FCC TEST REPORT (BLUETOOTH)

REPORT NO.:	RF111031E02-1
MODEL NO.:	RTL8723AE
FCC ID:	TX2-RTL8723AE
RECEIVED:	Oct. 31, 2011
TESTED:	Nov. 16 to 18, 2011
ISSUED:	Nov. 29, 2011
APPLICANT:	Realtek Semiconductor Corp.
ADDRESS:	No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan
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

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF111031E02-1	Original release	Nov. 29, 2011

1 CERTIFICATION

PRODUCT :	802.11b/g/n RTL8723AE Combo miniCard
BRAND NAME :	Realtek
MODEL NO. :	RTL8723AE
TEST SAMPLE :	ENGINEERING SAMPLE
APPLICANT :	Realtek Semiconductor Corp.
TESTED DATE :	Nov. 16 to 18, 2011
STANDARDS :	FCC Part 15, Subpart C (Section 15.247) ANSI C63.4-2003 ANSI C63.10-2009

The above equipment (Model: RTL8723AE) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Phoenix Huang , **DATE:** Nov. 29, 2011
(Phoenix Huang, Specialist)

APPROVED BY : , **DATE:** Nov. 29, 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			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -7.72dB at 0.193MHz.
15.247(a)(1)(iii)	Number of Hopping Frequency Used Spec.: At least 15 channels	PASS	Meet the requirement of limit.
15.247(a)(1)(iii)	Dwell Time on Each Channel Spec.: Max. 0.4 second within 31.6 second	PASS	Meet the requirement of limit.
15.247(a)(1)	1. Hopping Channel Separation Spec.: Min. 25 kHz or 20 dB bandwidth, whichever is greater 2. Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power	PASS	Meet the requirement of limit.
15.247(d)	Transmitter Radiated Emissions Spec.: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -0.5dB at 7320.00MHz.
15.247(d)	Conducted Out-Band Emission Measurement	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is not a standard connector.

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

2.1 ME ASUREMENT 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)	3.81 dB
Radiated emissions (1GHz -18GHz)	2.19 dB
Radiated emissions (18GHz -40GHz)	2.56 dB

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	802.11b/g/n RTL8723AE Combo miniCard
MODEL NO.	RTL8723AE
FCC ID	TX2-RTL8723AE
POWER SUPPLY	DC 3.3V from host equipment
MODULATION TYPE	GFSK, π/4-DQPSK, 8DPSK, GFSK(LE mode)
MODULATION TECHNOLOGY	FHSS
DATE RATE	1/2/3Mbps
FREQUENCY RANGE	2402MHz ~ 2480MHz
NUMBER OF CHANNEL	For Bluetooth 2.1+ EDR: 79 For Bluetooth LE: 40 (37 hopping + 3 advertising channel)
MAX. OUTPUT POWER	GFSK: 10.7 mW 8DPSK: 13.8 mW GFSK(LE MODE): 4.1mW
ANTENNA TYPE	Please see NOTE
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 " RF111031E02 " and the co-location test data refer “RF111031E02-2”>
2. The EUT has four different samples could be chosen and please refer the below table:

No.	miniCard Interface	Note
1	HMC module	Diversity
2	HMC module	Fixed
3	Stamp module	Diversity
4	Stamp module	Fixed

Above four samples were pre-tested in chamber, the worse case was found in **No.2**. Therefore only the test data of the model was recorded in this report.

3. The difference between HMC module and stamp module is in form factor, and some NC/reserved/AUX pins in HMC case were removed in stamp case.
4. Both of them are still indentical in PCIe interface cxcept pin numbers and form factor. The RF circuits for both are exactly the same, namely identical.
5. The HMC and Stamp will support different form factor for future application, and the form factor of Stamp module is defined by Realtek.
6. There are 172 sets of antennas provided to this EUT, please refer to the following table:

No.	Brand	Model	Antenna Type	Peak gain with cable loss	Cable Loss	Connector Type
1	JOYMAX	TWF-614XMPXX-500 (Main) TWF-614XMPXX-500 (Aux)	Dipole	3 3	NA	IPEX
2	LYNwave	ALA110-222050-150010 (Main) ALA110-222050-150010 (Aux)	PIFA	3.5 3.5	NA	IPEX
3	ACON	APP8P-700186 (Main) APP8P-700185 (Aux)	PIFA	1.84 0.07	0.81 1.12	IPEX, MHF, U.FL-L(P)
4	ACON	APP8P-700188 (Main) APP8P-700187 (Aux)	PIFA	1.84 0.07	0.81 1.12	IPEX, MHF, U.FL-L(P)
5	WHAYU	C435-520042-A (Main) C435-520045-A (Aux)	PIFA	1.91 1.88	1.11 1.85	Technova
6	WHAYU	C435-520044-A (Main) C435-520043-A (Aux)	PIFA	1.96 1.97	1.11 1.85	Technova
7	WNC	25.90A1E.001 (Main) 25.90A1F.001 (Aux)	PIFA	1.89 -0.90	-1.85 -1.84	IPEX
8	YAGEO	25.90A1E.011 (Main) 25.90A1F.011 (Aux)	PIFA	1.94 1.78	1.95 2.04	U.FL
9	WNC	25.91370.021 (Main) 25.91371.021 (Aux)	PIFA	0.51 0.58	1.40 1.73	IPEX
10	YAGEO	25.91370.011 (Main) 25.91371.011 (Aux)	PIFA	1.06 0.16	1.36 2.00	U.FL
11	Quanta	DQ6GC200100 (Main) DQ6GC200200 (Aux)	PIFA	0.1 -0.4	NA	IPEX
12	Tyco	25.90A4C.021 (Main) 25.90A4D.021 (Aux)	PIFA	0.06 0.18	1.55 1.60	U.FL
13	WNC	25.90A4C.001 (Main) 25.90A4D.001 (Aux)	PIFA	1.52 -0.60	1.83 1.84	U.FL
14	YAGEO	25.90A4C.011 (Main) 25.90A4D.011 (Aux)	PIFA	0.93 -0.17	1.64 1.65	U.FL

No.	Brand	Model	Antenna Type	Peak gain with cable loss	Cable Loss	Connector Type
15	ACON	25.90929.001 (Main) 25.90930.001 (Aux)	PIFA	-0.04 1.16	NA	IPEX, Hirose, U.FL-L(P)
16	Ethertronics Inc.	25.90934.001 (Main) 25.90935.001 (Aux)	PIFA	0.60 -0.59	NA	U.FL
17	WNC	25.90919.001 (Main) 25.90920.001 (Aux)	PIFA	0.87 -0.93	NA	IPEX
18	Tyco	25.90A2G.021 (Main) 25.90A2H.021 (Aux)	PIFA	-0.38 1.04	1.49 1.59	IPEX
19	WNC	25.90A2G.001 (Main) 25.90A2H.001 (Aux)	PIFA	1.23 0.29	1.65 1.74	IPEX
20	YAGEO	25.90A2G.011 (Main) 25.90A2H.011 (Aux)	PIFA	0.48 -1.37	1.50 1.60	U.FL
21	Amphenol	C-2238-11-000-26 (Main) C-2239-11-000-26 (Aux)	PIFA	-1.31 -3.09	0.92 1.08	U.FL
22	Amphenol	C-1952-11-000-26 (Main) C-1953-11-000-26 (Aux)	PIFA	0.35 -1.20	0.92 1.08	U.FL
23	Foxconn	WDAN-LFNZ3001-DH (Main) WDAN-LFNZ3002-DH (Aux)	PIFA Coupling Type Inverted F	1.14 0.61	1.03 1.12	IPEX
24	Tyco	1556219-1 (Main) 1556220-1 (Aux)	PIFA	0.64 -0.92	1.24 1.98	IPEX
25	ACON	APP8P-700189 (Main) APP8P-700190 (Aux)	PIFA	2.00 0.13	1.36 1.98	IPEX, MHF, U.FL-L(P), Technova
26	ACON	APP8P-700191 (Main) APP8P-700192 (Aux)	PIFA	2.00 0.13	1.36 1.98	IPEX, MHF, U.FL-L(P), Technova
27	Tyco	1556216-1 (Main) 1556215-1 (Aux)	PIFA	0.64 -0.92	1.24 1.98	IPEX
28	Quanta	DQ6GC300100 (Main) DQ6GC300200 (Aux)	PIFA	-1.3 0.7	NA	IPEX
29	Amphenol	C-2381-11-000-26 (Main) C-2382-11-000-26 (Aux)	PIFA	-1.54 -2.93	1.09 1.28	U.FL
30	Foxconn	WDAN-LWSN3001-DH (Main) WDAN-LWSN3002-DH (Aux)	PIFA Coupling Type Inverted F	0.87 0.49	1.40 1.43	IPEX

No.	Brand	Model	Antenna Type	Peak gain with cable loss	Cable Loss	Connector Type
31	WNC	25.90A1E.001 (Main) 25.90A1F.001 (Aux)	PIFA	1.94 -0.85	-1.85 -1.84	IPEX
32	Quanta	QADC FL8_WL_M (Main) QADC FL8_WL_A (Aux)	PIFA	0.1 -0.3	1.6 1.6	IPEX
33	YAGEO	25.90A4W.001 (Main) 25.90A4V.001 (Aux)	PIFA	0.07 -0.06	-1.25 -1.50	U.FL
34	FOXLINK	25.90A4W.011 (Main) 25.90A4V.011 (Aux)	PIFA	1.98 1.97	-1.39 -1.58	U.FL
35	Quanta	QADC PS3_WL_M (Main) QADC PS3_WL_A (Aux)	PIFA	-0.1 0.0	1.6 1.6	IPEX
36	Quanta	QADCFL3_WL_M (Main) QADCFL3_WL_A (Aux)	PIFA	-0.1 -0.1	NA	IPEX
37	Quanta	QADCGC5_WL_M (Main) QADCGC5_WL_A (Aux)	PIFA	0.4 -1.0	NA	IPEX
38	Quanta	DQ6GC200100 (Main) DQ6GC200200 (Aux)	PIFA	0.1 -0.4	NA	IPEX
39	Quanta	QADCGC6_WL_M (Main) QADCGC6_WL_A (Aux)	PIFA	0.7 1.2	NA	IPEX
40	Quanta	QADCPS1_WL_M (Main) QADCPS1_WL_A (Aux)	PIFA	-0.5 -1.4	NA	IPEX
41	ACON	25.90700.001 (Main) 25.90702.001 (Aux)	PIFA	-1.21 1.27	NA	IPEX
42	ACON	25.90800.001 (Main) 25.90802.001 (Aux)	PIFA	1.37 1.21	NA	U.FL
43	Amphenol	C-1334-11-000-26 (Main) C-1335-11-000-26 (Aux)	PIFA	-0.37 -2.64	NA	U.FL
44	WNC	25.90979.001 (Main) 25.90980.001 (Aux)	PIFA	0.77 0.74	NA	IPEX
45	Mag.Layers	FPA-2423-25GC1-A1 PCA-2111-25GC1-A1	PIFA	1.77 2.17	NA	IPEX
46	WNC	WNC005 (Main) WNC005 (Aux)	PIFA	-2.76 -3.64	1.86 2.54	IPEX
47	WNC	WNC001 (Main) WNC001 (Aux)	PIFA	-1.10 1.76	1.17 1.17	IPEX
48	WNC	WNC001 (Main) WNC001 (Aux)	PIFA	0.31 -0.75	1.98 2.01	IPEX
49	Tyco Holdings (Bermuda) VII Ltd.	TBN003 (Main) TBN003 (Aux)	PIFA	-1.11 -1.11	1.84 2.16	I.P.X
50	WNC	WNC004 (Main) WNC004 (Aux)	PIFA	2.40 1.50	1.53 1.92	IPEX

No.	Brand	Model	Antenna Type	Peak gain with cable loss	Cable Loss	Connector Type
51	WNC	WNC002 (Tx1) WNC002 (Tx2)	PIFA	1.18 1.75	2.28 2.12	IPEX
52	WNC	WNC003 (Main) WNC003 (Aux)	PIFA	0.52 1.07	1.49 2.13	IPEX
53	Hitachi Cable, Ltd	HFT40 (Tx1) HFT40 (Tx2)	PIFA	0.58 1.12	1.42 2.12	I-PEX-20278
54	Hitachi Cable, Ltd	HFT60 (Tx1) HFT60 (Tx2)	PIFA	-1.65 -0.92	1.48 2.18	I-PEX-20278
55	Hitachi Cable, Ltd	HBY07 (Tx1) HBY07 (Tx2)	PIFA	2.19 -0.33	0.95 0.95	I-PEX-20278
56	Hitachi Cable, Ltd	HBY051 (Tx1) HBY051 (Tx2)	PIFA	2.91 2.82	0.95 0.95	I-PEX-20278
57	Hitachi Cable, Ltd	HBY052 (Tx1) HBY052 (Tx2)	PIFA	0.27 0.02	0.95 0.95	I-PEX-20278
58	Hitachi Cable, Ltd	HBY061 (Tx1) HBY061 (Tx2)	PIFA	1.30 2.42	0.95 0.95	I-PEX-20278
59	Hitachi Cable, Ltd	HBY062 (Tx1) HBY062 (Tx2)	PIFA	-1.04 -1.19	0.95 0.95	I-PEX-20278
60	Hitachi Cable, Ltd	HFT65 (Tx1) HFT65 (Tx2)	PIFA	-1.74 1.16	0.95 0.95	I-PEX-20278
61	Hitachi Cable, Ltd	HCT01 (Main) HCT01 (Aux)	PIFA	0.87 1.94	0.89 0.89	IPEX, HRS
62	FOXCONN	WDAN-TQ (Tx1) WDAN-TQ (Tx2)	PIFA	-0.43 -0.7	2.5 2.5	Foxconn SGX0001
63	ethertronics	5002011-1 (Tx1) 5002012-1 (Tx2)	PIFA	0.12 -3.87	NA	Technova
64	ethertronics	5002015-1 (Tx1) 5002016-1 (Tx2)	PIFA	0.76 0.59	NA	Technova
65	ethertronics	5010011-1 (Tx1) 5010012-1 (Tx2)	PIFA	-1.76 -2.61	NA	Technova
66	ethertronics	5010015-1 (Tx1) 5010016-1 (Tx2)	PIFA	-0.84 -2.07	NA	Technova
67	ACON	AMP6P (Tx1) AMP6P (Tx2)	PIFA	0.00 1.89	0.86 0.86	IPEX, Hirose, U.FL-L(P)
68	WNC	81.EJZ15.G52 (Main) 81.EJZ15.G52 (Aux)	PIFA	-1.08 -0.62	2.22 3.03	IPEX
69	WNC	81.EJT15.GJC (Main) 81.EJT15.GJC (Aux)	PIFA	-0.58 -1.26	2.20 3.01	IPEX
70	WNC	81.EJT15.GGW (Tx1) 81.EJT15.GGW (Tx2)	PIFA	0.21 0.77	2.40 3.25	IPEX

No.	Brand	Model	Antenna Type	Peak gain with cable loss	Cable Loss	Connector Type
71	WNC	81.EJZ15.G53 (Tx1) 81.EJZ15.G53 (Tx2)	PIFA	-0.78 -2.14	2.45 3.24	IPEX
72	QUANTA	AN-070-G(R) AN-070-G(L)	PIFA	-0.7 -1.9	-2.1 -3	IPEX
73	QUANTA	AN-070-G(R) AN-070-G(L)	PIFA	-0.3 -1.9	-2.1 -3	IPEX
74	QUANTA	AN-120-F(R) AN-120-F(L)	PIFA	-0.4 -0.3	-2.1 -3	IPEX
75	QUANTA	AN-120-F(R) AN-120-F(L)	PIFA	-1.8 -4.4	-2.1 -3	IPEX
76	WHAYU	C435-520023-A (Main) C435-520024-A (Aux)	PIFA	1.74 1.56	1.73 2.43	TNOV
77	WNC	81.EJZ (Main) 81.EJZ (Aux)	PIFA	-0.67 -0.35	1.79 1.79	IPEX
78	WNC	81.EJT (Main) 81.EJT (Aux)	PIFA	-0.40 -1.91	1.79 1.79	IPEX
79	JEM	IA-100193 (Main) IA-100194 (Aux)	PIFA	1.27 -1.27	1.56 2.36	IPEX
80	Tyco Holdings (Bermuda) VII Ltd. Taiwan Branch	TBN008 (Tx1) TBN008 (Tx2)	PIFA	-0.10 -0.92	1.85 2.66	Technova
81	Smart Approach Co., Ltd.	03-FR021-026 (Main) 03-FR021-026 (Aux)	PIFA	1.51 1.56	1.26 1.69	IPEX
82	Hitachi Cable	HBY17 (Tx1) HBY17 (Tx2)	PIFA	-0.36 0.97	0.99 0.99	IPEX
83	Hitachi Cable, Ltd	HFT60 (Tx1) HFT60 (Tx2)	PIFA	2.97 0.90	0.32 0.32	IPEX, HRS
84	Smart Approach Co., Ltd.	03-FR021-020 (Main) 03-FR021-020 (Aux)	PIFA	1.66 1.83	1.27 1.28	IPEX
85	WHAYU INDUSTRIAL CO.,LTD	MSA-00005A (Main) MSA-00005A (Aux)	PIFA	-2.12 -2.49	-1.55 -2.16	Tnov
86	Tyco	TBN008 (Tx1) TBN008 (Tx2)	PIFA	-2.60 -0.26	2.34 2.13	IPEX

No.	Brand	Model	Antenna Type	Peak gain with cable loss	Cable Loss	Connector Type
87	Tyco	TBN007 (Tx1) TBN007 (Tx2)	PIFA	1.98 1.97	-0.97 -0.97	U.FL
88	Tyco Electronics Japan G.K.	TBN009 (Tx1) TBN009 (Tx2)	PIFA	0.22 0.33	0.96 0.95	U.FL
89	Tyco Electronics Japan G.K.	TBN010 (Tx1) TBN010 (Tx2)	PIFA	1.68 1.45	0.96 0.95	U.FL
90	Smart Approach.Co.,Ltd	03-FR021-016 (Tx1) 03-FR021-016 (Tx2)	PIFA	2.32 0.49	1.03 1.11	IPX
91	Foxconn	WDAN-T1WM (Tx1) WDAN-T1WM (Tx2)	PIFA	1.47 1.38	0.909 0.909	IPEX
92	Foxconn	WDAN-T1AM1001-DH (Tx1) WDAN-T1AM1002-DH (Tx2)	PIFA	2.58 1.39	0.909 0.909	Foxconn SGX0008-01
93	WNC	WNC003 (Main) WNC003 (Aux)	PIFA	-0.10 2.30	1.22 1.48	RF
94	TE Connectivity	1556465-1 TBN003 (Tx1) 1556466-1 TBN003 (Tx2)	PIFA	-0.23 -0.49	1.52 1.64	MI-113
95	ACON	APP8P-700341 (Main) APP8P-700342 (Aux)	PIFA	1.10 1.99	1.03 1.21	IPEX, MHF, U.FL-L(P)
96	Smart Approach	SE-ECLA1-001 (Main) SE-ECLA1-002 (Aux)	PIFA	2.53 2.92	1.20 1.39	IPX
97	WNC	81.EK515.G13 (Main) 81.EK515.G14 (Aux)	PIFA	0.30 0.39	1.96 2.67	IPEX
98	Favortron CO.,LTD (FVC)	N01001205001 (Tx1) N01001206001 (Tx2)	PIFA	2.81 1.97	-2.52 -2.13	IPEX
99	Favortron CO.,LTD (FVC)	W270HUQ-WiMAX-1 W270HUQ-WiMAX-2	PIFA	2.85 1.87	NA	I-PEX
100	Favortron CO.,LTD (FVC)	N01001193001 (Tx1) N01001193001 (Tx2)	PIFA	2.97 0.9	-2.13 -2.13	IPEX
101	Favortron CO.,LTD (FVC)	N01001199001 (Tx1) N01001199001 (Tx2)	PIFA	2.73 2.87	-2.61 -2.65	IPEX
102	Well Green	SKW24WMPB01+A (Tx1) SKW24WMPB01+A (Tx2)	PIFA	-1.63 -0.99	1.62 1.79	IPEX

No.	Brand	Model	Antenna Type	Peak gain with cable loss	Cable Loss	Connector Type
103	Favortron CO.,LTD (FVC)	N01001218001 (Tx1) N01001218001 (Tx2)	PIFA	2.53 2.28	-1.93 -1.93	IPEX
104	Well Green	SKM11WMPB03+A (Tx1) SKM11WMPB02+D (Tx2)	PIFA	-1.84 -2.93	1.17 0.89	IPEX
105	Favortron CO.,LTD (FVC)	E5120-WiMAX-1 E5120-WiMAX-2	PIFA	2.7 2.19	NA	IPEX
106	Favortron CO.,LTD (FVC)	B5100-WiMAX-1 B5100-WiMAX-2	PIFA	1.58 1.75	NA	IPEX
107	Well Green	SKW31WMPB01+A (Tx1) SKW31WMPB01+A (Tx2)	PIFA	-1.07 -0.64	-1.39 -1.53	IPEX
108	WhaYu	C680-520279-A (Tx1) C680-520279-A (Tx2)	PIFA	1.09 -0.55	0.72 1.89	FAF
109	WhaYu	C680-520278-A (Tx1) C680-520277-A (Tx2)	PIFA	1.92 -1.03	0.64 1.72	FAF
110	Wellshine	DQ67KJQUT35 (Tx1) DQ67KJQUT36 (Tx2)	PIFA	2.03 0.05	1.00 1.80	IPEX
111	ZTX	ZTX-A162-Q18000-00 (Tx1) ZTX-A162-Q18000-00 (Tx2)	PIFA	2.014 1.742	NA	IPEX
112	Well Green	SK81WMPB01+A (Tx1) SK81WMPB02+A (Tx2)	PIFA	1.79 0.66	-1.88 -2.95	IPEX
113	Wellshine	DQ67KJQUT33 (Tx1) DQ67KJQUT33 (Tx2)	PIFA	1.17 -0.06	0.77 1.90	IPEX
114	Tyco Holding (Bermuda) VII Ltd.	TBN001 (Main) TBN001 (Aux)	PIFA	3.45 2.41	1.45 2.13	I.P.X
115	tyco	TBN005 TBN006	PIFA	2.09 3.40	NA	IPEX
116	Tyco Electronic AMPKK	TBN004 (Main) TBN004 (Aux)	PIFA	0.28 -0.83	0.98 0.98	U.FL
117	Hitachi	HFS23	PIFA	-0.8	0.89	IPEX or HRS
118	Hitachi	HFS40	PIFA	0.64	0.89	IPEX or HRS
119	Quanta	AS-070-F (Tx1) AS-070-F (Tx2)	PIFA	-0.5 -1.9	-1.6 -3	IPEX

No.	Brand	Model	Antenna Type	Peak gain with cable loss	Cable Loss	Connector Type
120	ACON	DQ60APM6P02(APM6P-700091) (Main) DQ60APM6P02(APM6P-700091) (Aux)	PIFA	-0.7 -0.29	1.81 2.52	IPX, Hirose, Technova, MHF
121	ACON	DQ60APM6P03(APM6P-700092) (Main) DQ60APM6P03(APM6P-700092) (Aux)	PIFA	-0.6 -1.02	2.02 2.73	IPX, Hirose, Technova, MHF
122	Quanta Computer Inc	37LX6AATP00 (Tx1) 37LX6AATP00 (Tx2)	PIFA	1.8 -0.3	-1.40 -2.02	I-PEX
123	Quanta Computer Inc	37LX7AATP00 (Tx1) 37LX7AATP00 (Tx2)	PIFA	0.3 1.7	-1.44 -1.79	I-PEX
124	Quanta Computer Inc	3ASP8AATP20 (Tx1) 3ASP8AATP20 (Tx2)	PIFA	1.0 0.2	-1.36 -1.95	SPD
125	Quanta Computer Inc	35AX6AATP10 (Tx1) 35AX6AATP10 (Tx2)	PIFA	0.7 -1.4	-1.28 -1.96	SGX
126	Foxconn	WDAN-HMCH1401-DH/79010T000-600-G (Tx1) WDAN-HMCH1402-DH/79010SY00-600-G (Tx2)	PIFA	-0.99 -0.09	1.05 1.82	IPEX
127	Yageo	CAN43130WIFO04921/79010SQ00-011-G (Tx1) CAN43130WIFO04922/79010SR00-011-G (Tx2)	PIFA	0.23 1.53	1.08 1.88	Hirose, U.FL-LP, IPEX, MHF
128	WHAYU	C107-520757-A/79010T100-12S-G (Tx1) C107-520756-A/79010SS00-12S-G (Tx2)	PIFA	-0.18 2.58	1.30 1.30	IPEX
129	Foxconn	WDAN-HMCH1501-DH/79010SW00-600-G (Tx1) WDAN-HMCH1502-DH/79010SV00-600-G (Tx2)	PIFA	-0.35 0.38	1.22 2.03	IPEX
130	ACON	AMP8P-700186 (Main) AMP8P-700187 (Aux)	PIFA	1.96 1.91	1.58 2.29	IPEX, U.FL, MHF
131	Amphenol	FL5202-11-001-C (Tx1) FL5202-11-001-C (Tx2)	PIFA	-1.41 -0.77	1.38 1.88	U.FL
132	Amphenol	IV5233-15-003-C (Tx1) IV5233-15-002-C (Tx2)	PIFA	0.54 -0.53	1.56 2.37	GBE

No.	Brand	Model	Antenna Type	Peak gain with cable loss	Cable Loss	Connector Type
133	Amphenol	IV5218-11-002-C (Tx1) IV5218-11-001-C (Tx2)	PIFA	0.55 0.31	1.36 2.23	U.FL
134	Amphenol	FX5170-15-004-C (Tx1) FX5170-15-001-C (Tx2)	PIFA	0.76 -2.11	0.80 1.62	IPEX, Technova
135	HON HAI	WDAN-HMEDW005-DH (Tx1) WDAN-HMEDW005-DH (Rx2)	PIFA	-1.85 1.33	0.67 1.34	IPEX
136	WNC	6036B0086802 (Tx1) 6036B0087102 (Tx2)	PIFA	-1.30 -0.49	1.09 1.36	U.FL
137	WNC	6036B0088203 (Main) 6036B0088303 (Aux)	PIFA	0.50 0.12	1.83 2.25	U.FL
138	WNC	6036B0088203 (Main) 6036B0088303 (Aux)	PIFA	1.21 -0.07	1.83 2.25	U.FL
139	WNC	6036B0087303 (Main) 6036B0087203 (Aux)	PIFA	2.34 1.28	1.76 2.45	U.FL
140	WNC	6036B0091201 (Main) 6036B0091401 (Aux)	PIFA	-1.11 -0.95	1.85 2.71	U.FL
141	YAGEO	CAN43130LIIN03863 (Tx1) CAN43130LIIN03864 (Tx2)	PIFA	-2.69 -1.09	1.04 1.78	Technova
142	YAGEO	6036B0091202 (Tx1) 6036B0091402 (Tx2)	PIFA	0.80 0.25	1.30 1.98	Technova
143	YAGEO	CAN43130LIIN03841 (Tx1) CAN43130LIIN03842 (Tx2)	PIFA	1.46 0.95	1.22 2.03	Technova
144	YAGEO	6036B0088401 (Tx1) 6036B0088501 (Tx2)	PIFA	0.61 0.71	1.90 2.40	Technova
145	ACON	APM8P-700018 (Tx1) APM8P-700019 (Tx2)	PIFA	2.66 2.27	1.72 2.53	IPEX, MHF, U.FL-LP
146	WNC	81.EK515.G15 (Main) 81.EK515.G16 (Aux)	PIFA	2.36 1.13	1.94 2.76	IPEX
147	ACON	APM8P-700016 (Main) APM8P-700017 (Aux)	PIFA	2.79 0.74	1.48 2.09	IPEX, MHF, U.FL-LP
148	NISSEI ELECTRIC CO., LTD	3209970 (Rx) 3210002 (Tx)	PIFA	1.88 1.26	NA	U.FL
149	ACON	25.90598.001 (Rx) 25.90597.001 (Tx)	PIFA	1.17 1.04	NA	I-PEX
150	WNC	25.90587.001 (Rx) 25.90586.001 (Tx)	PIFA	1.94 0.59	NA	I-PEX

No.	Brand	Model	Antenna Type	Peak gain with cable loss	Cable Loss	Connector Type
151	ACON	25.90653.001 (Rx) 25.90654.001 (Tx)	PIFA	-0.42 -0.13	NA	I-PEX
152	WNC	25.90649.001 (Rx) 25.90650.001 (Tx)	PIFA	-0.52 0.31	NA	I-PEX
153	Foxconn	024-01F0-2242 (Rx) 024-01F0-2243 (Tx)	PIFA	1.16 -0.88	NA	SGX0003-02
154	NISSEI ELECTRIC CO., LTD	3176658 (Rx) 3176674 (Tx)	PIFA	-0.83 -0.61	NA	U.FL
155	Foxconn	WDAN-L1WK1001-DF (Rx) WDAN-L1WK1002-DF (Tx)	PIFA	1.71 1.43	NA	FOXCONN
156	Hitachi	HMT14-MAIN (Rx) HMT14-AUX (Tx)	PIFA	1.82 1.54	NA	U.FL
157	ACON	25.90700.001 (Rx) 25.90702.001 (Tx)	PIFA	-1.21 1.27	NA	I-PEX
158	ACON	25.90800.001 (Rx) 25.90802.001 (Tx)	PIFA	1.37 1.21	NA	U.FL
159	ACON	APM6P-700033 (Rx) APM6P-700034 (Tx)	PIFA	-0.96 -0.86	NA	I-PEX
160	Amphenol Taiwan Corporation	14G152168231LV (Rx) 14G152168131LV (Tx)	PIFA	-1.85 -1.60	NA	I-PEX
161	ACON	APM6P-700027 (Rx) APM6P-700029 (Tx)	PIFA	-1.32 -0.23	NA	I-PEX
162	TYCO	2023940-1 (Rx) 2023944-1 (Tx)	PIFA	-2.39 1.52	NA	U.FL
163	ACON	APM6P-700028 (Rx) APM6P-700030 (Tx)	PIFA	-1.16 -0.74	NA	I-PEX
164	Tyco Holding (Bermuda) VII Ltd.	2023946-1 (Rx) 2023950-1 (Tx)	PIFA	-0.58 -0.11	NA	U.FL
165	Amphenol SAA	LX-0980-11-000-R (Rx) LX-0983-11-000-R (Tx)	PIFA	1.61 1.57	NA	20351-111R-37
166	NISSEI ELECTRIC CO., LTD	3172525 (Rx) 3172566 (Tx)	PIFA	1.35 1.99	NA	U.FL
167	Amphenol	LX0970-11-000-R (Rx) LX0968-11-000-R (Tx)	PIFA	1.47 1.68	NA	U.FL
168	FOXCONN	WDAN-L1ML3001-DF (Rx) WDAN-L1ML3002-DF (Tx)	PIFA	-0.40 1.10	NA	SGX0003-02

No.	Brand	Model	Antenna Type	Peak gain with cable loss	Cable Loss	Connector Type
169	NISSEI ELECTRIC CO., LTD	3172467 (Rx) 3172509 (Tx)	PIFA	0.54 1.80	NA	U.FL
170	ACON	25.90675.001 (Rx) 25.90676.001 (Tx)	PIFA	-0.39 0.64	NA	U.FL
171	WNC	25.90669.001 (Rx) 25.90670.001 (Tx)	PIFA	-1.53 1.32	NA	I-PEX
172	ACON	AWP6P (Main) AWP6P (Aux)	PIFA	-0.19 -0.99	0.85 0.85	I-PEX, Hirose, U.FL-L(P)

From the above antennas, the worst case was found in No. 1 & 2. Therefore only the test data of the modes were recorded in this report individually.

7. The PIFA antenna was pre-tested under the following test modes for three different axes placements:

Test Mode	Description
Mode A	**X plane**
Mode B	Y plane
Mode C	Z plane

From the above modes, the worst emission level was found in Mode A. Therefore only the test data of the modes were recorded in this report individually.

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

3.2 DESCRIPTION OF TEST MODES

For Bluetooth 2.1+ EDR: 79

Seventy-nine channels are provided for Bluetooth.

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 LE: 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

3.3 TEST MODE APPLICABLITY AND TESTED CHANNEL DETAIL:

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ³ 1G	APCM	OB	
1	-	√	√	-	-	Dipole Antenna
2	√	√	√	√	√	PIFA Antenna

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

RE ³ 1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

OB: Conducted Out-Band Emission 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	0	FHSS	8DPSK	DH5

Radiated Emission Test (Below 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, 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	PLANE
0 to 78	0	FHSS	8DPSK	DH5	
0 to 39	0	FHSS	GFSK (LE MODE)	DH1	

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	PLANE
0 to 78	0, 39, 78	FHSS	GFSK	DH5	
0 to 78	0, 39, 78	FHSS	8DPSK	DH5	
0 to 39	0, 19, 39	FHSS	GFSK (LE MODE)	DH1	

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
0 to 78	0, 39, 78	FHSS	GFSK	DH5
0 to 78	0, 39, 78	FHSS	8DPSK	DH5
0 to 39	0, 19, 39	FHSS	GFSK (LE MODE)	DH1

Conducted Out-Band Emission 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
0 to 78	0, 78	FHSS	GFSK	DH5
0 to 78	0, 78	FHSS	8DPSK	DH5
0 to 39	0, 39	FHSS	GFSK (LE MODE)	DH1

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	28deg. C, 64%RH,	120Vac, 60Hz	Kent Liu
RE<1G	18deg. C, 70%RH	120Vac, 60Hz	Kent Liu
RE≥1G	20deg. C, 67%RH	120Vac, 60Hz	Evan Huang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang
OB	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang

3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C. (15.247)
ANSI C63.4-2003
ANSI C63.10-2009

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.

3.5 DESCRIPTION OF SUPPORT UNITS

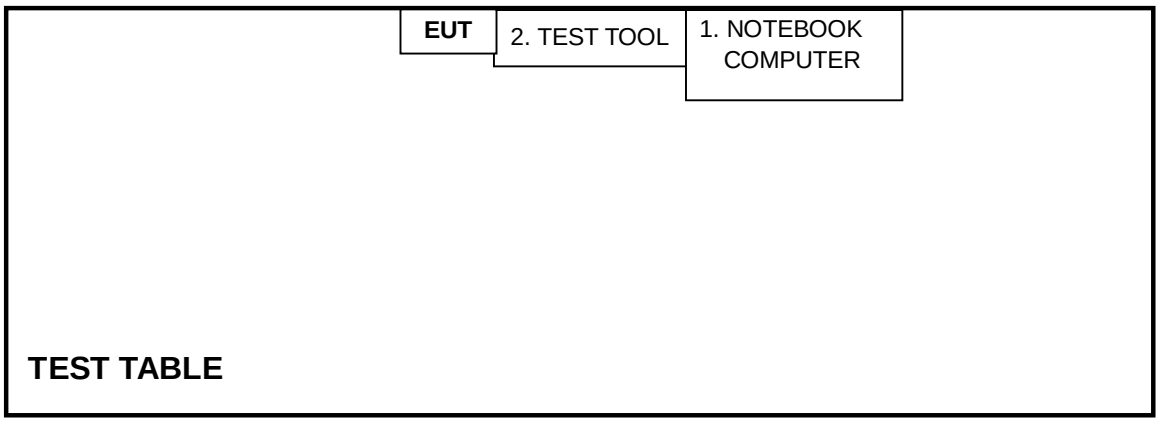
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5CA-0448	PIW632500516610
2	TEST TOOL	Realtek	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	NA

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

3.6 CONFIGURATION OF SYSTEM UNDER TEST



4 TEST PROCEDURES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

Test date: Nov. 22, 2011

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)	NSLK8127	8127-522	Sep. 07, 2011	Sep. 06, 2012
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 01, 2011	Oct. 31, 2012
RF Cable (JYEBAO)	5DFB	COCCAB-002	Aug. 29, 2011	Aug. 28, 2012
50 ohms Terminator	50	3	Nov. 02, 2011	Nov. 01, 2012
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.

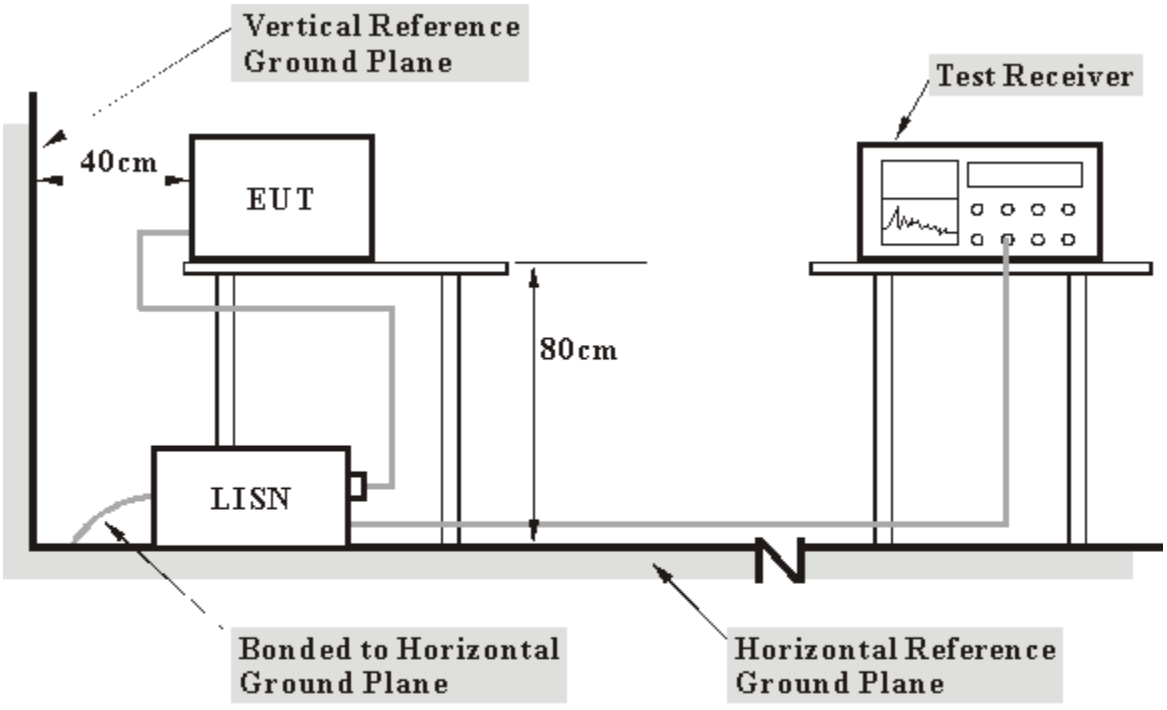
4.1.3 TEST PROCEDURES

a. 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.

b. Both lines of the power mains connected to the EUT/HOST were checked for maximum conducted interference.

c. 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: 1. Support units were connected to second LISN.
2. 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

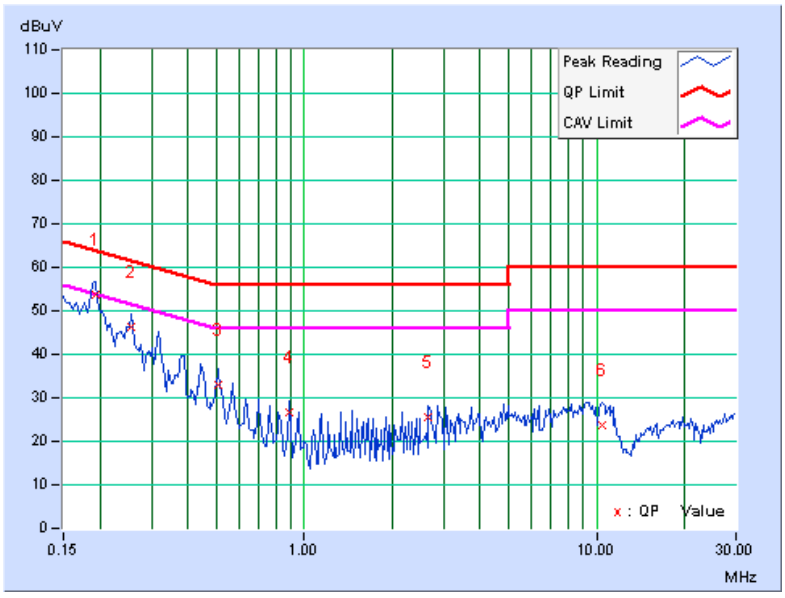
1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “setup.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.6 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.193	0.10	53.55	45.78	53.65	45.88	63.91	53.91	-10.26	-8.03
2	0.255	0.10	46.05	38.25	46.15	38.35	61.58	51.58	-15.42	-13.22
3	0.509	0.12	32.97	27.01	33.09	27.13	56.00	46.00	-22.91	-18.87
4	0.888	0.14	26.71	24.64	26.85	24.78	56.00	46.00	-29.15	-21.22
5	2.664	0.24	25.33	21.68	25.57	21.92	56.00	46.00	-30.43	-24.08
6	10.402	0.56	23.08	17.14	23.64	17.70	60.00	50.00	-36.36	-32.30

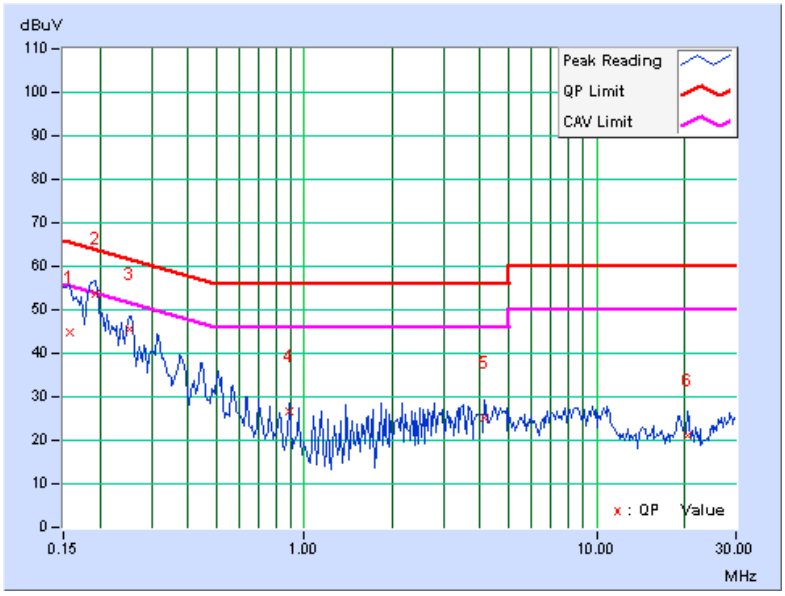
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.08	44.76	18.40	44.84	18.48	65.58	55.58	-20.74	-37.10
2	**0.193**	**0.09**	**53.78**	**46.10**	**53.87**	**46.19**	**63.91**	**53.91**	**-10.04**	**-7.72**
3	0.252	0.10	45.62	38.59	45.72	38.69	61.71	51.71	-15.99	-13.02
4	0.888	0.13	26.43	23.90	26.56	24.03	56.00	46.00	-29.44	-21.97
5	4.125	0.24	24.94	19.19	25.18	19.43	56.00	46.00	-30.82	-26.57
6	20.363	0.67	20.30	10.04	20.97	10.71	60.00	50.00	-39.03	-39.29

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



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
4. Section 15.205 restricted bands of operation shall compliance with the limits in Section 15.209.

4.2.2 TEST INSTRUMENTS

Test date: Nov. 16 to 18, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012
Agilent Pre-Selector	N9039A	MY46520311	July 12, 2011	July 11, 2012
Agilent Signal Generator	N5181A	MY49060517	July 12, 2011	July 11, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 15, 2011	Nov. 14, 2012
Agilent Pre-Amplifier	8449B	3008A02578	July 04, 2011	July 03, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 14, 2011	Nov. 13, 2012
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 27, 2010	Dec. 26, 2011
RF Cable	NA	CHGCAB_001	Oct. 07, 2011	Oct. 06, 2012
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.

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room test. 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.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

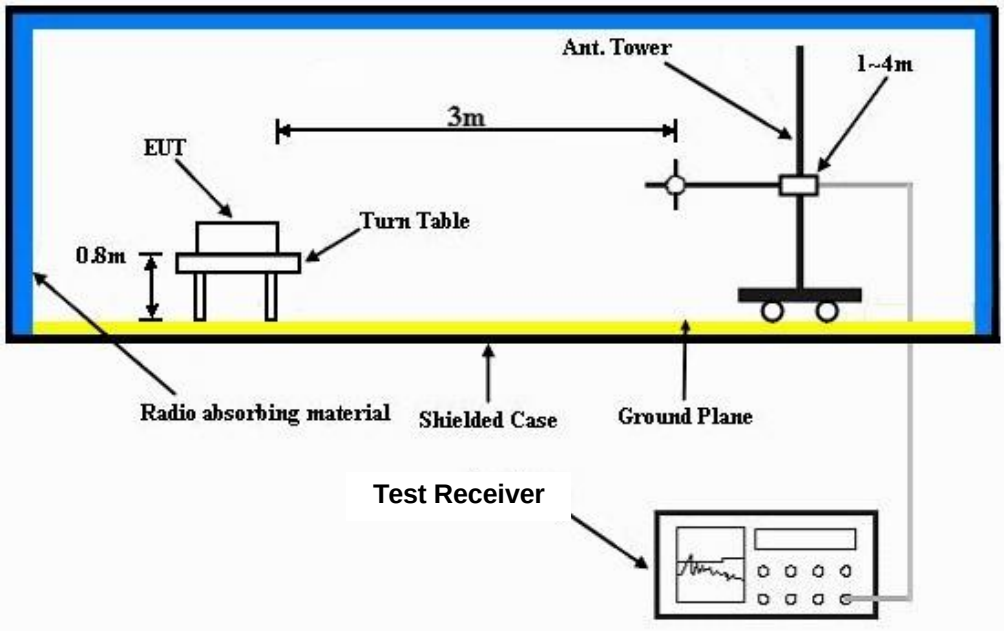
NOTE:

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.5

4.2.7 TEST RESULTS (DIPOLE ANTENNA)

BELOW 1GHz WORST-CASE DATA：8DPSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	18deg. C, 70%RH	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	169.20	36.2 QP	43.5	-7.3	2.00 H	184	22.23	13.99
2	399.87	36.4 QP	46.0	-9.6	1.50 H	251	18.47	17.93
3	560.01	41.4 QP	46.0	-4.7	1.50 H	156	19.65	21.70
4	699.93	39.6 QP	46.0	-6.4	1.25 H	64	16.55	23.05
5	795.23	38.4 QP	46.0	-7.6	1.00 H	188	12.66	25.73
6	895.67	39.7 QP	46.0	-6.3	1.25 H	149	12.40	27.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	36.51	35.7 QP	40.0	-4.3	1.00 V	143	22.15	13.56
2	172.22	35.9 QP	43.5	-7.6	1.25 V	16	22.14	13.78
3	399.80	39.2 QP	46.0	-6.8	1.25 V	231	21.31	17.92
4	499.92	42.4 QP	46.0	-3.6	1.50 V	198	22.09	20.31
5	560.01	41.0 QP	46.0	-5.0	1.25 V	111	19.33	21.70
6	799.98	40.6 QP	46.0	-5.4	1.50 V	359	14.72	25.87

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.

GFSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan 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	2389.39	56.6 PK	74.0	-17.4	1.00 H	231	24.85	31.75
2	2389.39	26.5 AV	54.0	-27.5	1.00 H	231	-5.25	31.75
3	*2402.00	101.0 PK			1.00 H	231	69.21	31.79
4	*2402.00	70.9 AV			1.00 H	231	39.11	31.79
5	4804.00	51.0 PK	74.0	-23.0	1.00 H	247	11.70	39.30
6	4804.00	20.9 AV	54.0	-33.1	1.00 H	247	-18.40	39.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2388.80	56.3 PK	74.0	-17.7	1.29 V	181	24.55	31.75
2	2388.80	26.2 AV	54.0	-27.8	1.29 V	181	-5.55	31.75
3	*2402.00	107.5 PK			1.29 V	181	75.71	31.79
4	*2402.00	77.4 AV			1.29 V	181	45.61	31.79
5	4804.00	55.5 PK	74.0	-18.5	1.10 V	261	16.20	39.30
6	4804.00	25.4 AV	54.0	-28.6	1.10 V	261	-13.90	39.30

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan 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	*2441.00	101.2 PK			1.00 H	227	69.27	31.93
2	*2441.00	71.1 AV			1.00 H	227	39.17	31.93
3	4882.00	46.4 PK	74.0	-27.6	1.05 H	255	6.87	39.53
4	4882.00	16.3 AV	54.0	-37.7	1.05 H	255	-23.23	39.53
5	7323.00	53.5 PK	74.0	-20.5	1.29 H	244	6.64	46.86
6	7323.00	23.4 AV	54.0	-30.6	1.29 H	244	-23.46	46.86
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	106.1 PK			1.25 V	179	74.17	31.93
2	*2441.00	76.0 AV			1.25 V	179	44.07	31.93
3	4882.00	50.8 PK	74.0	-23.2	1.16 V	274	11.27	39.53
4	4882.00	20.7 AV	54.0	-33.3	1.16 V	274	-18.83	39.53
5	7323.00	56.7 PK	74.0	-17.3	1.05 V	258	9.84	46.86
6	7323.00	26.6 AV	54.0	-27.4	1.05 V	258	-20.26	46.86

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

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

7. Average value = peak reading + 20log(duty cycle).

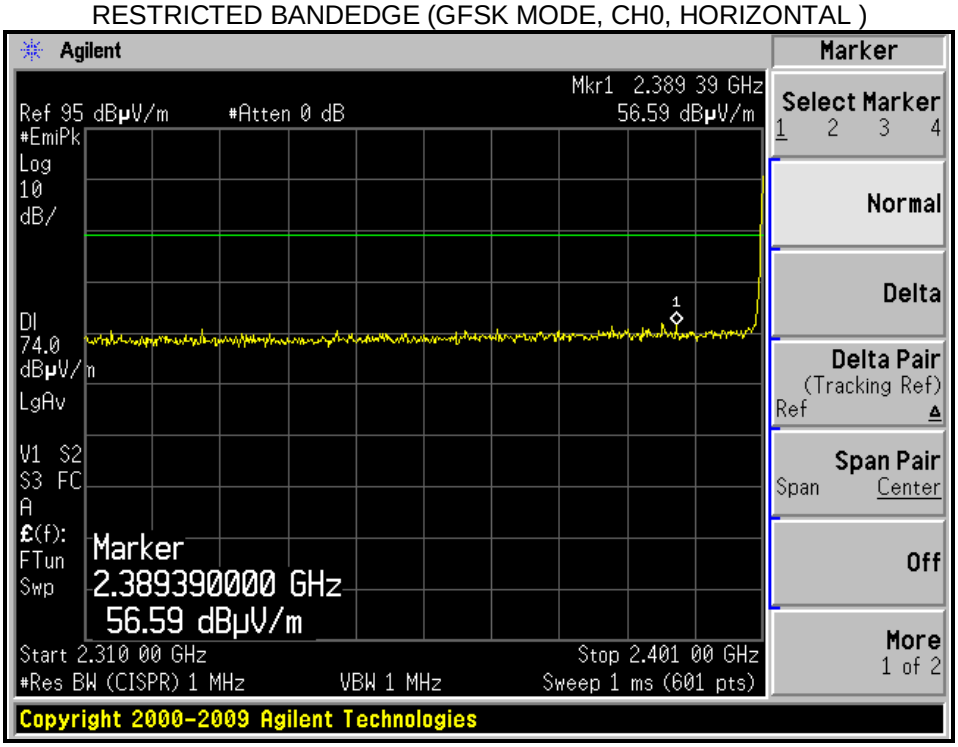
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan Huang

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	*2480.00	98.7 PK			1.00 H	239	66.62	32.08
2	*2480.00	68.6 AV			1.00 H	239	36.52	32.08
3	2483.69	54.9 PK	74.0	-19.1	1.00 H	239	22.81	32.09
4	2483.69	24.8 AV	54.0	-29.2	1.00 H	239	-7.29	32.09
5	4960.00	49.5 PK	74.0	-24.5	1.09 H	270	9.69	39.81
6	4960.00	19.4 AV	54.0	-34.6	1.09 H	270	-20.41	39.81
7	7440.00	53.2 PK	74.0	-20.8	1.29 H	247	6.46	46.74
8	7440.00	23.1 AV	54.0	-30.9	1.29 H	247	-23.64	46.74
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	105.3 PK			1.24 V	206	73.22	32.08
2	*2480.00	75.2 AV			1.24 V	206	43.12	32.08
3	2483.50	55.3 PK	74.0	-18.7	1.24 V	207	23.21	32.09
4	2483.50	25.2 AV	54.0	-28.8	1.24 V	207	-6.89	32.09
5	4960.00	53.3 PK	74.0	-20.7	1.11 V	268	13.49	39.81
6	4960.00	23.2 AV	54.0	-30.8	1.11 V	268	-16.61	39.81
7	7440.00	56.4 PK	74.0	-17.6	1.08 V	262	9.66	46.74
8	7440.00	26.3 AV	54.0	-27.7	1.08 V	262	-20.44	46.74

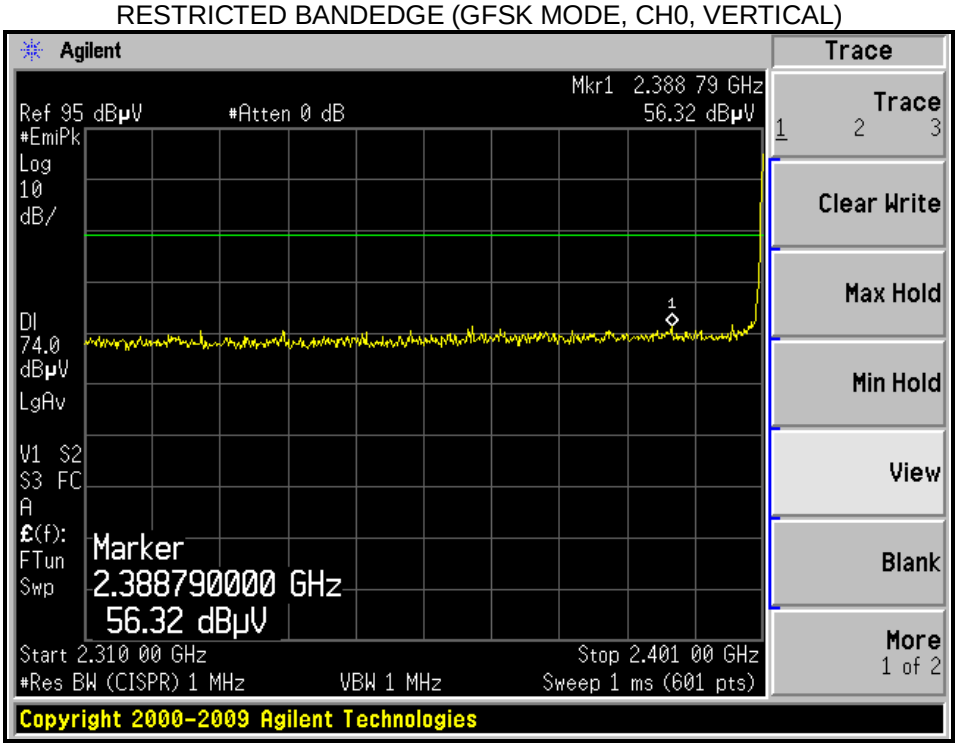
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

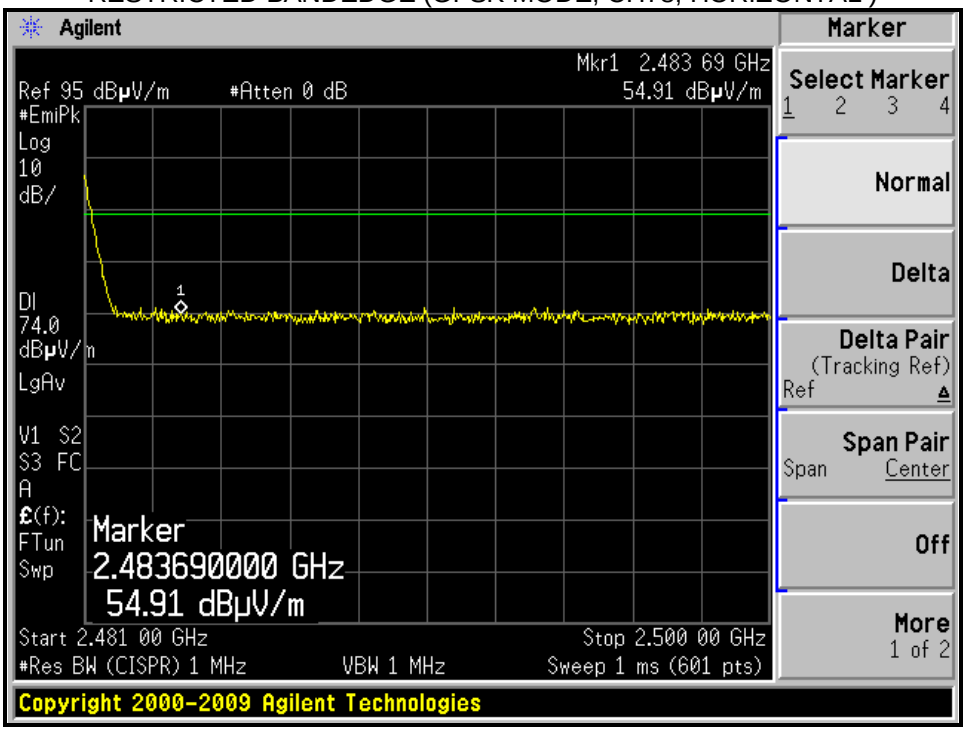
RESTRICTED BANDEDGE (GFSK MODE, CH0, HORIZONTAL)



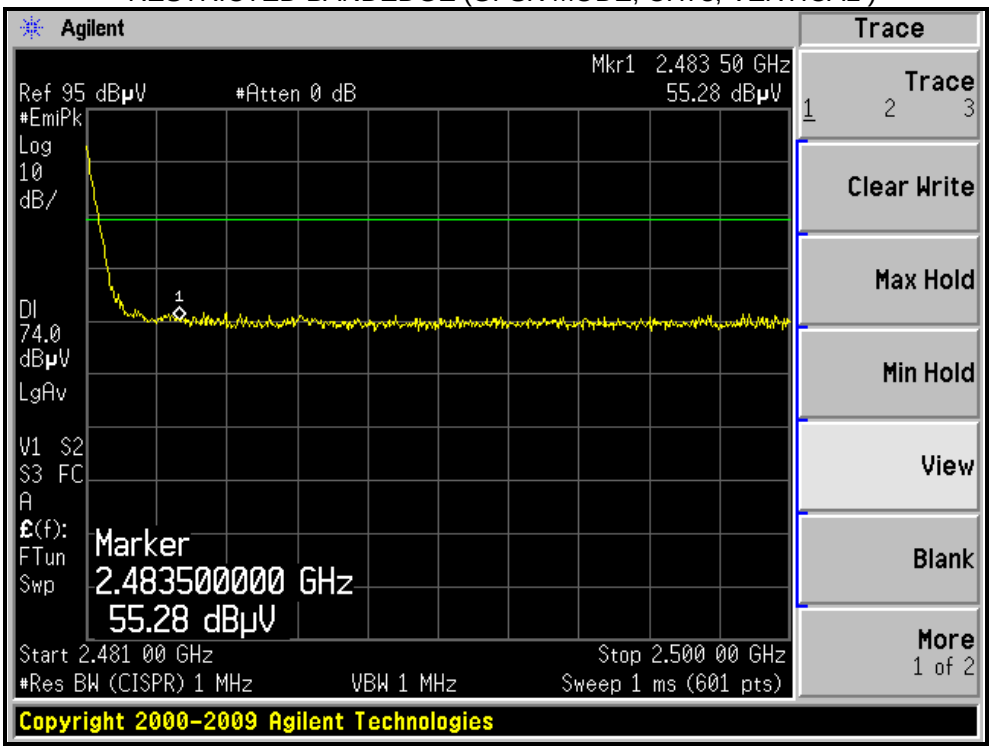
RESTRICTED BANDEDGE (GFSK MODE, CH0, VERTICAL)



RESTRICTED BANDEDGE (GFSK MODE, CH78, HORIZONTAL)



RESTRICTED BANDEDGE (GFSK MODE, CH78, VERTICAL)



The average value is Average value = peak reading + 20log(duty cycle). And it meets the requirement of limit.

8DPSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan 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	2387.88	55.9 PK	74.0	-18.1	1.00 H	231	24.15	31.75
2	2387.88	25.8 AV	54.0	-28.2	1.00 H	231	-5.95	31.75
3	*2402.00	101.2 PK			1.00 H	231	69.41	31.79
4	*2402.00	71.1 AV			1.00 H	231	39.31	31.79
5	4804.00	50.7 PK	74.0	-23.3	1.00 H	247	11.40	39.30
6	4804.00	20.6 AV	54.0	-33.4	1.00 H	247	-18.70	39.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.8 PK	74.0	-18.2	1.28 V	164	24.05	31.75
2	2390.00	25.7 AV	54.0	-28.3	1.28 V	164	-6.05	31.75
3	*2402.00	107.6 PK			1.28 V	164	75.81	31.79
4	*2402.00	77.5 AV			1.28 V	164	45.71	31.79
5	4804.00	55.6 PK	74.0	-18.4	1.10 V	261	16.30	39.30
6	4804.00	25.5 AV	54.0	-28.5	1.10 V	261	-13.80	39.30

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan 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	*2441.00	100.9 PK			1.00 H	227	68.97	31.93
2	*2441.00	70.8 AV			1.00 H	227	38.87	31.93
3	4882.00	46.8 PK	74.0	-27.2	1.05 H	255	7.27	39.53
4	4882.00	16.7 AV	54.0	-37.3	1.05 H	255	-22.83	39.53
5	7323.00	53.7 PK	74.0	-20.3	1.29 H	244	6.84	46.86
6	7323.00	23.6 AV	54.0	-30.4	1.29 H	244	-23.26	46.86
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	106.0 PK			1.25 V	179	74.07	31.93
2	*2441.00	75.9 AV			1.25 V	179	43.97	31.93
3	4882.00	50.5 PK	74.0	-23.5	1.16 V	274	10.97	39.53
4	4882.00	20.4 AV	54.0	-33.6	1.16 V	274	-19.13	39.53
5	7323.00	57.1 PK	74.0	-16.9	1.05 V	258	10.24	46.86
6	7323.00	27.0 AV	54.0	-27.0	1.05 V	258	-19.86	46.86

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

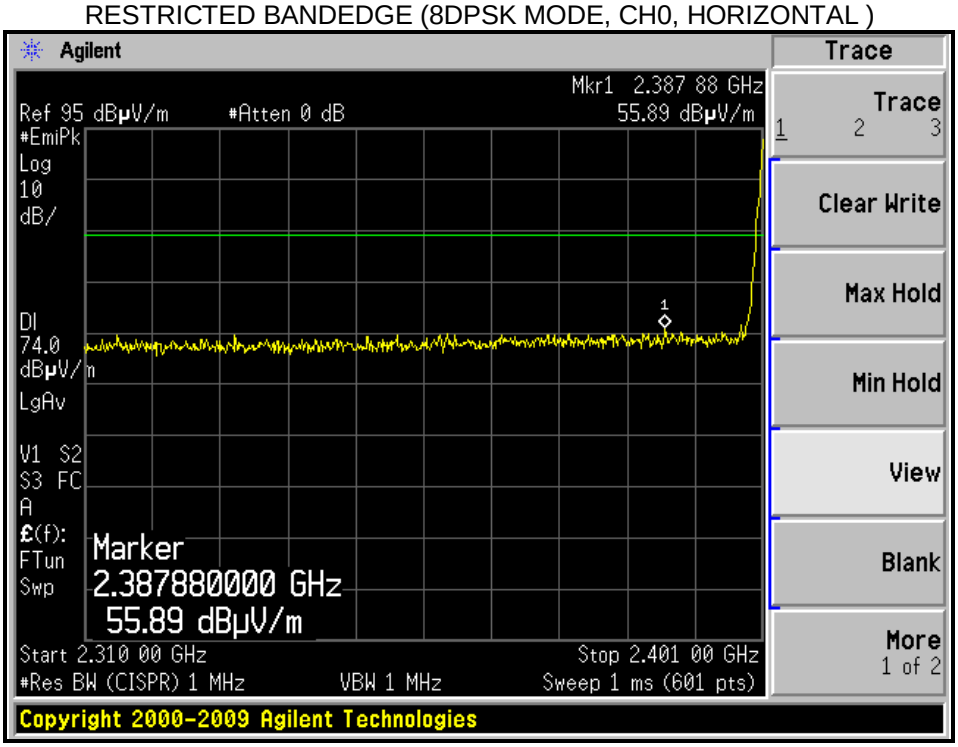
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan Huang

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	*2480.00	98.3 PK			1.00 H	239	66.22	32.08
2	*2480.00	68.2 AV			1.00 H	239	36.12	32.08
3	2483.50	55.1 PK	74.0	-18.9	1.00 H	239	23.01	32.09
4	2483.50	25.0 AV	54.0	-29.0	1.00 H	239	-7.09	32.09
5	4960.00	49.4 PK	74.0	-24.6	1.09 H	270	9.59	39.81
6	4960.00	19.3 AV	54.0	-34.7	1.09 H	270	-20.51	39.81
7	7440.00	52.7 PK	74.0	-21.3	1.29 H	247	5.96	46.74
8	7440.00	22.6 AV	54.0	-31.4	1.29 H	247	-24.14	46.74
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	105.5 PK			1.25 V	208	73.42	32.08
2	*2480.00	75.4 AV			1.25 V	208	43.32	32.08
3	2483.50	54.9 PK	74.0	-19.1	1.25 V	209	22.81	32.09
4	2483.50	24.8 AV	54.0	-29.2	1.25 V	209	-7.29	32.09
5	4960.00	53.9 PK	74.0	-20.1	1.11 V	268	14.09	39.81
6	4960.00	23.8 AV	54.0	-30.2	1.11 V	268	-16.01	39.81
7	7440.00	56.3 PK	74.0	-17.7	1.08 V	262	9.56	46.74
8	7440.00	26.2 AV	54.0	-27.8	1.08 V	262	-20.54	46.74

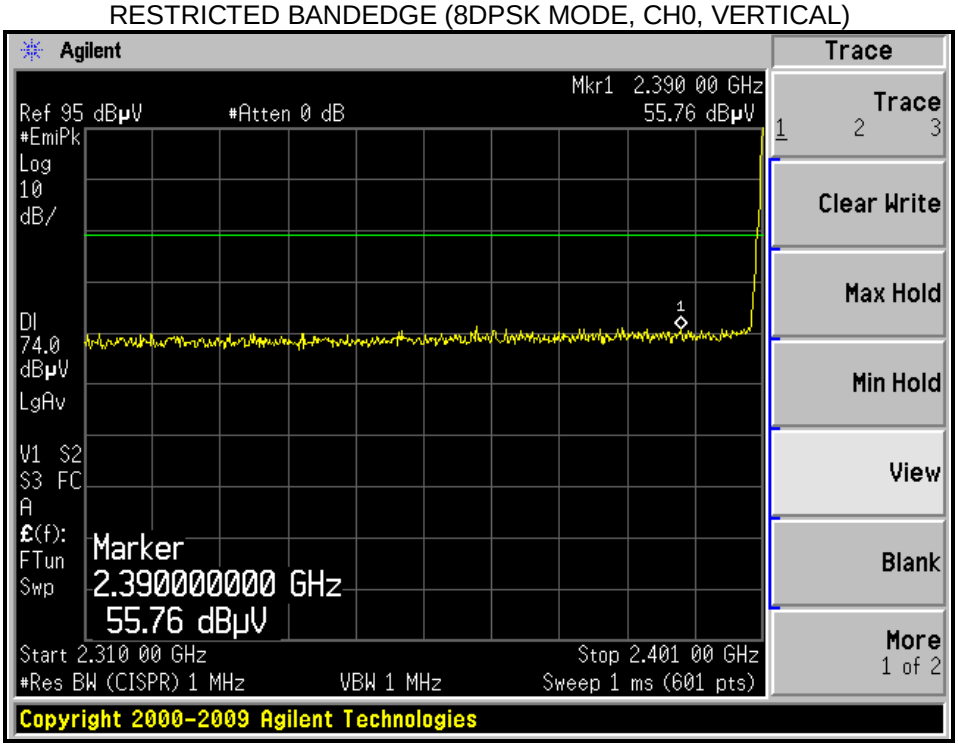
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

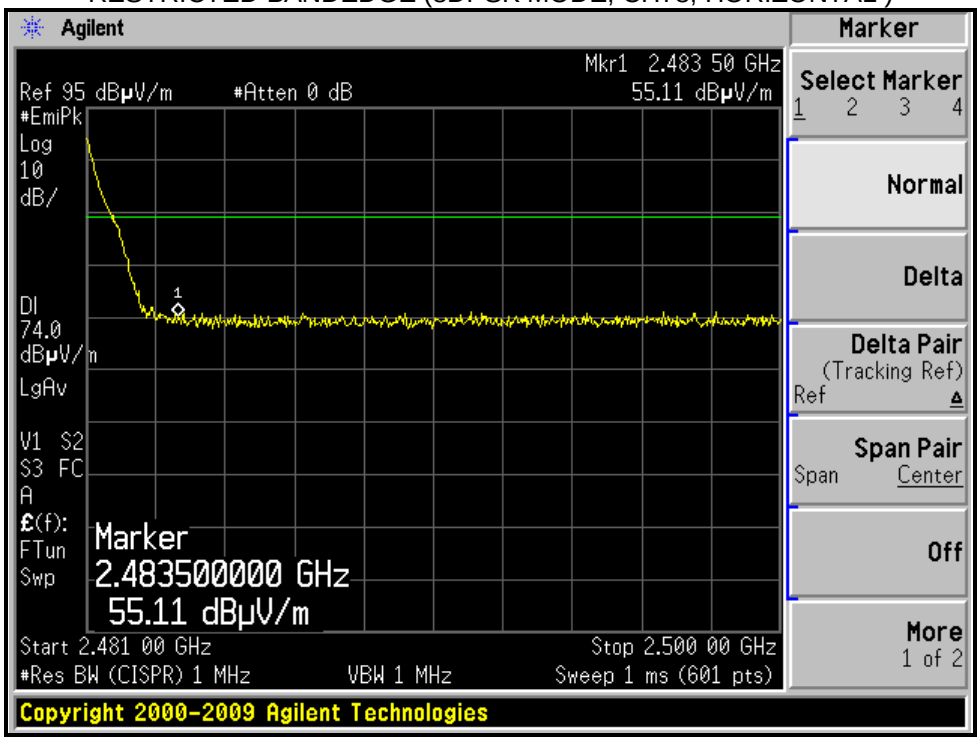
RESTRICTED BANDEDGE (8DPSK MODE, CH0, HORIZONTAL)



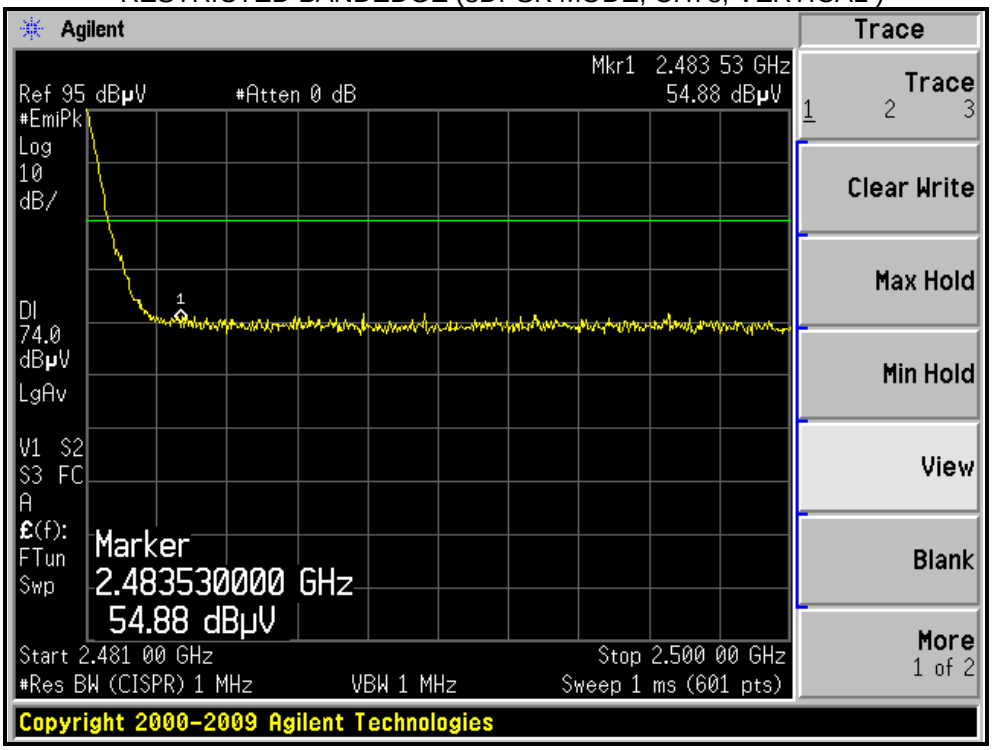
RESTRICTED BANDEDGE (8DPSK MODE, CH0, VERTICAL)



RESTRICTED BANDEDGE (8DPSK MODE, CH78, HORIZONTAL)



RESTRICTED BANDEDGE (8DPSK MODE, CH78, VERTICAL)



* The average value is Average value = peak reading + 20log(duty cycle). And it meets the requirement of limit.

4.2.7.1 TEST RESULTS (GFSK (LE MODE))

BELOW 1GHz WORST-CASE DATA :

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	**FREQUENCY RANGE**	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	18deg. C, 70%RH	**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	155.30	36.6 QP	43.5	-6.9	2.00 H	131	21.92	14.66
2	399.40	39.7 QP	46.0	-6.3	1.50 H	98	21.83	17.91
3	597.60	41.0 QP	46.0	-5.0	1.50 H	253	18.44	22.53
4	658.74	38.0 QP	46.0	-8.0	1.00 H	49	15.17	22.84
5	799.57	42.4 QP	46.0	-3.6	1.00 H	247	16.51	25.86
6	899.50	39.9 QP	46.0	-6.1	1.25 H	221	12.52	27.35
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	37.49	37.1 QP	40.0	-3.0	1.00 V	87	23.35	13.70
2	156.51	38.7 QP	43.5	-4.8	1.25 V	149	24.04	14.65
3	399.99	40.7 QP	46.0	-5.3	1.50 V	268	22.73	17.93
4	499.99	41.6 QP	46.0	-4.4	1.50 V	154	21.27	20.31
5	599.62	41.1 QP	46.0	-4.9	1.50 V	101	18.53	22.57
6	799.99	40.0 QP	46.0	-6.0	1.25 V	351	14.16	25.87

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

ABOVE 1GHz WORST-CASE DATA：

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan 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	2388.40	57.2 PK	74.0	-16.8	1.00 H	61	25.46	31.74
2	2388.40	13.2 AV	54.0	-40.8	1.00 H	61	-18.54	31.74
3	*2402.00	94.1 PK			1.00 H	61	62.31	31.79
4	*2402.00	50.1 AV			1.00 H	61	18.31	31.79
5	4804.00	47.6 PK	74.0	-26.4	1.00 H	290	8.30	39.30
6	4804.00	3.6 AV	54.0	-50.4	1.00 H	290	-35.70	39.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.9 PK	74.0	-11.1	1.00 V	57	31.15	31.75
2	2390.00	18.9 AV	54.0	-35.1	1.00 V	57	-12.85	31.75
3	*2402.00	104.7 PK			1.00 V	57	72.91	31.79
4	*2402.00	60.7 AV			1.00 V	57	28.91	31.79
5	4804.00	49.1 PK	74.0	-24.9	1.00 V	276	9.80	39.30
6	4804.00	5.1 AV	54.0	-48.9	1.00 V	276	-34.20	39.30

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The DH1 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 1 per 0.625 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(0.625 / 100)= -44 dB.
7. Average value = peak reading + 20log(duty cycle).

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 19	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan 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	2390.00	56.2 PK	74.0	-17.8	1.00 H	61	24.45	31.75
2	2390.00	12.2 AV	54.0	-41.8	1.00 H	61	-19.55	31.75
3	*2440.00	93.9 PK			1.00 H	61	61.97	31.93
4	*2440.00	49.9 AV			1.00 H	61	17.97	31.93
5	2483.50	55.4 PK	74.0	-18.6	1.00 H	61	23.31	32.09
6	2483.50	11.4 AV	54.0	-42.6	1.00 H	61	-20.69	32.09
7	4880.00	47.2 PK	74.0	-26.8	1.00 H	291	7.68	39.52
8	4880.00	3.2 AV	54.0	-50.8	1.00 H	291	-36.32	39.52
9	7320.00	50.8 PK	74.0	-23.2	1.00 H	123	3.93	46.87
10	7320.00	6.8 AV	54.0	-47.2	1.00 H	123	-40.07	46.87

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The DH1 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 1 per 0.625 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(0.625 / 100)= -44 dB.
7. Average value = peak reading + 20log(duty cycle).

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 19	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan Huang

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	56.2 PK	74.0	-17.8	1.00 V	81	24.45	31.75
2	2390.00	12.2 AV	54.0	-41.8	1.00 V	81	-19.55	31.75
3	*2440.00	103.9 PK			1.00 V	80	71.97	31.93
4	*2440.00	59.9 AV			1.00 V	80	27.97	31.93
5	2483.50	55.3 PK	74.0	-18.7	1.00 V	81	23.21	32.09
6	2483.50	11.3 AV	54.0	-42.7	1.00 V	81	-20.79	32.09
7	4880.00	48.3 PK	74.0	-25.7	1.14 V	265	8.78	39.52
8	4880.00	4.3 AV	54.0	-49.7	1.14 V	265	-35.22	39.52
9	7320.00	50.9 PK	74.0	-23.1	1.00 V	153	4.03	46.87
10	7320.00	6.9 AV	54.0	-47.1	1.00 V	153	-39.97	46.87

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The DH1 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 1 per 0.625 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(0.625 / 100)= -44 dB.
7. Average value = peak reading + 20log(duty cycle).

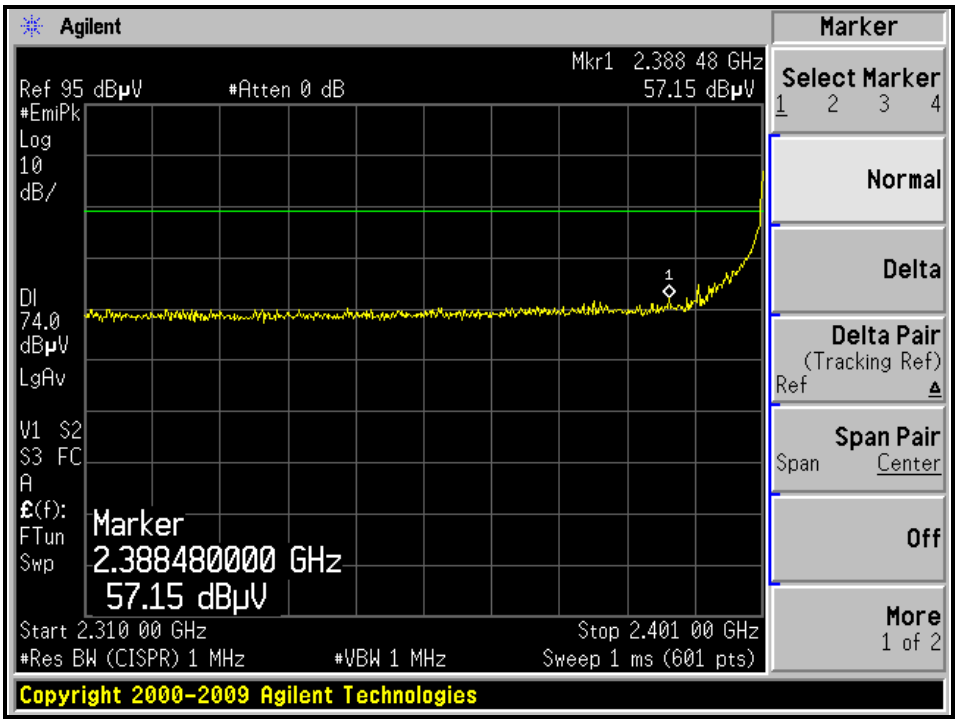
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan Huang

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	*2480.00	91.9 PK			1.00 H	66	59.82	32.08
2	*2480.00	47.9 AV			1.00 H	66	15.82	32.08
3	2483.50	61.6 PK	74.0	-12.4	1.00 H	66	29.51	32.09
4	2483.50	17.6 AV	54.0	-36.4	1.00 H	66	-14.49	32.09
5	4960.00	46.9 PK	74.0	-27.1	1.00 H	291	7.09	39.81
6	4960.00	2.9 AV	54.0	-51.1	1.00 H	291	-36.91	39.81
7	7440.00	51.7 PK	74.0	-22.3	1.00 H	113	4.96	46.74
8	7440.00	7.7 AV	54.0	-46.3	1.00 H	113	-39.04	46.74
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	102.6 PK			1.00 V	82	70.52	32.08
2	*2480.00	58.6 AV			1.00 V	82	26.52	32.08
3	2483.50	72.4 PK	74.0	-1.6	1.00 V	82	40.31	32.09
4	2483.50	28.4 AV	54.0	-25.6	1.00 V	82	-3.69	32.09
5	4960.00	46.9 PK	74.0	-27.1	1.14 V	265	7.09	39.81
6	4960.00	2.9 AV	54.0	-51.1	1.14 V	265	-36.91	39.81
7	7440.00	51.3 PK	74.0	-22.7	1.00 V	142	4.56	46.74
8	7440.00	7.3 AV	54.0	-46.7	1.00 V	142	-39.44	46.74

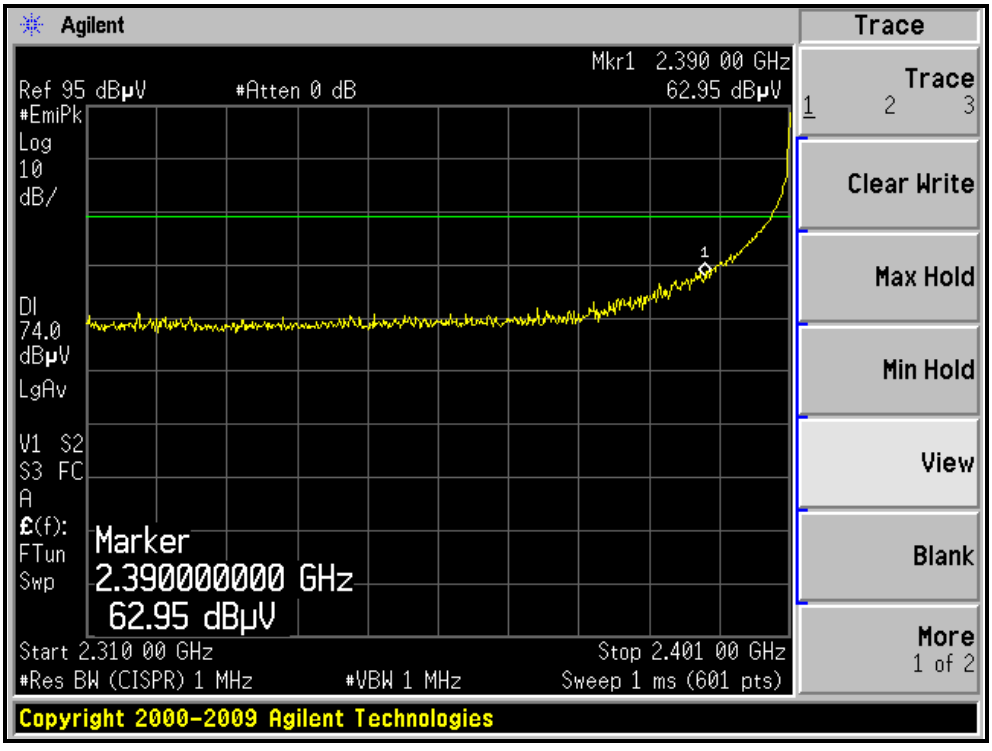
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The DH1 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 1 per 0.625 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(0.625 / 100)= -44 dB.
7. Average value = peak reading + 20log(duty cycle).

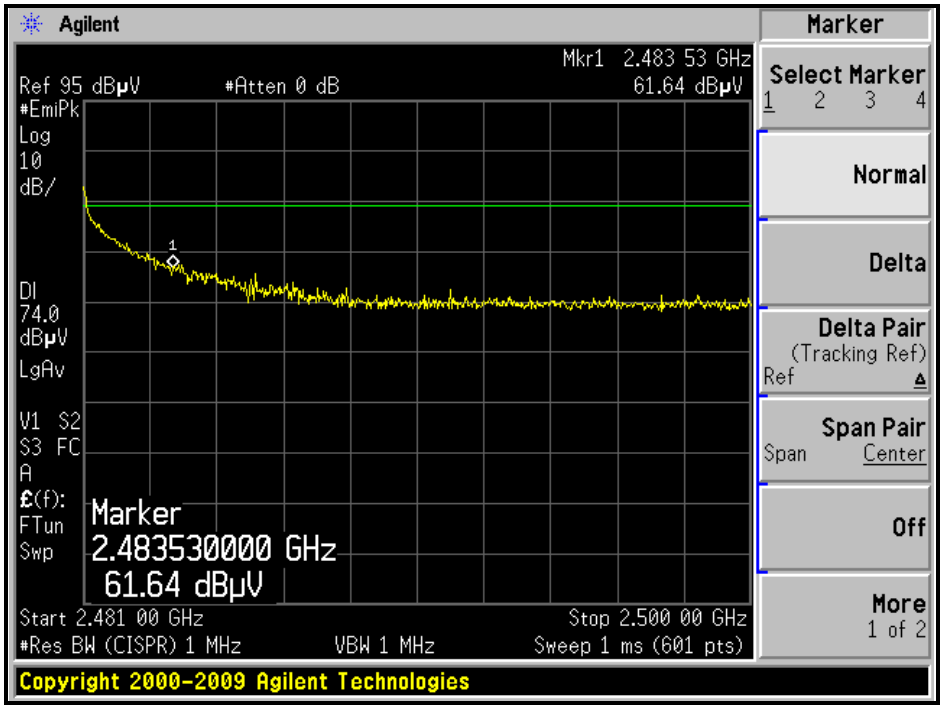
RESTRICTED BANDEDGE (GFSK(LE MODE) MODE, CH0, HORIZONTAL)



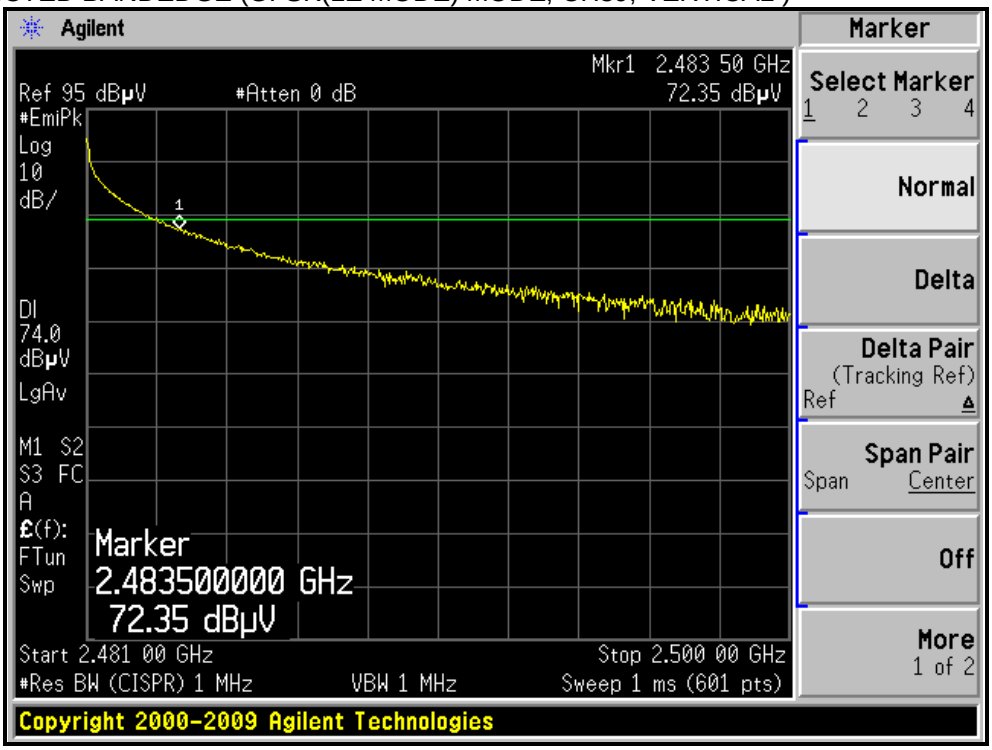
RESTRICTED BANDEDGE (GFSK(LE MODE) MODE, CH0, VERTICAL)



RESTRICTED BANDEDGE (GFSK(LE MODE) MODE, CH39, HORIZONTAL)



RESTRICTED BANDEDGE (GFSK(LE MODE) MODE, CH39, VERTICAL)



* The average value is Average value = peak reading + 20log(duty cycle). And it meets the requirement of limit.

4.2.8 TEST RESULTS (PIFA ANTENNA)

BELOW 1GHz WORST-CASE DATA：8DPSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	18deg. C, 70%RH	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	165.31	37.6 QP	43.5	-5.9	2.00 H	46	23.35	14.26
2	399.20	38.9 QP	46.0	-7.1	1.50 H	309	20.96	17.91
3	560.26	40.7 QP	46.0	-5.3	1.50 H	0	18.97	21.71
4	699.95	39.6 QP	46.0	-6.4	1.25 H	283	16.55	23.05
5	795.19	40.0 QP	46.0	-6.0	1.00 H	117	14.30	25.73
6	896.11	40.7 QP	46.0	-5.3	1.25 H	261	13.37	27.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	36.52	36.2 QP	40.0	-3.8	1.25 V	187	22.67	13.57
2	173.56	36.8 QP	43.5	-6.7	1.25 V	48	23.14	13.69
3	399.94	40.1 QP	46.0	-6.0	1.50 V	173	22.12	17.93
4	499.98	41.6 QP	46.0	-4.4	1.50 V	239	21.32	20.31
5	560.20	40.9 QP	46.0	-5.1	1.25 V	20	19.21	21.70
6	799.99	38.9 QP	46.0	-7.1	1.50 V	141	12.99	25.87

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.

GFSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan 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	2387.88	55.1 PK	74.0	-18.9	1.68 H	43	23.35	31.75
2	2387.88	25.0 AV	54.0	-29.0	1.68 H	43	-6.75	31.75
3	*2402.00	102.8 PK			1.68 H	43	71.01	31.79
4	*2402.00	72.7 AV			1.68 H	43	40.91	31.79
5	4804.00	56.0 PK	74.0	-18.0	1.20 H	129	16.70	39.30
6	4804.00	25.9 AV	54.0	-28.1	1.20 H	129	-13.40	39.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2388.33	55.6 PK	74.0	-18.4	1.00 V	254	23.85	31.75
2	2388.33	25.5 AV	54.0	-28.5	1.00 V	254	-6.25	31.75
3	*2402.00	100.1 PK			1.00 V	254	68.31	31.79
4	*2402.00	70.0 AV			1.00 V	254	38.21	31.79
5	4804.00	57.3 PK	74.0	-16.7	1.28 V	129	18.00	39.30
6	4804.00	27.2 AV	54.0	-26.8	1.28 V	129	-12.10	39.30

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan 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	*2441.00	102.5 PK			1.66 H	46	70.57	31.93
2	*2441.00	72.4 AV			1.66 H	46	40.47	31.93
3	4882.00	56.7 PK	74.0	-17.3	1.45 H	172	17.17	39.53
4	4882.00	26.6 AV	54.0	-27.4	1.45 H	172	-12.93	39.53
5	7323.00	60.7 PK	74.0	-13.3	1.12 H	68	13.84	46.86
6	7323.00	30.6 AV	54.0	-23.4	1.12 H	68	-16.26	46.86
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	101.3 PK			1.19 V	224	69.37	31.93
2	*2441.00	71.2 AV			1.19 V	224	39.27	31.93
3	4882.00	57.9 PK	74.0	-16.1	1.38 V	135	18.37	39.53
4	4882.00	27.8 AV	54.0	-26.2	1.38 V	135	-11.73	39.53
5	7323.00	63.7 PK	74.0	-10.3	1.20 V	78	16.84	46.86
6	7323.00	33.6 AV	54.0	-20.4	1.20 V	78	-13.26	46.86

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

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

7. Average value = peak reading + 20log(duty cycle).

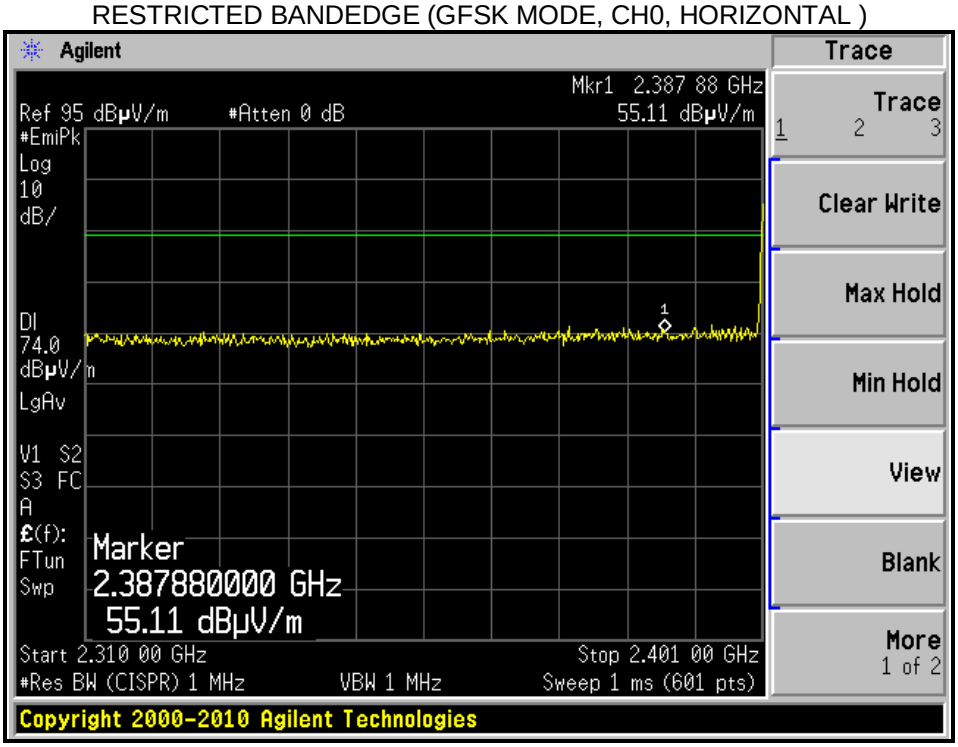
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan Huang

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	*2480.00	101.4 PK			1.62 H	49	69.32	32.08
2	*2480.00	71.3 AV			1.62 H	49	39.22	32.08
3	2483.85	56.0 PK	74.0	-18.0	1.62 H	49	23.91	32.09
4	2483.85	25.9 AV	54.0	-28.1	1.62 H	49	-6.19	32.09
5	4960.00	57.4 PK	74.0	-16.6	1.51 H	185	17.59	39.81
6	4960.00	27.3 AV	54.0	-26.7	1.51 H	185	-12.51	39.81
7	7440.00	61.4 PK	74.0	-12.6	1.10 H	68	14.66	46.74
8	7440.00	31.3 AV	54.0	-22.7	1.10 H	68	-15.44	46.74
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	100.9 PK			1.11 V	228	68.82	32.08
2	*2480.00	70.8 AV			1.11 V	228	38.72	32.08
3	2388.79	55.5 PK	74.0	-18.5	1.11 V	228	23.41	32.09
4	2388.79	25.4 AV	54.0	-28.6	1.11 V	228	-6.69	32.09
5	4960.00	57.5 PK	74.0	-16.5	1.35 V	128	17.69	39.81
6	4960.00	27.4 AV	54.0	-26.6	1.35 V	128	-12.41	39.81
7	7440.00	63.0 PK	74.0	-11.0	1.26 V	92	16.26	46.74
8	7440.00	32.9 AV	54.0	-21.1	1.26 V	92	-13.84	46.74

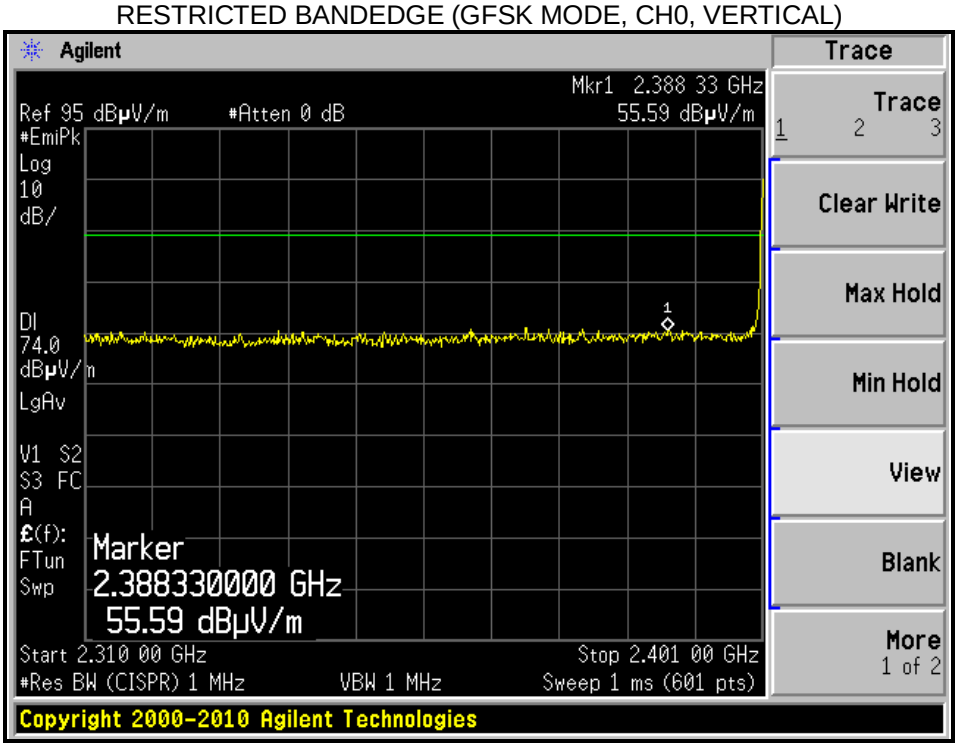
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

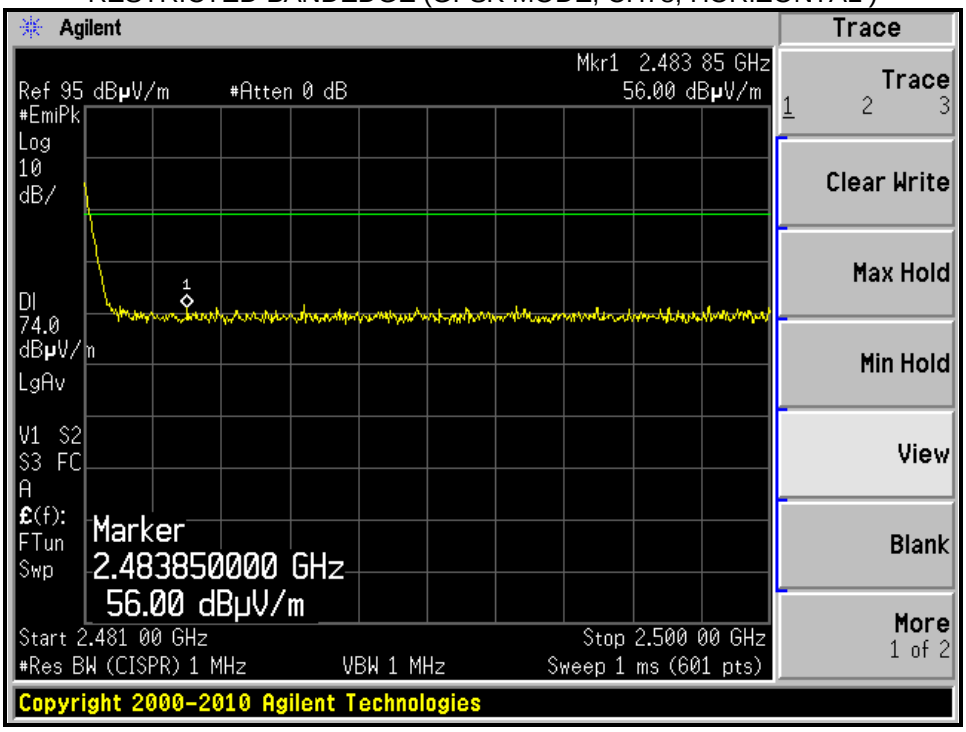
RESTRICTED BANDEDGE (GFSK MODE, CH0, HORIZONTAL)



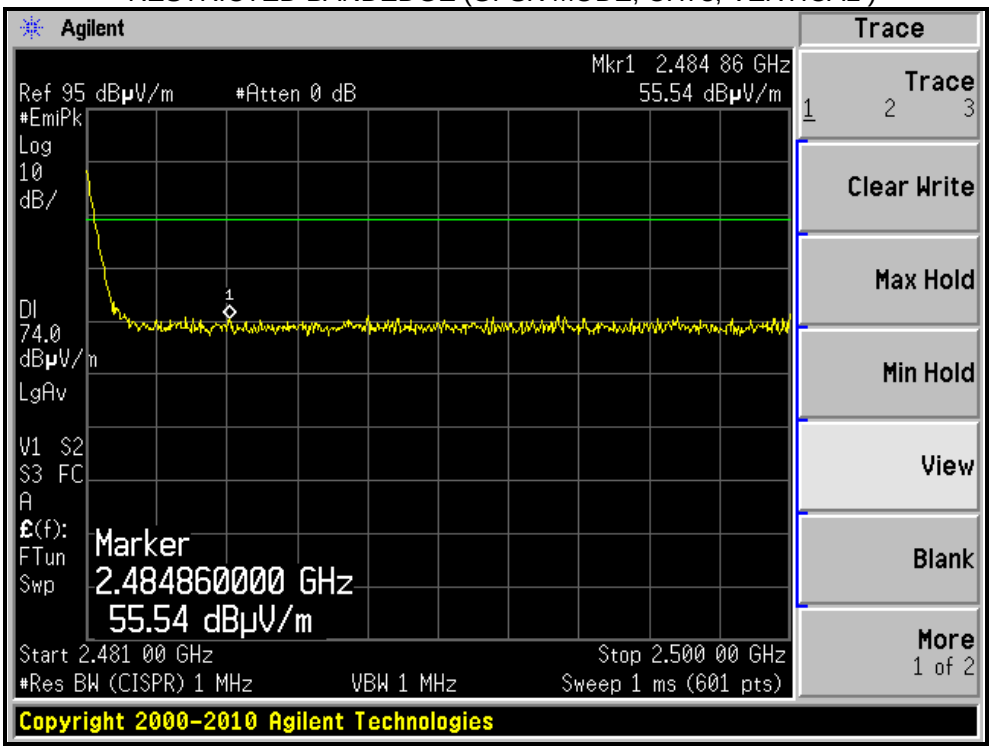
RESTRICTED BANDEDGE (GFSK MODE, CH0, VERTICAL)



RESTRICTED BANDEDGE (GFSK MODE, CH78, HORIZONTAL)



RESTRICTED BANDEDGE (GFSK MODE, CH78, VERTICAL)



The average value is Average value = peak reading + 20log(duty cycle). And it meets the requirement of limit.

8DPSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan 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	2389.39	55.6 PK	74.0	-18.4	1.68 H	42	23.85	31.75
2	2389.39	25.5 AV	54.0	-28.5	1.68 H	42	-6.25	31.75
3	*2402.00	102.8 PK			1.68 H	42	71.01	31.79
4	*2402.00	72.7 AV			1.68 H	42	40.91	31.79
5	4804.00	57.2 PK	74.0	-16.8	1.56 H	172	17.90	39.30
6	4804.00	27.1 AV	54.0	-26.9	1.56 H	172	-12.20	39.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2388.79	55.9 PK	74.0	-18.1	1.15 V	236	24.15	31.75
2	2388.79	25.8 AV	54.0	-28.2	1.15 V	236	-5.95	31.75
3	*2402.00	100.9 PK			1.15 V	236	69.11	31.79
4	*2402.00	70.8 AV			1.15 V	236	39.01	31.79
5	4804.00	57.6 PK	74.0	-16.4	1.30 V	123	18.30	39.30
6	4804.00	27.5 AV	54.0	-26.5	1.30 V	123	-11.80	39.30

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan 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	*2441.00	102.9 PK			1.63 H	43	70.97	31.93
2	*2441.00	72.8 AV			1.63 H	43	40.87	31.93
3	4882.00	57.4 PK	74.0	-16.6	1.50 H	183	17.87	39.53
4	4882.00	27.3 AV	54.0	-26.7	1.50 H	183	-12.23	39.53
5	7323.00	60.9 PK	74.0	-13.1	1.11 H	79	14.04	46.86
6	7323.00	30.8 AV	54.0	-23.2	1.11 H	79	-16.06	46.86
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	101.3 PK			1.16 V	224	69.37	31.93
2	*2441.00	71.2 AV			1.16 V	224	39.27	31.93
3	4882.00	57.6 PK	74.0	-16.4	1.38 V	136	18.07	39.53
4	4882.00	27.5 AV	54.0	-26.5	1.38 V	136	-12.03	39.53
5	7323.00	63.2 PK	74.0	-10.8	1.34 V	77	16.34	46.86
6	7323.00	33.1 AV	54.0	-20.9	1.34 V	77	-13.76	46.86

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

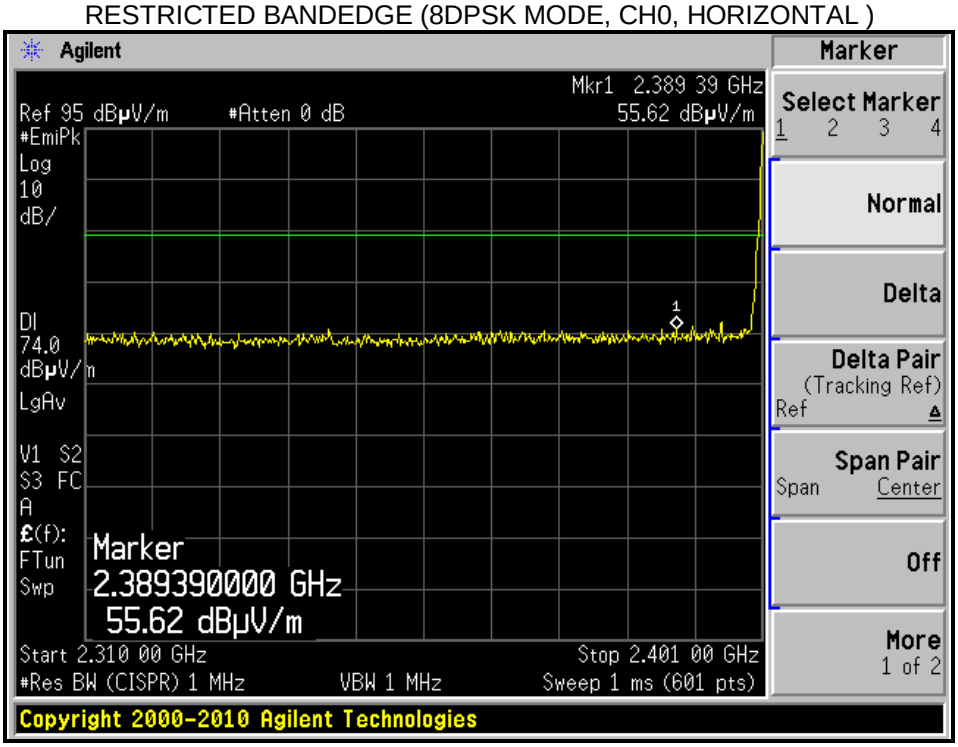
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan Huang

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	*2480.00	102.0 PK			1.64 H	49	69.92	32.08
2	*2480.00	71.9 AV			1.64 H	49	39.82	32.08
3	2483.60	55.6 PK	74.0	-18.4	1.64 H	49	23.51	32.09
4	2483.60	25.5 AV	54.0	-28.5	1.64 H	49	-6.59	32.09
5	4960.00	57.9 PK	74.0	-16.1	1.49 H	191	18.09	39.81
6	4960.00	27.8 AV	54.0	-26.2	1.49 H	191	-12.01	39.81
7	7440.00	61.1 PK	74.0	-12.9	1.08 H	95	14.36	46.74
8	7440.00	31.0 AV	54.0	-23.0	1.08 H	95	-15.74	46.74
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	101.2 PK			1.10 V	239	69.12	32.08
2	*2480.00	71.1 AV			1.10 V	239	39.02	32.08
3	2484.10	55.5 PK	74.0	-18.5	1.00 V	239	23.41	32.09
4	2484.10	25.4 AV	54.0	-28.6	1.00 V	239	-6.69	32.09
5	4960.00	58.1 PK	74.0	-15.9	1.35 V	120	18.29	39.81
6	4960.00	28.0 AV	54.0	-26.0	1.35 V	120	-11.81	39.81
7	7440.00	62.8 PK	74.0	-11.2	1.22 V	80	16.06	46.74
8	7440.00	32.7 AV	54.0	-21.3	1.22 V	80	-14.04	46.74

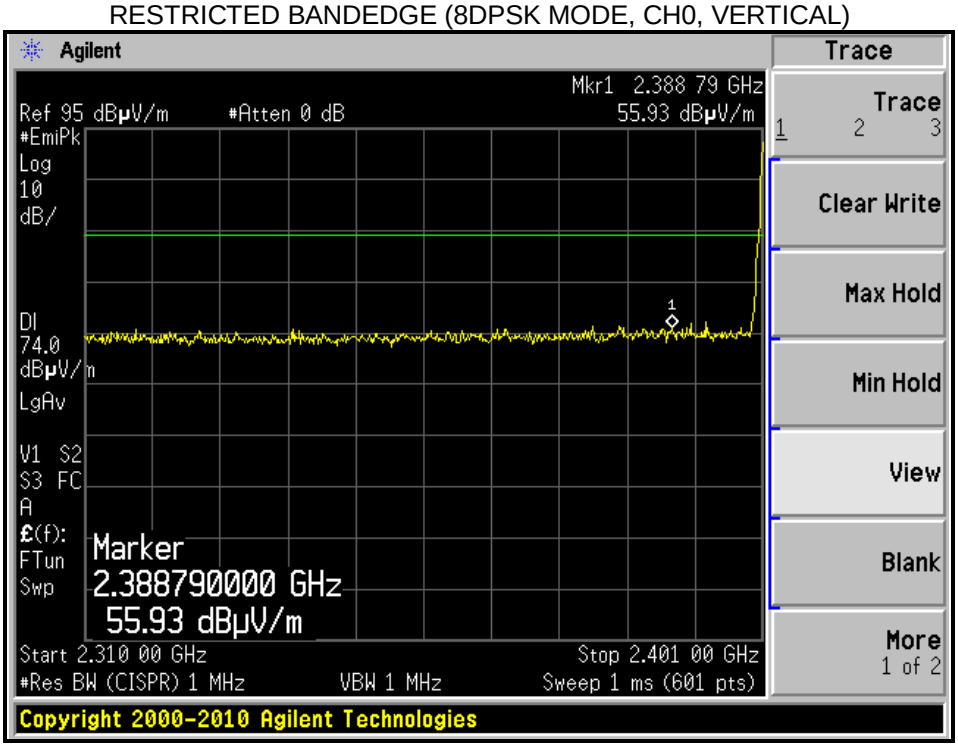
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

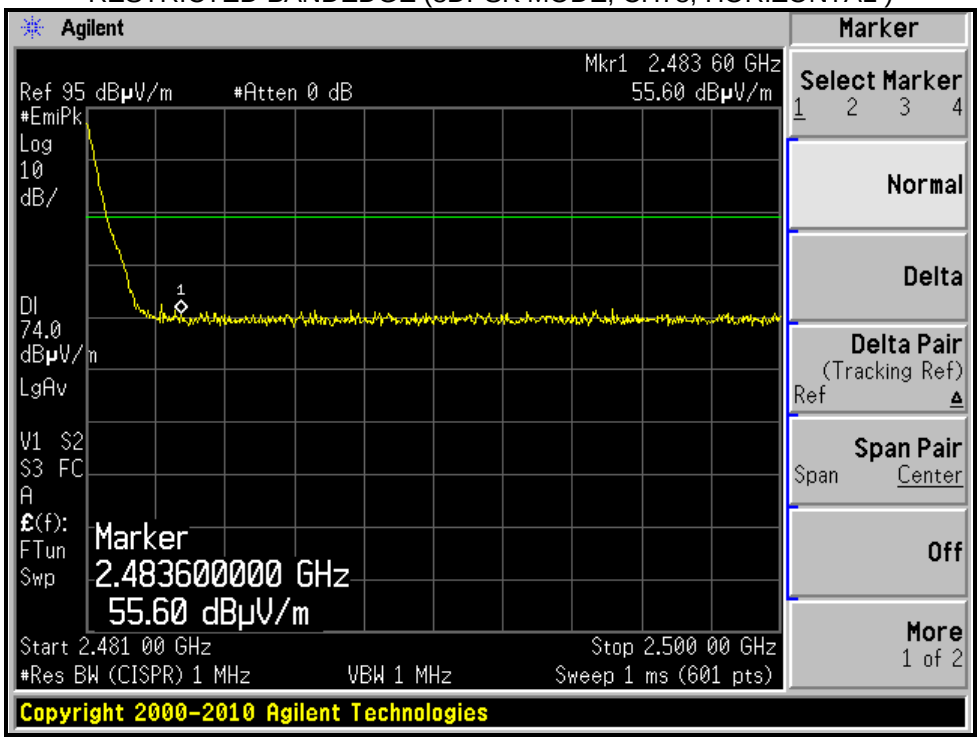
RESTRICTED BANDEDGE (8DPSK MODE, CH0, HORIZONTAL)



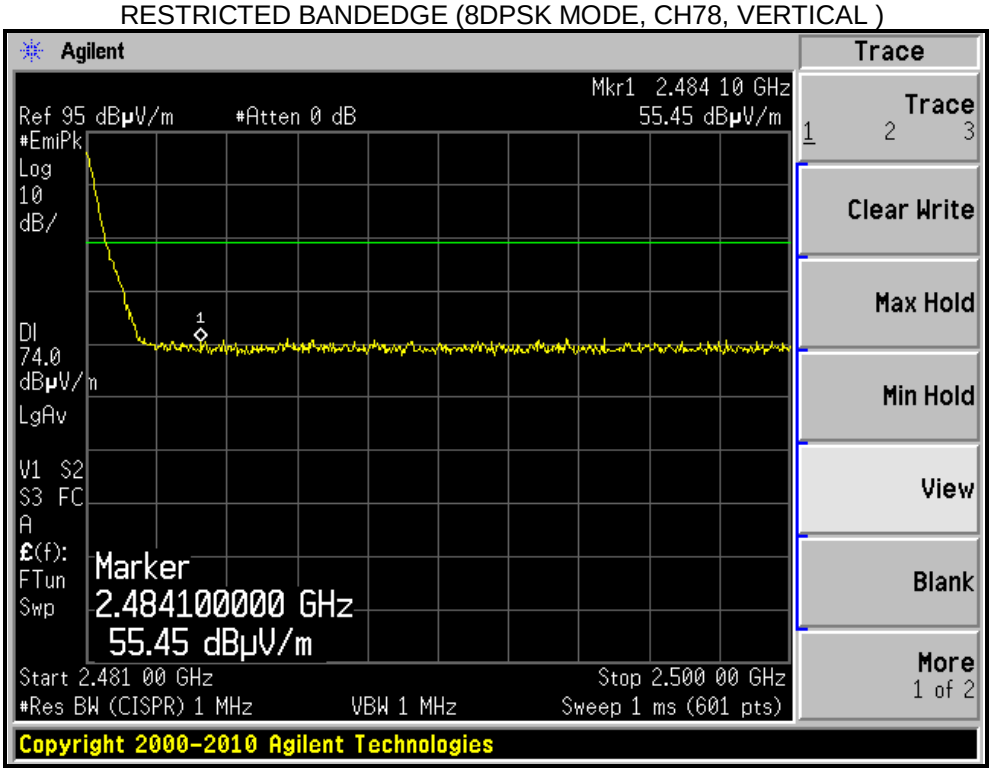
RESTRICTED BANDEDGE (8DPSK MODE, CH0, VERTICAL)



RESTRICTED BANDEDGE (8DPSK MODE, CH78, HORIZONTAL)



RESTRICTED BANDEDGE (8DPSK MODE, CH78, VERTICAL)



* The average value is Average value = peak reading + 20log(duty cycle). And it meets the requirement of limit.

4.2.8.1 TEST RESULTS (GFSK (LE MODE))

BELOW 1GHz WORST-CASE DATA :

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	**FREQUENCY RANGE**	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	18deg. C, 70%RH	**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	155.20	36.0 QP	43.5	-7.5	2.00 H	119	21.33	14.66
2	398.90	39.2 QP	46.0	-6.8	1.50 H	344	21.31	17.90
3	582.34	41.3 QP	46.0	-4.7	1.50 H	55	19.07	22.19
4	659.98	38.5 QP	46.0	-7.5	1.00 H	170	15.70	22.84
5	799.31	41.2 QP	46.0	-4.8	1.00 H	301	15.35	25.85
6	899.50	40.2 QP	46.0	-5.8	1.25 H	142	12.87	27.35
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	37.43	36.9 QP	40.0	-3.1	1.01 V	74	23.18	13.70
2	156.74	38.4 QP	43.5	-5.1	1.25 V	135	23.76	14.65
3	399.98	41.9 QP	46.0	-4.1	1.50 V	302	23.97	17.93
4	499.99	41.4 QP	46.0	-4.6	1.50 V	148	21.06	20.31
5	598.71	41.3 QP	46.0	-4.7	1.50 V	73	18.75	22.55
6	799.99	39.6 QP	46.0	-6.4	1.25 V	0	13.76	25.87

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

ABOVE 1GHz WORST-CASE DATA：

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan 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	2389.70	63.9 PK	74.0	-10.1	1.61 H	293	32.15	31.75
2	2389.70	19.9 AV	54.0	-34.1	1.61 H	293	-11.85	31.75
3	*2402.00	104.8 PK			1.60 H	293	73.01	31.79
4	*2402.00	60.8 AV			1.60 H	293	29.01	31.79
5	4804.00	53.6 PK	74.0	-20.4	1.16 H	244	14.30	39.30
6	4804.00	9.6 AV	54.0	-44.4	1.16 H	244	-29.70	39.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.0 PK	74.0	-18.0	1.00 V	117	24.25	31.75
2	2390.00	12.0 AV	54.0	-42.0	1.00 V	117	-19.75	31.75
3	*2402.00	92.1 PK			1.00 V	117	60.31	31.79
4	*2402.00	48.1 AV			1.00 V	117	16.31	31.79
5	4804.00	48.2 PK	74.0	-25.8	1.05 V	74	8.90	39.30
6	4804.00	4.2 AV	54.0	-49.8	1.05 V	74	-35.10	39.30

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The DH1 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 1 per 0.625 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(0.625 / 100)= -44 dB.
7. Average value = peak reading + 20log(duty cycle).

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 19	**FREQUENCY RANGE**	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	**DETECTOR FUNCTION**	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	**TESTED BY**	Evan 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	2390.00	56.1 PK	74.0	-17.9	1.58 H	287	24.35	31.75
2	2390.00	12.1 AV	54.0	-41.9	1.58 H	287	-19.65	31.75
3	*2440.00	104.0 PK			1.58 H	287	72.07	31.93
4	*2440.00	60.0 AV			1.58 H	287	28.07	31.93
5	2483.50	56.3 PK	74.0	-17.7	1.55 H	256	24.21	32.09
6	2483.50	12.3 AV	54.0	-41.7	1.55 H	256	-19.79	32.09
7	4880.00	54.3 PK	74.0	-19.7	1.13 H	256	14.78	39.52
8	4880.00	10.3 AV	54.0	-43.7	1.13 H	256	-29.22	39.52
9	**7320.00**	**73.5 PK**	**74.0**	**-0.5**	**1.57 H**	**279**	**26.63**	**46.87**
10	7320.00	29.5 AV	54.0	-24.5	1.57 H	279	-17.37	46.87

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The DH1 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 1 per 0.625 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(0.625 / 100)= -44 dB.
7. Average value = peak reading + 20log(duty cycle).

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 19	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.4 PK	74.0	-18.6	1.00 V	114	23.65	31.75
2	2390.00	11.4 AV	54.0	-42.6	1.00 V	114	-20.35	31.75
3	*2440.00	92.6 PK			1.00 V	116	60.67	31.93
4	*2440.00	48.6 AV			1.00 V	116	16.67	31.93
5	2483.50	55.6 PK	74.0	-18.4	1.00 V	115	23.51	32.09
6	2483.50	11.6 AV	54.0	-42.4	1.00 V	115	-20.49	32.09
7	4880.00	48.2 PK	74.0	-25.8	1.03 V	77	8.68	39.52
8	4880.00	4.2 AV	54.0	-49.8	1.03 V	77	-35.32	39.52
9	7320.00	55.5 PK	74.0	-18.5	1.00 V	139	8.63	46.87
10	7320.00	11.5 AV	54.0	-42.5	1.00 V	139	-35.37	46.87

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The DH1 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 1 per 0.625 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(0.625 / 100)= -44 dB.
7. Average value = peak reading + 20log(duty cycle).

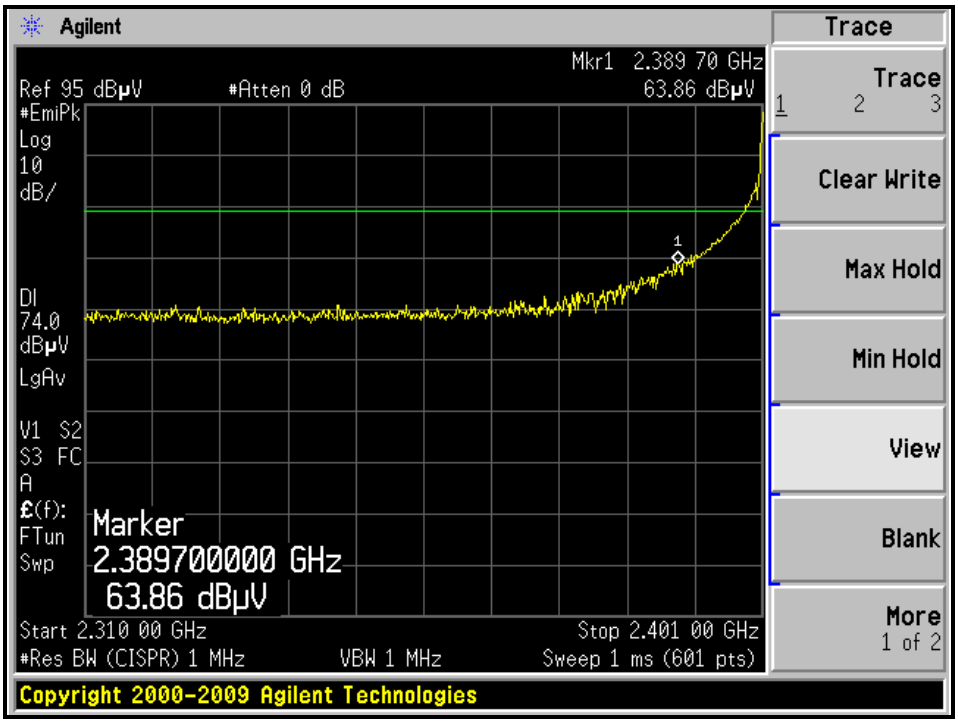
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 67%RH	TESTED BY	Evan Huang

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	*2480.00	103.6 PK			1.62 H	293	71.52	32.08
2	*2480.00	59.6 AV			1.62 H	293	27.52	32.08
3	2483.50	73.3 PK	74.0	-0.7	1.62 H	293	41.21	32.09
4	2483.50	29.3 AV	54.0	-24.7	1.62 H	293	-2.79	32.09
5	4960.00	47.2 PK	74.0	-26.8	1.28 H	236	7.39	39.81
6	4960.00	3.2 AV	54.0	-50.8	1.28 H	236	-36.61	39.81
7	7440.00	54.4 PK	74.0	-19.6	1.17 H	241	7.66	46.74
8	7440.00	10.4 AV	54.0	-43.6	1.17 H	241	-36.34	46.74
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	92.9 PK			1.00 V	116	60.82	32.08
2	*2480.00	48.9 AV			1.00 V	116	16.82	32.08
3	2483.50	62.4 PK	74.0	-11.6	1.00 V	116	30.31	32.09
4	2483.50	18.4 AV	54.0	-35.6	1.00 V	116	-13.69	32.09
5	4960.00	47.9 PK	74.0	-26.1	1.00 V	67	8.09	39.81
6	4960.00	3.9 AV	54.0	-50.1	1.00 V	67	-35.91	39.81
7	7440.00	55.6 PK	74.0	-18.4	1.00 V	123	8.86	46.74
8	7440.00	11.6 AV	54.0	-42.4	1.00 V	123	-35.14	46.74

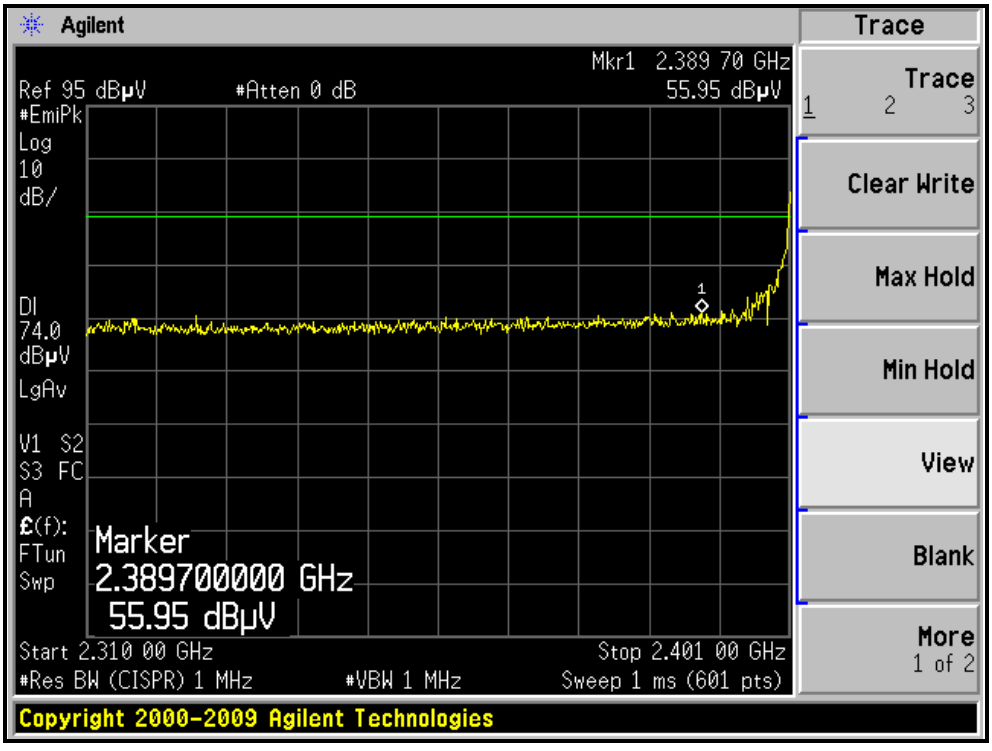
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The DH1 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 1 per 0.625 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(0.625 / 100)= -44 dB.
7. Average value = peak reading + 20log(duty cycle).

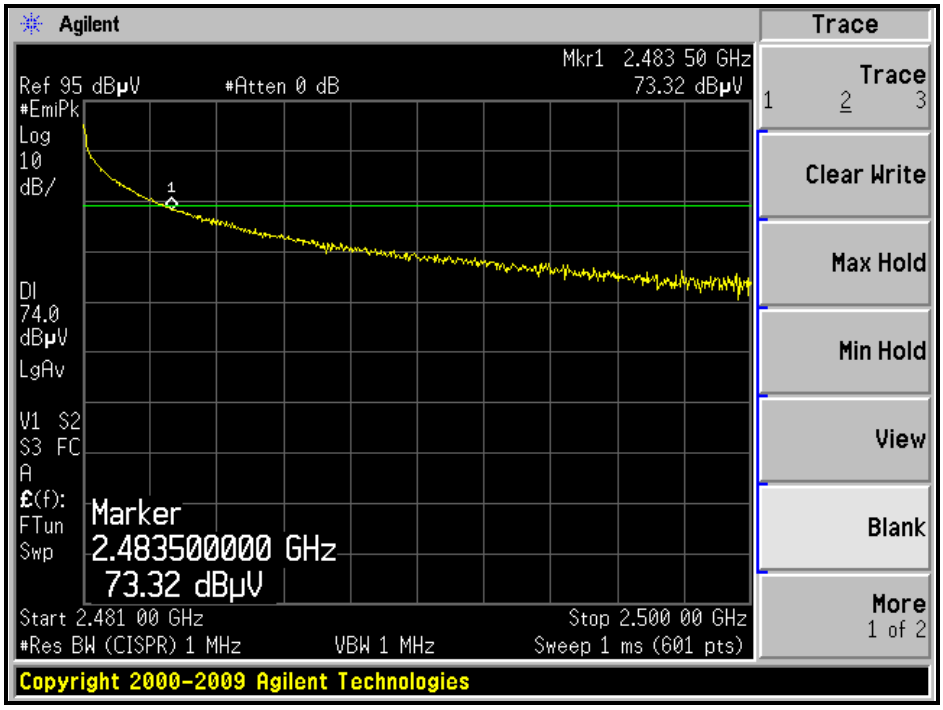
RESTRICTED BANDEDGE (GFSK(LE MODE) MODE, CH0, HORIZONTAL)



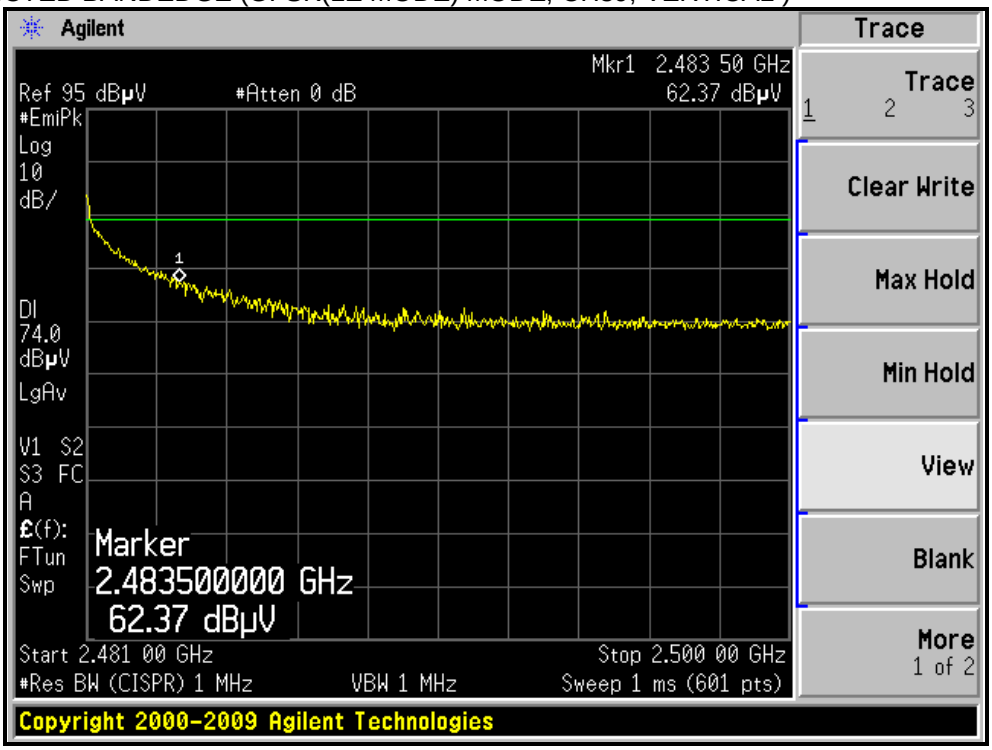
RESTRICTED BANDEDGE (GFSK(LE MODE) MODE, CH0, VERTICAL)



RESTRICTED BANDEDGE (GFSK(LE MODE) MODE, CH39, HORIZONTAL)



RESTRICTED BANDEDGE (GFSK(LE MODE) MODE, CH39, VERTICAL)



* The average value is Average value = peak reading + 20log(duty cycle). And it meets the requirement of limit.

4.3 NUMBER OF HOPPING FREQUENCY USED

4.3.1 LIMIT OF HOPPING FREQUENCY USED

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

4.3.2 TEST INSTRUMENTS

Test date: Nov. 16, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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

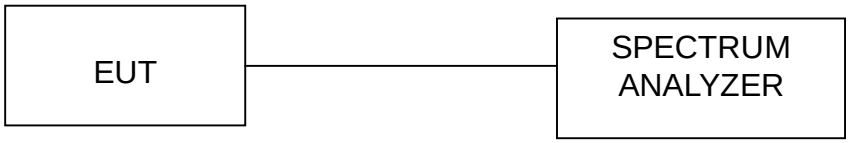
4.3.3 TEST PROCEDURES

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.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

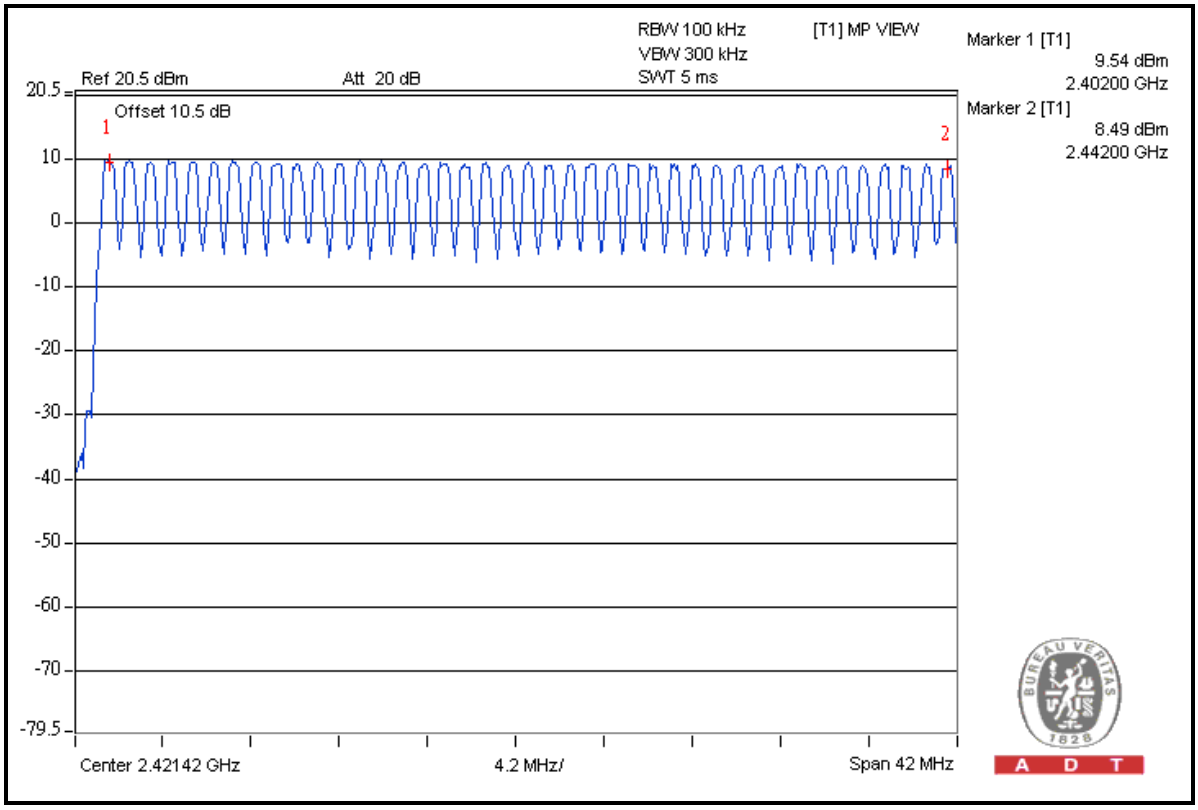
4.3.5 TEST SETUP

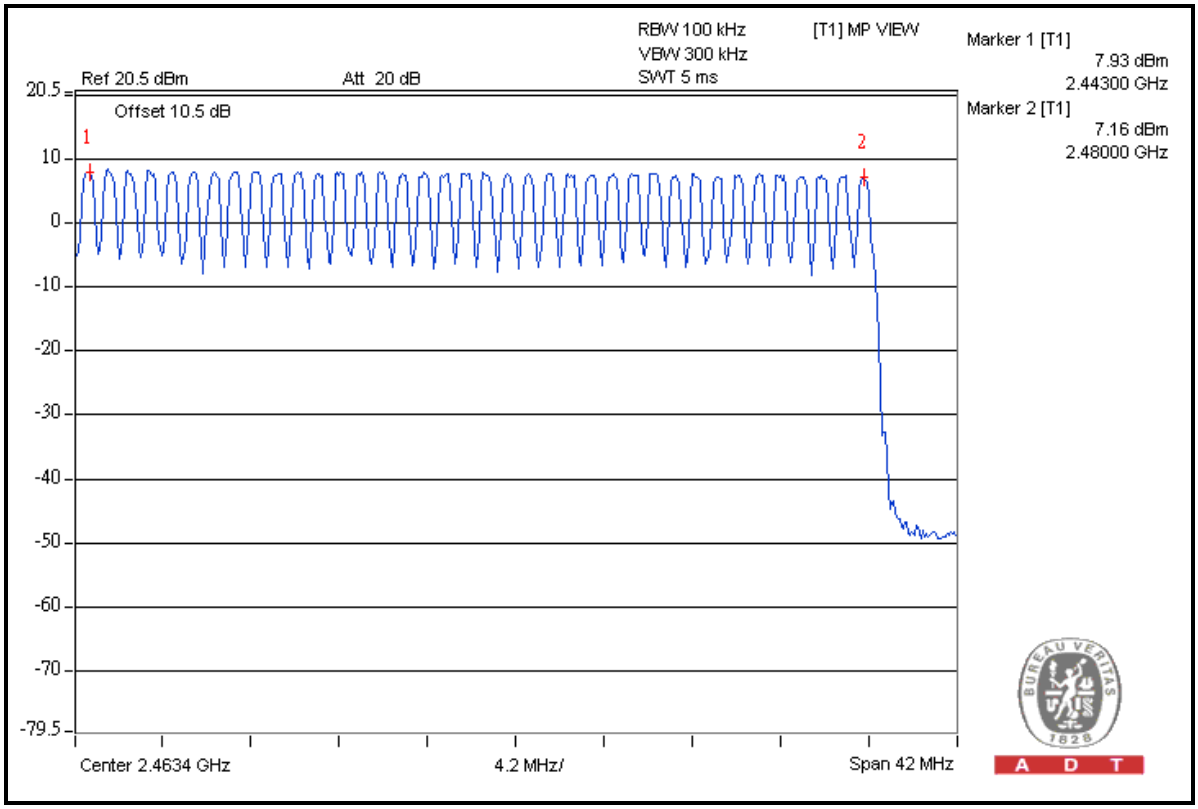


4.3.6 TEST RESULTS

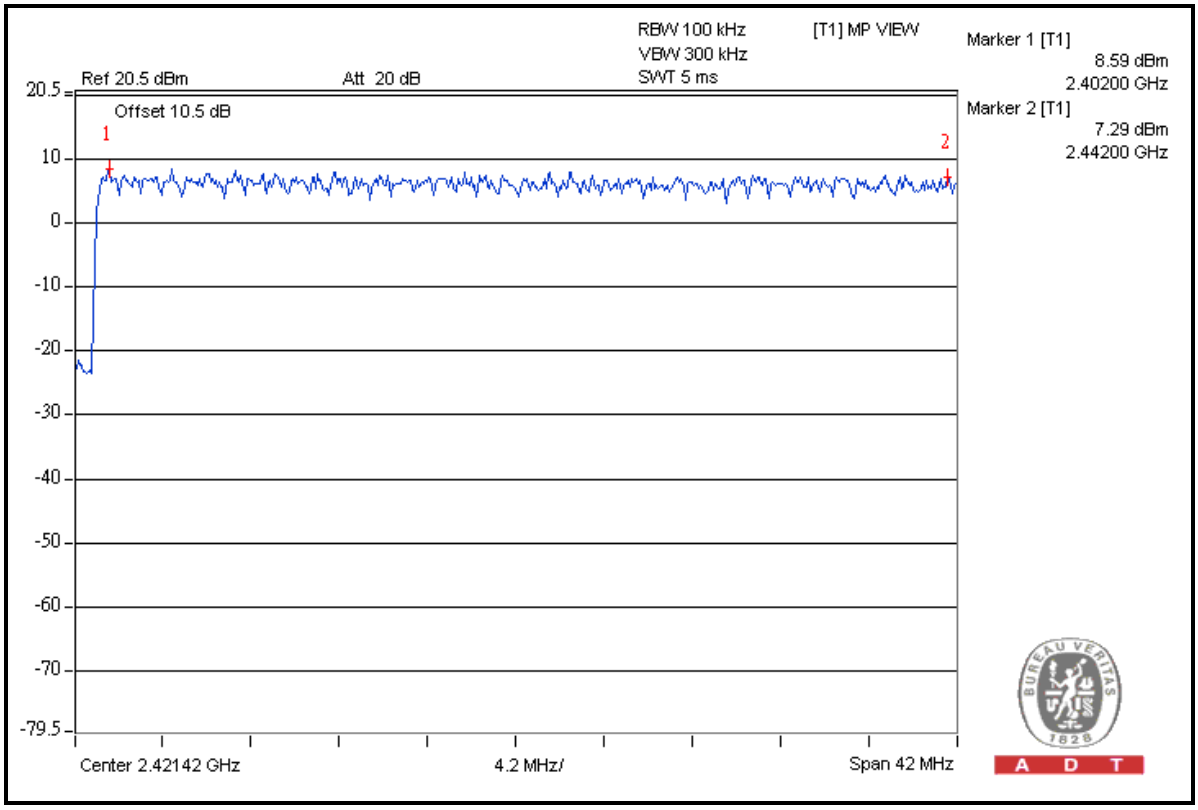
There are 79 hopping frequencies for Bluetooth 2.1+ EDR and 40 hopping frequencies for Bluetooth 4.0 in the hopping mode. Please refer to next pages for the test result. On the plots, it shows that the hopping frequencies are equally spaced.

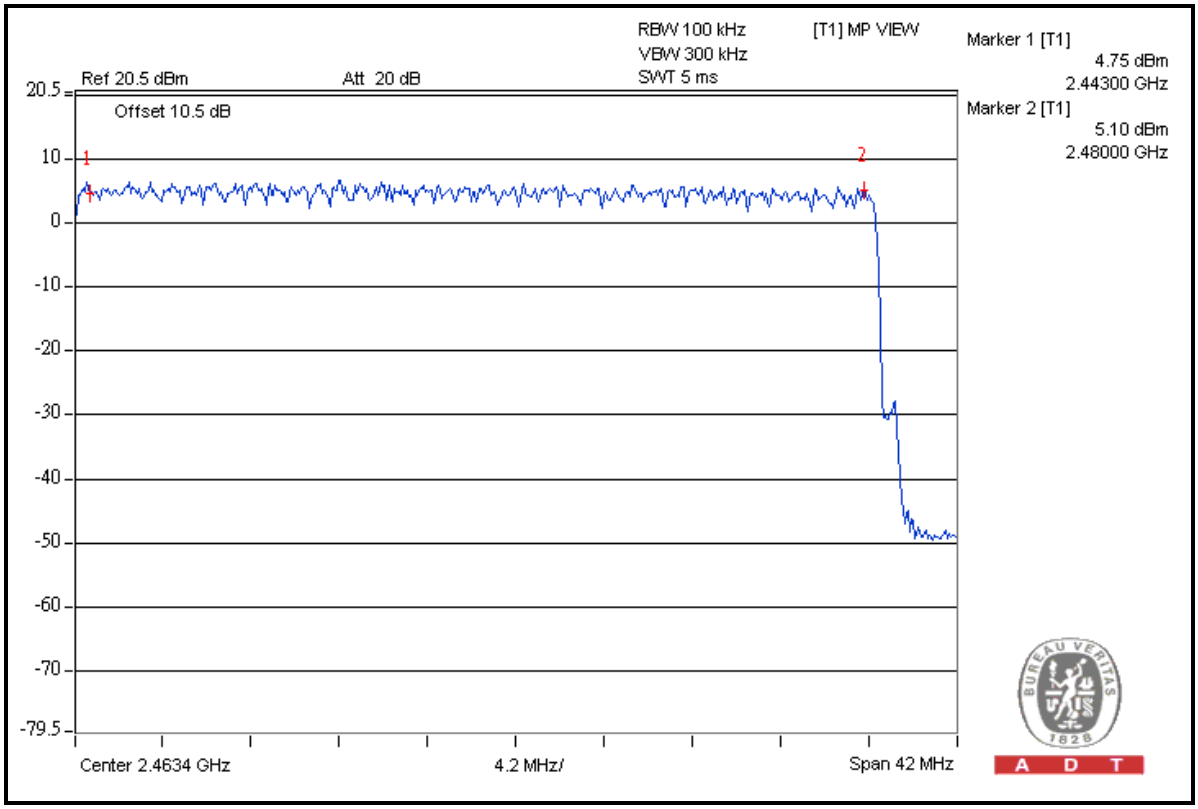
For GFSK


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MP VIEW
Marker 1 [T1]
9.54 dBm
2.40200 GHz
Marker 2 [T1]
8.49 dBm
2.44200 GHz
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.42142 GHz
4.2 MHz/
Span 42 MHz

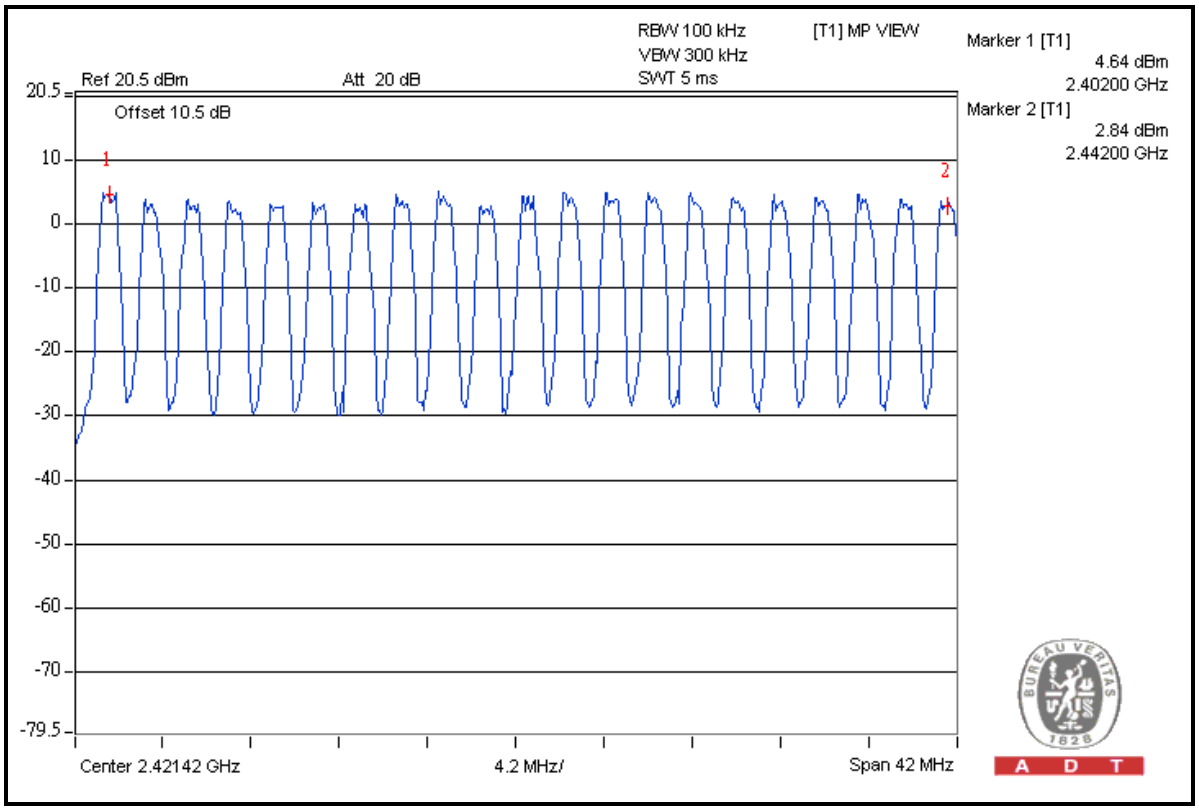

RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MP VIEW
Marker 1 [T1]
7.93 dBm
2.44300 GHz
Marker 2 [T1]
7.16 dBm
2.48000 GHz
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.4634 GHz
4.2 MHz/
Span 42 MHz

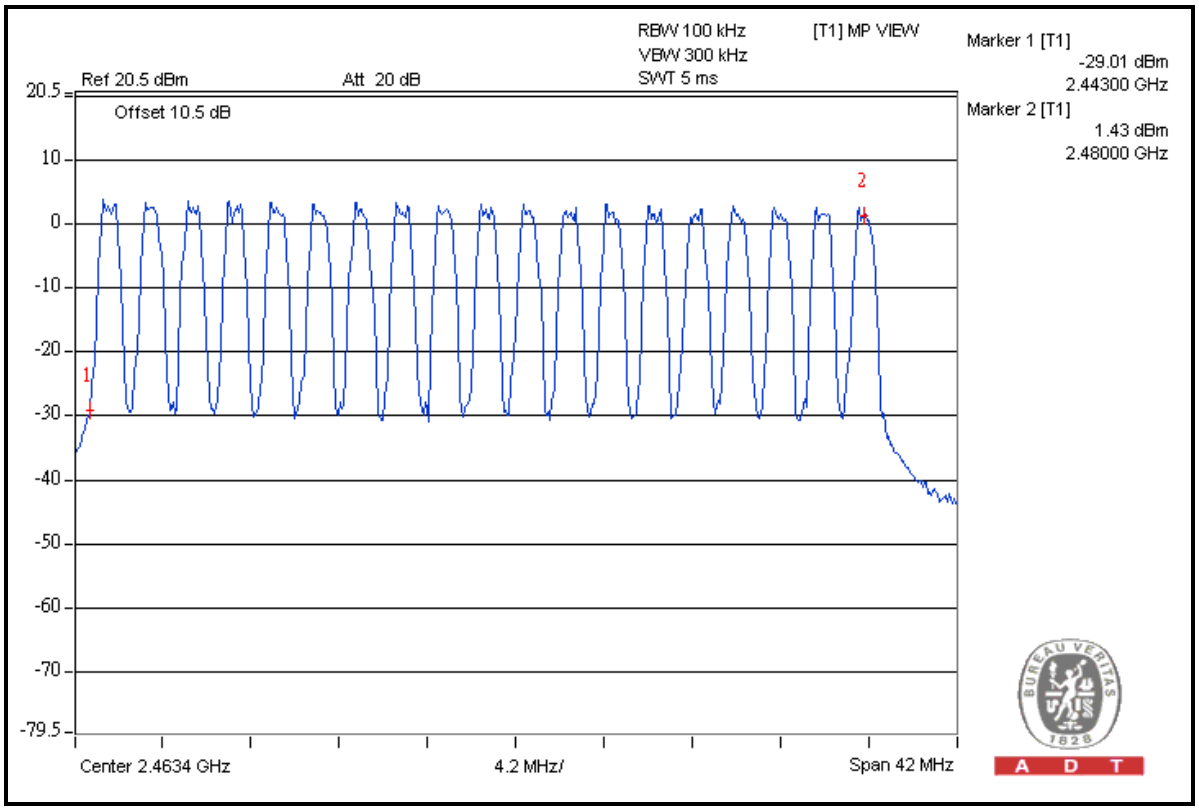
For 8DPSK


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MP VIEW
Marker 1 [T1]
8.59 dBm
2.40200 GHz
Marker 2 [T1]
7.29 dBm
2.44200 GHz
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.42142 GHz
4.2 MHz/
Span 42 MHz


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MP VIEW
Marker 1 [T1]
4.75 dBm
2.44300 GHz
Marker 2 [T1]
5.10 dBm
2.48000 GHz
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.4634 GHz
4.2 MHz/
Span 42 MHz

For GFSK(LE MODE):





4.4 DWELL TIME ON EACH CHANNEL

4.4.1 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 GFSK(LE mode)

4.4.2 TEST INSTRUMENTS

Test date: Nov. 16, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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

4.4.3 TEST PROCEDURES

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.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

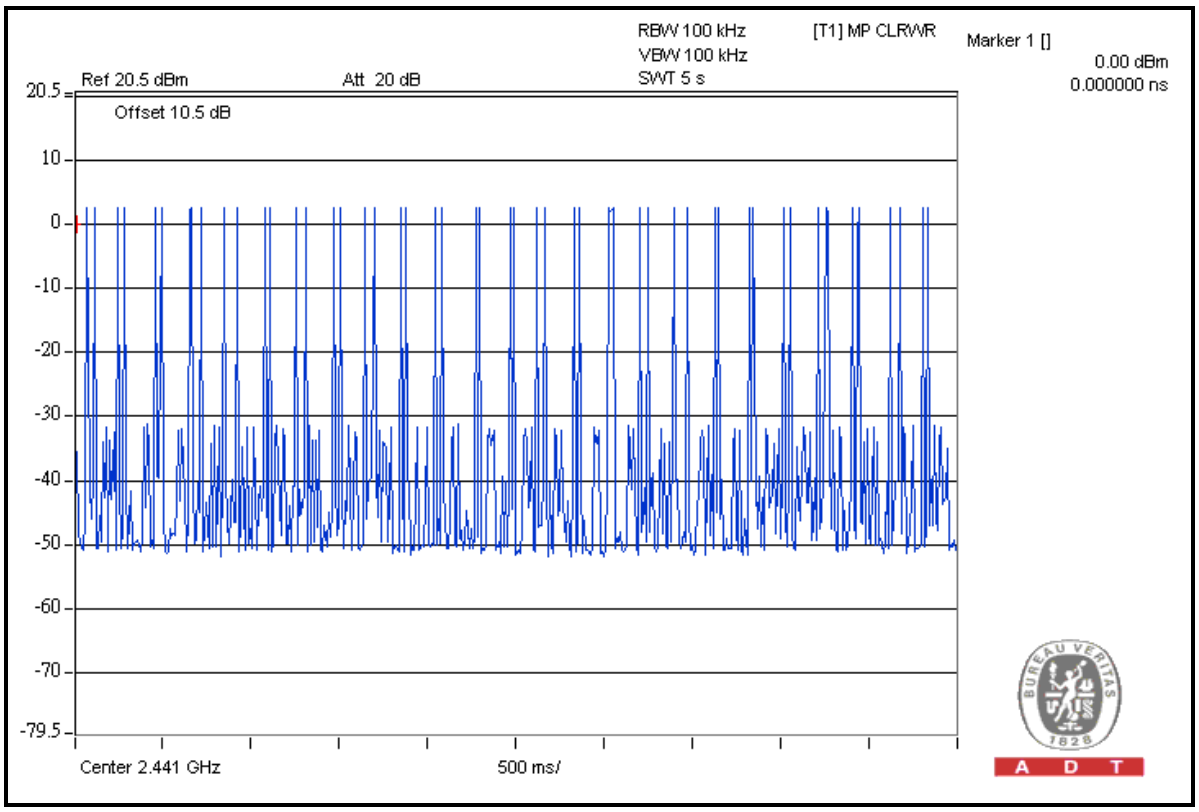
4.4.5 TEST SETUP

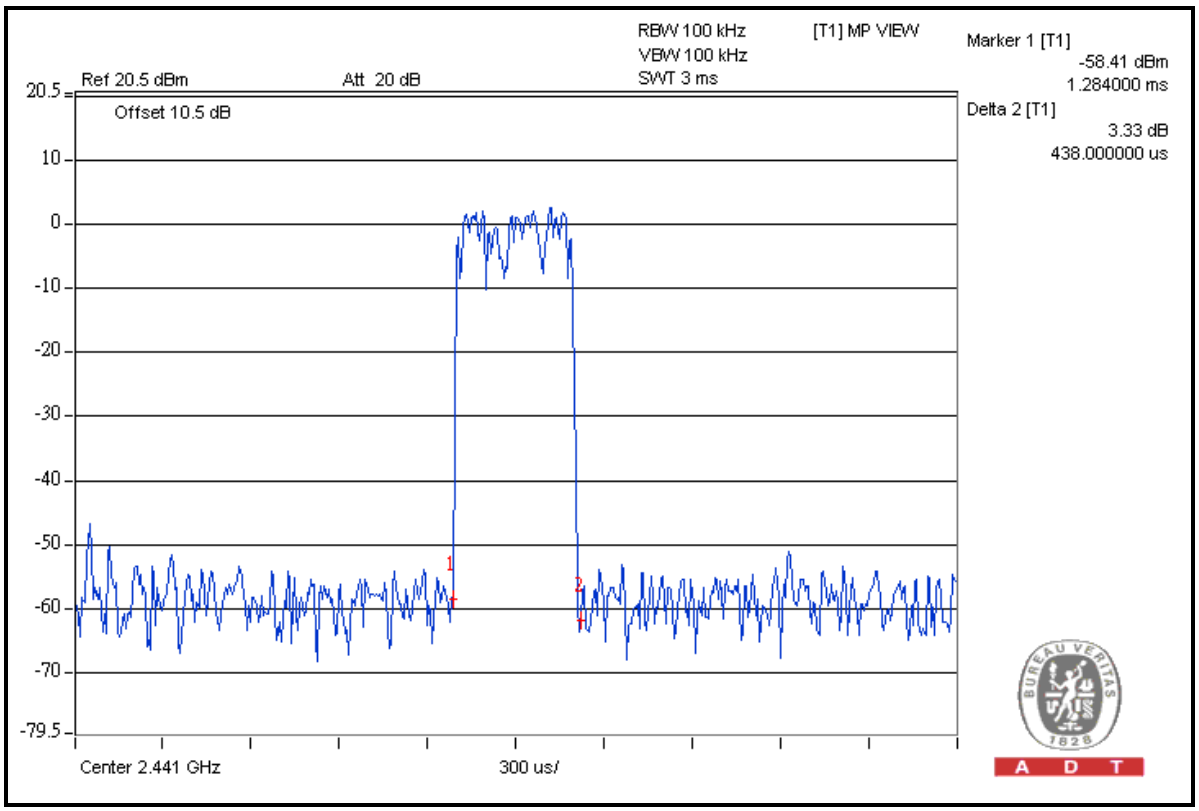
4.4.6 TEST RESULTS

For GFSK:

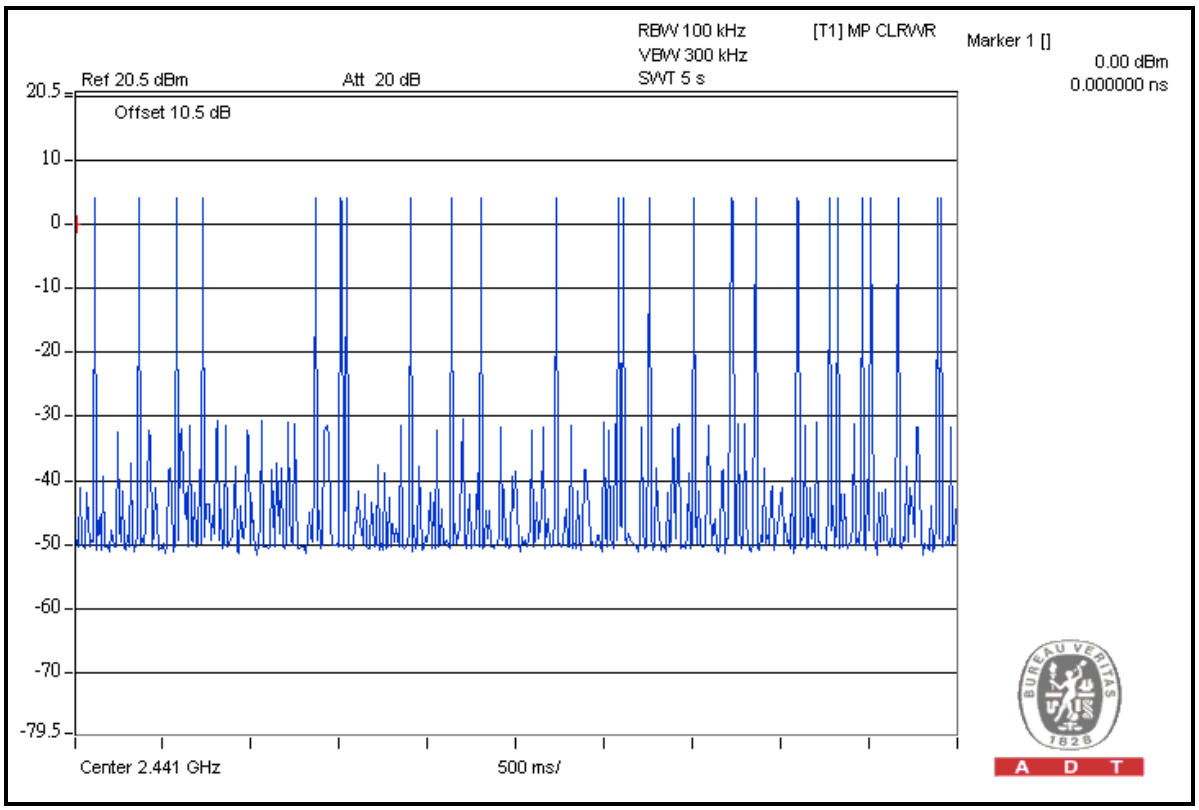
Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	50 (times / 5 sec) *6.32=316.00 times	0.438	138.41	400
DH3	25 (times / 5 sec) *6.32=158.00 times	1.696	267.97	400
DH5	18 (times / 5 sec) *6.32=113.76 times	2.990	340.14	400

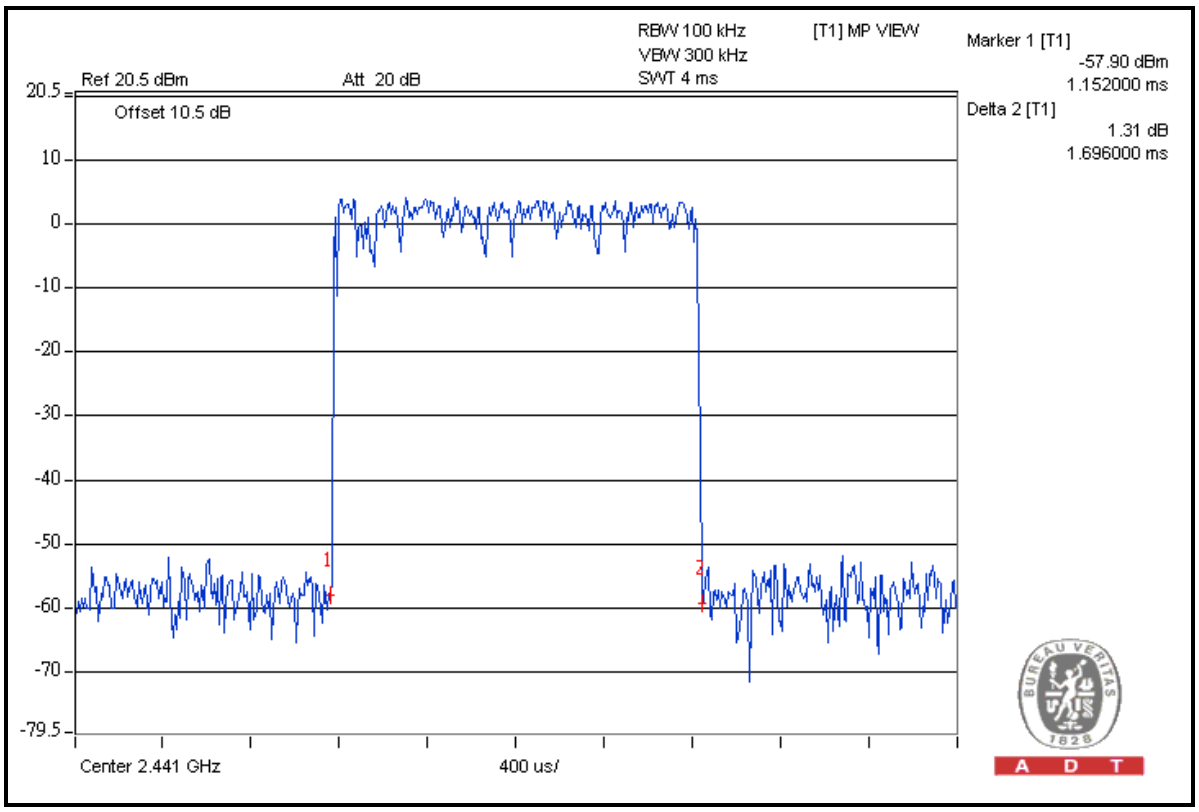
DH1


RBW 100 kHz
VBW 100 kHz
SWT 5 s
[T1] MP CLRWR
Marker 1 []
0.00 dBm
0.000000 ns
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.441 GHz
500 ms/

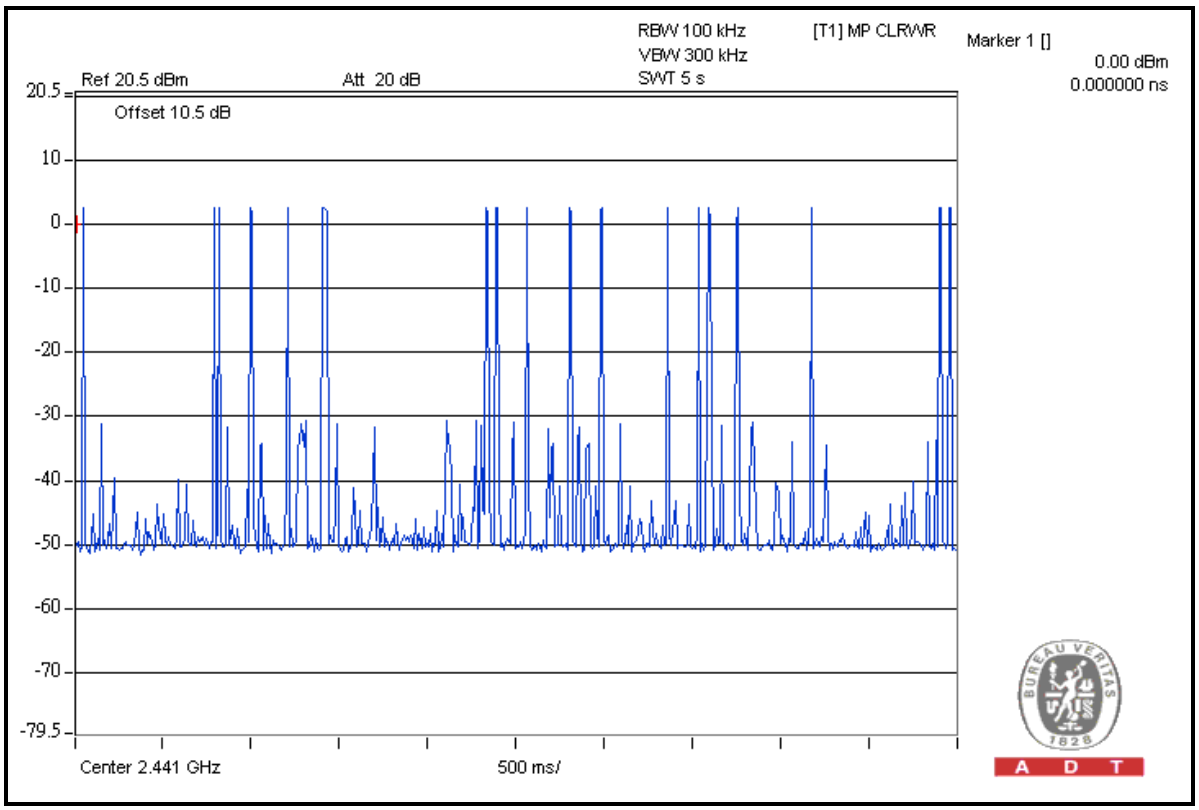

RBW 100 kHz
VBW 100 kHz
SWT 3 ms
[T1] MP VIEW
Marker 1 [T1]
-58.41 dBm
1.284000 ms
Delta 2 [T1]
3.33 dB
438.000000 us
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.441 GHz
300 us/

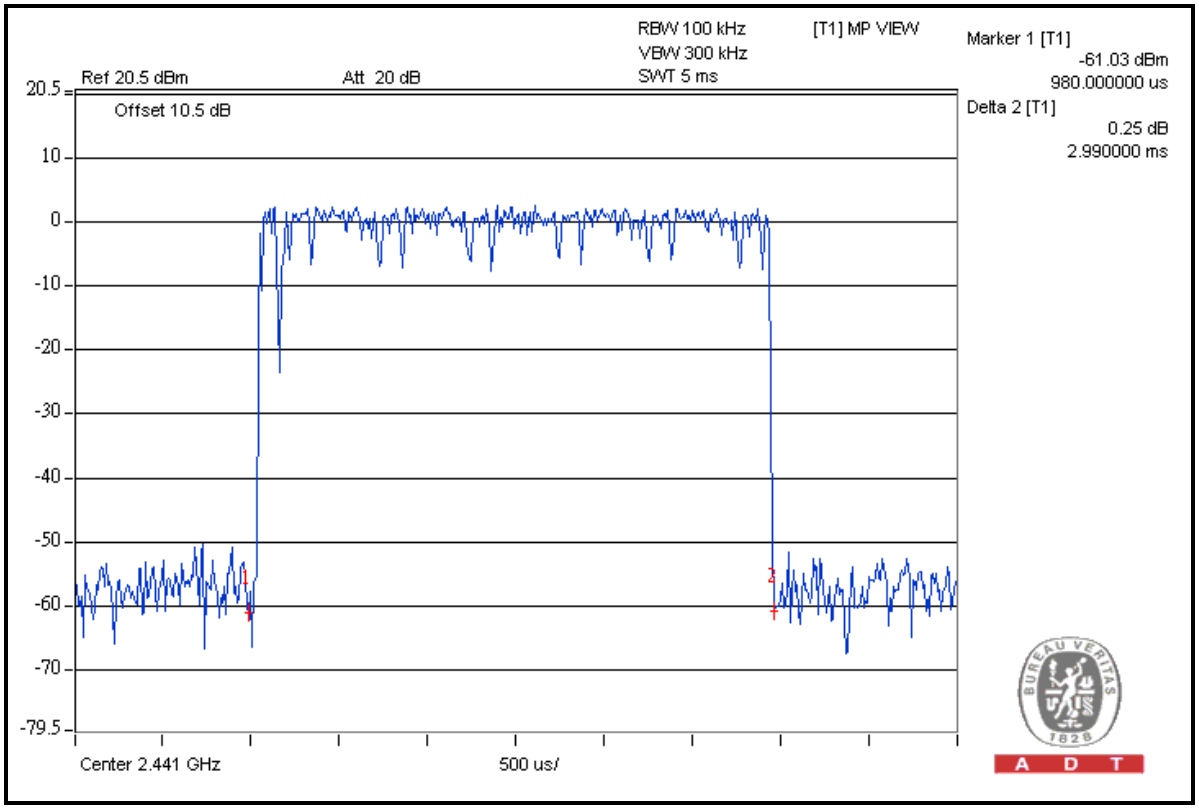
DH3


RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MP CLRWR
Marker 1 []
0.00 dBm
0.000000 ns
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.441 GHz
500 ms/


RBW 100 kHz
VBW 300 kHz
SWT 4 ms
[T1] MP VIEW
Marker 1 [T1]
-57.90 dBm
1.152000 ms
Delta 2 [T1]
1.31 dB
1.696000 ms
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.441 GHz
400 us/

DH5

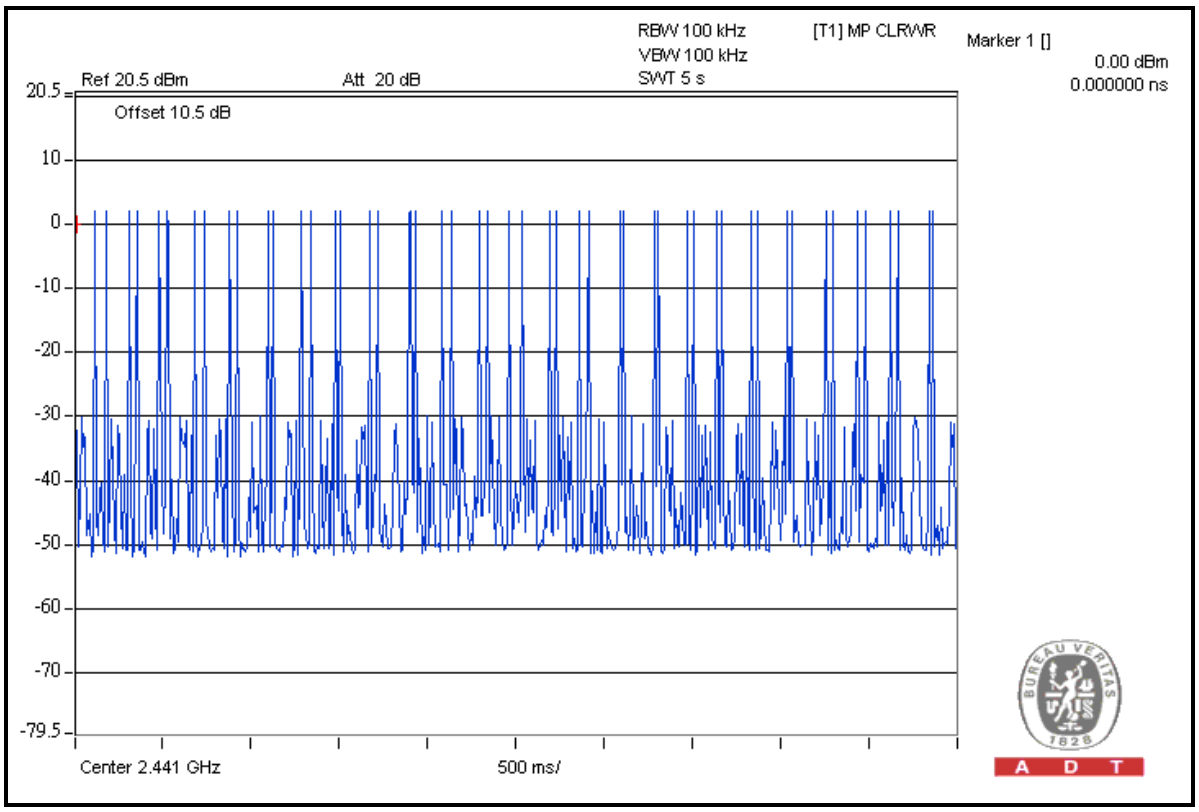

RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MP CLRWR
Marker 1 []
0.00 dBm
0.000000 ns
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.441 GHz
500 ms/

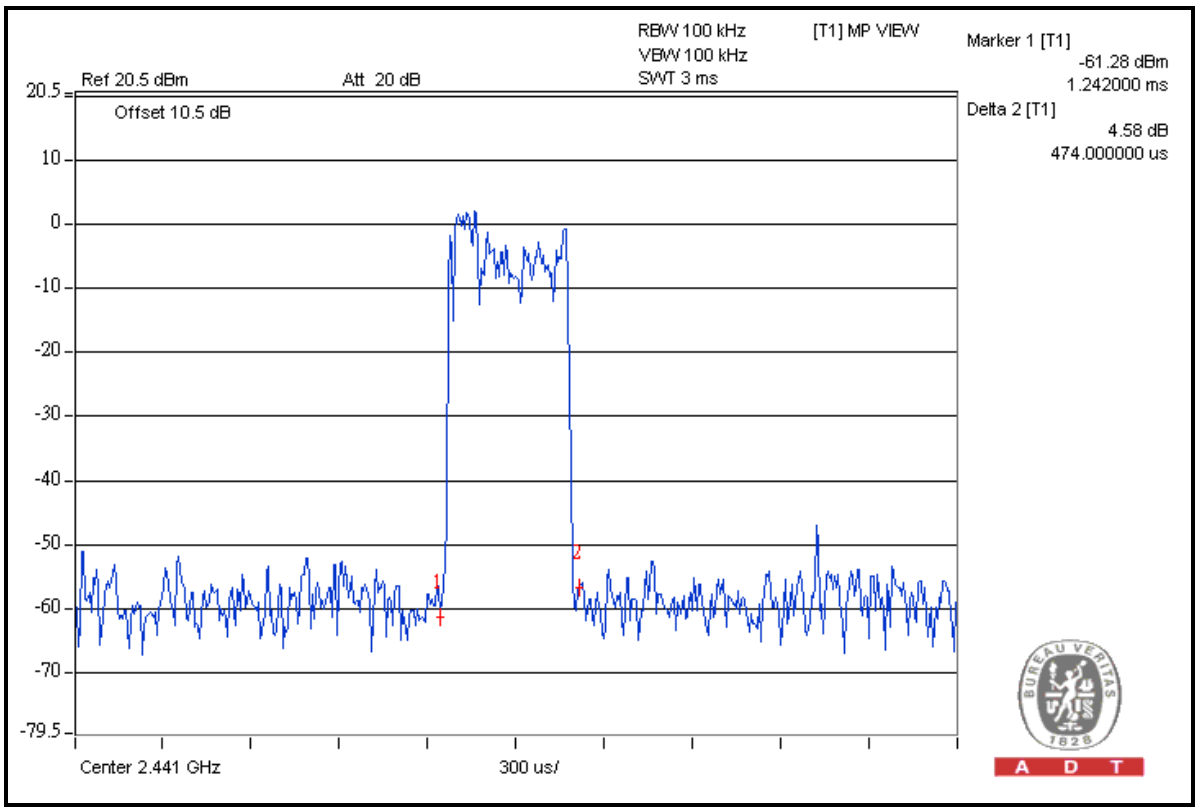

RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MP VIEW
Marker 1 [T1]
-61.03 dBm
980.000000 us
Delta 2 [T1]
0.25 dB
2.990000 ms
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.441 GHz
500 us/

For 8DPSK :

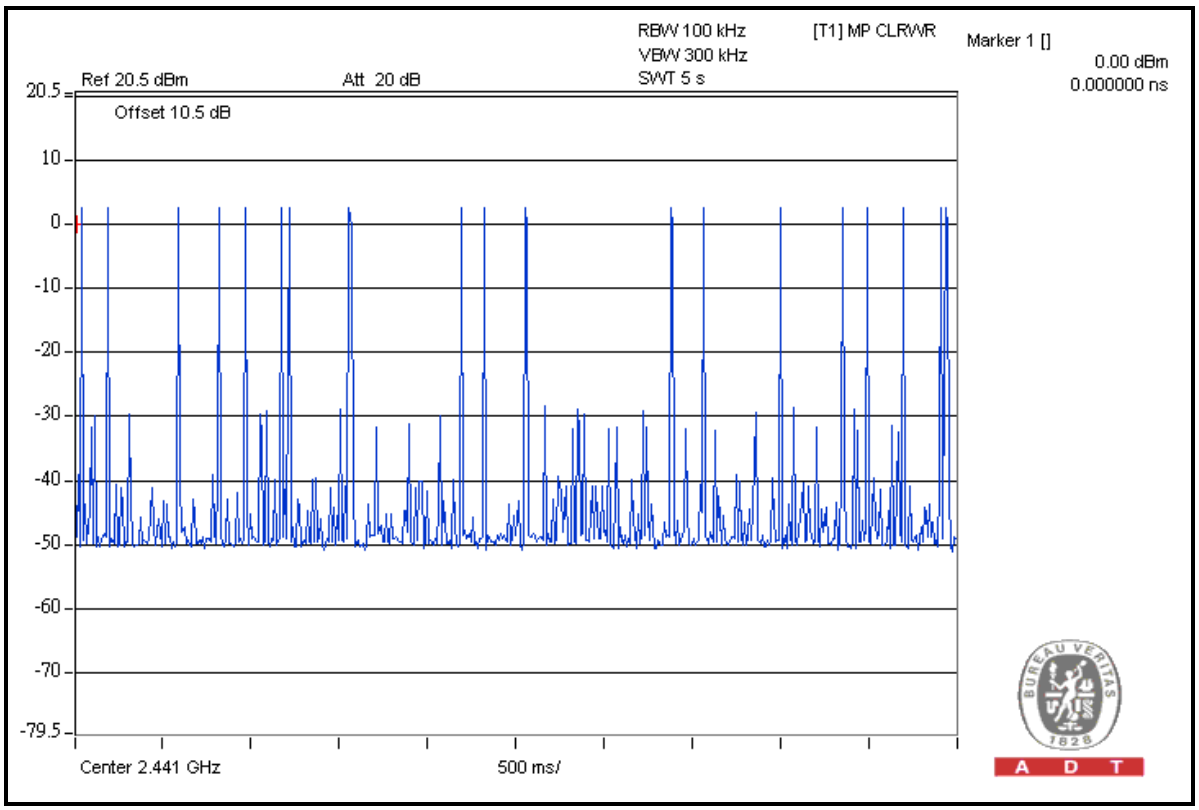
Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	50 (times / 5 sec) *6.32=316.00 times	0.474	149.78	400
DH3	19 (times / 5 sec) *6.32=120.08 times	1.790	214.94	400
DH5	16 (times / 5 sec) *6.32=101.12 times	2.990	302.35	400

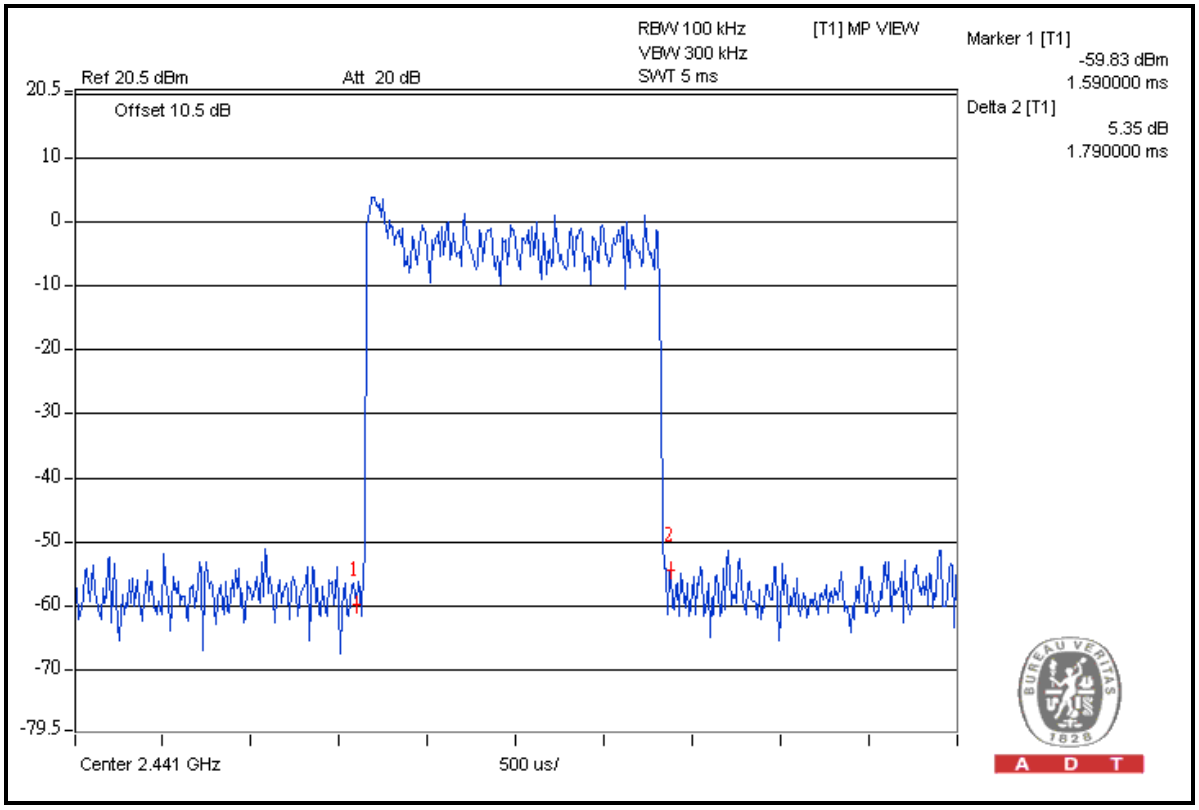
DH1


RBW 100 kHz
VBW 100 kHz
SWT 5 s
[T1] MP CLRWR
Marker 1 []
0.00 dBm
0.000000 ns
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.441 GHz
500 ms/

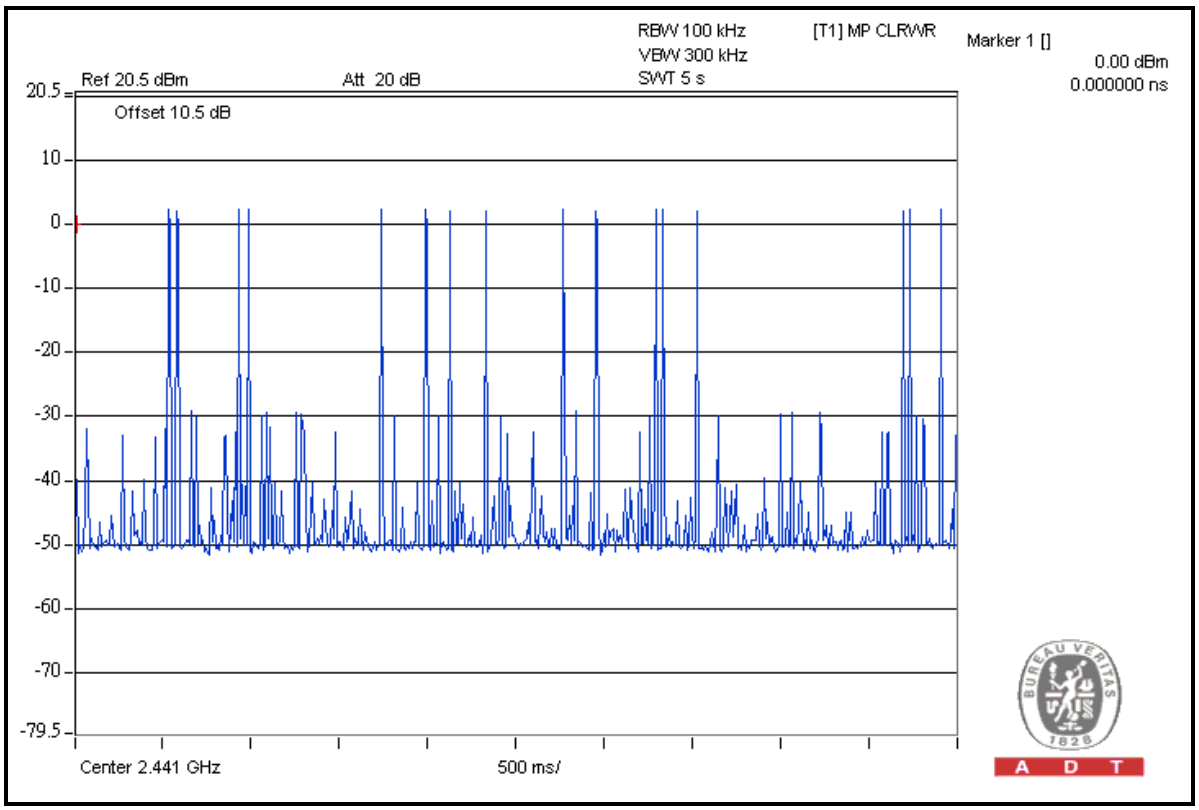

RBW 100 kHz
VBW 100 kHz
SWT 3 ms
[T1] MP VIEW
Marker 1 [T1]
-61.28 dBm
1.242000 ms
Delta 2 [T1]
4.58 dB
474.000000 us
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.441 GHz
300 us/

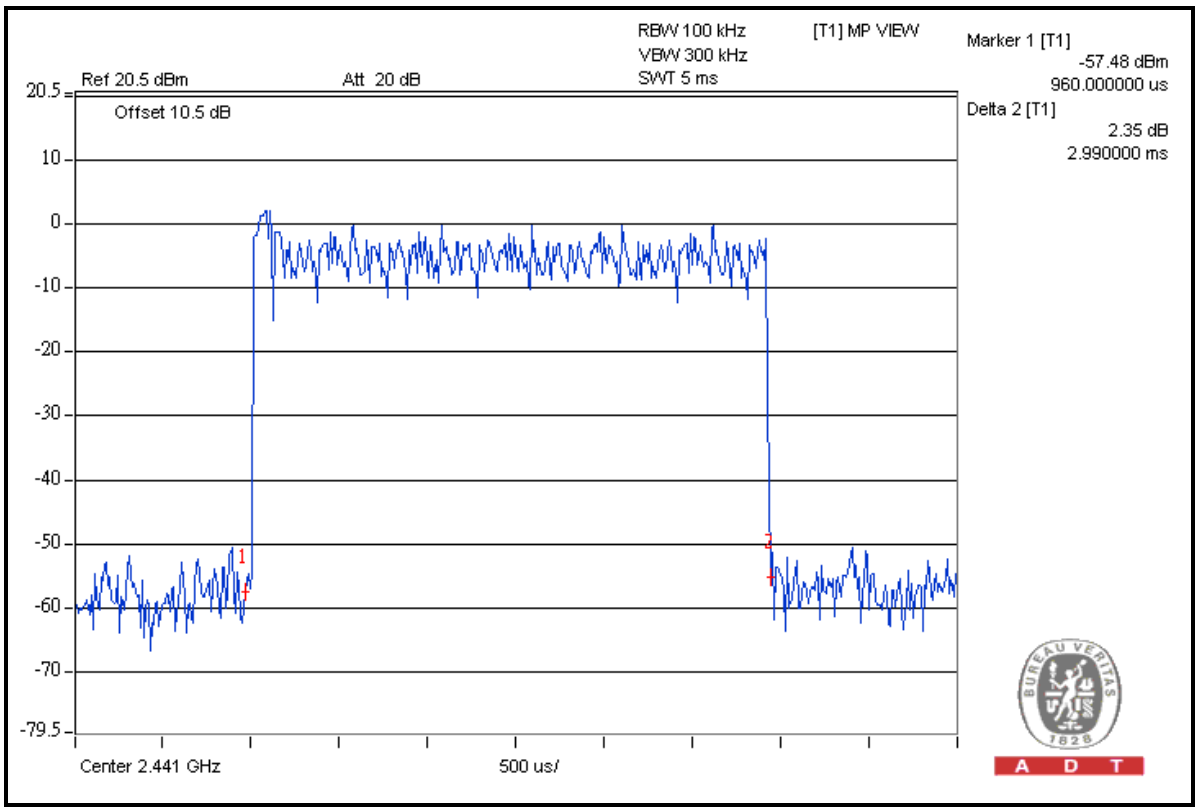
DH3


RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MP CLRWR
Marker 1 []
0.00 dBm
0.000000 ns
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.441 GHz
500 ms/


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MP VIEW
Marker 1 [T1]
-59.83 dBm
1.590000 ms
Delta 2 [T1]
5.35 dB
1.790000 ms
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
1
2
Center 2.441 GHz
500 us/

DH5


RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MP CLRWR
Marker 1 []
0.00 dBm
0.000000 ns
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.441 GHz
500 ms/

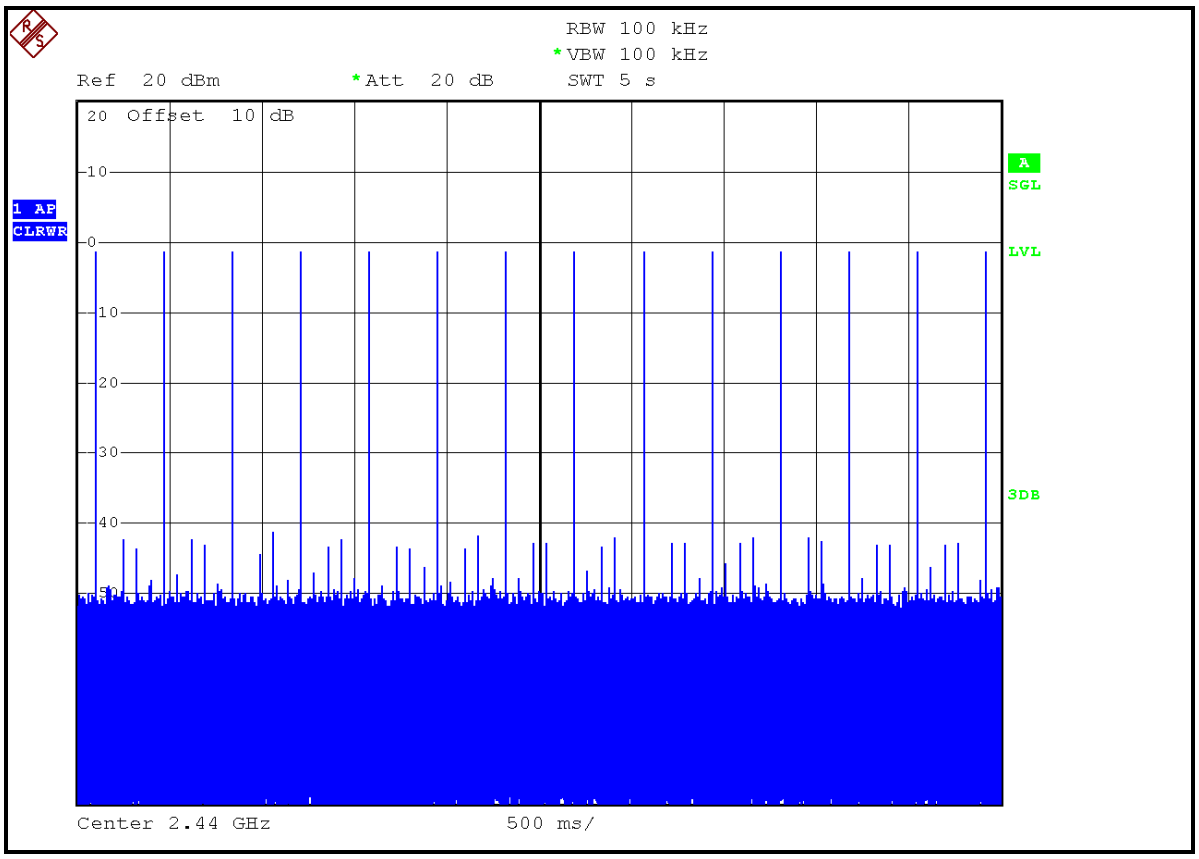

RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MP VIEW
Marker 1 [T1]
-57.48 dBm
960.000000 us
Delta 2 [T1]
2.35 dB
2.990000 ms
Ref 20.5 dBm
Att 20 dB
Offset 10.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.441 GHz
500 us/

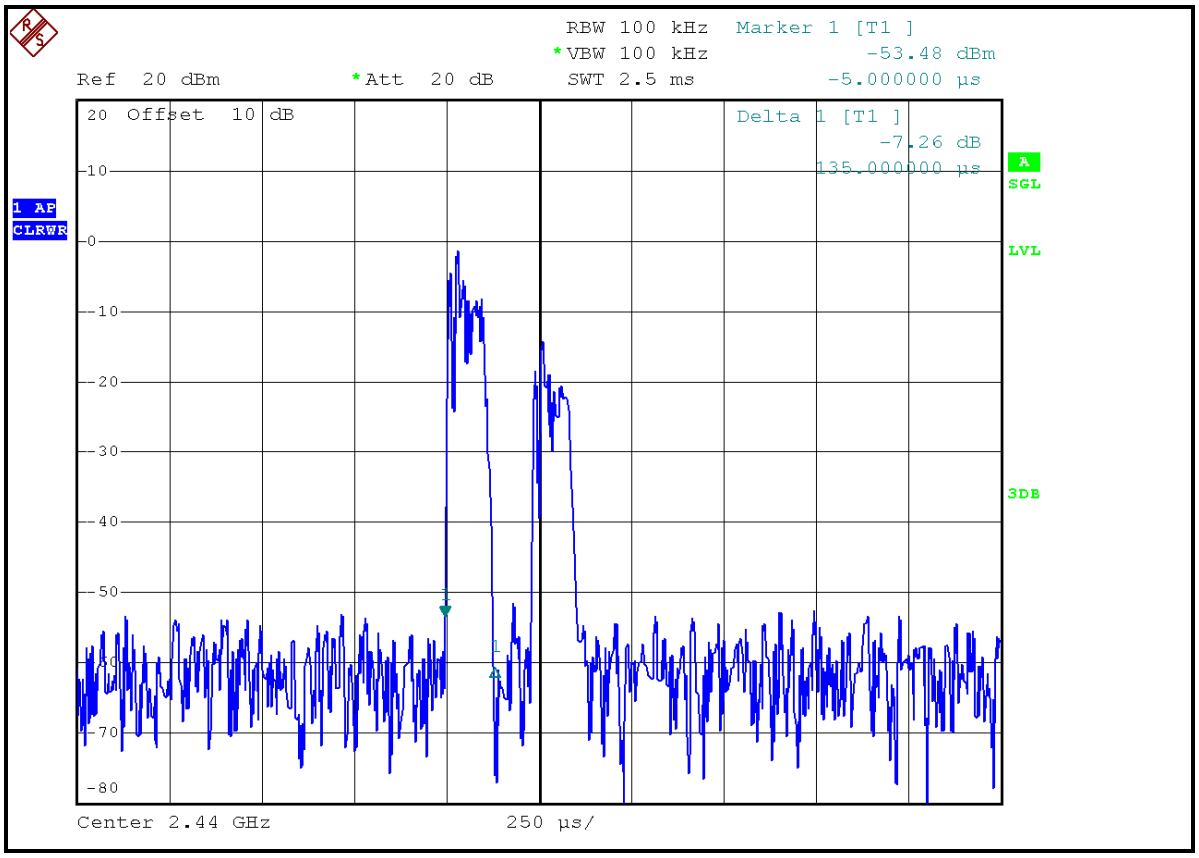
For GFSK(LE MODE):

Mode	Number of transmission in a 16 (40Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	14 (times / 5 sec) *3.2=44.8 times	0.270	12.096	400

*There are two burst signal during transmission time period.

DH1


RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 20 dB
SWT 5 s
20 Offset 10 dB
1 AP
CLRWR
A
SGL
LVL
3DB
Center 2.44 GHz
500 ms/


RBW 100 kHz
Marker 1 [T1]
*VBW 100 kHz
-53.48 dBm
Ref 20 dBm
*Att 20 dB
SWT 2.5 ms
-5.000000 µs
20 Offset 10 dB
Delta 1 [T1]
-7.26 dB
135.000000 µs
1 AP
CLRWR
A
SGL
LVL
3DB
Center 2.44 GHz
250 µs/

4.5 CHANNEL BANDWIDTH

4.5.1 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 shell be a minimum limit for the hopping channel separation.

4.5.2 TEST INSTRUMENTS

Test date: Nov. 16, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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

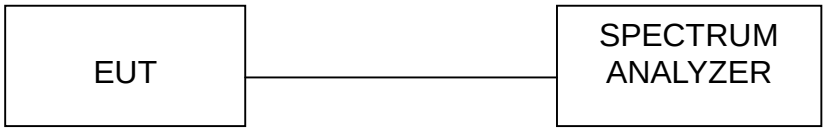
4.5.3 TEST PROCEDURE

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.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

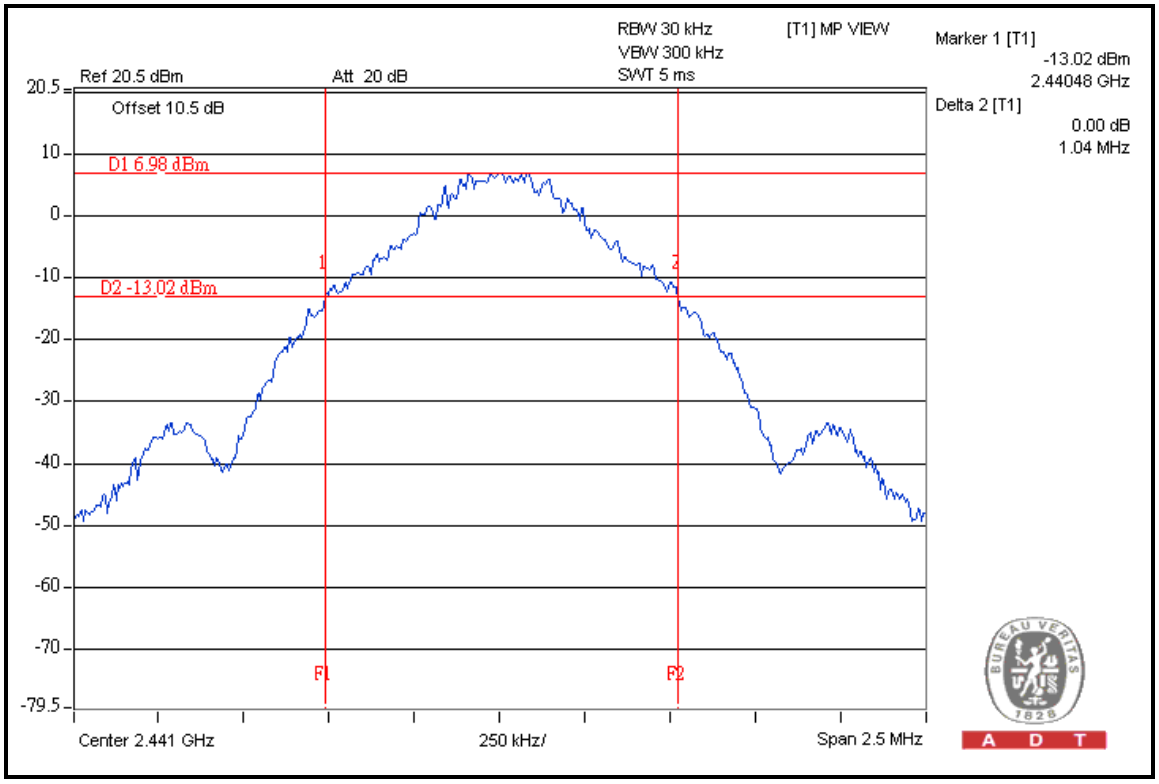
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.5.7 TEST RESULTS

For GFSK:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	1.03
39	2441	1.04
78	2480	1.04

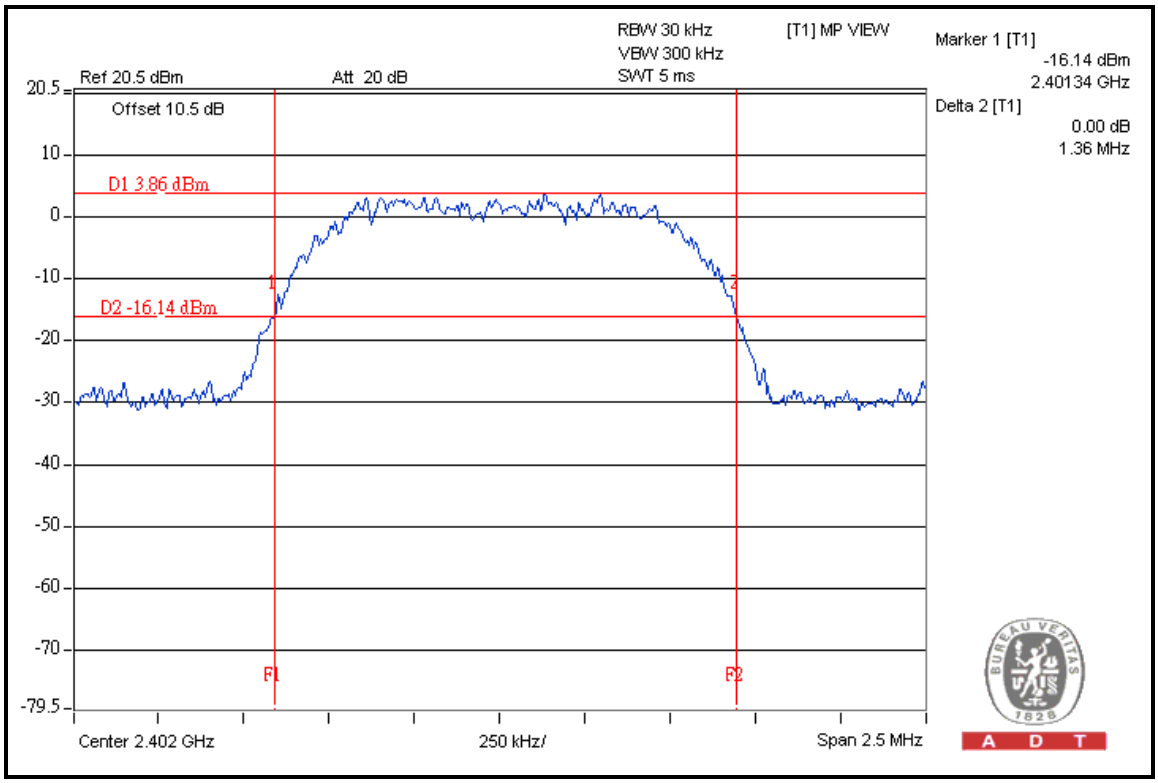
CH 39



For 8DPSK:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	1.36
39	2441	1.36
78	2480	1.35

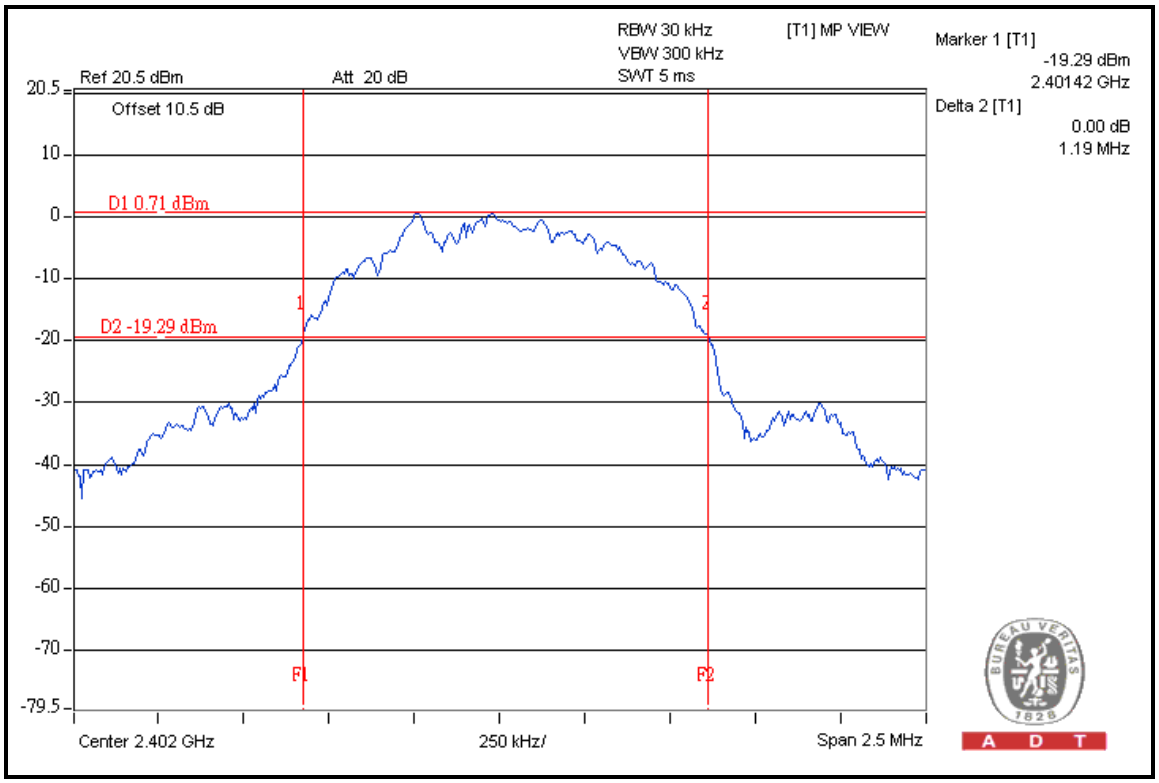
CH 0



For GFSK (LE MODE):

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	1.19
19	2440	1.19
39	2480	1.19

CH 0



4.6 HOPPING CHANNEL SEPARATION

4.6.1 LIMIT OF HOPPING CHANNEL SEPARATION

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

4.6.2 TEST INSTRUMENTS

Test date: Nov. 16, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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

4.6.3 TEST PROCEDURES

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP

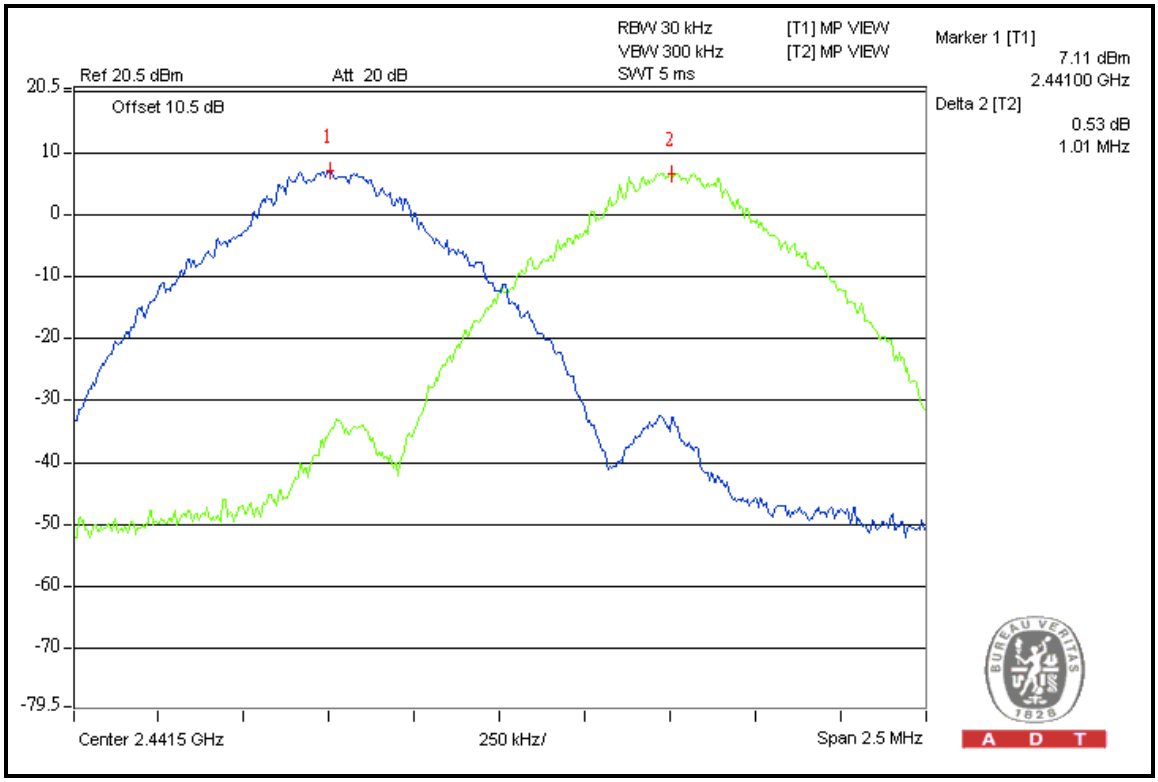
4.6.6 TEST RESULTS

For GFSK

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.00	0.69	PASS
39	2441	1.01	0.69	PASS
78	2480	1.00	0.69	PASS

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

CH 39

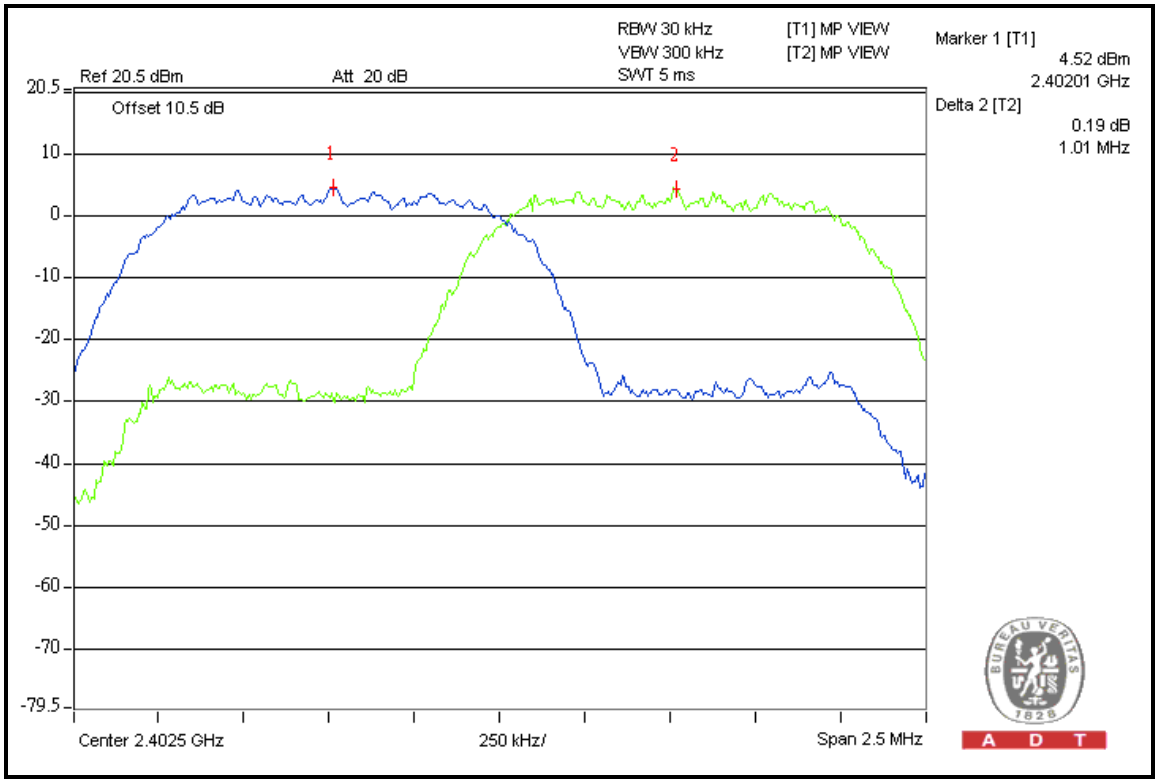


For 8DPSK

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.01	0.90	PASS
39	2441	1.00	0.90	PASS
78	2480	1.01	0.90	PASS

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

CH 0

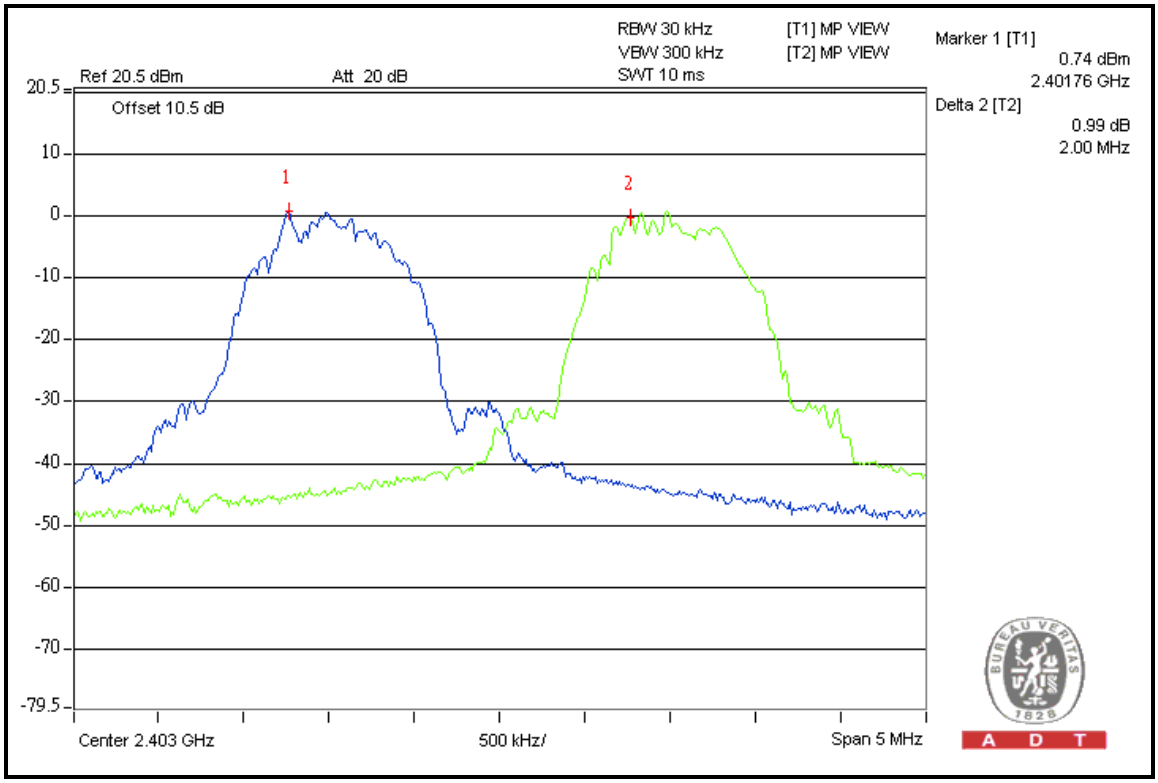


For GFSK(LE MODE)

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	2.00	0.79	PASS
19	2440	2.00	0.79	PASS
39	2480	2.00	0.79	PASS

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

CH 0



4.7 MAXIMUM PEAK OUTPUT POWER

4.7.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Limit is 125mW.

4.7.2 INSTRUMENTS

Test date: Nov. 16, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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

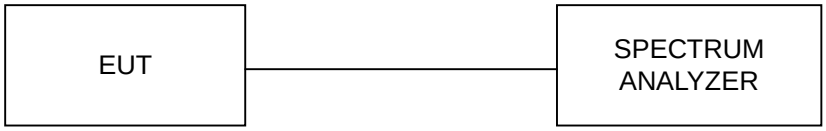
4.7.3 TEST PROCEDURES

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.

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



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

4.7.6 EUT OPERATING CONDITION

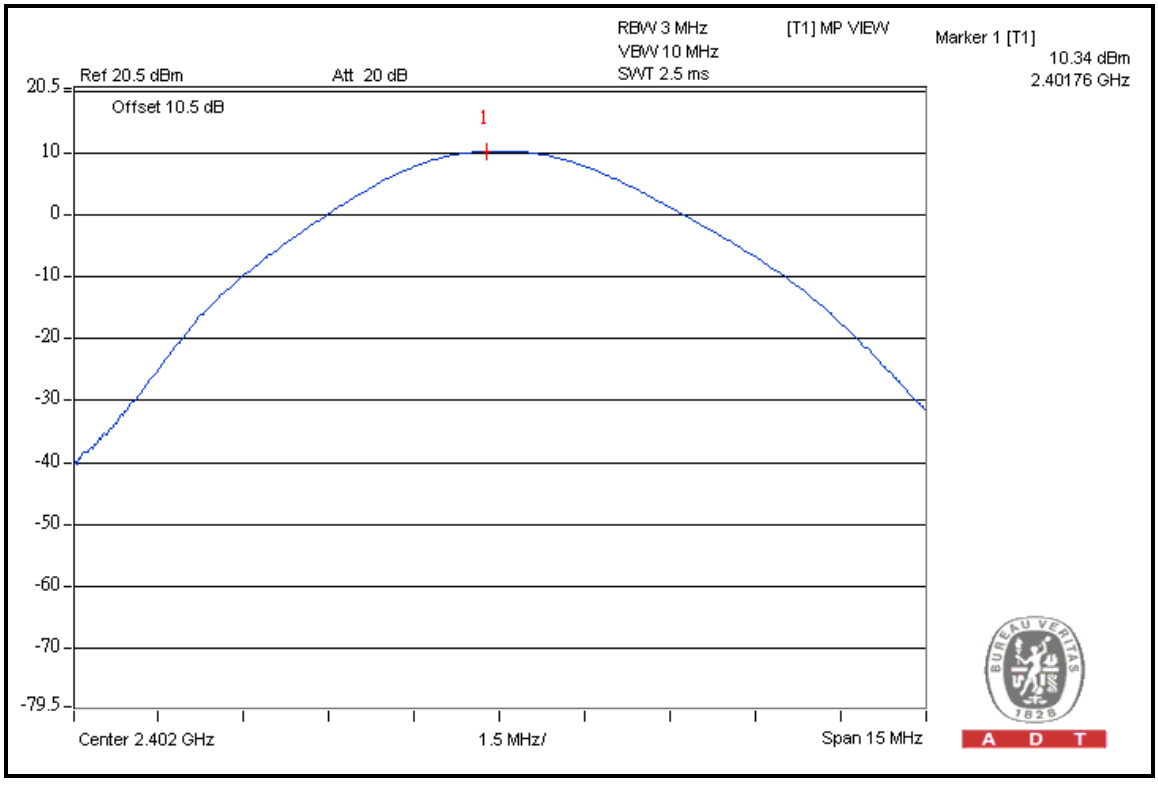
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.7.7 TEST RESULTS

GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (dBm)	POWER OUTPUT (mW)	POWER LIMIT (mW)	PASS/FAIL
0	2402	10.3	10.7	125	PASS
39	2441	9.7	9.3	125	PASS
78	2480	8.6	7.2	125	PASS

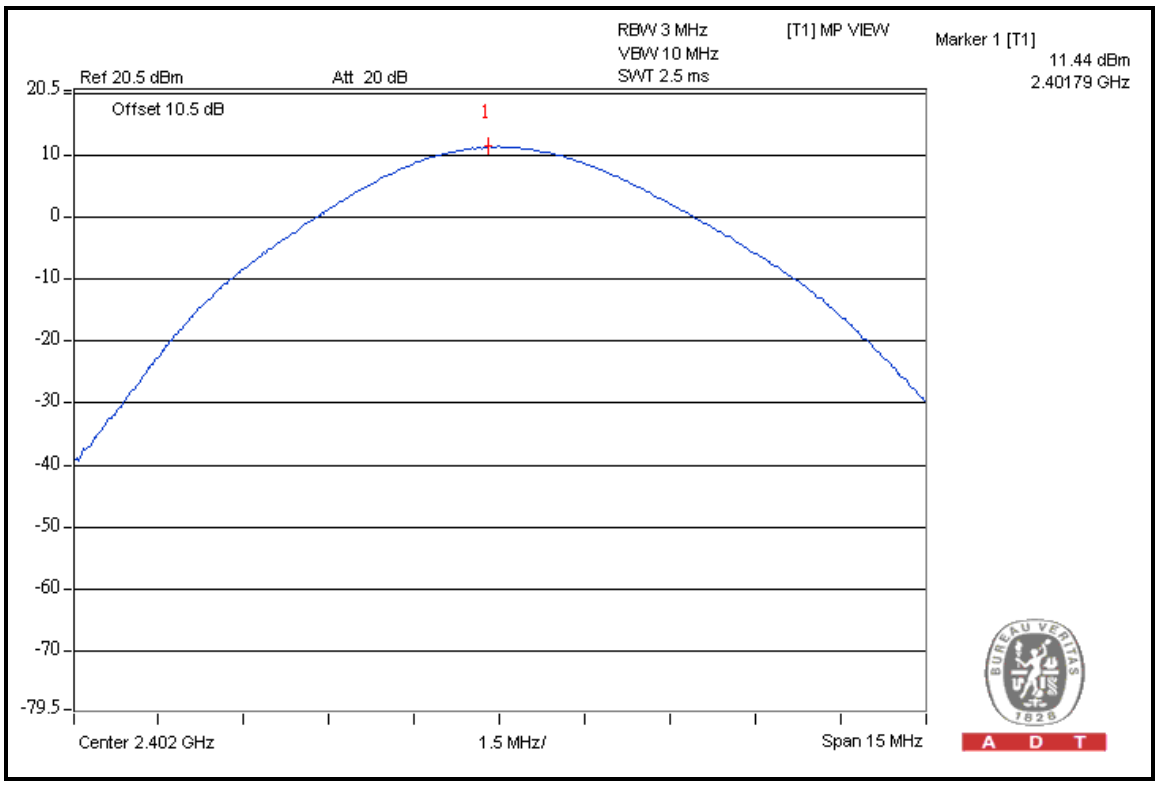
CH 0



For 8DPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (dBm)	POWER OUTPUT (mW)	POWER LIMIT (mW)	PASS/FAIL
0	2402	11.4	13.8	125	PASS
39	2441	11.0	12.6	125	PASS
78	2480	10.1	10.2	125	PASS

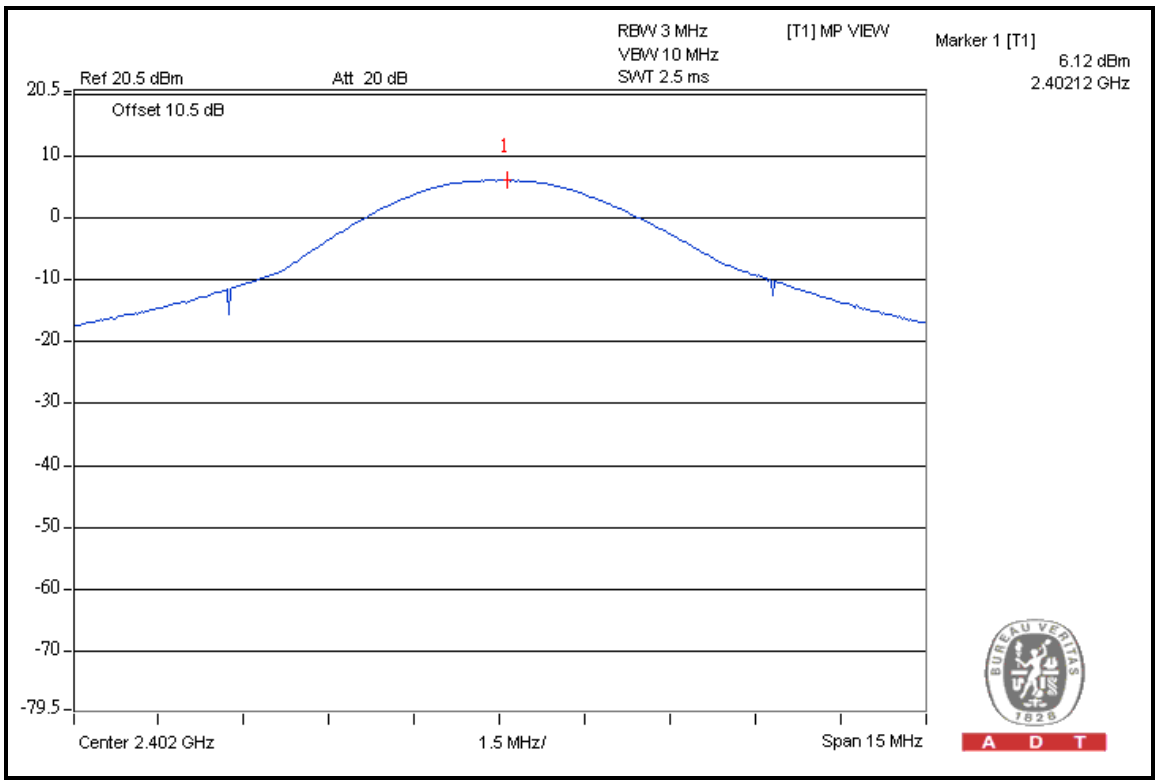
CH 0



For GFSK(LE MODE)

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (dBm)	POWER OUTPUT (mW)	POWER LIMIT (mW)	PASS/FAIL
0	2402	6.1	4.1	125	PASS
19	2440	5.3	3.4	125	PASS
39	2480	3.6	2.3	125	PASS

CH 0



4.8 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

Test date: Nov. 16, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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

4.8.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low 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

4.8.5 EUT OPERATING CONDITION

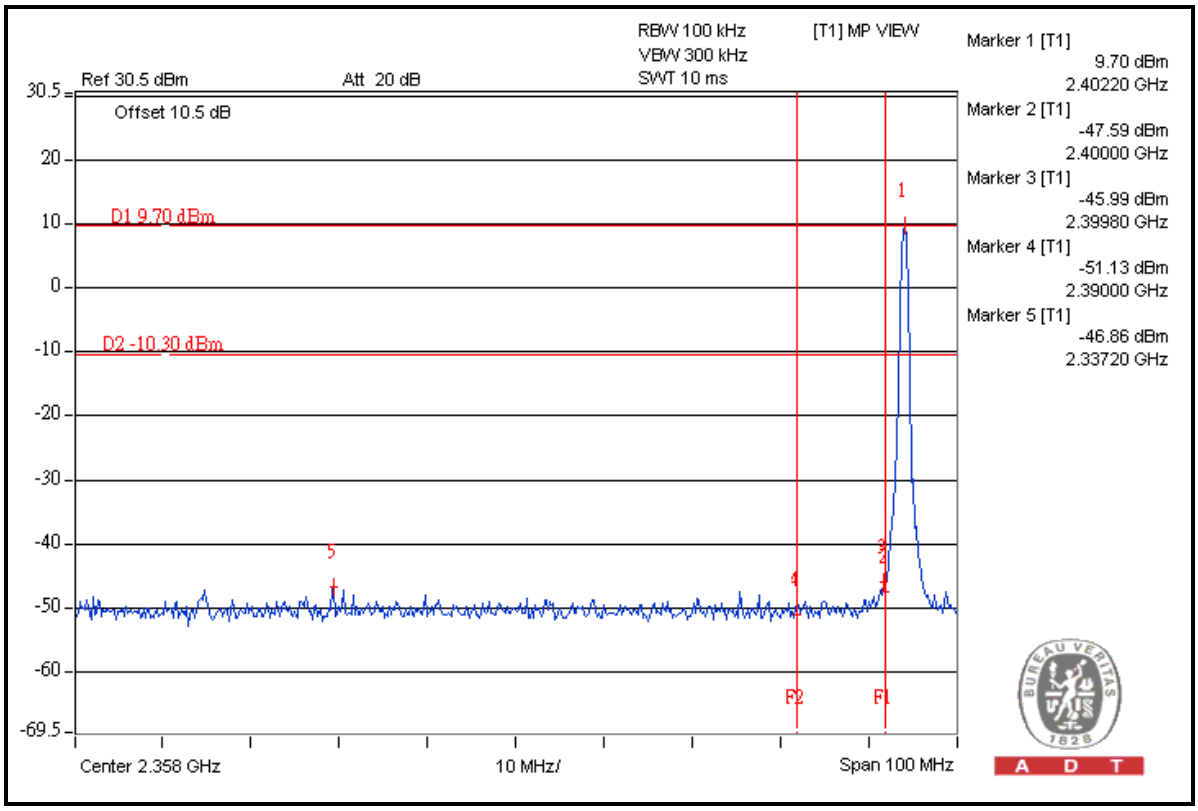
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

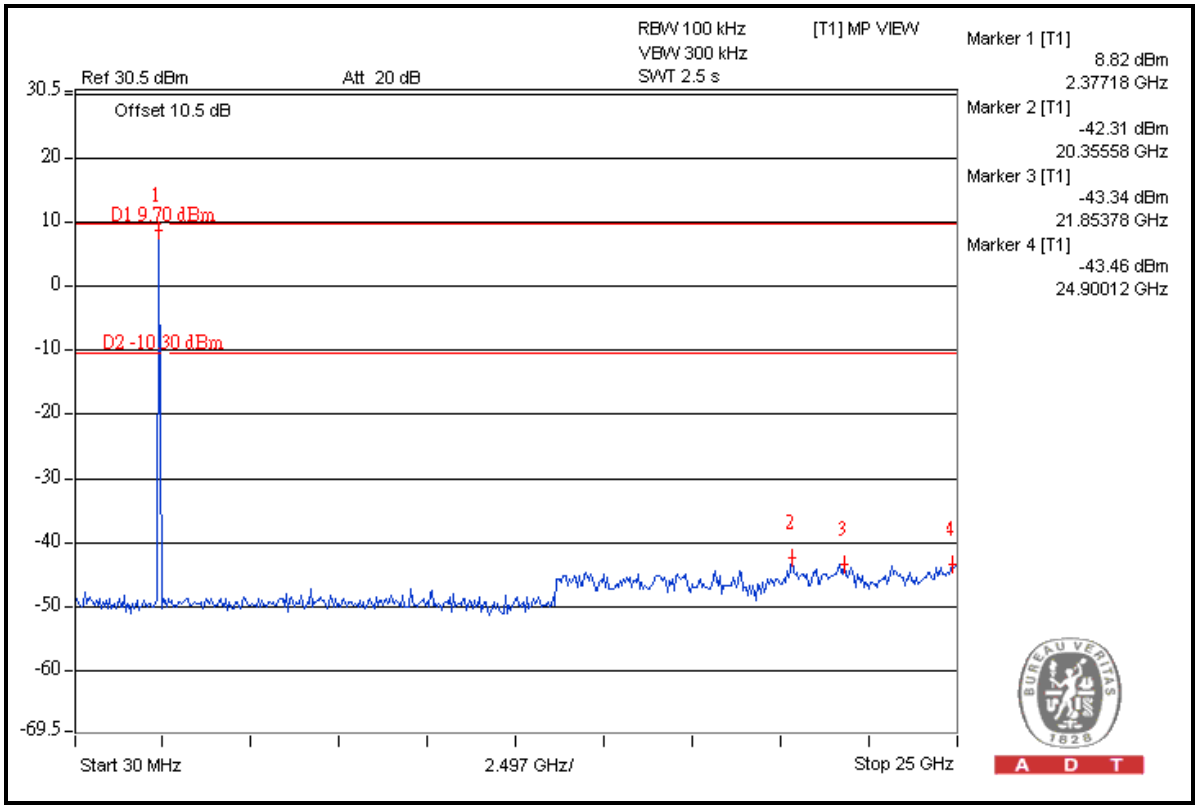
4.8.6 TEST RESULTS

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

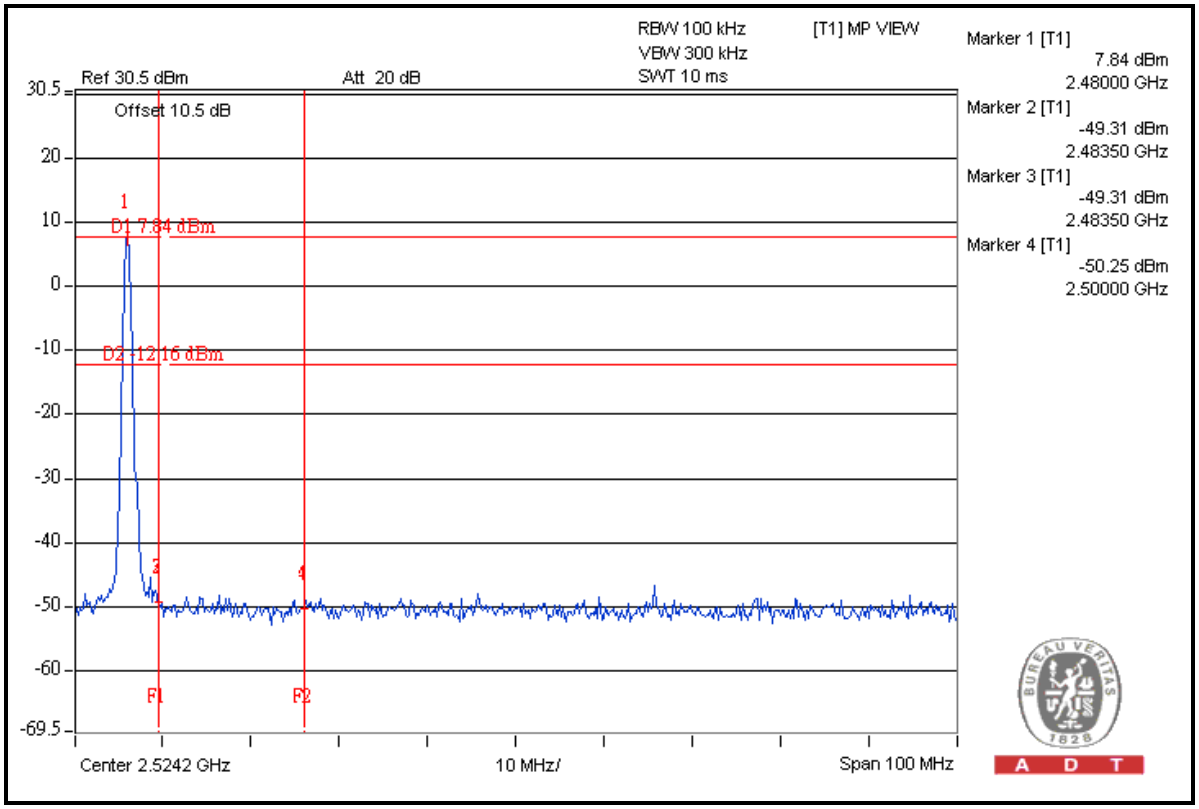
For GFSK Modulation Type:

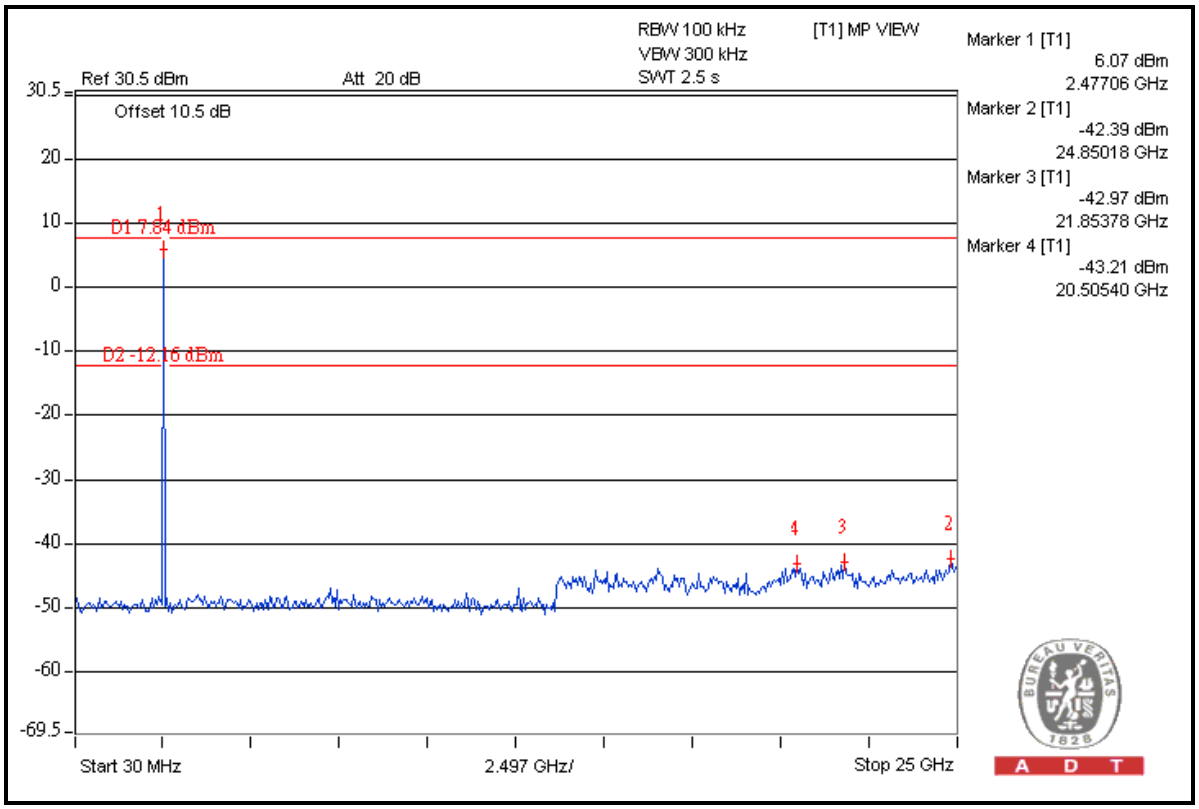
CH 0





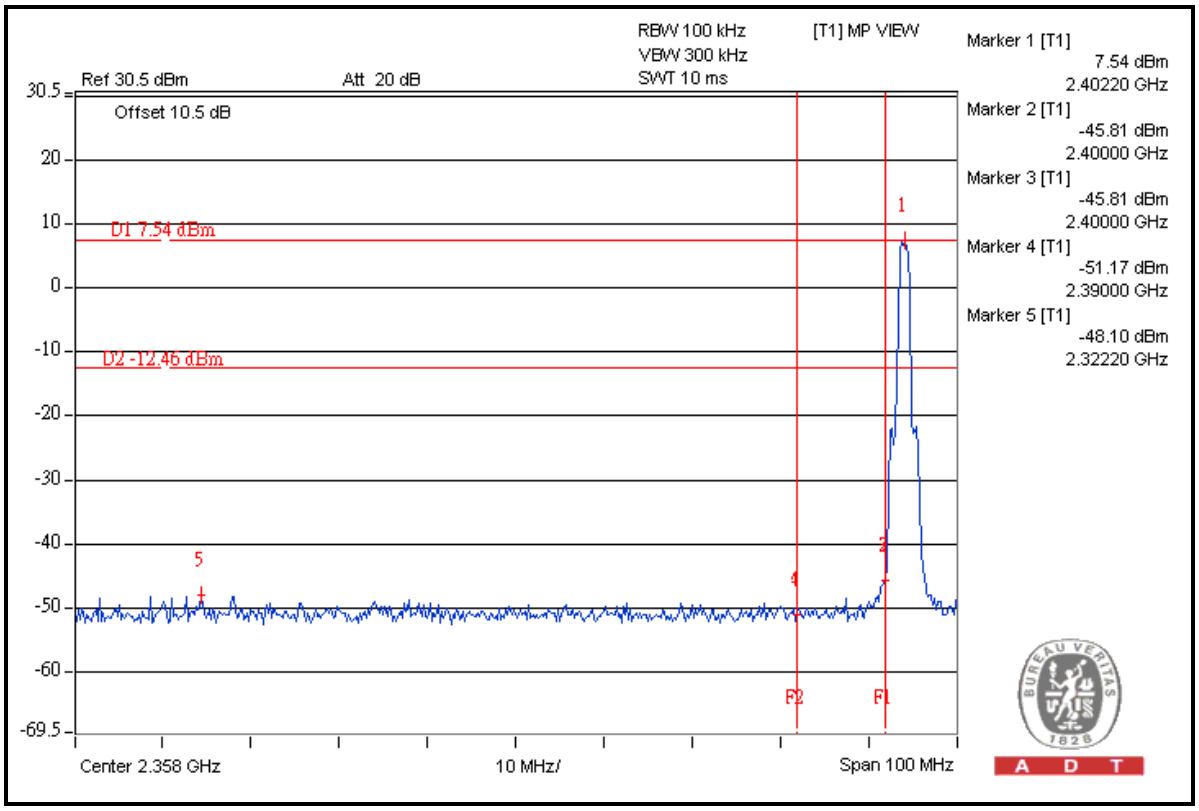
CH 78

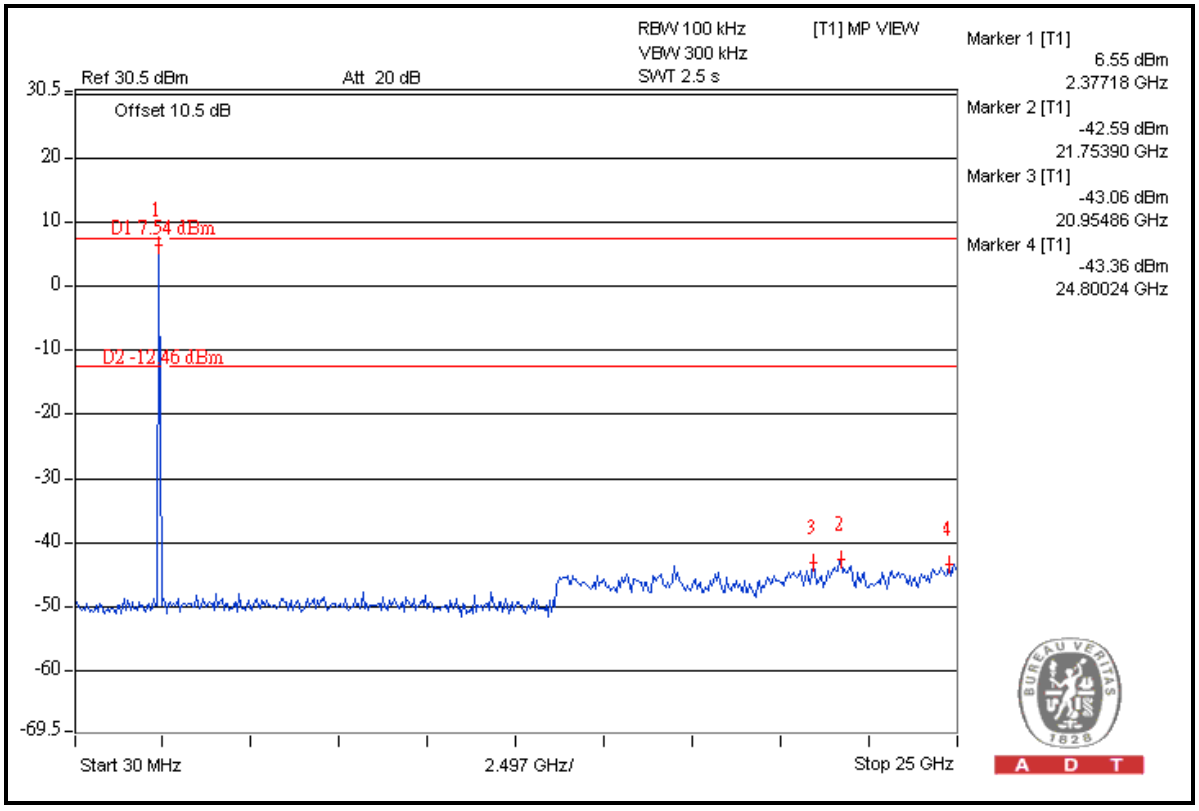

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MP VIEW
Ref 30.5 dBm
Att 20 dB
Offset 10.5 dB
D1 7.84 dBm
D2 -12.16 dBm
Marker 1 [T1]
7.84 dBm
2.48000 GHz
Marker 2 [T1]
-49.31 dBm
2.48350 GHz
Marker 3 [T1]
-49.31 dBm
2.48350 GHz
Marker 4 [T1]
-50.25 dBm
2.50000 GHz
Center 2.5242 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MP VIEW
Ref 30.5 dBm
Att 20 dB
Offset 10.5 dB
D1 7.84 dBm
D2 -12.16 dBm
Marker 1 [T1]
6.07 dBm
2.47706 GHz
Marker 2 [T1]
-42.39 dBm
24.85018 GHz
Marker 3 [T1]
-42.97 dBm
21.85378 GHz
Marker 4 [T1]
-43.21 dBm
20.50540 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz

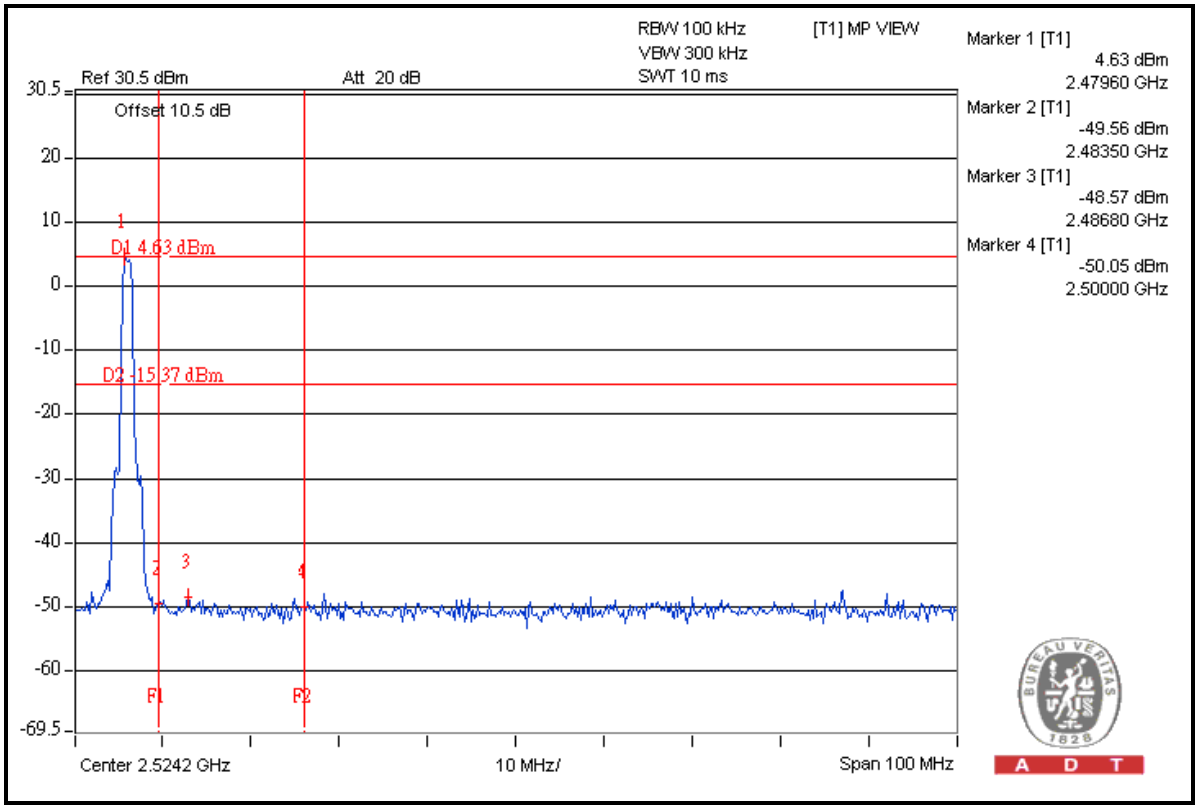
For 8DPSK Modulation Type:

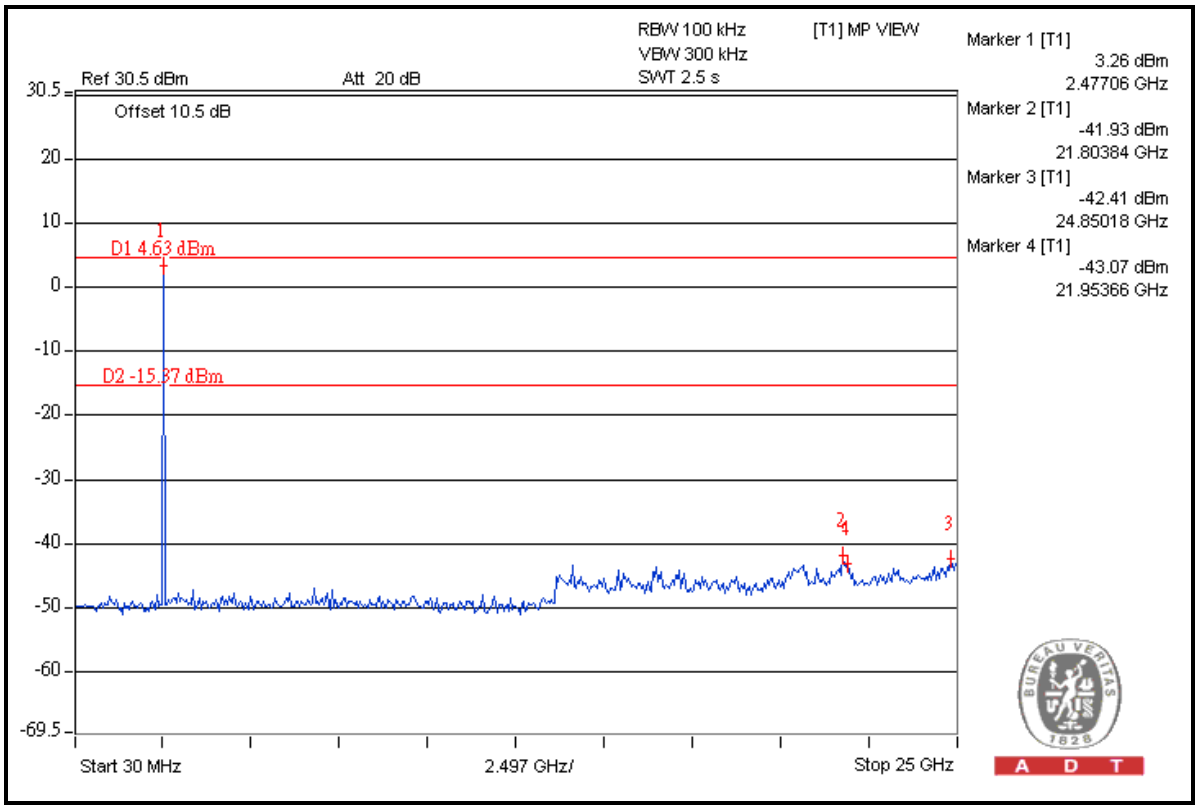
CH 0





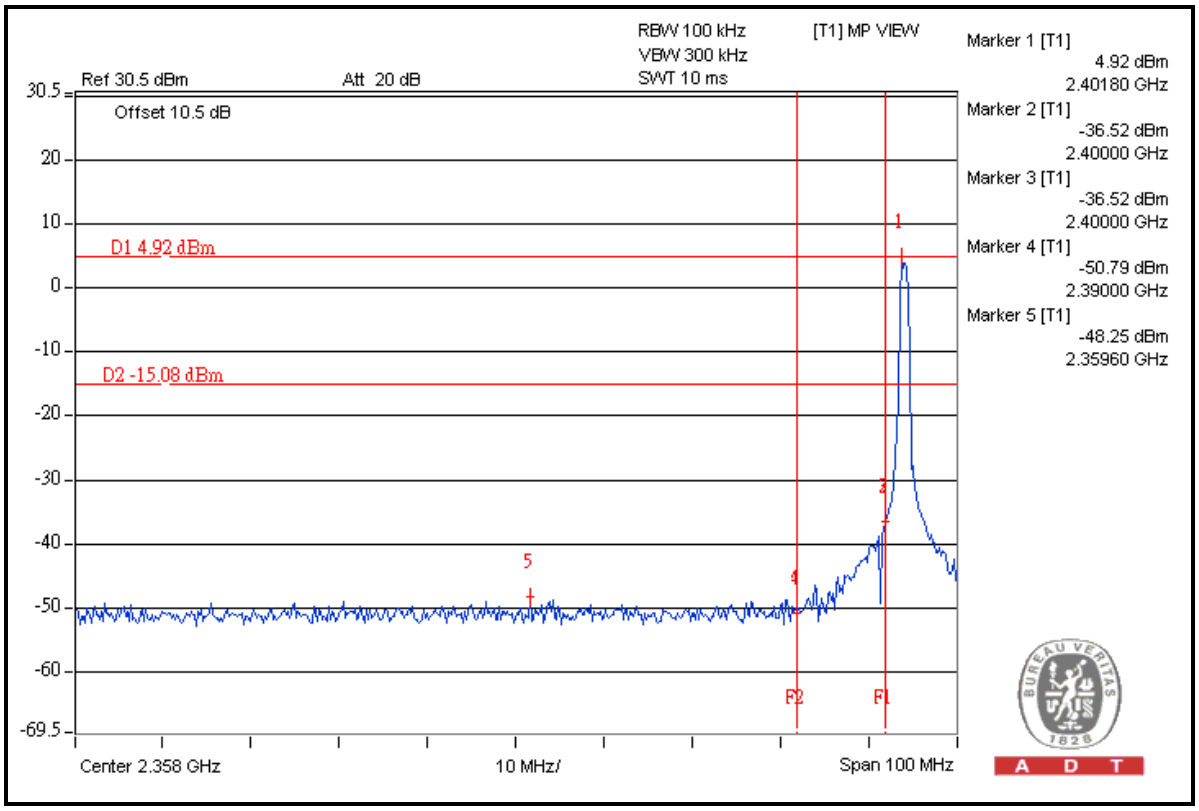
CH 78

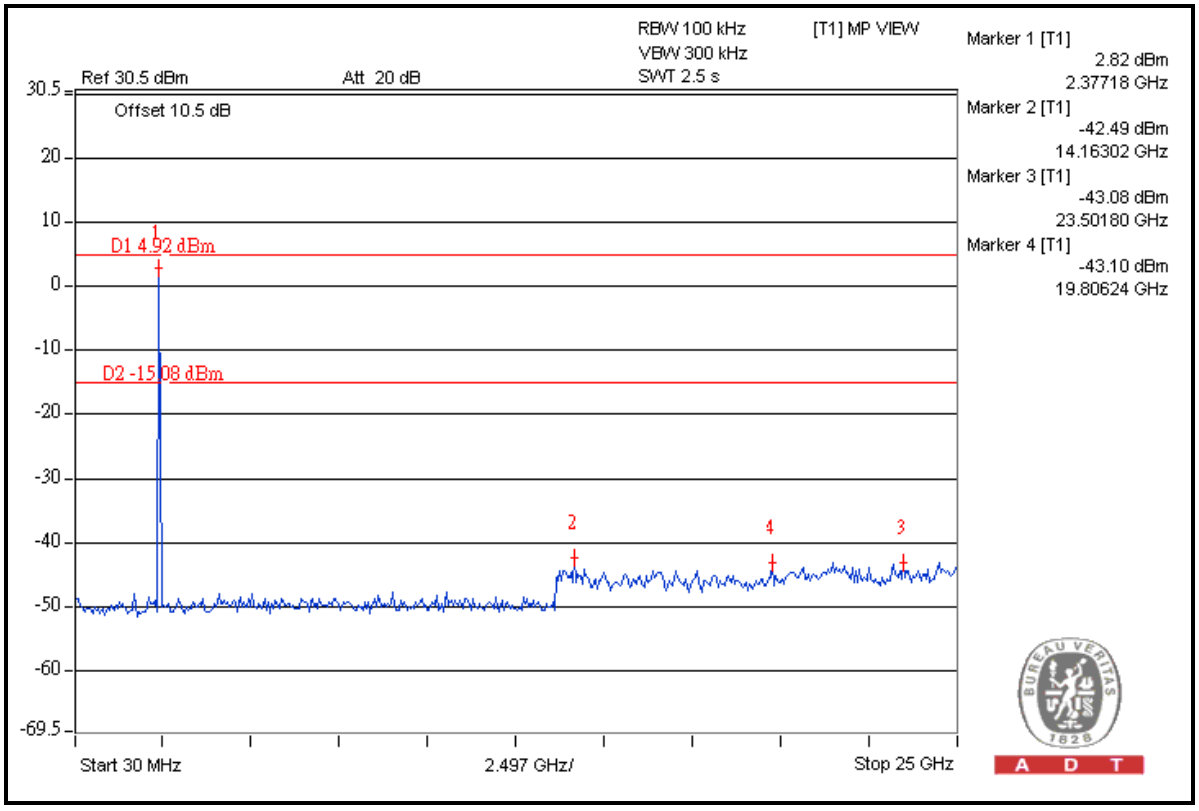

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MP VIEW
Ref 30.5 dBm
Att 20 dB
Offset 10.5 dB
D1 4.63 dBm
D2 -15.37 dBm
Marker 1 [T1]
4.63 dBm
2.47960 GHz
Marker 2 [T1]
-49.56 dBm
2.48350 GHz
Marker 3 [T1]
-48.57 dBm
2.48680 GHz
Marker 4 [T1]
-50.05 dBm
2.50000 GHz
Center 2.5242 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MP VIEW
Ref 30.5 dBm
Att 20 dB
Offset 10.5 dB
D1 4.63 dBm
D2 -15.37 dBm
Marker 1 [T1]
3.26 dBm
2.47706 GHz
Marker 2 [T1]
-41.93 dBm
21.80384 GHz
Marker 3 [T1]
-42.41 dBm
24.85018 GHz
Marker 4 [T1]
-43.07 dBm
21.95366 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz

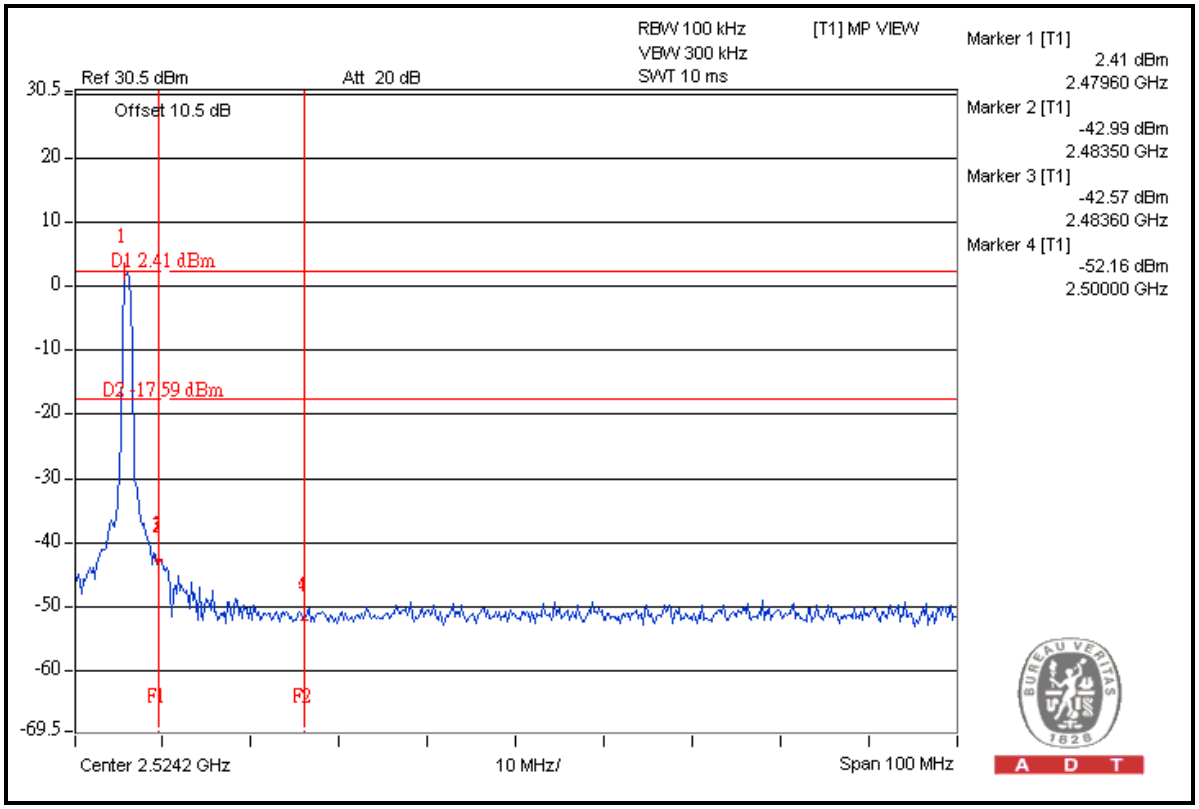
For GFSK(LE MODE) Modulation Type:

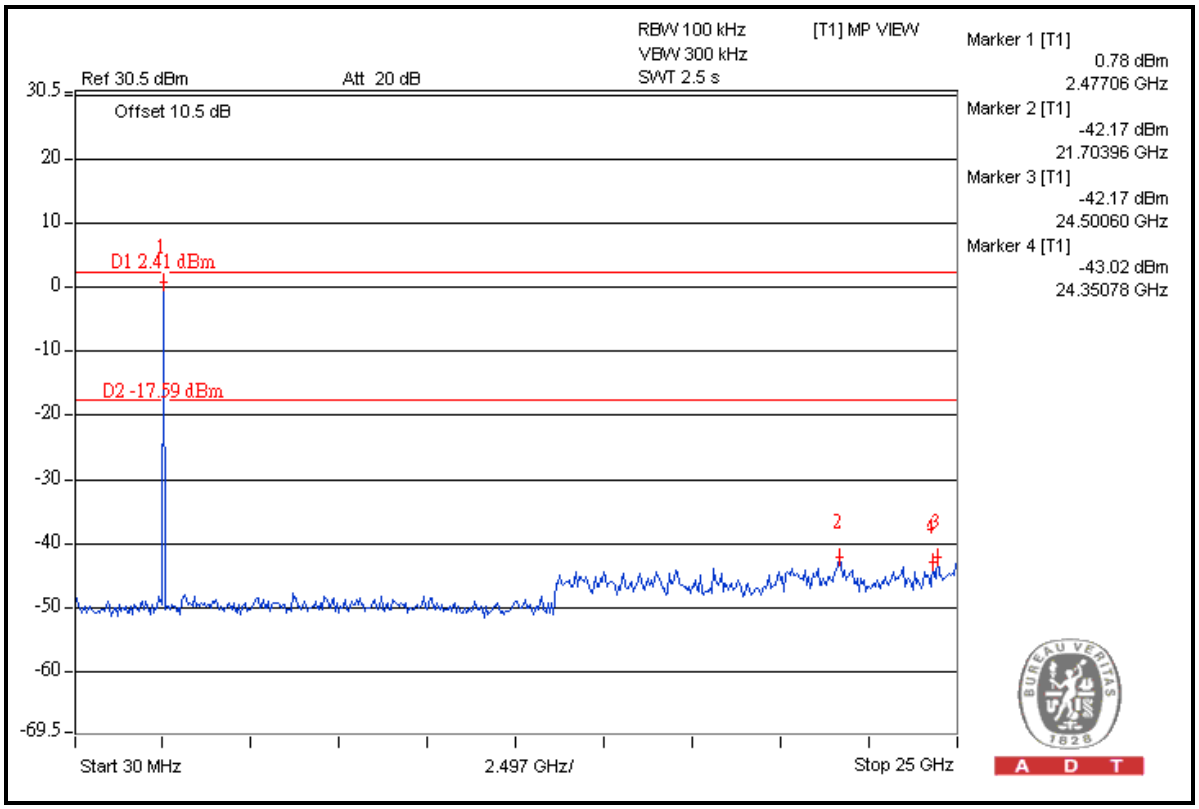
CH 0





CH 39


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MP VIEW
Ref 30.5 dBm
Att 20 dB
Offset 10.5 dB
D1 2.41 dBm
D2 -17.59 dBm
Marker 1 [T1]
2.41 dBm
2.47960 GHz
Marker 2 [T1]
-42.99 dBm
2.48350 GHz
Marker 3 [T1]
-42.57 dBm
2.48360 GHz
Marker 4 [T1]
-52.16 dBm
2.50000 GHz
Center 2.5242 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MP VIEW
Ref 30.5 dBm
Att 20 dB
Offset 10.5 dB
D1 2.41 dBm
D2 -17.59 dBm
Marker 1 [T1]
0.78 dBm
2.47706 GHz
Marker 2 [T1]
-42.17 dBm
21.70396 GHz
Marker 3 [T1]
-42.17 dBm
24.50060 GHz
Marker 4 [T1]
-43.02 dBm
24.35078 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz

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 and authorization 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@tw.bureauveritas.com
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 modifications were made to the EUT by the lab during the test.

--- END ---