-1.2	1.07 H	183	29.97	14.85
6	399.00	43.1 QP	46.0	-2.9	1.00 H	227	25.26	17.83
7	497.00	39.4 QP	46.0	-6.6	1.96 H	248	19.47	19.90
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	87.49	28.8 QP	40.0	-11.2	1.00 V	334	19.26	9.58
2	97.20	34.0 QP	43.5	-9.5	1.58 V	287	24.22	9.78
3	187.27	28.6 QP	43.5	-14.9	1.94 V	179	16.51	12.13
4	236.60	30.7 QP	46.0	-15.3	1.00 V	223	18.23	12.44
5	262.00	30.8 QP	46.0	-15.2	1.73 V	210	17.42	13.39
6	299.70	35.7 QP	46.0	-10.3	1.05 V	256	20.74	14.92
7	399.90	37.3 QP	46.0	-8.8	1.96 V	283	19.39	17.86
8	799.00	33.3 QP	46.0	-12.7	1.24 V	241	8.43	24.85

- 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

ABOVE 1GHz WORST-CASE DATA :

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	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

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	56.6 PK	74.0	-17.4	1.62 H	278	24.94	31.66
2	2390.00	43.7 AV	54.0	-10.3	1.62 H	278	12.04	31.66
3	*2402.00	109.8 PK			1.62 H	278	78.10	31.70
4	*2402.00	84.8 AV			1.62 H	278	53.10	31.70
5	4804.00	52.7 PK	74.0	-21.3	1.08 H	49	13.80	38.90
6	4804.00	40.8 AV	54.0	-13.2	1.08 H	49	1.90	38.90
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	56.0 PK	74.0	-18.0	1.34 V	79	24.34	31.66
2	2390.00	43.7 AV	54.0	-10.3	1.34 V	79	12.04	31.66
3	*2402.00	107.5 PK			1.34 V	79	75.80	31.70
4	*2402.00	83.2 AV			1.34 V	79	51.50	31.70
5	4804.00	51.2 PK	74.0	-22.8	1.03 V	323	12.30	38.90
6	4804.00	38.6 AV	54.0	-15.4	1.03 V	323	-0.30	38.90

- 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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 19	FREQUENCY RANGE	1 ~ 12.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	109.9 PK			1.58 H	279	78.08	31.82
2	*2440.00	84.7 AV			1.58 H	279	52.88	31.82
3	4880.00	54.3 PK	74.0	-19.7	1.06 H	49	15.14	39.16
4	4880.00	42.6 AV	54.0	-11.4	1.06 H	49	3.44	39.16
5	7320.00	55.1 PK	74.0	-18.9	1.55 H	274	8.47	46.63
6	7320.00	41.9 AV	54.0	-12.1	1.55 H	274	-4.73	46.63
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	107.4 PK			1.42 V	81	75.58	31.82
2	*2440.00	83.1 AV			1.42 V	81	51.28	31.82
3	4880.00	52.0 PK	74.0	-22.0	1.05 V	328	12.84	39.16
4	4880.00	39.6 AV	54.0	-14.4	1.05 V	328	0.44	39.16
5	7320.00	54.9 PK	74.0	-19.1	1.12 V	243	8.27	46.63
6	7320.00	41.8 AV	54.0	-12.2	1.12 V	243	-4.83	46.63

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.



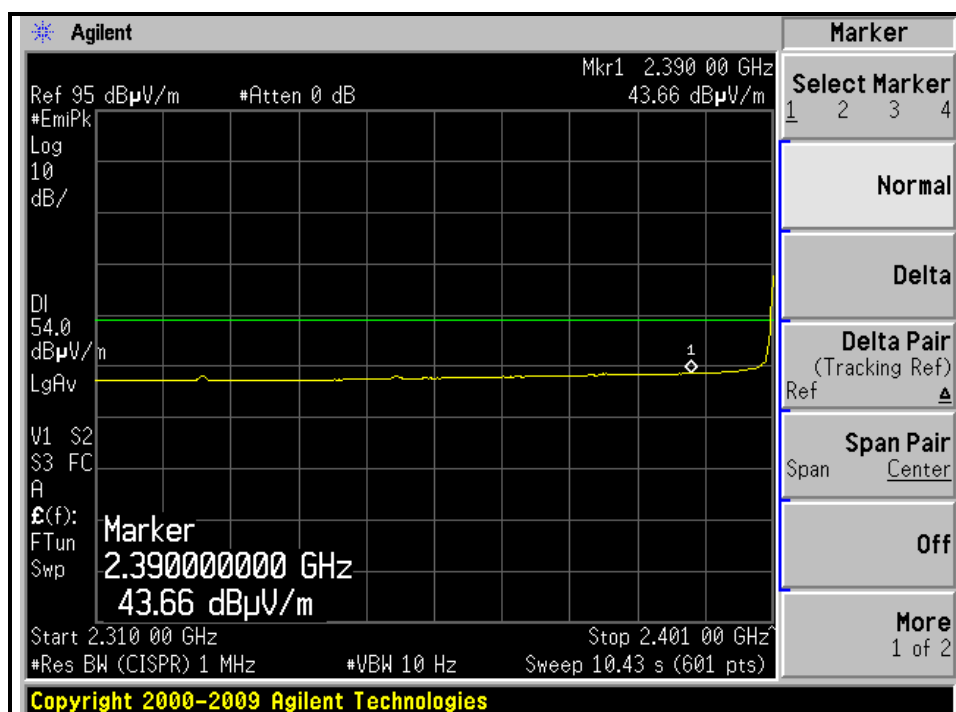
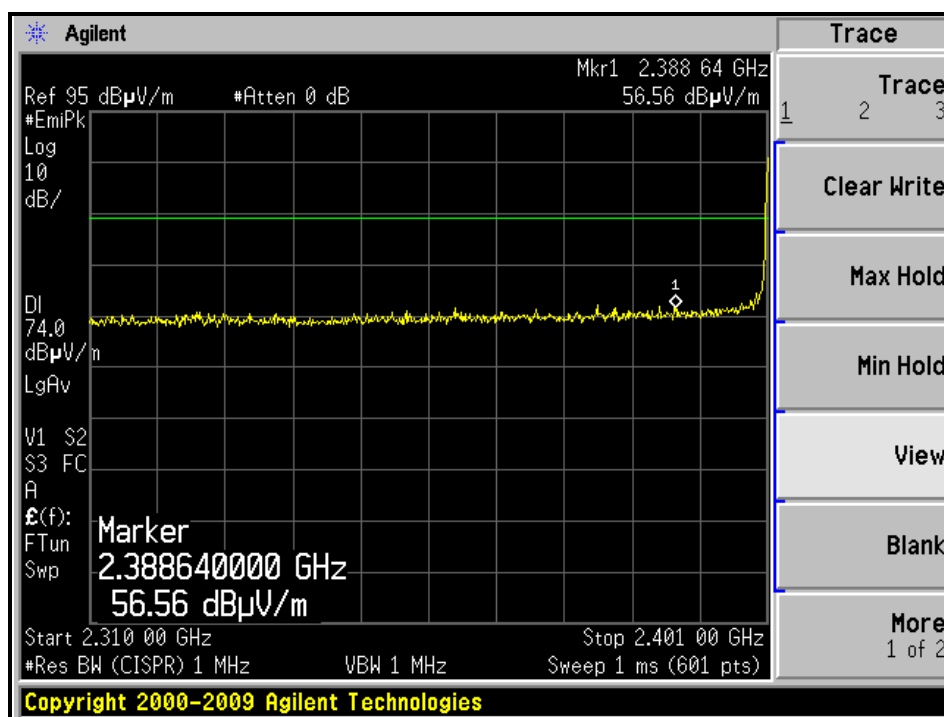
A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 12.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

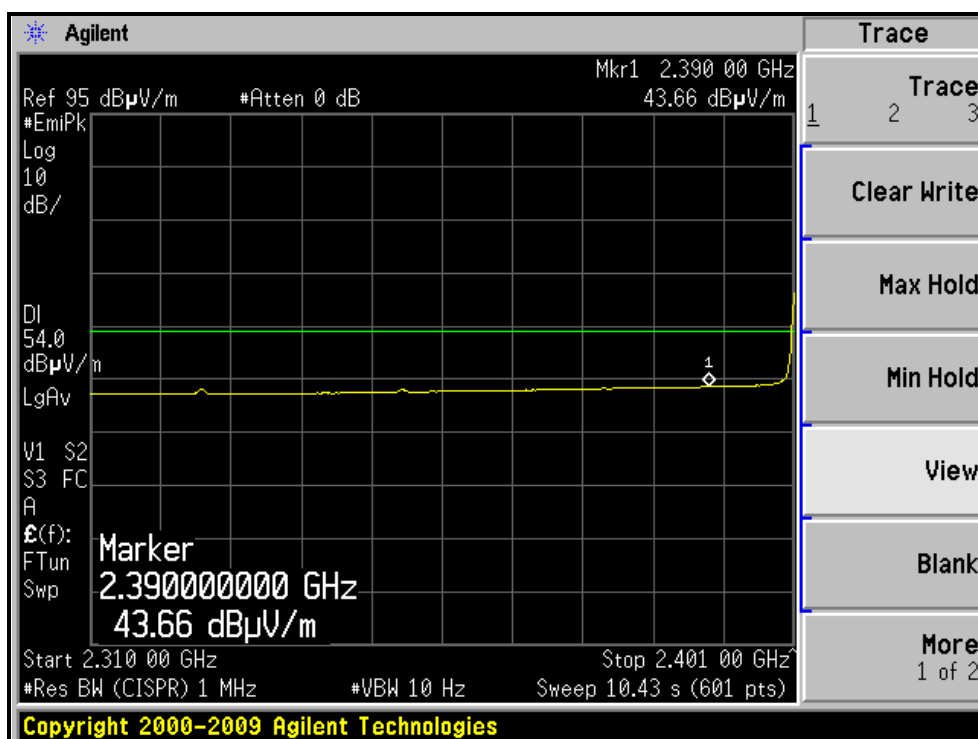
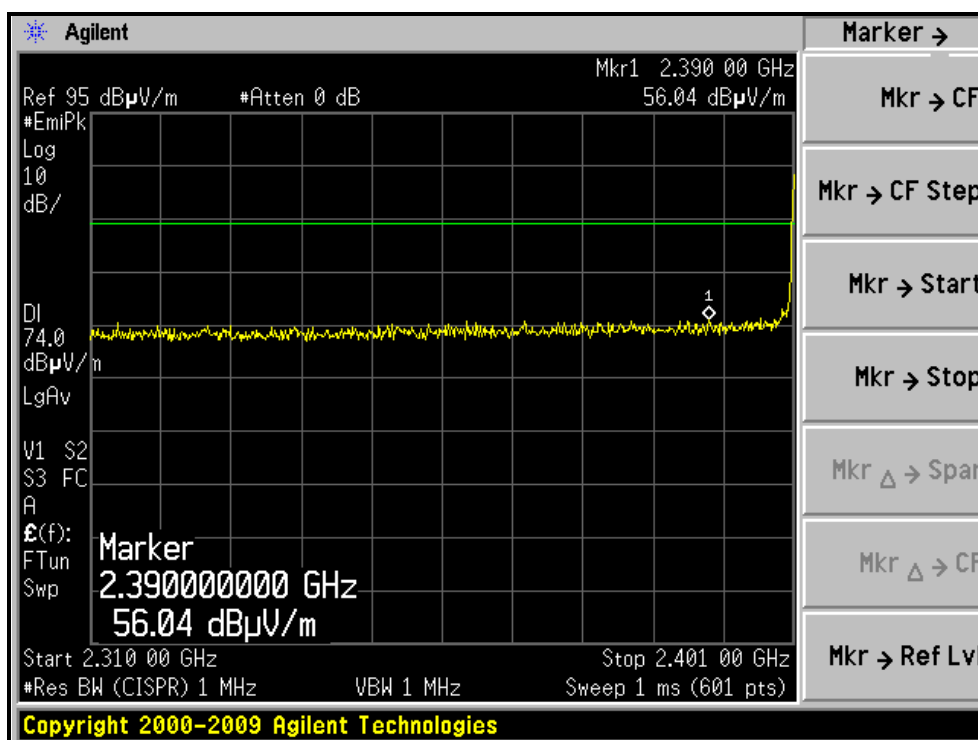
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	109.0 PK			1.51 H	280	77.05	31.95
2	*2480.00	84.5 AV			1.51 H	280	52.55	31.95
3	2483.50	57.8 PK	74.0	-16.2	1.51 H	280	25.83	31.97
4	2483.50	44.3 AV	54.0	-9.7	1.51 H	280	12.33	31.97
5	4960.00	55.1 PK	74.0	-18.9	1.02 H	49	15.68	39.42
6	4960.00	43.4 AV	54.0	-10.6	1.02 H	49	3.98	39.42
7	7440.00	54.8 PK	74.0	-19.2	1.53 H	276	8.24	46.56
8	7440.00	41.7 AV	54.0	-12.3	1.53 H	276	-4.86	46.56
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	*2480.00	107.1 PK			1.51 V	84	75.15	31.95
2	*2480.00	82.9 AV			1.51 V	84	50.95	31.95
3	2483.50	56.8 PK	74.0	-17.2	1.51 V	84	24.83	31.97
4	2483.50	43.8 AV	54.0	-10.2	1.51 V	84	11.83	31.97
5	4960.00	52.9 PK	74.0	-21.1	1.03 V	328	13.48	39.42
6	4960.00	41.0 AV	54.0	-13.0	1.03 V	328	1.58	39.42
7	7440.00	55.1 PK	74.0	-18.9	1.11 V	240	8.54	46.56
8	7440.00	41.6 AV	54.0	-12.4	1.11 V	240	-4.96	46.56

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.
5. “ * ”: Fundamental frequency.

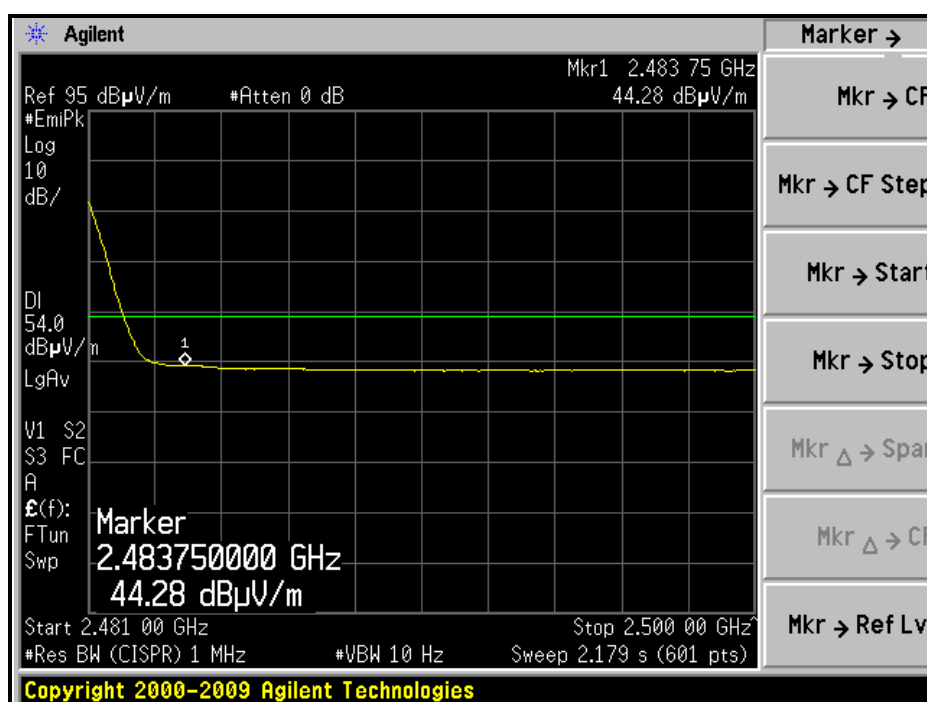
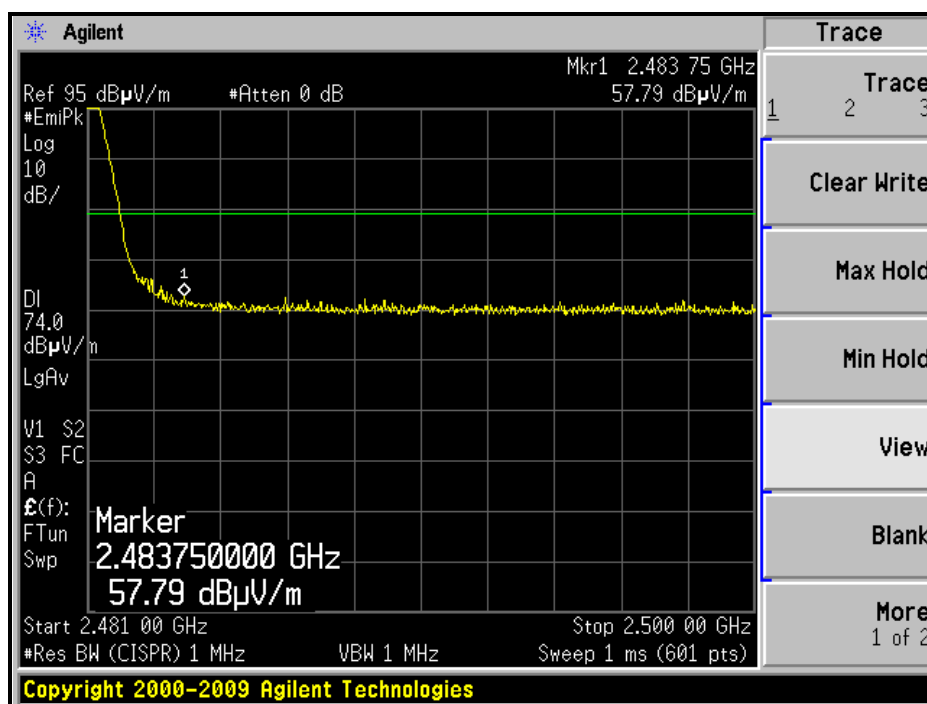
RESTRICTED BANDEDGE (additional GFSK MODE, CH0, HORIZONTAL)



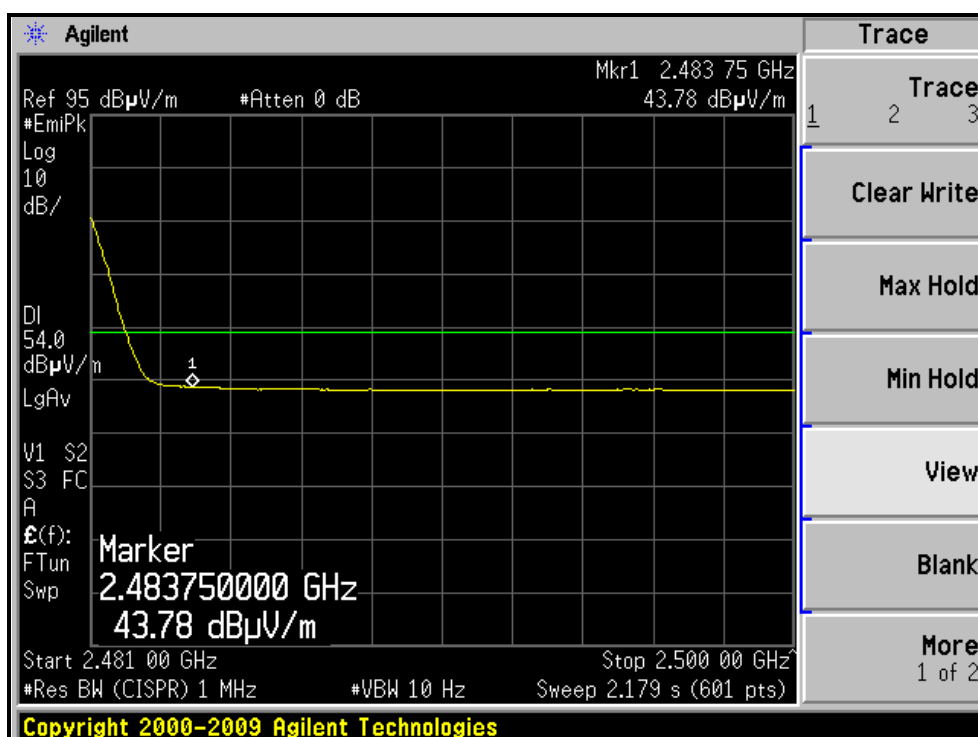
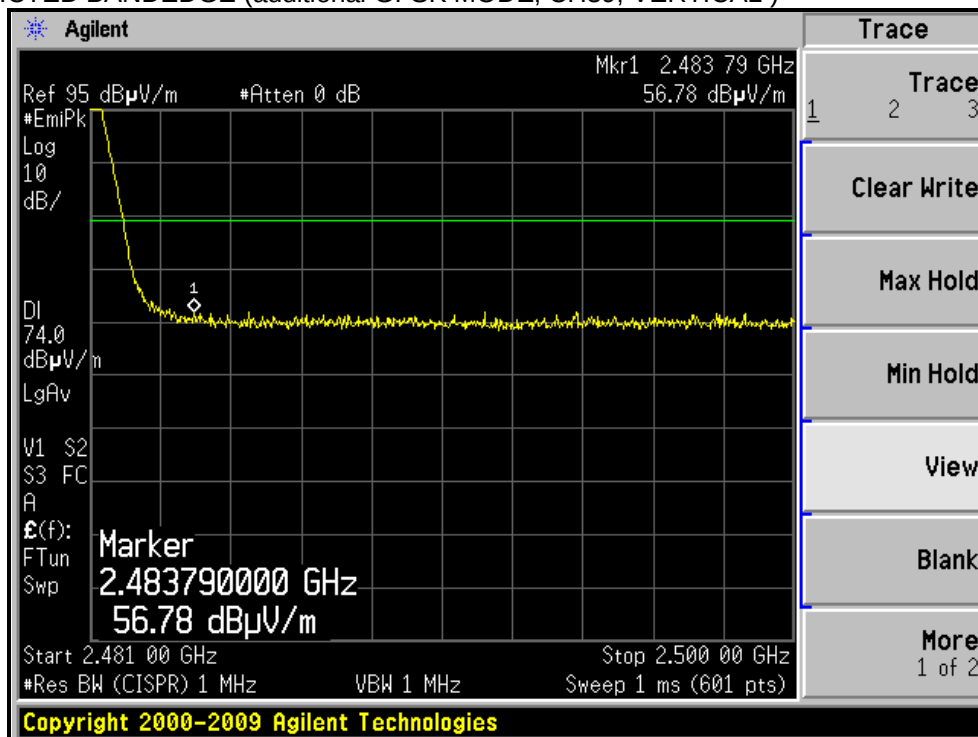
RESTRICTED BANDEDGE (additional GFSK MODE, CH0, VERTICAL)



RESTRICTED BANDEDGE (additional GFSK MODE, CH39, HORIZONTAL)



RESTRICTED BANDEDGE (additional GFSK MODE, CH39, VERTICAL)





A D T

4.8.7 TEST RESULTS (FOR RECEIVER PART)

4.8.7.1 TEST RESULTS (Bluetooth traditional GFSK/ $\pi/4$ -DQPSK/ 8DPSK)

BELOW 1GHz WORST-CASE DATA :

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	19deg. C, 66%RH 1022 hPa	TESTED BY	Rex Huang

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	87.42	38.0 QP	40.0	-2.0	2.00 H	298	28.40	9.58
2	187.33	36.9 QP	43.5	-6.6	1.75 H	95	24.82	12.12
3	236.73	40.0 QP	46.0	-6.0	1.00 H	270	27.57	12.44
4	261.53	39.0 QP	46.0	-7.0	1.25 H	259	25.59	13.37
5	299.75	44.6 QP	46.0	-1.4	1.00 H	184	29.69	14.92
6	398.00	43.0 QP	46.0	-3.0	1.00 H	233	25.17	17.80
7	497.11	39.3 QP	46.0	-6.7	2.00 H	242	19.39	19.90
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	87.49	28.7 QP	40.0	-11.3	1.00 V	341	19.08	9.58
2	97.20	33.8 QP	43.5	-9.7	2.00 V	291	24.06	9.78
3	187.27	28.4 QP	43.5	-15.1	2.00 V	174	16.24	12.13
4	236.95	31.0 QP	46.0	-15.0	1.00 V	215	18.51	12.45
5	261.66	31.0 QP	46.0	-15.0	1.75 V	207	17.60	13.37
6	299.46	35.9 QP	46.0	-10.1	1.00 V	260	20.95	14.91
7	399.38	37.1 QP	46.0	-8.9	2.00 V	283	19.30	17.84
8	799.35	33.1 QP	46.0	-12.9	1.25 V	242	8.23	24.85

- 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

ABOVE 1GHz WORST-CASE DATA :

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 7.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

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	2402.00	41.1 PK	74.0	-32.9	1.41 H	107	9.40	31.70
2	2402.00	27.9 AV	54.0	-26.1	1.41 H	107	-3.80	31.70
3	3000.00	46.7 PK	74.0	-27.3	1.39 H	135	13.66	33.04
4	3000.00	40.8 AV	54.0	-13.2	1.39 H	135	7.76	33.04
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	2402.00	40.5 PK	74.0	-33.5	1.19 V	327	8.80	31.70
2	2402.00	28.5 AV	54.0	-25.5	1.19 V	327	-3.20	31.70
3	3000.00	49.4 PK	74.0	-24.6	1.39 V	314	16.36	33.04
4	3000.00	46.0 AV	54.0	-8.0	1.39 V	314	12.96	33.04

- 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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 7.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2441.00	41.7 PK	74.0	-32.3	1.41 H	109	9.87	31.83
2	2441.00	28.1 AV	54.0	-25.9	1.41 H	109	-3.73	31.83
3	3000.00	46.8 PK	74.0	-27.2	1.32 H	139	13.76	33.04
4	3000.00	40.3 AV	54.0	-13.7	1.32 H	139	7.26	33.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2441.00	40.6 PK	74.0	-33.4	1.17 V	328	8.77	31.83
2	2441.00	28.7 AV	54.0	-25.3	1.17 V	328	-3.13	31.83
3	3000.00	49.7 PK	74.0	-24.3	1.31 V	317	16.66	33.04
4	3000.00	46.3 AV	54.0	-7.7	1.31 V	317	13.26	33.04

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 7.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

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	41.5 PK	74.0	-32.5	1.43 H	104	9.55	31.95
2	2480.00	27.9 AV	54.0	-26.1	1.43 H	104	-4.05	31.95
3	3000.00	46.5 PK	74.0	-27.5	1.33 H	135	13.46	33.04
4	3000.00	40.7 AV	54.0	-13.3	1.33 H	135	7.66	33.04
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	40.8 PK	74.0	-33.2	1.18 V	326	8.85	31.95
2	2480.00	28.4 AV	54.0	-25.6	1.18 V	326	-3.55	31.95
3	3000.00	49.4 PK	74.0	-24.6	1.33 V	317	16.36	33.04
4	3000.00	46.1 AV	54.0	-7.9	1.33 V	317	13.06	33.04

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

4.8.7.2 TEST RESULTS (Bluetooth additional GFSK)

BELOW 1GHz WORST-CASE DATA :

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	19deg. C, 66%RH 1022 hPa	TESTED BY	Rex Huang

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	87.30	38.1 QP	40.0	-1.9	2.00 H	298	28.48	9.58
2	187.35	36.9 QP	43.5	-6.6	1.75 H	95	24.77	12.12
3	236.60	40.0 QP	46.0	-6.1	1.02 H	274	27.51	12.44
4	261.30	38.7 QP	46.0	-7.3	1.25 H	261	25.37	13.36
5	298.00	44.8 QP	46.0	-1.2	1.07 H	183	29.97	14.85
6	399.00	43.1 QP	46.0	-2.9	1.00 H	227	25.26	17.83
7	497.00	39.4 QP	46.0	-6.6	1.96 H	248	19.47	19.90
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	87.49	28.8 QP	40.0	-11.2	1.00 V	334	19.26	9.58
2	97.20	34.0 QP	43.5	-9.5	1.58 V	287	24.22	9.78
3	187.27	28.6 QP	43.5	-14.9	1.94 V	179	16.51	12.13
4	236.60	30.7 QP	46.0	-15.3	1.00 V	223	18.23	12.44
5	262.00	30.8 QP	46.0	-15.2	1.73 V	210	17.42	13.39
6	299.70	35.7 QP	46.0	-10.3	1.05 V	256	20.74	14.92
7	399.90	37.3 QP	46.0	-8.8	1.96 V	283	19.39	17.86
8	799.00	33.3 QP	46.0	-12.7	1.24 V	241	8.43	24.85

- 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

ABOVE 1GHz WORST-CASE DATA :

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 7.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

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	2402.00	41.1 PK	74.0	-32.9	1.41 H	107	9.40	31.70
2	2402.00	27.9 AV	54.0	-26.1	1.41 H	107	-3.80	31.70
3	3000.00	46.7 PK	74.0	-27.3	1.39 H	135	13.66	33.04
4	3000.00	40.8 AV	54.0	-13.2	1.39 H	135	7.76	33.04
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	2402.00	40.5 PK	74.0	-33.5	1.19 V	327	8.80	31.70
2	2402.00	28.5 AV	54.0	-25.5	1.19 V	327	-3.20	31.70
3	3000.00	49.4 PK	74.0	-24.6	1.39 V	314	16.36	33.04
4	3000.00	46.0 AV	54.0	-8.0	1.39 V	314	12.96	33.04

- 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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 19	FREQUENCY RANGE	1 ~ 7.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2440.00	41.3 PK	74.0	-32.7	1.42 H	110	9.48	31.82
2	2440.00	28.3 AV	54.0	-25.7	1.42 H	110	-3.52	31.82
3	3000.00	46.4 PK	74.0	-27.6	1.32 H	335	13.36	33.04
4	3000.00	40.2 AV	54.0	-13.8	1.32 H	335	7.16	33.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2440.00	40.3 PK	74.0	-33.7	1.15 V	333	8.48	31.82
2	2440.00	28.9 AV	54.0	-25.1	1.15 V	333	-2.92	31.82
3	3000.00	49.5 PK	74.0	-24.5	1.30 V	327	16.46	33.04
4	3000.00	46.5 AV	54.0	-7.5	1.30 V	327	13.46	33.04

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 7.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 67%RH 1022 hPa	TESTED BY	Kent Liu

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	41.5 PK	74.0	-32.5	1.43 H	104	9.55	31.95
2	2480.00	27.9 AV	54.0	-26.1	1.43 H	104	-4.05	31.95
3	3000.00	46.5 PK	74.0	-27.5	1.33 H	135	13.46	33.04
4	3000.00	40.7 AV	54.0	-13.3	1.33 H	135	7.66	33.04
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	40.8 PK	74.0	-33.2	1.18 V	326	8.85	31.95
2	2480.00	28.4 AV	54.0	-25.6	1.18 V	326	-3.55	31.95
3	3000.00	49.4 PK	74.0	-24.6	1.33 V	317	16.36	33.04
4	3000.00	46.1 AV	54.0	-7.9	1.33 V	317	13.06	33.04

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.

4.9 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.8.1 LIMITS OF CONDUCTED OUT-BAND EMISSION 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 DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

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 lose cable. Set RBW a of spectrum analyzer to 100 kHz and VBW of spectrum analyzer to 300 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

4.9.1 TEST SETUP



4.8.5 EUT OPERATING CONDITION

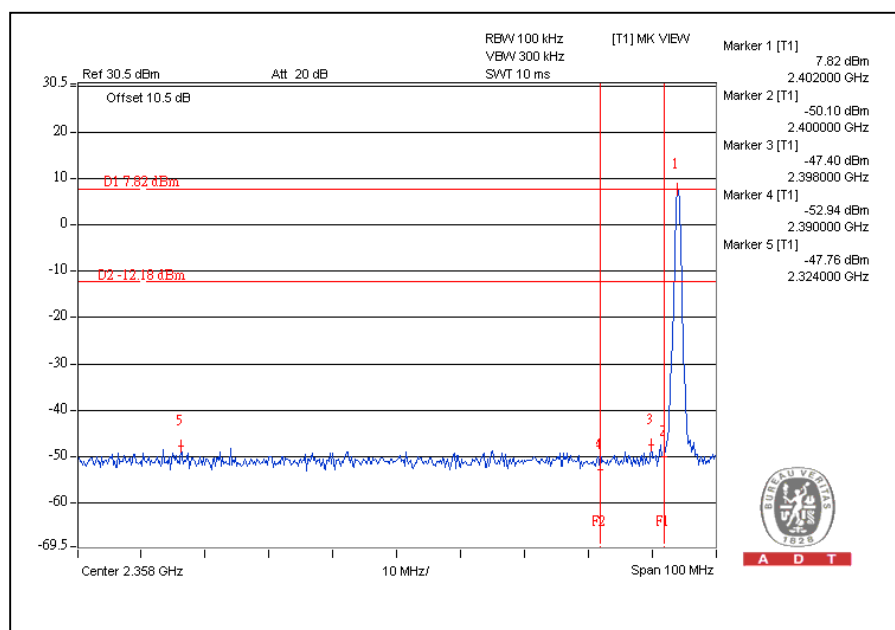
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.8.6 TEST RESULTS

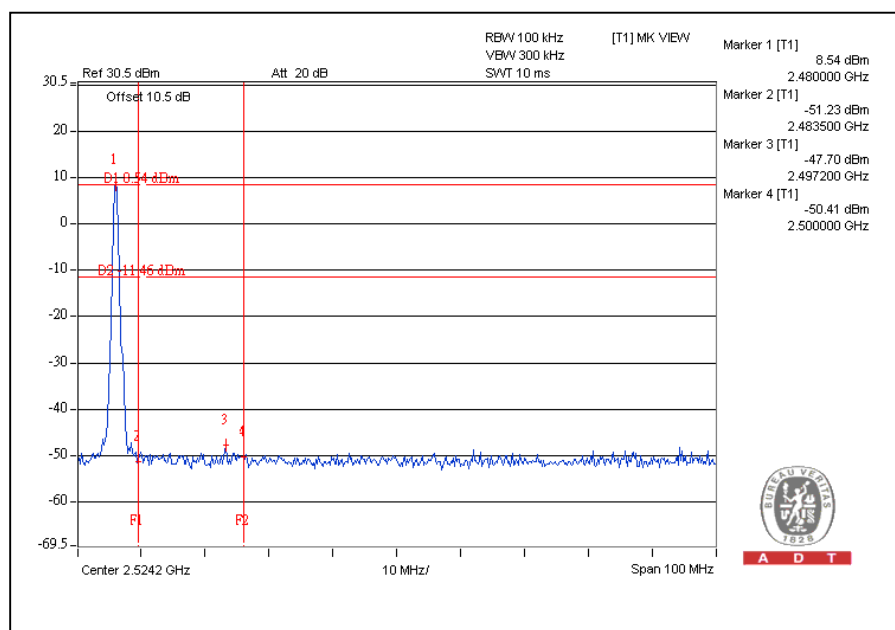
Emissions radiated outside of the specified frequency bands, please refer following pages for met the requirement of the general radiated emission limits in § 15.209.

For GFSK Modulation Type:

CH0



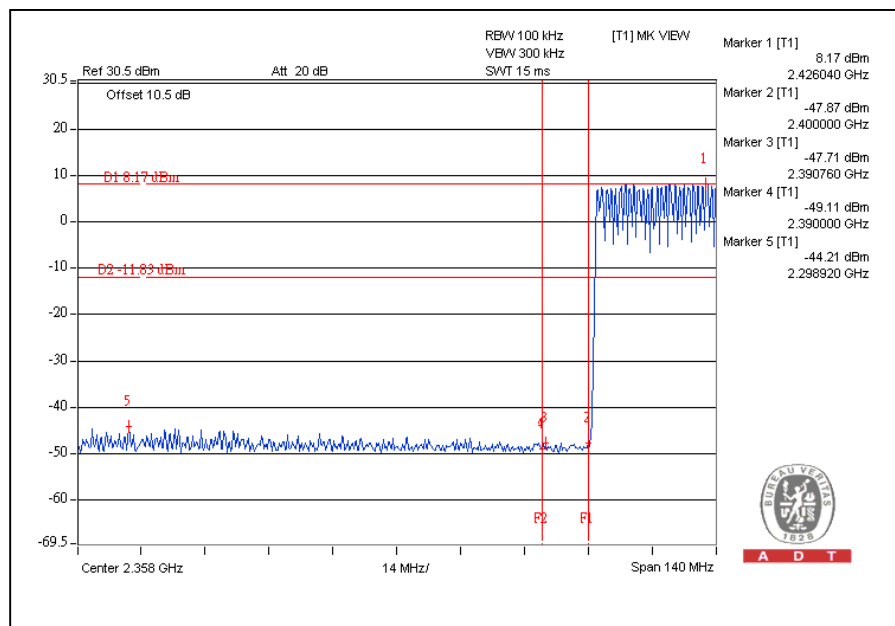
CH78



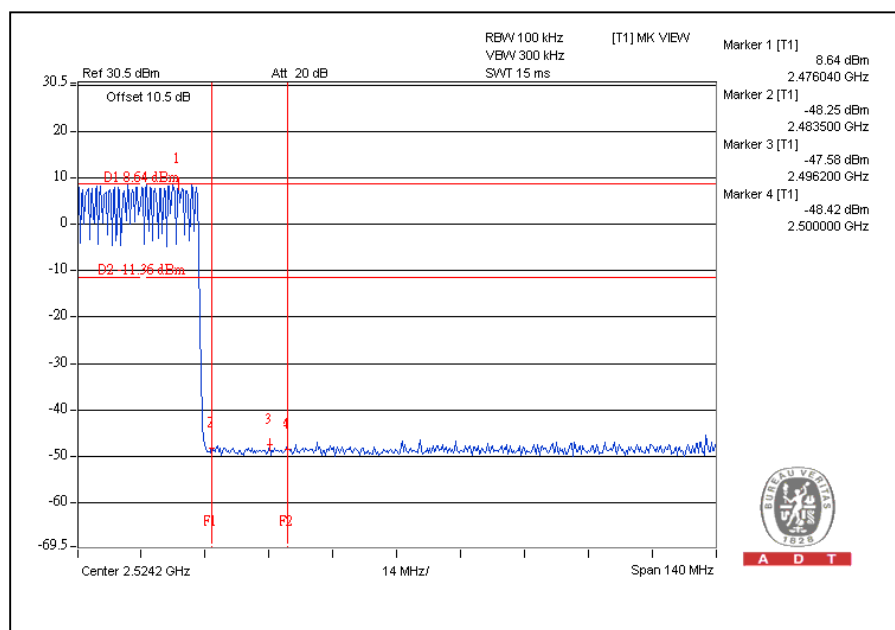


A D T

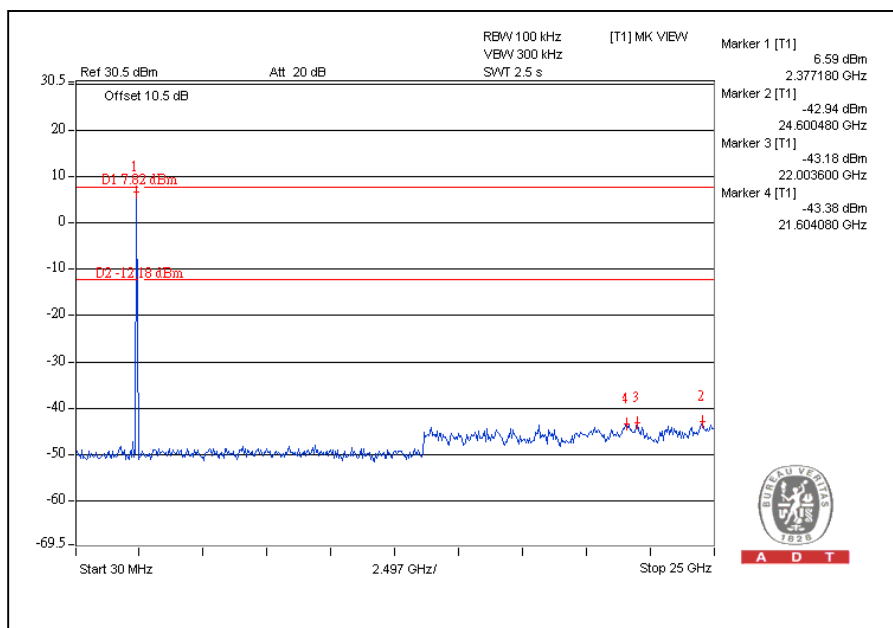
CH0



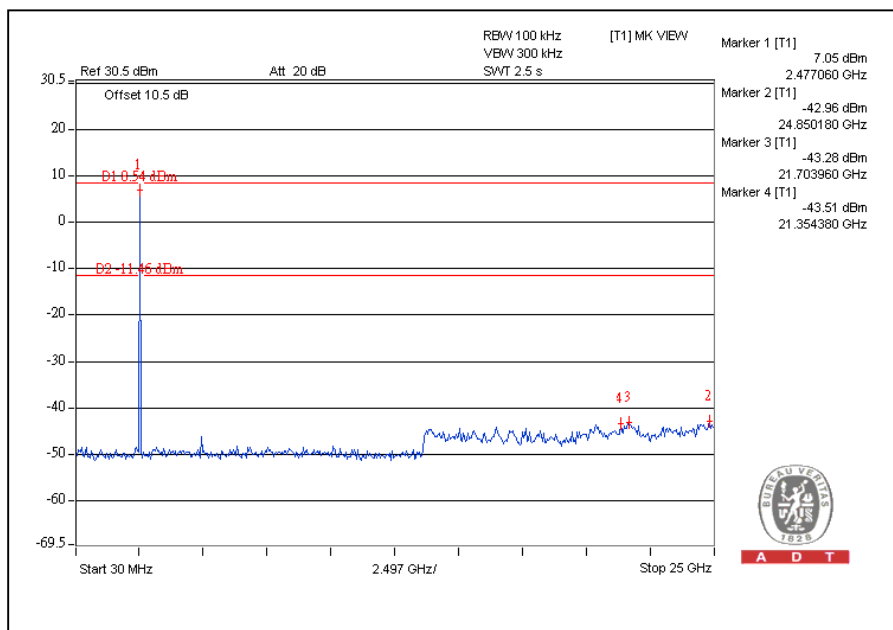
CH78



CH0

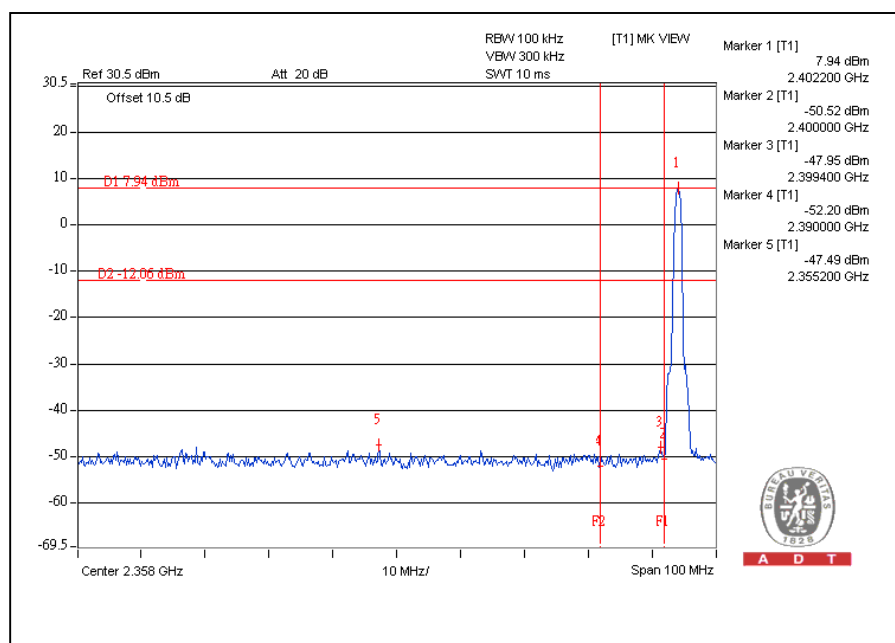


CH78

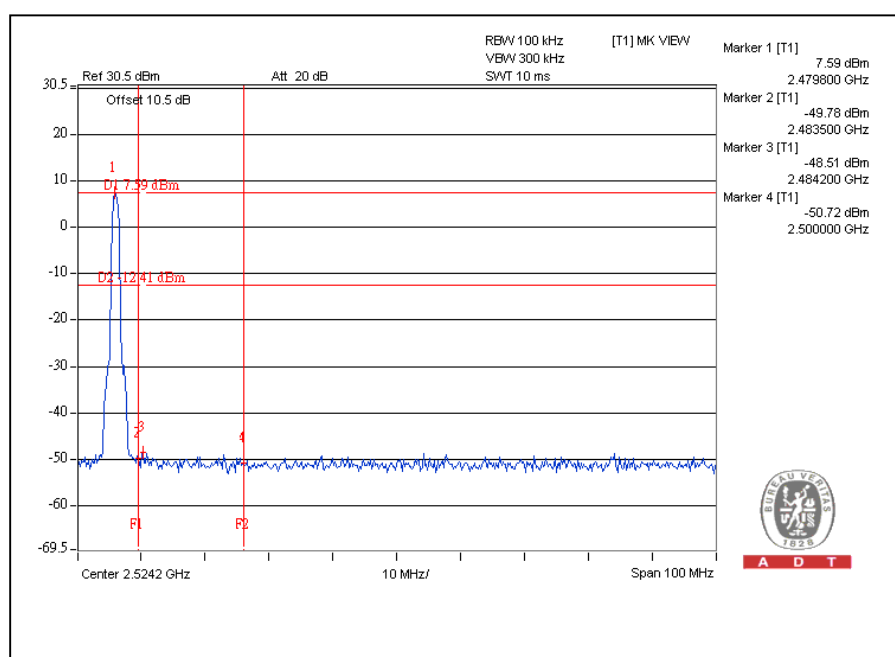


For 8DPSK Modulation Type:

CH0



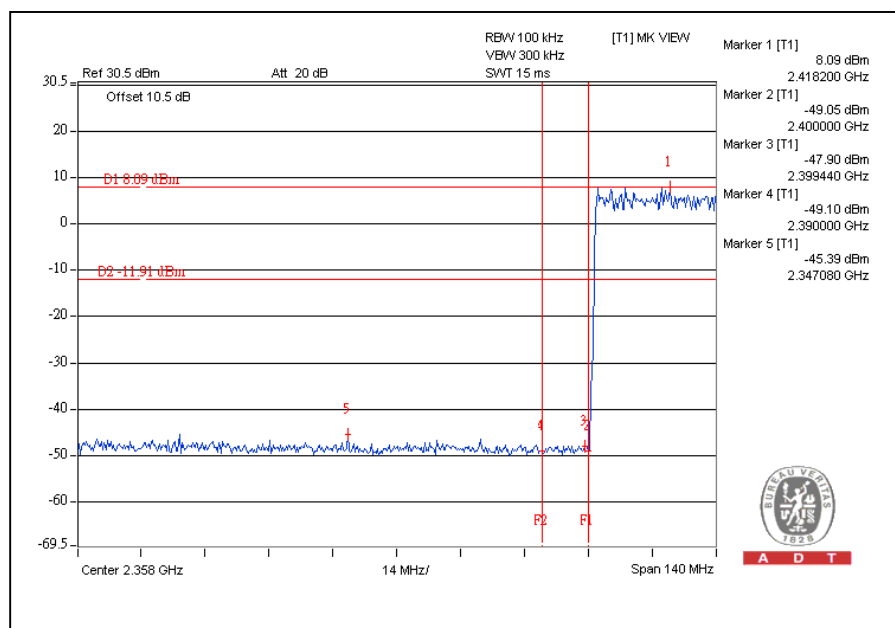
CH78



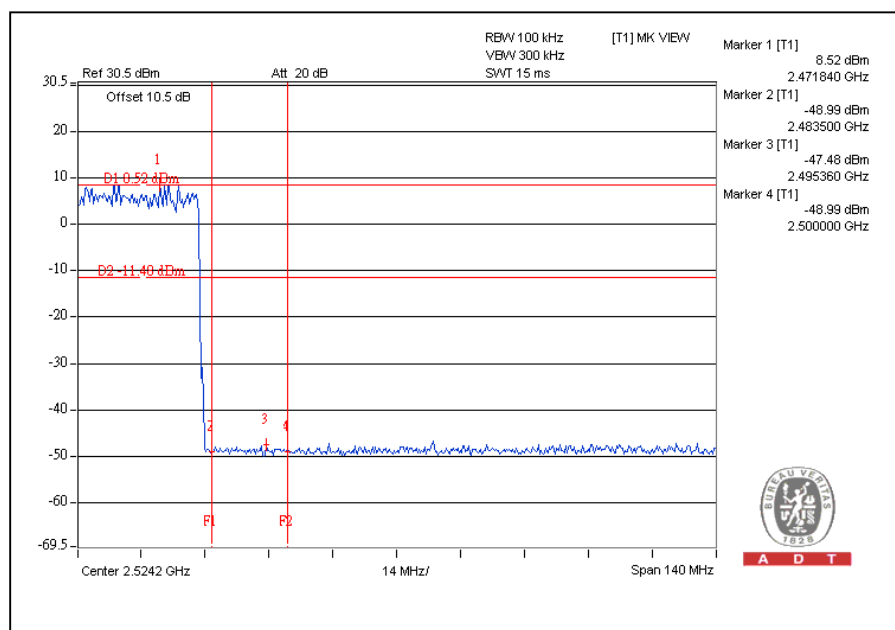


A D T

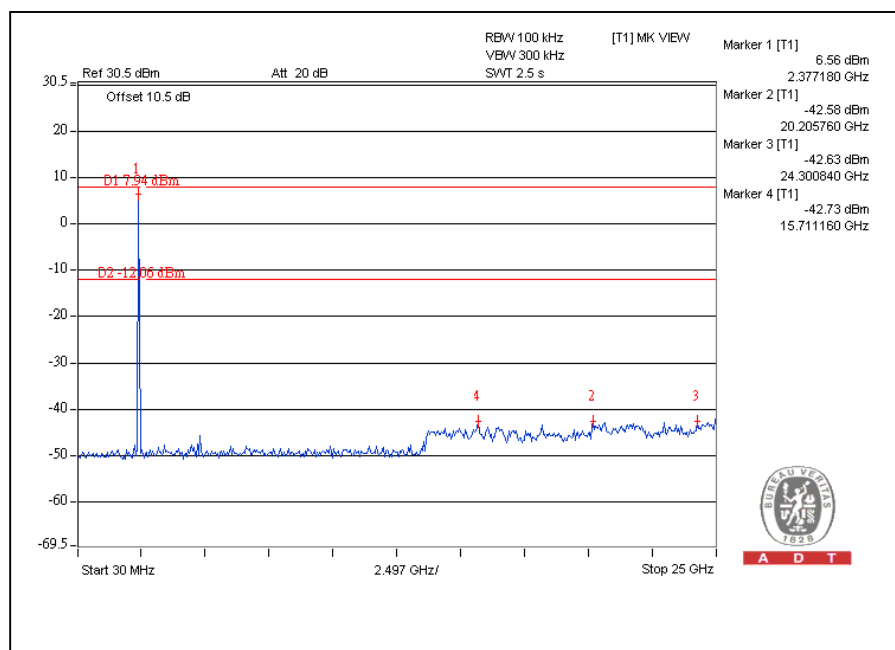
CH0



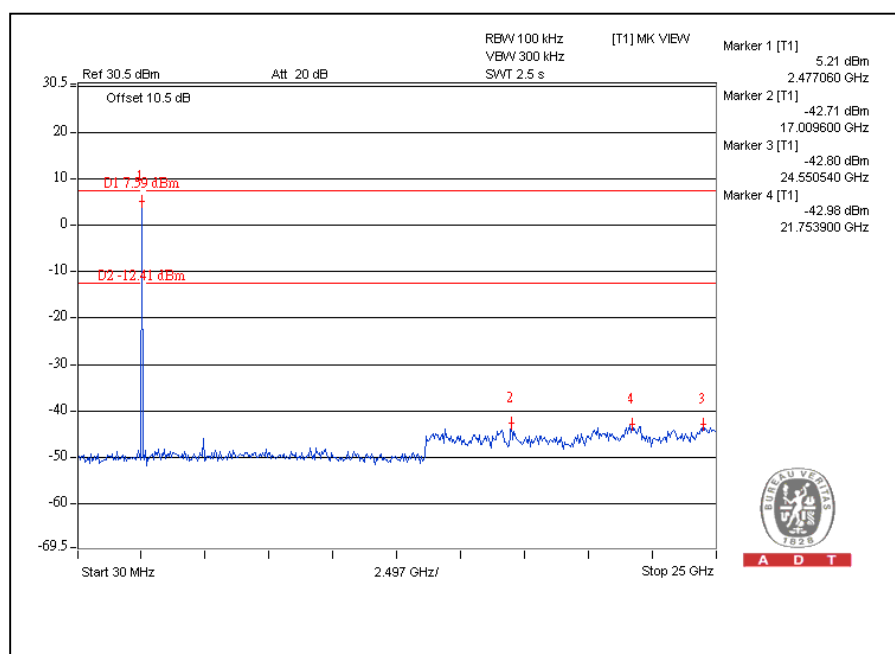
CH78



CH0

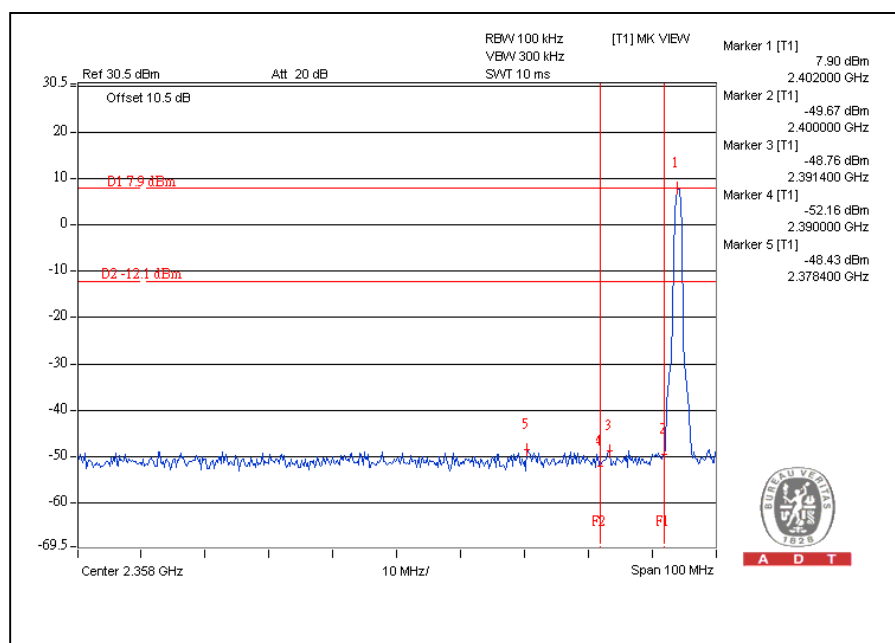


CH78

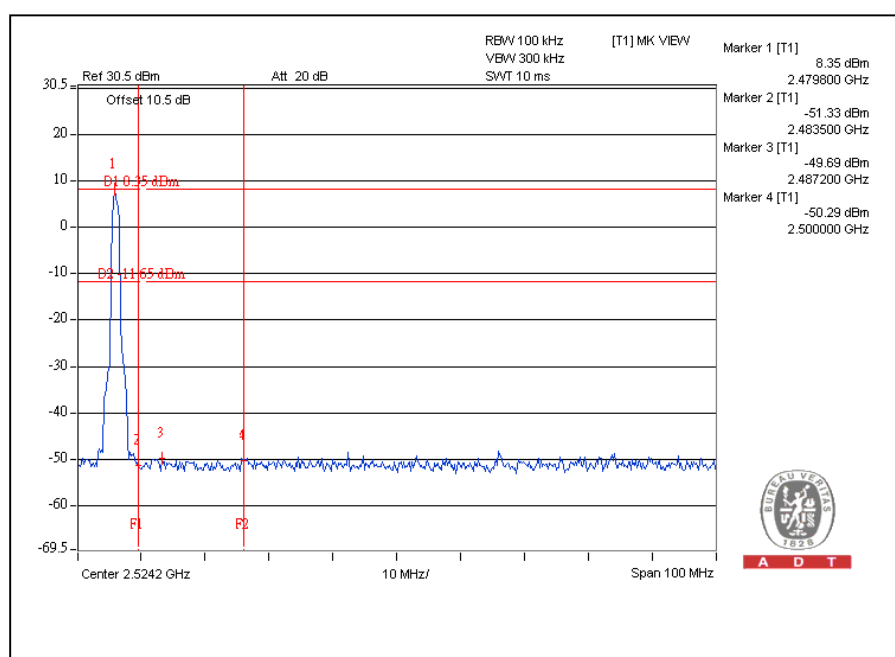


For $\pi/4$ -DQPSK Modulation Type:

CH0



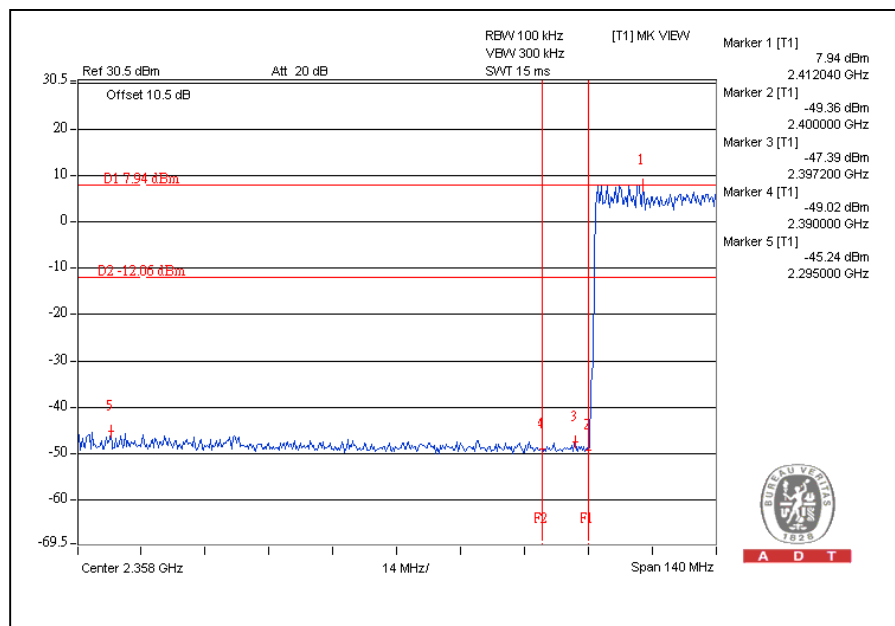
CH78



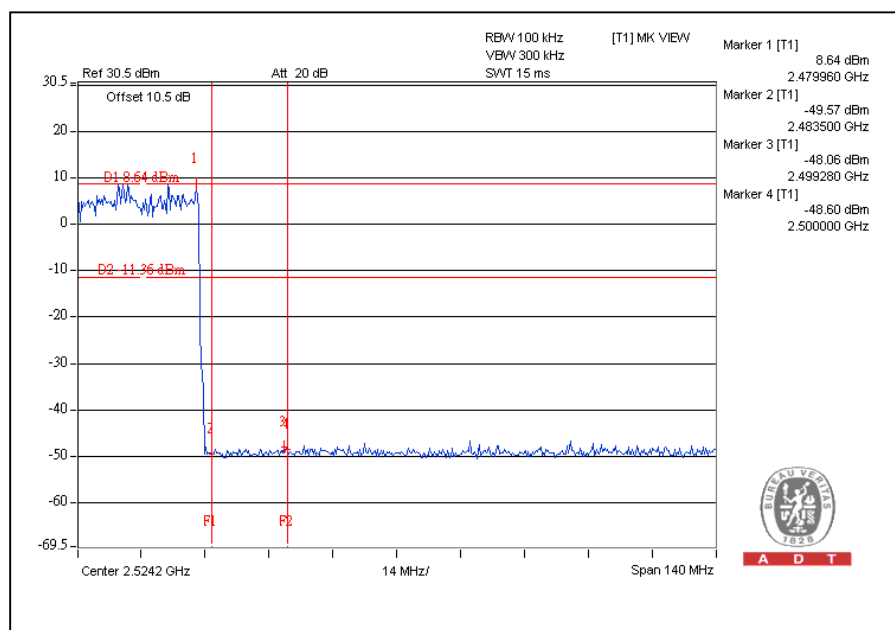


A D T

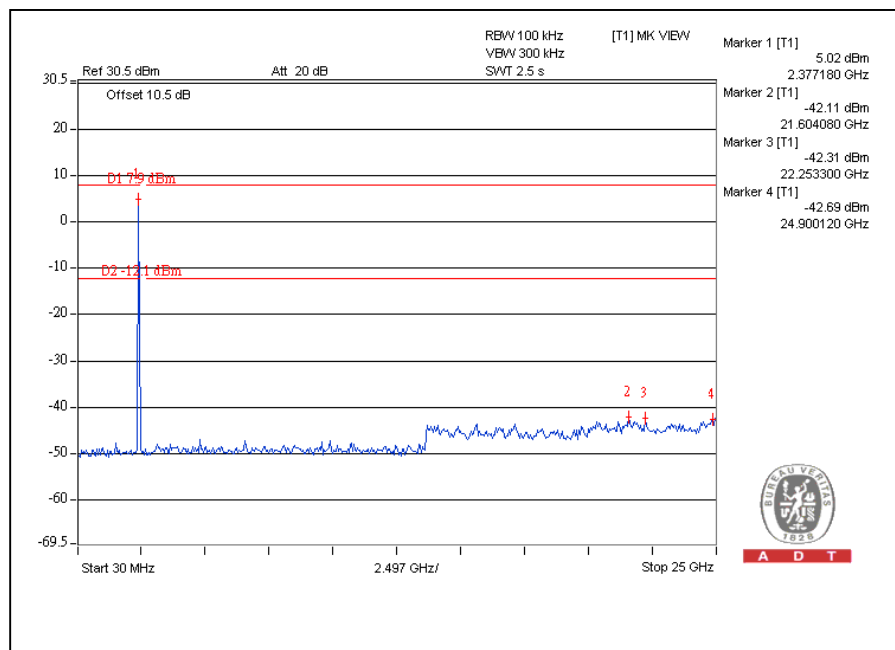
CH0



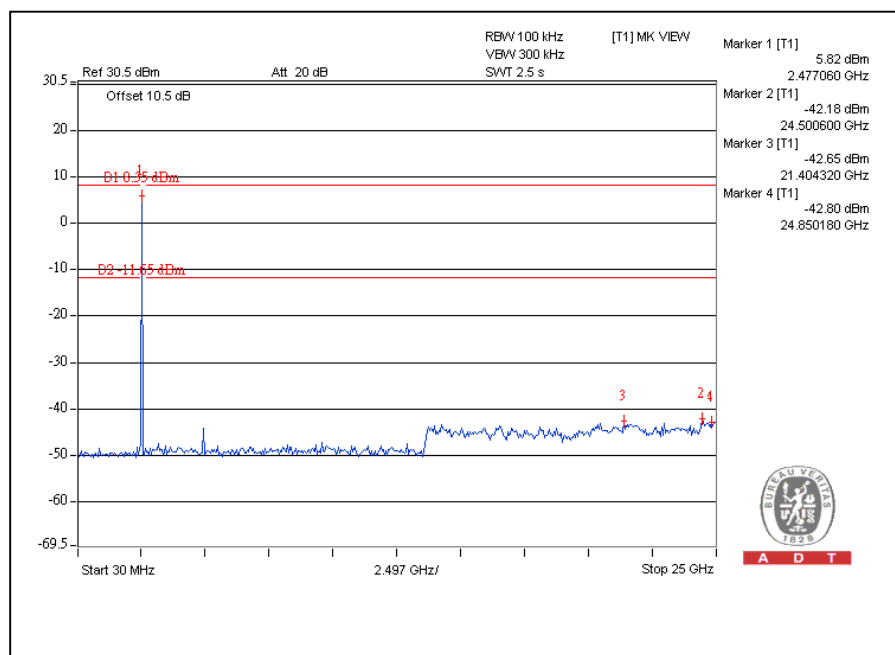
CH78



CHO



CH78

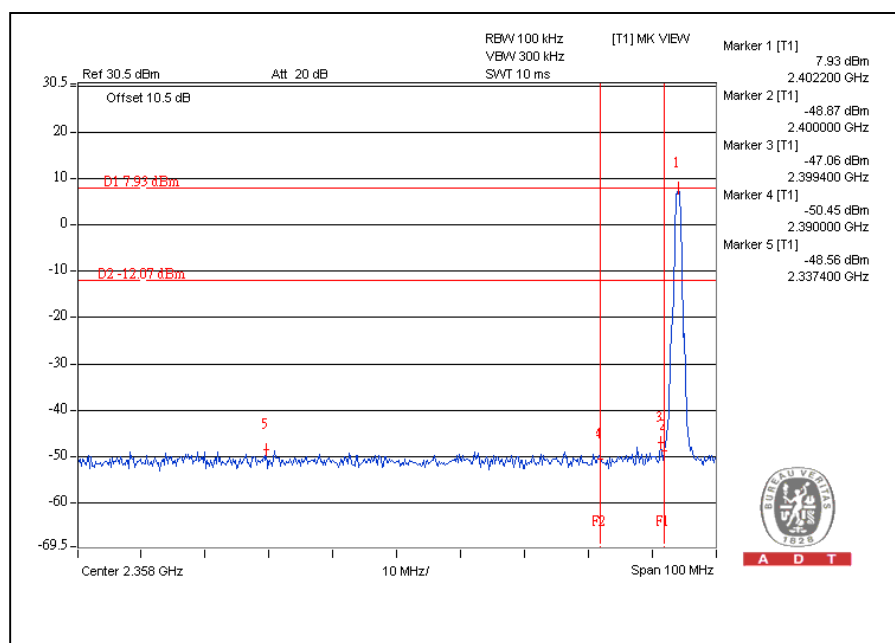




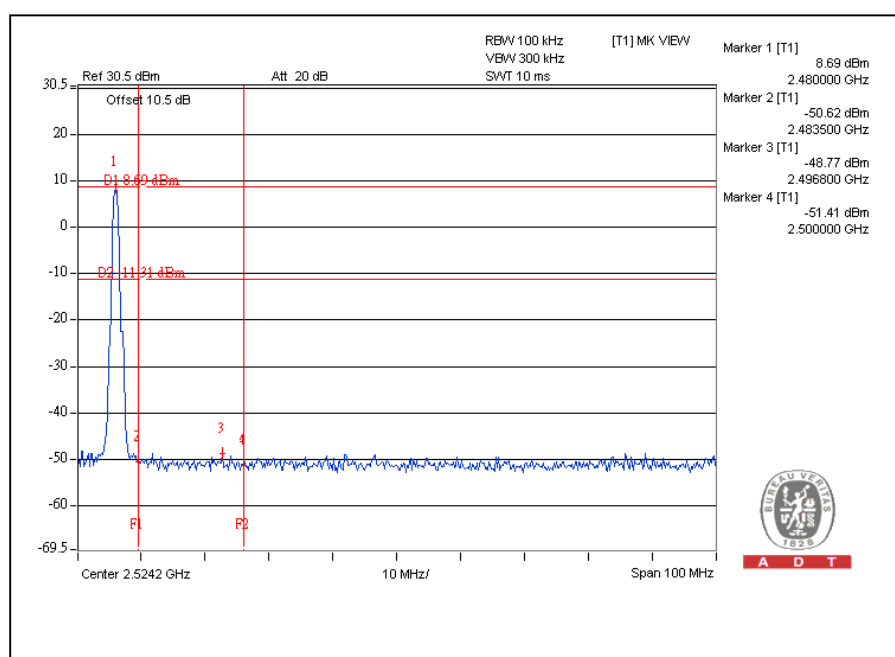
A D T

For Additional GFSK Modulation Type:

CH0



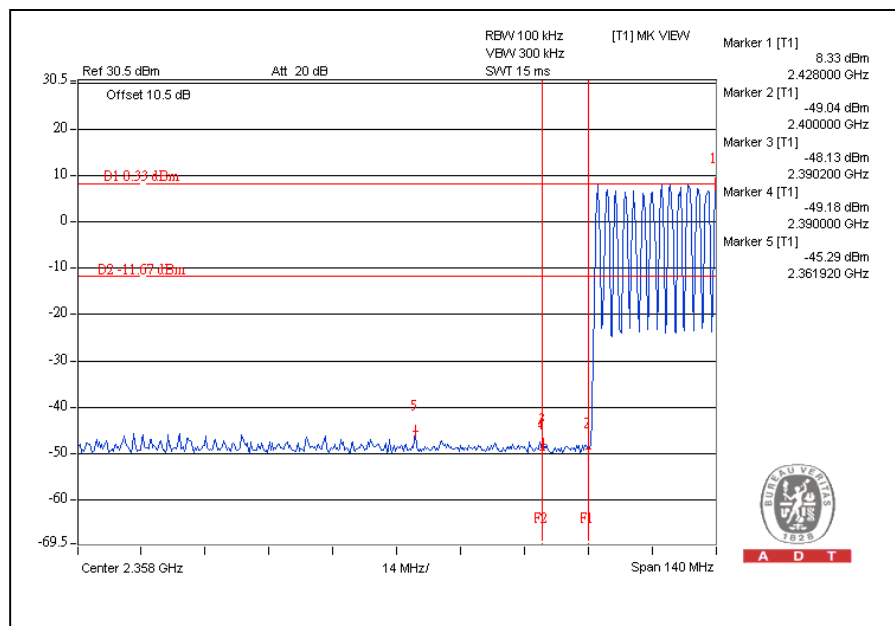
CH39



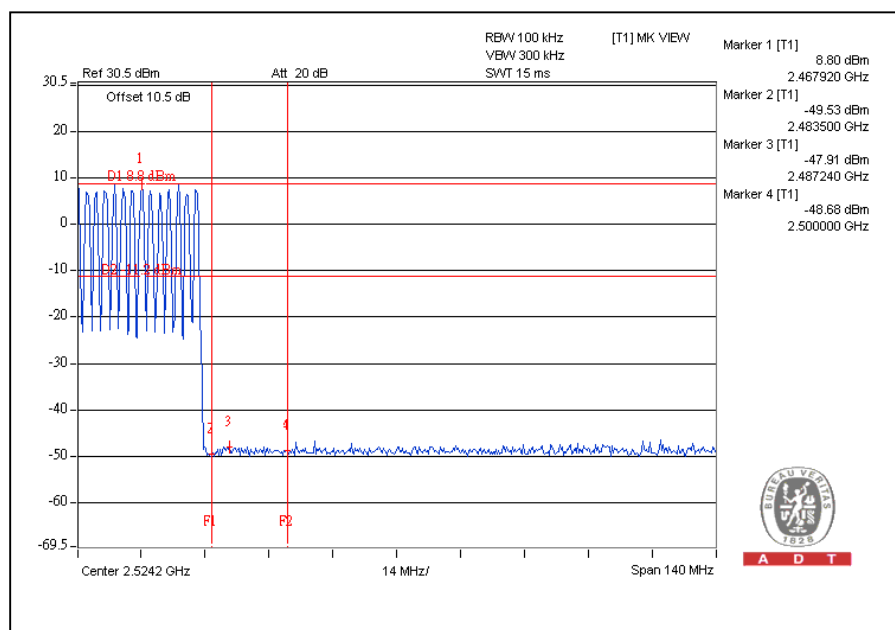


A D T

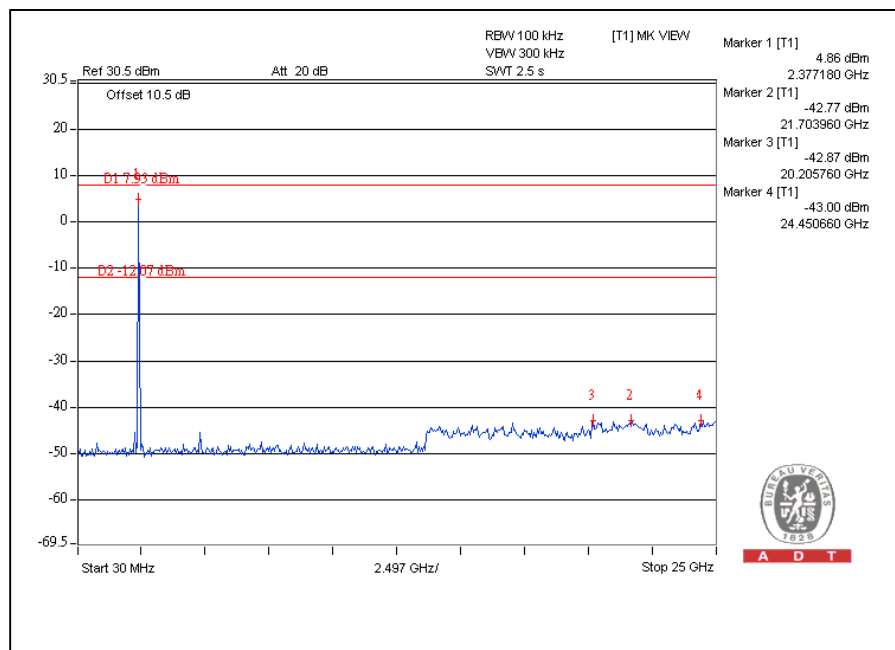
CH0



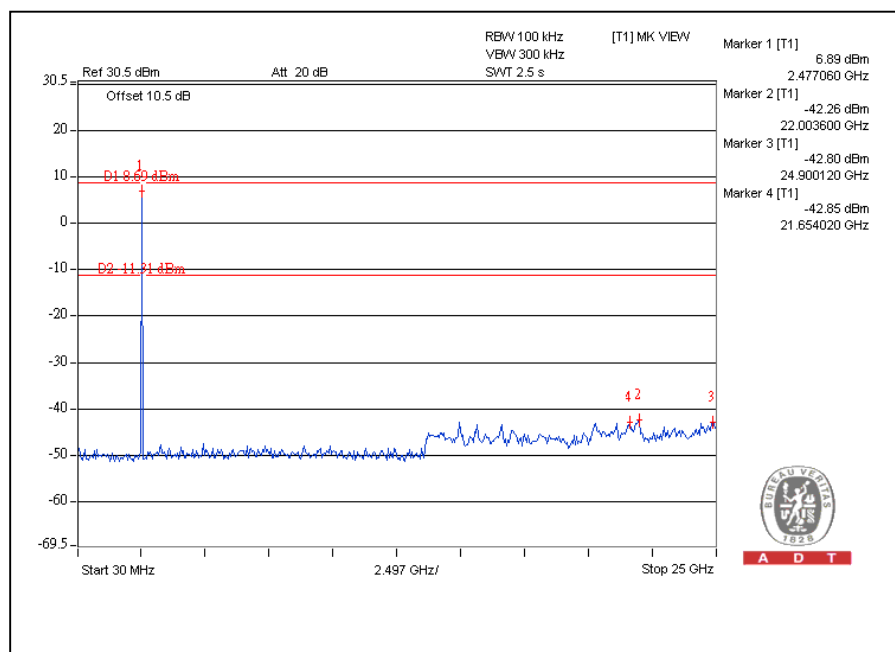
CH39



CH0



CH39



5 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:

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: 886-2-26052943

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

Email: service@adt.com.tw

Web Site: www.adt.com.tw

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

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

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

--- END ---