APPLICATION FOR CERTIFICATION On Behalf of Amtran Technology Co., Ltd. Bluetooth Embedded Module Total Model No.: BCM92046MD_EMB FCC ID: MDZSV422XVT-BT

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TEST REPORT CERTIFICATION

Applicant	:	Amtran Technology Co.,	Ltd.			
EUT Description	:	Bluetooth Embedded Module				
FCC ID	:	MDZSV422XVT-BT				
		(A) MODEL NO.	:	BCM92046MD_EMB		
		(B) SERIAL NO.	:	N/A		
		(C) POWER SUPPLY	:	DC 5V		
		(D) TEST VOLTAGE	:	AC 120V, 60Hz (Via Notebook PC)		

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C, July. 2008 AND ANSI C63.4/2003

(FCC CFR 47 Part 15C, §15.205, §15.207, §15.209 and §15.247)

The device described above was tested by AUDIX Technology Corporation to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart C limits.

The measurement results are contained in this test report and AUDIX Technology Corporation is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX Technology Corporation.

Date of Test :	Aug. 03 7 05, 2009	Date of Report :	Aug. 13, 2009
Producer :	mtolee	_	
Review:	(Nita Lee/Administrator)		
Signatory:	(Leon Liu/Deputy General Man	ager)	

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Bluetooth Embedded Module
Model Number	:	BCM92046MD_EMB
FCC ID	:	MDZSV422XVT-BT
Applicant	:	Amtran Technology Co., Ltd. 17F, No.268, Lien Chen Rd., Chung Ho City, Taipei County, Taiwan, 235 R.O.C.
Fundamental Range	:	$2400 MHz \sim 2483.5 MHz$
Channel Number	:	79
Radio Technology	:	FHSS Modulation
Antenna Gain	:	1.87dBi
Date of Receipt of Sample	:	Aug. 03 ~ 05, 2009
Date of Test	:	Jul. 23, 2009

1.2. Tested Supporting System Details

1.2.1.	LCD TV		
	Model Number	:	VIZIO SV422XVT
	Serial Number	:	N/A
	BSMI ID	:	R31421
	FCC ID	:	FCC By DoC
	Manufacturer	:	VIZIO
	Power Cord	:	Non-Shielded, Detachable, 1.8m (3 Pin)

1.2.2. NOTEBOOK PC Model Number : PP2130 Serial Number 5Y32KSQZ40ME : BSMI ID 3912A556 : FCC By DoC FCC ID : LG (Brand Compaq) Manufacturer : COMPAQ, M/N PA-1650-02C Power Adapter : DC Power Cord: Shielded, Undetachable, 1.8m Bonded a ferrite core AC Power Cord: Non-Shielded, Undetachable, 1.8m

1.3. Description of Test Facility

Name of Firm	:	AUDIX Technology Corporation EMC Department No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang, Taipei County, Taiwan, R.O.C.
Test Site	:	Semi-Anechoic Chamber No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang, Taipei Hsien, Taiwan
		May 14, 2009 Renewal on Federal Communication Commission Registration Number: 90993
NVLAP Lab. Code (NVLAP is a NATA accredite	: d bod	200077-0 y under Mutual Recognition Agreement)

TAF Accreditation No : 1724

1.4. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)			
Radiation Test (Distance: 3m)	30MHz~300MHz	±2.91dB			
	300MHz~1000MHz	±2.94dB			
	Above 1GHz	± 5.02dB			
Remark : Uncertainty = $ku_c(y)$					

Test Item	Uncertainty	
20dB Bandwidth	$\pm 0.2 \mathrm{kHz}$	
Carrier Frequency Separation	± 0.2 kHz	
Time Of Occupancy	$\pm 0.03 sec$	
Maximum peak Output power	± 0.52dBm	
Emission Limitations	$\pm 0.13 dB$	
Band Edges	± 0.13dB	

2. CONDUCTED EMISSION MEASUREMET

【The EUT only employs DC power for operation, no conductive emission limits are required according to FCC Part 15 Section §15.207】

3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

The following test equipment was used during the radiated emission measurement:

3.1.1.	For Frequency	30MHz~	1000MHz	(at Se	mi-Anechoic	Chamber)
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Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	HP	8564EC	3946A00249	Oct. 24, 08'	Oct. 23, 09'
2.	Test Receiver	R & S	ESCS30	100265	Aug. 28, 08'	Aug. 27, 09'
3.	Amplifier	HP	8447D	2944A06305	Feb. 04, 09'	Feb. 03, 10'
4	Log Periodic	Sahwarzhaak	UHALP	0.001.0	Mar 20.00'	Mar 10 10'
4.	Antenna	Schwarzbeck	9108-A	0810	Mai. 20, 09	Mai. 19, 10
5.	Biconical Antenna	CHASE	VBA6106A	1264	Mar. 20, 09'	Mar. 19, 10'

3.1.2. For Frequency Above 1GHz (at Semi-Anechoic Chamber)

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	HP	8564EC	3946A00249	Oct. 24, 08'	Oct. 23, 09'
2.	Amplifier	HP	8449B	3008A01284	Jun. 17, 09'	Jun. 16, 10'
3.	Horn Antenna	EMCO	3115	9112-3775	May 15, 09'	May 14, 10'
4.	Horn Antenna	EMCO	3116	2653	Oct. 03, 08'	Oct. 02, 09'

3.2. Test Setup

3.2.1. Block Diagram of connection between EUT and simulators

EUT: Bluetooth Embedded Module





3.2.2. Semi-Anechoic Chamber (3m) Setup Diagram for 30-1000MHz ANTENNA TOWE

3.2.3. Semi-Anechoic Chamber (3m) Setup Diagram for above 1GHz





3.3.	Radiated	Emission	Limits	(§15.209)
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Frequency	Distance Matera	Field Strengths Limits			
MHz	Distance wreters	μV/m	dBµV/m		
30 ~ 88	3	100	40.0		
88~216	3	150	43.5		
216~960	3	200	46.0		
Above 960	3	500	54.0		
Above 1000	3	74.0 dBµV	/m (Peak)		
		54.0 dB μ V/m (Average)			

Remark : (1) Emission level $(dB\mu V/m) = 20 \log Emission level (\mu V/m)$

- (2) The tighter limit applies at the edge between two frequency bands.
 - (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 - (4) The limits in this table are based on CFR 47 Part 15.205(a)(b) and Part 15.209 (a).
 - (5) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35(b) and Part 15.205(b) & Part 15.209(e) and Part 15.207(c).

3.4. Operating Condition of EUT

- 3.4.1. Set up the EUT (Bluetooth Embedded Module) and simulator as shown on 3.2.1.
- 3.4.2. To turn on the power of all equipment.
- 3.4.3. The EUT was set to continuously transmit signals at 2402MHz, 2441MHz and 2480MHz during testing.
- 3.4.4. The EUT was set to continuously receive signals at 2441MHz during testing.

3.5. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set to 3 meters away from the receiving antenna which was mounted on an antenna tower. The antenna moved up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna such as calibrated biconical and log-periodical antennas or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to FCC ANSI C63.4-2003 regulation.

The bandwidth of the R&S Test Receiver ESCS30 was set at 120kHz. (For 30MHz to 1000MHz)

The resolution bandwidth and video bandwidth of test spectrum analyzer is 1MHz for peak detection (PK) at frequency above 1GHz.

The resolution bandwidth of test spectrum analyzer is 1MHz and the video bandwidth is 3kHz for average detection (AV) at frequency above 1GHz.

The frequency range from 30MHz to 25GHz (Up to 10th harmonics from fundamental frequency) was checked.

3.6. Radiated Emission Measurement Results

PASSED. All the emissions not reported below are too low against the official limits. [Note: Three types of modulation (GFSK and 8-DPSK and $\pi/4$ -DQPSK) were evaluated but only the worst case (GFSK) was reported in this report.]

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EUT : Bluetooth Embedded Module M/N : BCM92046MD_EMB
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Test Date : Aug. 03, 2009 Temperature : 26 Humidity : 53 %

For Frequency Range 30MHz~1000MHz:

The EUT with following test modes was performed during this section testing and all the test results are listed in section 3.6.1.

Mada	Test Me	do and Fraguanay	Reference Test Data No.			
Mode		ue and Frequency	Horizontal	Vertical		
1.		2402MHz (CH0)	# 10	#9		
2.	Transmitting	2441MHz (CH39)	#9	# 10		
3.		2480MHz (CH78)	# 10	#9		
4.	Receiving	2441MHz (CH39)	#9	# 10		

* Type of modulation: GFSK.

* All above final readings were measured with Quasi-Peak detector.

For Frequency above 1GHz:

The EUT with the following test modes was measured within semi-anechoic chamber. All the graphical results are attached in Appendix I.

Test Modes 5 & 9 (Frequency range: 1000-2680MHz) was measurement with Peak and Average detector are listed in section 3.6.2.

Mode	Test Mode	e and Frequency	Test Frequency Range
1.			1000-2680MHz
2.	Transmitting	$2402MH_{\pi}$ (CH0)	2680-5500MHz
3.		24021/112 (C110)	5500-18000MHz
4.			18000-25000MHz
*5.			1000-2680MHz
6.	Transmitting	$2441MH_{\pi}$ (CH20)	2680-5500MHz
7.		244 INITZ (CT39)	5500-18000MHz
8.			18000-25000MHz
*9.			1000-2680MHz
10.	Transmitting	$2490MH_{\pi}(CH79)$	2680-5500MHz
11.	Transmitting	2400 VITZ (CT/0)	5500-18000MHz
12.			18000-25000MHz
13.			1000-2680MHz
14.	Receiving	$2441MH_{\pi}$ (CU20)	2680-5500MHz
15.		244 IIVINZ (CN39)	5500-18000MHz
16.			18000-25000MHz

* Above all final readings were measured with Peak detector and Average detector.

* Type of modulation: GFSK.

(Test Modes 1~ 4 & 6 ~8 & 10 ~16 emissions level is too low to be measured, therefore, the reading values not reported.)

For Restricted Bands:

The EUT was tested in restricted bands and all the test results are listed in section 3.6.3. (The restricted bands defined in part 15.205(a))

Mada	Test Me	do and Fraguanay	Reference Test Data No.			
Mode	Test Mo	ue and Frequency	Horizontal	Vertical		
1.	Trongmitting	2402MHz (CH0)	#1,#4	#2,#3		
2.	Transmitting	2480MHz (CH78)	#7,#6	# 8, # 5		

Type of modulation: GFSK.

3.6.1. 30MHz~1000MHz Frequency Range Measurement Result





DIS. / Ant.		SIII VDA0100A/UNALP9100A	Ant. por.		HORIZONTAL
Limit	:	FCC PART-15C			
Env. / Ins.	:	8564EC 26*C/53%	Engineer	:	Jarwei Wang
EUT	:	Bluetooth Embedded Module			
Power Rating	:	120Vac/60Hz M/N:BCM92046MD_EMB			
Test Mode	:	TX2402			

		Ant.	Cable		Emissic	on				
	Freq.	Factor	Loss	Reading	Level	Limits	Margin	Remark		
	(MHz)	(dB/m)	(dB)	(dBµV)	(dBµV/m)	(dBµV/m) (dB)			
1	109.540	18.13	2.20	7.05	27.38	43.50	16.12		-	
2	135.730	19.95	2.40	11.47	33.82	43.50	9.68			
3	162.890	20.87	2.70	5.20	28.78	43.50	14.72			
4	190.050	21.51	2.92	7.19	31.62	43.50	11.88			
5	217.210	21.90	3.20	7.54	32.64	46.00	13.36			
6	271.530	25.06	3.70	6.94	35.70	46.00	10.30			
7	362.710	16.38	4.50	5.69	26.57	46.00	19.43			
8	432.550	17.28	5.20	2.72	25.20	46.00	20.80			
9	486.870	18.67	6.20	3.96	28.83	46.00	17.17			
									-	
Remar	ks: 1. Em:	ission 1	Level=	Antenna	Factor +	- Cable Los	s + Read	ling.		
	2. The	e emissi	ion lev	vels that	t are 20d	B below th	e offici	al		
	limit are not reported.									



Test Mode : TX2402



	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emissic Level (dBµV/m)	on Limits (dBµV/m)	Margin Remar (dB)	k
1	135.730	19.95	2.40	7.90	30.25	43.50	13.25	
2	162.890	20.87	2.70	3.96	27.54	43.50	15.96	
3	241.460	23.16	3.40	3.49	30.05	46.00	15.95	
4	254.070	24.13	3.60	2.47	30.20	46.00	15.80	
5	271.530	25.06	3.70	5.34	34.10	46.00	11.90	
6	362.710	16.38	4.50	5.41	26.29	46.00	19.71	
7	434.490	17.36	5.24	1.45	24.04	46.00	21.96	
8	486.870	18.67	6.20	1.23	26.10	46.00	19.90	
<pre>Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading. 2. The emission levels that are 20dB below the official limit are not reported.</pre>								



Test Mode : TX2441



		Ant.	Cable		Emissic	n				
	Freq.	Factor	Loss	Reading	Level	Limits	Margin	Remark		
	(MHz)	(dB/m)	(dB)	(dBµV)	(dBµV/m)	(dBµV/m)	(dB)			
1	135.730	19.95	2.40	11.63	33.98	43.50	9.52			
2	162.890	20.87	2.70	6.84	30.42	43.50	13.08			
3	190.050	21.51	2.92	7.65	32.08	43.50	11.42			
4	217.210	21.90	3.20	6.54	31.64	46.00	14.36			
5	241.460	23.16	3.40	4.57	31.13	46.00	14.87			
6	271.530	25.06	3.70	6.40	35.16	46.00	10.84			
7	362.710	16.38	4.50	7.03	27.91	46.00	18.09			
8	486.870	18.67	6.20	2.20	27.07	46.00	18.93			
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.										
	2. The	e emiss:	ion lev	vels that	t are 20d	B below th	ne offici	.al		
	limit are not reported.									



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		Ant.	Cable		Emissio	n		
	Freq.	Factor	Loss	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dBµV)	(dBµV/m)	(dBµV/m)	(dB)	
1	135.730	19.95	2.40	7.19	29.54	43.50	13.96	
2	162.890	20.87	2.70	3.78	27.36	43.50	16.14	
3	242.430	23.23	3.40	4.39	31.03	46.00	14.97	
4	271.530	25.06	3.70	2.75	31.51	46.00	14.49	
5	362.710	16.38	4.50	6.13	27.01	46.00	18.99	
6	486.870	18.67	6.20	1.07	25.94	46.00	20.06	
7	908.820	25.01	7.40	-1.98	30.43	46.00	15.57	

Power Rating : 120Vac/60Hz M/N:BCM92046MD_EMB

Test Mode : TX2441



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Power Rating Test Mode	:	120Vac/ TX2480	60Hz M/	N:BCM9204	6MD_EMB			
		Ant.	Cable		Emission	L		
Freq.		Factor	Loss	Reading	Level	Limits	Margin	Remark
(MHz)		(dB/m)	(dB)	(dBµV) (dBµV/m) (dBµV/m) (a	dB)	
1 100 E4	~	10 10	0 00	7 47	07 00	42 50	15 70	

	(MHZ)	(db/m)	(ab)	(ασμν)	(aph // m)	(aph / m)	(db)
1	109.540	18.13	2.20	7.47	27.80	43.50	15.70
2	135.730	19.95	2.40	11.36	33.71	43.50	9.79
3	162.890	20.87	2.70	6.17	29.75	43.50	13.75
4	190.050	21.51	2.92	7.56	31.99	43.50	11.51
5	217.210	21.90	3.20	7.42	32.52	46.00	13.48
6	242.430	23.23	3.40	5.42	32.06	46.00	13.94
7	271.530	25.06	3.70	7.76	36.52	46.00	9.48
8	362.710	16.38	4.50	5.89	26.77	46.00	19.23
9	486.870	18.67	6.20	3.78	28.65	46.00	17.35
Remar	ks: 1. Em	ission 1	Level=	Antenna	a Factor +	- Cable Lo	oss + Reading.
	2. Th	e emissi	ion lev	vels tha	t are 20d	dB below t	the official

limit are not reported.



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	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emissic Level (dBµV/m)	on Limits (dBµV/m)	Margin (dB)	Remark
1	135.730	19.95	2.40	7.99	30.34	43.50	13.16	
2	162.890	20.87	2.70	4.62	28.20	43.50	15.30	
3	241.460	23.16	3.40	3.79	30.35	46.00	15.65	
4	271.530	25.06	3.70	4.40	33.16	46.00	12.84	
5	362.710	16.38	4.50	7.65	28.53	46.00	17.47	
6	486.870	18.67	6.20	0.61	25.48	46.00	20.52	

Power Rating : 120Vac/60Hz M/N:BCM92046MD_EMB

Test Mode : TX2480



Test Mode : RX2441



		Ant.	Cable		Emissic	n		
	Freq.	Factor	Loss	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dBµV)	(dBµV/m)	(dBµV/m)	(dB)	
1	135.730	19.95	2.40	6.52	28.87	43.50	14.63	
2	162.890	20.87	2.70	3.78	27.36	43.50	16.14	
3	241.460	23.16	3.40	3.08	29.64	46.00	16.36	
4	271.530	25.06	3.70	2.84	31.60	46.00	14.40	
5	362.710	16.38	4.50	5.13	26.01	46.00	19.99	
6	434.490	17.36	5.24	2.30	24.89	46.00	21.11	
7	486.870	18.67	6.20	3.57	28.44	46.00	17.56	
8	973.810	26.64	7.70	-2.76	31.59	54.00	22.41	
Remar	ks: 1. Em	ission 1	Level=	Antenna	Factor +	Cable Los	ss + Read	ling.
	2. Th	e emiss:	ion le	vels tha	t are 20d	lB below th	ne offici	al
	11	mit are	not re	eported.				



Test Mode : RX2441



		Ant.	Cable		Emissic	n		
	Freq.	Factor	Loss	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dBµV)	(dBµV/m)	(dBµV/m)	(dB)	
1	109.540	18.13	2.20	8.16	28.49	43.50	15.01	
2	120.210	19.08	2.30	11.01	32.39	43.50	11.11	
3	135.730	19.95	2.40	11.43	33.78	43.50	9.72	
4	190.050	21.51	2.92	6.83	31.26	43.50	12.24	
5	217.210	21.90	3.20	6.66	31.76	46.00	14.24	
6	242.430	23.23	3.40	5.21	31.85	46.00	14.15	
7	271.530	25.06	3.70	6.45	35.21	46.00	10.79	
8	362.710	16.38	4.50	5.94	26.82	46.00	19.18	
9	434.490	17.36	5.24	2.76	25.35	46.00	20.65	
10	486.870	18.67	6.20	1.92	26.79	46.00	19.21	
Remar	ks: 1. Em	ission 1	Level=	Antenna	Factor +	Cable Los	ss + Read	ing.
	2. Th	e emiss:	ion le	vels tha	t are 20d	B below th	ne offici	al
	1 i	mit are	not re	eported.				

D	Date of Test :		Aug. (03, 2009	Temperatu	ure :	26
E	UT:	Bluet	ooth Em	bedded Module	Humid	ity:	53%
Test Mode :		Transmitting Mode, Frequency: 2441MHz (CH39)			Test Volta	ige :	DC 5V
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBµV	Meter Reading Horizontal dBµV/m	Emission Level Horizontal dBµV/m	Limits dB	Margin
Peak	2409.520	28.63	6.36	7.16	42.15	74.00	31.85
Average	2409.520	28.63	6.36	2.38	37.37	54.00	16.63
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBµV	Meter Reading D Vertical dBµV/m	Emission Level Vertical dBµV/m	Limits dB	Margin
Peak	2406.160	28.63	6.36	10.90	45.89	74.00	28.11
Average	2406.160	28.63	6.36	4.59	39.58	54.00	14.42
	1	. 1 г [.]	 · т	1 A (F		·	

3.6.2. Above 1GHz Frequency Range Measurement Results

Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.

2. Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

Date of Test :			Aug. 0	03, 2009	Temperati	ure :	26
E	UT:	Bluet	ooth Em	bedded Module	Humid	ity :	53%
Test Mode :		Transn	nitting M 2480MH	lode, Frequency: Iz (CH78)	Test Volta	Test Voltage : DC	
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBµV	Meter Reading 1 Horizontal dBµV/m	Emission Level Horizontal dBµV/m	Limits dB	Margin
Peak	2406.160	28.63	6.36	6.02	41.01	74.00	32.99
Average	2406.160	28.63	6.36	1.87	36.86	54.00	17.14
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBµV	Meter Reading D Vertical dBµV/m	Emission Level Vertical dBµV/m	Limits dB	Margin
Peak	2409.520	28.63	6.36	7.50	42.49	74.00	31.51
Average	2409.520	28.63	6.36	2.55	37.54	54.00	16.46

Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

	Date of Test :		Aug. (03, 2009	Temperatu	re :	26
	EUT:	Bluetooth Embedded Module			Humidi	ty:	53%
	Test Mode :	Transi	mitting N 2402M	Iode, Frequency Hz (CH0)	Test Voltag	ge :	DC 5V
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBµV	Meter Reading Horizontal dBµV/m	Emission Level Horizontal dBµV/m	Limits dB	Margin
Peak	* 2377.400	28.58	6.32	3.52	38.42	74.00	35.58
Average	* 2385.200	28.59	6.33	-7.06	27.86	54.00	26.14
	Remark	: 1. Emis 2. Low	sion Lev	el = Antenna Fac y section (spuric	ctor + Cable Loss	s + Mete ed band	r Reading.

3.6.3. Restricted Bands Measurement Results

2310-2390MHz).

3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



	Date of Test :	Aug. 03, 2009			Temperat	ure :	26
	EUT:		tooth Em	bedded Module	Humid	lity:	53%
Test Mode :		Transmitting Mode, Frequency: 2402MHz (CH0)			Test Volta	Test Voltage :	
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBµV	Meter Reading En Vertical dBµV/m	mission Level Vertical dBµV/m	Limits dB	Margin
Peak	* 2386.200	28.59	6.33	7.76	42.68	74.00	31.32
Average	* 2385.400	28.59	6.33	-1.90	33.02	54.00	20.98
	Remark	: 1. Emis 2. Low	sion Lev frequenc	el = Antenna Facto y section (spurious	or + Cable Los in the restric	ss + Mete ted band	r Reading.

2310-2390MHz).3. '*' The field strength of emission appearing within Part 15.205(a)





	Date of Test :		Aug. (03, 2009	Temperatur	re :	26
	EUT:		Bluetooth Embedded Module			ty:	53%
Test Mode :		Trans	nitting M 2480MH	Iode, Frequency: Iz (CH78)	Test Voltag	Test Voltage :	
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBµV	Meter Reading I Horizontal dBµV/m	Emission Level Horizontal dBµV/m	Limits dB	Margin
Peak	* 2483.600	28.77	6.45	4.05	39.27	74.00	34.73
Average	* 2483.700	28.77	6.45	-1.24	33.98	54.00	20.02
	D 1	. 1 .	· .	1 4 7 5			D 1'

Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.

2. Low frequency section (spurious in the restricted band 2483.5-2500MHz).

3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



	Date of Test :	of Test : Aug. 03, 2009		Temperatu	re :	26	
	EUT:		tooth Em	bedded Module	Humidi	ty:	53%
Test Mode :		Transmitting Mode, Frequency: 2480MHz (CH78)			Test Voltag	ge:	DC 5V
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBµV	Meter Reading Er Vertical dBµV/m	nission Level Vertical dBµV/m	Limits dB	Margin
Peak	* 2483.600	28.77	6.45	6.91	42.13	74.00	31.87
Average	* 2483.600	28.77	6.45	3.79	39.01	54.00	14.99

Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.

2. Low frequency section (spurious in the restricted band 2483.5-2500MHz).

3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



4. 20dB BANDWIDTH MEASUREMENT

4.1. Test Equipment

The following test equipment was used during the 20dB bandwidth measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9020A	MY48011382	Sep. 22, 08'	Sep. 21, 09'

4.2. Block Diagram of Test Setup



4.3. Specification Limits (§15.247(a)(1))

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

4.4. Operating Condition of EUT

- 4.4.1. Set up the EUT and simulator as shown on 4.2.
- 4.4.2. To turn on the power of all equipment.
- 4.4.3. The EUT (Bluetooth Embedded Module) was on transmitting frequency function during the testing.

4.5. Test Procedure follow DA00-705

The transmitter output was connected to the spectrum analyzer. The RBW of the fundamental frequency was measure by spectrum analyzer 1% of the 20dB bandwidth and the setting equal to RBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

4.6. Test Results

PASSED. All the test results are attached in next pages.

[Note: Two types of modulation (GFSK and 8-DPSK) were reported in this report.]

EUT : Bluetooth Embedded Module M/N : BCM92046MD_EMB

Test Date : Aug. 03, 2009 Temperature : 26 Humidity : 53 %

4.6.1.Type of Modulation: GFSK

No.	Channel	Test Frequency	20dB Bandwidth	2/3 (20dB Bandwidth)
1.	0	2402MHz	0.723MHz	0.482MHz
2.	39	2441MHz	0.720MHz	0.480MHz
3.	78	2480MHz	0.723MHz	0.482MHz

The maximum two-thirds of the 20dB bandwidth shall be at maximum 0.482MHz.

4.6.2. Type of Modulation: 8-DPSK

No.	Channel	Test Frequency	20dB Bandwidth	2/3 (20dB Bandwidth)
1.	0	2402MHz	1.251MHz	0.834MHz
2.	39	2441MHz	1.248MHz	0.832MHz
3.	78	2480MHz	1.254MHz	0.836MHz

The maximum two-thirds of the 20dB bandwidth shall be at maximum 0.836MHz.



Figure 1: GFSK, Channel 0, Frequency: 2402MHz







Figure 3: GFSK, Channel 78, Frequency: 2480MHz

Figure 4: 8-DPSK, Channel 0, Frequency: 2402MHz





Figure 5: 8-DPSK, Channel 39, Frequency: 2441MHz





5. CARRIER FREQUENCY SEPARATION MEASUREMENT

5.1. Test Equipment

The following test equipment was used during the carrier frequency separation measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9020A	MY48011382	Sep. 22, 08'	Sep. 21, 09'

5.2. Block Diagram of Test Setup

The same as section.4.2.

5.3. Specification Limits (\$15.247(a)(1))

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output no greater than 125mW.

5.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

5.5. Test Procedure follow DA00-705

The transmitter output was connected to the spectrum analyzer. The channel separation was measure by spectrum analyzer with RBW equal to 1% of the span. The video bandwidth not to be smaller than resolution bandwidth, the peak was mark on adjacent bandwidth, the between of peak is carrier frequency separation.

5.6. Test Results

PASSED. All the test results are attached in next pages.

[Note: Two types of modulation (GFSK and 8-DPSK) were reported in this report.]

EUT: Bluetooth Embedded Module M/N: BCM92046MD_EMB

Test Date : Aug. 03, 2009 Temperature : 26 Humidity : 53 %

5.6.1. Type of Modulation: GFSK

- 1. 2402MHz adjacent channel of carrier frequency separation: 1.002MHz.
- 2. 2441MHz adjacent channel of right carrier frequency separation: 1.002MHz_o
- 3. 2441MHz adjacent channel of left carrier frequency separation: 1.002MHz_o
- 4. 2480MHz adjacent channel of carrier frequency separation: 1.002MHz_o

[Above values have met the requirement as specified in section 4.3: frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.]

5.6.2. Type of Modulation: 8-DPSK

- 1. 2402MHz adjacent channel of carrier frequency separation: 1.002MHz.
- 2. 2441MHz adjacent channel of right carrier frequency separation: 1.002MHz.
- 3. 2441MHz adjacent channel of left carrier frequency separation: 1.002MHz_o
- 4. 2480MHz adjacent channel of carrier frequency separation: 1.002MHz.

[Above values have met the requirement as specified in section 4.3: frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.]



Figure 1: 2402MHz adjacent channel of carrier frequency separation (GFSK)

Figure 2: 2441MHz adjacent channel of right carrier frequency separation (GFSK)

📱 Agilent Spectrum Analyzer - Swept SA 📃 🗖 🔀								
()0 Mark	50 Q	00000 MHz	AC	SENSE:INT	ALIGNAUTO AVI TVDE:	Log-Pwr	05:12:2 TR	1 PM 3./31, 200
mar		Input: RF	PNO: Far G	Trig: Free Run Atten: 16 dB	Avg Hold>	100/100	۲	DET P NNNN
10 dE	Miv Ref 5.00	dBm				4	Mkr1 1. -	002 MHz 0.458 dE
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-75.0								
-85.0								
Cent #Res	er 2.441000 GH BW 30 kHz	z	#VB	W 30 kHz		Sweet	Span 9 4.07 ms	3.000 MHz (1001 pts
MSG					STATUS			

Marker 1 Δ 1.002000000 M Input: I	Hz IF Gain:Low	D Trig: Free Run Atten: 16 dB	ALIGNAUTO Avg Type: Lo Avg Hold>100	05:12 8-Pwr 1/100	241 PM 3431, 20 TRACE 1 2 3 4 5 TYPE MWWWW
input F	RF PNO: Far G IFGain:Low	Trig: Free Run Atten: 16 dB	Avg Hold>100	100	TYPE MWWWW
					DET P NINININ
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5.0					
Jenter 2.441000 GHz Res BW 30 kHz	#VE	3W 30 kHz		Spar Sweep 4.07 m	n 3.000 MH Is (1001 pt
sg			STATUS		

Figure 3: 2441MHz adjacent channel of left carrier frequency separation (GFSK)

D Agi	ent Spectrum A	Inalyzer - Swept	SA				1	,	. [· ······	
1,00	50 0			A.C.	SENSE:INT	AL.	IGNAUTO		05:14:3	24 PM 3./31, 200
Marker 1 Δ 1.002000000 MHz Input: RF PN0: Far Trig: Free Run IFGain:Low Atten: 16 dB						Run	Avg Type: Log-Pwr Avg Hold>100/100			DET P N N N N
10 dE	Miv Ref	5.00 dBm							ΔMkr1 1. -	002 MHz 0.163 dE
-5.00		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Ą.							
-15.0 -25.0	ser and a series of the series		h	m	f	~	how			
-35.0 -45.0							V	h	~	
-55.0									- Jun	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
-75.0										
-85.0	- 0 1000									0.000 000
Cent #Res	er 2.48000 s BW 30 kl	lo GHz Hz		#VB	W 30 kHz			Swe	span ep 4.07 ms	3.000 MHz 6 (1001 pts
MSG							STATUS			

Figure 4: 2480MHz adjacent channel of carrier frequency separation (GFSK)


Figure 5: 2402MHz adjacent channel of carrier frequency separation (8-DPSK)

Figure 6: 2441MHz adjacent channel of right carrier frequency separation (8-DPSK)





Figure 7: 2441MHz adjacent channel of left carrier frequency separation (8-DPSK)

Figure 8: 2480MHz adjacent channel of carrier frequency separation (8-DPSK)



6. TIME OF OCCUPANCY MEASUREMENT

6.1. Test Equipment

The following test equipment was used during the time of occupancy measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9020A	MY48011382	Sep. 22, 08'	Sep. 21, 09'

6.2. Block Diagram of Test Setup

The same as section.4.2.

6.3. Specification Limits (\$15.247(a)(1)(iii))

Frequency hopping systems in the 2400-2483.5MHz shall use at least 15 non-overlapping channels. 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 number of hopping channels employed.

6.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

6.5. Test Procedure follow DA00-705

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 1MHz RBW and 1MHz VBW. VBW≥RBW ; Span=zero span.

Centered on a hopping channel sweep=as necessary to capture the entire dwell time per hopping channel ; Detector function=peak ; Trace=Max hold

6.6. Test Results

PASSED. All the test results are attached in next page. [Note: Two types of modulation (GFSK and 8-DPSK) were reported in this report.]

EUT: Bluetooth Embeddee	d Module	M/N:E	BCM92046MD_EMB	
Test Date : Aug. 05, 2009	Temperature	: 27	Humidity : 61 %	

6.6.1. Type of Modulation: GFSK, Test Frequency: 2402MHz

Duty cycle: 79channels*0.4 seconds = 31.6 seconds

- DH1 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH1 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 800 hops per second with 79 channels. So you have each channel 10.13 time per second and so for 31.6 seconds you have 320 time of appearance. Each Tx-time per appearance is 391.7us.
 10.13 time*31.6 seconds* 0.3917ms = 125.386ms (<400ms)
 - B. For each 5 seconds of 50 channels appearance, the longest time of occupancy for each of 31.6 seconds is:
 50 channels*31.6 seconds/5* 0.3917ms = 126.252ms (<400ms)
- DH3 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH3 packet need 3 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 400 hops per second with 79 channels. So you have each channel 5.1 time per second and so for 31.6 seconds you have 161 time of appearance. Each Tx-time per appearance is 1650us.
 5.1 time*31.6 seconds* 1.650ms = 265.914ms (<400ms)
 - B. For each 5 seconds of 25 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

25 channels*31.6 seconds/5* 1.650ms = 260.7ms (<400ms)

DH5 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH5 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 266.7 hops per second with 79 channels. So you have each channel 3.37 time per second and so for 31.6 seconds you have 106 time of appearance. Each Tx-time per appearance is 2883us.

3.37 time*31.6 seconds* 2.883ms = 307.016ms (<400ms)

B. For each 5 seconds of 17 channels appearance, the longest time of occupancy for each of 31.6 seconds is:
17 channels*31.6 seconds/5* 2.883ms = 309.749ms (<400ms)

💷 Agi	lent Spectrum J	nalyzer	- Swept SA												
1 00	50 9			Á	c	SENSE:I	NT	1	4.1GN	OTUAL			09:33:2	SAM Aug	06,2009
Vide	0 BW 1.0) MHZ	Innut: DE	PNO-1	Land C	Tri	g: Free	Run		Avg Type:	Log-P	WF	1	TYPE WW	3456
			input to	IFGain:	Low	At	ten: 16 d	B						DET P N	NNNN
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Log															_
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-35.0		\vdash	_	+	+	-			╟	_	-	+			
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-85.0		<u> </u>		+		-			+		-			-	
Can	tor 2 40200	0000	CH2											Snan	0 117
Res	BW 1.0 M	Hz	0112		#VB	w						Swee	n 8.333 ms	span (100	1 pts)
	III III									CTATUC		5	5.000 mi		. pes)
MSG										STATUS					

🗷 Agilent Spectrum Analyzer - Swept SA 11:37:15 AM Aug 06, 2009 TRACE 1 2 3 4 5 6 TYPE MULLION DET P NNNNN Avg Type: Log-Pwr Avg|Hold: 1/100 Center Freq 2.402000000 GHz PNO: Far Trig: Free Run IFGain:Low Atten: 16 dB Input: RF 10 dB/div Ref 5.00 dBm -5.00 -15.0 -25.0 -35.0 -45.0 -55.0 -65.0 W. W. 41, W. մն Wh ł ١ -75.0 -85.0 Center 2.402000000 GHz Res BW 100 kHz Span 0 Hz Sweep 5.000 s (1001 pts) #VBW 100 kHz

STATUS

Figure 1: GFSK, 2402MHz, DH1

💷 Agilent S	pectrum Analyzer - Swept SA					
Marker	50 Ω 1 Δ 1.65000 ms Input: R	F PNO: Fast C	SENSE:INT	ALIGNAUTO Avg Type:	09:33 Log-Pwr	TRACE 1 2 3 4 5 0 TYPE WWWWWW
10 dB/div	Ref 5.00 dBm	IFGain:Low	Atten: 10 ab		ΔMkr	1 1.650 ms -0.06 dE
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-85.0						
Center 2 Res BW	2.402000000 GHz 1.0 MHz	#V	BW		Sweep 8.333 n	Span 0 Hz ns (1001 pts
MSG				STATUS		

Figure 2: GFSK, 2402MHz, DH3



AUDIX Technology Corporation Report No. EM-F980571

💷 Agilent	Spectrum Analyzer - Swept SA			
()) Markov	50 R	AC SENSE:INT	ALIGNAUTO AVG THDE:	09:37:45 AM Aug 06, 200
marker	Input: R	F PNO: Fast Trig: Free IFGain:Low Atten: 16	dB	TYPE WWWWWW DET P NNNN
10 dB/di	iv Ref 5.00 dBm			ΔMkr1 2.892 ms -0.05 dE
			¹ ∆2 ¹ √2	
-5.00				
-15.0				
-25.0				
-35.0				
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.65.0				
	lainest later they		hyper the states	\\\\
-75.0				
-85.0				
Center Res BV	r 2.402000000 GHz W 1.0 MHz	#VBW		Span 0 Hz Sweep 8.333 ms (1001 pts
MSG			STATUS	

Figure 3: GFSK, 2402MHz, DH5



6.6.2. Type of Modulation : GFSK, Test Frequency : 2441MHz

Duty cycle: 79channels*0.4 seconds = 31.6 seconds

- DH1 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH1 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 800 hops per second with 79 channels. So you have each channel 10.13 time per second and so for 31.6 seconds you have 320 time of appearance. Each Tx-time per appearance is 391.7us.
 10.13 time*31.6 seconds* 0.3917ms = 125.386ms (<400ms)
 - B. For each 5 seconds of 50 channels appearance, the longest time of occupancy for each of 31.6 seconds is:
 50 channels*31.6 seconds/5* 0.3917ms = 126.252ms (<400ms)
- DH3 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH3 packet need 3 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 400 hops per second with 79 channels. So you have each channel 5.1 time per second and so for 31.6 seconds you have 161 time of appearance. Each Tx-time per appearance is 1650us.

5.1 time*31.6 seconds* 1.650ms = 265.914ms (<400ms)

B. For each 5 seconds of 25 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

25 channels*31.6 seconds/5* 1.650ms = 260.7ms (<400ms)

- DH5 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH5 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 266.7 hops per second with 79 channels. So you have each channel 3.37 time per second and so for 31.6 seconds you have 106 time of appearance. Each Tx-time per appearance is 2883us.
 3.37 time*31.6 seconds* 2.883ms = 307.016ms (<400ms)
 - B. For each 5 seconds of 17 channels appearance, the longest time of occupancy for each of 31.6 seconds is:
 17 channels*31.6 seconds/5* 2.883ms = 309.749ms (<400ms)





Figure 1: GFSK, 2441MHz, DH1



Figure 2: GFSK, 2441MHz, DH3



💷 Agi	ient Spectrum /	Analyzer - Swep	t SA						
<u>19</u>	50 0	00000		AC.	SENSE:INT	ALIG	NAUTO	09:38:2	4 AM Aug 06, 2005
Mari	Ker 1 Δ Z	.88333 ms	6 nput: RF I	PNO: Fast 🕞	Trig: Free Atten: 16 d	Run IB	Avg Type: Log-Pa		DET P NNNN
10 di	B/div Ref	5.00 dBm						∆Mkr1	2.883 ms -0.06 dB
Log					w.//			1∆2	
-5.00	~			<u>+</u>	%2			<u> </u>	ŕ~
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				- yerry	HAN			themather the second	
-75.0									
-85.0									
Cen	ter 2.4410	00000 GHz		#VP	M			ween 0.333 m	Span 0 Hz
MSG	BW 1.0 WI	12		#VD			STATUS		(1001 pts)
100									

Figure 3: GFSK, 2441MHz, DH5



6.6.3. Type of Modulation: GFSK, Test Frequency: 2480MHz

Duty cycle: 79channels*0.4 seconds = 31.6 seconds

- DH1 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH1 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 800 hops per second with 79 channels. So you have each channel 10.13 time per second and so for 31.6 seconds you have 320 time of appearance. Each Tx-time per appearance is 391.7us.
 10.13 time*31.6 seconds* 0.3917ms = 125.386ms (<400ms)
 - B. For each 5 seconds of 50 channels appearance, the longest time of occupancy for each of 31.6 seconds is:
 50 channels*31.6 seconds/5* 0.3917ms = 126.252ms (<400ms)
- DH3 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH3 packet need 3 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 400 hops per second with 79 channels. So you have each channel 5.1 time per second and so for 31.6 seconds you have 161 time of appearance. Each Tx-time per appearance is 1650us.

5.1 time*31.6 seconds* 1.650ms = 265.914ms (<400ms)

B. For each 5 seconds of 25 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

25 channels*31.6 seconds/5* 1.650ms = 260.7ms (<400ms)

- DH5 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH5 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 266.7 hops per second with 79 channels. So you have each channel 3.37 time per second and so for 31.6 seconds you have 106 time of appearance. Each Tx-time per appearance is 2883us.
 3.37 time*31.6 seconds* 2.883ms = 307.016ms (<400ms)
 - B. For each 5 seconds of 17 channels appearance, the longest time of occupancy for each of 31.6 seconds is:
 17 channels*31.6 seconds/5* 2.883ms = 309.749ms (<400ms)

D Ag	lent Spectrum	Analyzer - Swep	t SA							
<mark>M</mark> ar	ker1Δ3	91.667 µs	nput: RF	AC PNO: Fast FGain:Low	SENSE:INT Trig: Free I Atten: 16 d	Run IB	Avg Type:	Log-Pwr	09:35:1	13 AM Aug 06, 2009 IRACE 1 2 3 4 5 6 TYPE WWWWWW DET P NNNN
10 d	B/div Ref	5.00 dBm							∆Mkr1	391.7 µs 0.23 dB
-5.00					~		142			, r
-15.0										
-25.0				· · · · ·						
-35.0										
-45.0										
-55.0	لم			لے			لم			لم
-65.0	refleteret	hapatrija	anya l	rillynordylydd	Verman	M	alleagershair,	Nruety	NHY	Noline intern
-75.0										
-85.0										
Cen Res	ter 2.4800 BW 1.0 M	00000 GHz Hz		#VB	w		1	Swee	o 8.333 m	Span 0 Hz s (1001 pts)
MSG							STATUS			

Figure 1: GFSK, 2480MHz, DH1



🗊 Agilent S	pectrum Analyzer - Swe	pt SA							
00 Marker	50 Q	e	AC.	SENSE:INT	AL	Avg Type:	Log-Pwr	09:35:4/	9 AM Aug 06, 2009
marker	14 1.05000 11	Input: RF P	NO: Fast	Trig: Free Ru	n				DET P NNNN
		IF	Gain:Low	Attent to ab				AMkr1	1 650 me
10 dB/div	Ref 5.00 dBm	1							-0.10 dB
			W//		^{1∆2}				
-5.00					1	F			
-15.0									
-25.0									
-25.0			Í						
-35.0									
-45.0									
-55.0			لے			4			لم
-30.0									
-65.0		Maga Mar	hyth:		ule-printe	h ^a n		4 and the second second	4la
-75.0									
-85.0									
Center 2	2.48000000 GH	2	#\/B	16/			Curao		Span 0 Hz
Res BW	1.0 MHz		#VB			07.171.10	Swee	p 8.333 ms	(Too Tpts)
Mag						STATUS			

Figure 2: GFSK, 2480MHz, DH3



AUDIX Technology Corporation Report No. EM-F980571

🗊 Agi	lent Spectrum Analyz	ter - Swept SA						
C)0	50 Q		AC S	SENSE:INT	ALIGNAUTO		09:39:00 A	M Aug 06, 2009
<u>Mar</u> i	ker 1 Δ 2.883	333 ms Input: RF	PNO: Fast 😱 IFGain:Low	Trig: Free Run Atten: 16 dB	Avg Ty	pe: Log-Pwr	TRAC TYP	PE WWWWWWWWW PE WWWWWWWWWWWWWWWWWWW PET P NNNNN
10 di	B/div Ref 5.0	0 dBm					∆Mkr1 2.	.883 ms 0.07 dB
g					×			^{1∆2}
-5.00								
-15.0								
-25.0								
-35.0			_				++	
-45.0								
-55.0	l l f]			-1		++	_
-65.0	when help have			havisylogia	~~W			,Ugajajar
-75.0								
-85.0								
Con	tor 2 4800000							nan 0 Ha
Res	BW 1.0 MHz	JU GHZ	#VB	w		Swee	ep 8.333 ms (1001 pts)
MSG					STATUS			

Figure 3: GFSK, 2480MHz, DH5



6.6.4. Type of Modulation: 8-DPSK, Test Frequency: 2402MHz

Duty cycle: 79channels*0.4 seconds = 31.6 seconds

- DH1 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH1 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 800 hops per second with 79 channels. So you have each channel 10.13 time per second and so for 31.6 seconds you have 320 time of appearance. Each Tx-time per appearance is 391.7us.
 10.13 time*31.6 seconds* 0.3917ms = 125.386ms (<400ms)
 - B. For each 5 seconds of 50 channels appearance, the longest time of occupancy for each of 31.6 seconds is:
 50 channels*31.6 seconds/5* 0.3917ms = 126.252ms (<400ms)
- DH3 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH3 packet need 3 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 400 hops per second with 79 channels. So you have each channel 5.1 time per second and so for 31.6 seconds you have 161 time of appearance. Each Tx-time per appearance is 1625us.

5.1 time*31.6 seconds* 1.625ms = 261.885ms (<400ms)

B. For each 5 seconds of 25 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

25 channels*31.6 seconds/5* 1.625ms = 256.750ms (<400ms)

- DH5 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH5 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 266.7 hops per second with 79 channels. So you have each channel 3.37 time per second and so for 31.6 seconds you have 106 time of appearance. Each Tx-time per appearance is 2900us.
 3.37 time*31.6 seconds* 2.900ms = 308.826ms (<400ms)
 - B. For each 5 seconds of 17 channels appearance, the longest time of occupancy for each of 31.6 seconds is:
 17 channels*31.6 seconds/5* 2.900ms = 311.576ms (<400ms)



Figure 1: 8-DPSK, 2402MHz, DH1



1	gilent Spe	ctrum Analyzer - Swept	SA							
Ma	rkor 1	50 Q		A.C.	SENSE:INT	A	Ava Type:	Log-Pwr	10:13:3	3 AM Aug 06, 2009 MOI 1 2 3 4 5 7
ma	INCII	Δ 1.02500 IIIS	1put: RF	PNO: Fast 🕞	Trig: Free	Run				TYPE WWWWWWW
			1	Gain:Low	Atten: 16 d	1B				berp mana
									∆Mkr1	1.625 ms
10 c	dB/div	Ref 5.00 dBm								-0.80 aB
	1					N//		1Δ2		
-5.00	0 		بسطسعهل	**************************************	1	Second and		ň –	يسبعون معهدا	
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-25.0										
-2.3.1	Ĩ									
-35.0	0									
			Ý		,	l I			ļ.	
-45.0	0	(ll f					
-55.0	0									
		ALL BROKEN			Martineton I			and which are		
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-76.0										
-73.0										
-85.0	0									
Cel	nter 2. s BW 1	402000000 GHz		#VB	M			Sween	8 333 mg	Span 0 Hz (1001 pts)
n ea		1.0 14112		#46			07.00.00	oweep	0.000 118	(1001 pts)
MSG							STATUS			

Figure 2: 8-DPSK, 2402MHz, DH3



💷 Agilan	t Spectrum Analyzer -	Swept SA							
<u>, 100</u>	50 9		AC	SENSE:INT	AL	IGNAUTO	a a Daw	10:14:0	5 AM Aug 06, 2005
Marke	er 1 Δ 2.90000	Input: RF	PNO: Fast G	⊃ Trig: Free I Atten: 16 c	Run IB	Avg type:	Log-Pwr		DET P NNNN
10 dB/c	div Ref 5.00 d	Bm						∆Mkr1	2.900 ms -0.59 dB
-500 m						×			142
15.0									
-15.0									
-25.0									
.45.0		-				ŕ			
-55.0									
-65.0	and the second	N			maller	M			L. A
-75.0 —	r				r				Ŷ
-85.0 —									
Canto	r 2 402000000	CH7							Snan 0 Ha
Res B	W 1.0 MHz	GHZ	#VE	sw			Sweep	8.333 ms	span 0 Hz (1001 pts)
MSG						STATUS			

Figure 3: 8-DPSK, 2402MHz, DH5



6.6.5. Type of Modulation: 8-DPSK, Test Frequency: 2441MHz

Duty cycle: 79channels*0.4 seconds = 31.6 seconds

- DH1 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH1 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 800 hops per second with 79 channels. So you have each channel 10.13 time per second and so for 31.6 seconds you have 320 time of appearance. Each Tx-time per appearance is 391.7us.
 10.13 time*31.6 seconds* 0.3917ms = 125.386ms (<400ms)
 - B. For each 5 seconds of 50 channels appearance, the longest time of occupancy for each of 31.6 seconds is:
 50 channels*31.6 seconds/5* 0.3917ms = 126.252ms (<400ms)
- DH3 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH3 packet need 3 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 400 hops per second with 79 channels. So you have each channel 5.1 time per second and so for 31.6 seconds you have 161 time of appearance. Each Tx-time per appearance is 1625us.

5.1 time*31.6 seconds* 1.625ms = 261.885ms (<400ms)

B. For each 5 seconds of 25 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

25 channels*31.6 seconds/5* 1.625ms = 256.750ms (<400ms)

- DH5 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH5 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 266.7 hops per second with 79 channels. So you have each channel 3.37 time per second and so for 31.6 seconds you have 106 time of appearance. Each Tx-time per appearance is 2900us.
 3.37 time*31.6 seconds* 2.900ms = 308.826ms (<400ms)
 - B. For each 5 seconds of 17 channels appearance, the longest time of occupancy for each of 31.6 seconds is:
 17 channels*31.6 seconds/5* 2.900ms = 311.576ms (<400ms)



Figure 1: 8-DPSK, 2441MHz, DH1



💷 Agi	lent Spect	rum J	nalyzer - Swep	t SA													X
	kan d d	50 Q	60500			AC		SENSE:INT		AL,	IGNAUTO		on Dur	10:13	1:07	AM Aug 06,	2009
man	Ker 1 Z	1.1.	62500 ms	s nput: RF	PN	IO: Fast	G	Trig: Free	Run		~~ 9 ' 9	pe.	rog-r m		T	PE WWW	~~~~
					IFG	ain:Low		Atten: 16 d	18						1	SET IP IN IN I	N IN I
														∆Mkr1	11	.625 ו	ms
10 dE	B/div	Ref	5.00 dBm													0.75	dB
LUg					Τ											<u>_</u>	
-5.00		-								_		v.		•		2	
		Γ	aloran descendentes				$(\ $	Marchandress.	- + - Harrison - + - + - + - + - + - + - + - + - + -	۱.		152	alers - brown that of	-+-			$\left[\right]$
-15.0		+			+		+					⊢			+		+
				1 1													
-25.0		+			+		+			-		⊢			+		+
-35.0		+			+		+			-		⊢			+		+
		_ل				ſ					l r	1				ſ	
-45.0		_			+	- (\vdash	Í				+		_
-55.0					+	-				\vdash					+		_
	Austral				Ц	Maria										لمسرسها	
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75.0				'	1												
-75.U					T										T		
96.0																	
-05.0					Т										Т		
Cen	ter 2.44	100	00000 GHz										_		5	Span 0	Hz
Res	BW 1.0	NI MI	1Z			#	VB	w					Sweep	o 8.333 n	ns	(1001 p	ots)
MSG											STATUS						

Figure 2: 8-DPSK, 2441MHz, DH3



AUDIX Technology Corporation Report No. EM-F980571

💷 Agi	lent Spe	ctrum Anal	lyzer - Sw	ept SA								
<u>1</u>		50 Q				AC	SENSE:INT	A	LIGNAUTO	and Deriv	10:14:3	8 AM Aug 06, 2009
Mari	ker 1	Δ 2.90	0000 n	Input: R	F	PNO: Fast G	⊃ Trig: Free Atten: 16 d	Run 18	Avg Type:	Log-PWF		DET P NNNN
10 di	B/div	Ref 5.	00 dBr	n							∆Mkr1	2.900 ms -1.99 dB
-5.00					X				1 ∆2			
-15.0									1		1971-17 19 1999 1997 1997 1997 1997 1997	
-25.0			_							<u> </u>		
-35.0												
-45.0		_		_	ſ							
-55.0		_		_								
-65.0		_	f	herene	h				phinaster			
-75.0		_		_								
-85.0												
Cen Res	ter 2.4 BW 1	410000 .0 MHz	000 GH	Iz		#VE	w			Sweep) 8.333 ms	Span 0 Hz (1001 pts)
MSG									STATUS			

Figure 3: 8-DPSK, 2441MHz, DH5



6.6.6. Type of Modulation: 8-DPSK, Test Frequency: 2480MHz

Duty cycle: 79channels*0.4 seconds = 31.6 seconds

- DH1 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH1 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 800 hops per second with 79 channels. So you have each channel 10.13 time per second and so for 31.6 seconds you have 320 time of appearance. Each Tx-time per appearance is 391.7us.
 10.13 time*31.6 seconds* 0.3917ms = 125.386ms (<400ms)
 - B. For each 5 seconds of 50 channels appearance, the longest time of occupancy for each of 31.6 seconds is:
 50 channels*31.6 seconds/5* 0.3917ms = 126.252ms (<400ms)
- DH3 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH3 packet need 3 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 400 hops per second with 79 channels. So you have each channel 5.1 time per second and so for 31.6 seconds you have 161 time of appearance. Each Tx-time per appearance is 1625us.

5.1 time*31.6 seconds* 1.625ms = 261.885ms (<400ms)

B. For each 5 seconds of 25 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

25 channels*31.6 seconds/5* 1.625ms = 256.750ms (<400ms)

- DH5 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH5 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 266.7 hops per second with 79 channels. So you have each channel 3.37 time per second and so for 31.6 seconds you have 106 time of appearance. Each Tx-time per appearance is 2900us.
 3.37 time*31.6 seconds* 2.900ms = 308.826ms (<400ms)
 - B. For each 5 seconds of 17 channels appearance, the longest time of occupancy for each of 31.6 seconds is:
 17 channels*31.6 seconds/5* 2.900ms = 311.576ms (<400ms)



Figure 1: 8-DPSK, 2480MHz, DH1





Figure 2: 8-DPSK, 2480MHz, DH3





Figure 3: 8-DPSK, 2480MHz, DH5



7. NUMBER OF HOPPING CHANNELS MEASUREMENT

7.1. Test Equipment

The following test equipment was used during the number of hopping channels measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9020A	MY48011382	Sep. 22, 08'	Sep. 21, 09'

7.2. Block Diagram of Test Setup

The same as section.4.2.

7.3. Specification Limits (\$15.247(a)(1)(iii))

Frequency hopping systems which use fewer than 20 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels.

7.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

7.5. Test Procedure follow DA00-705

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100kHz RBW and 100kHz VBW. Sweep=Auto ; Detector function=peak ; Trace=Max hold

7.6. Test Results

PASSED. All the test results are attached in next page.

[Note: Two types of modulation (GFSK and 8-DPSK) were reported in this report.]

EUT : Bluetooth Embedded Module M/N : BCM92046MD_EMB

Test Date : Aug. 03, 2009 Temperature : 26 Humidity : 53 %

7.6.1. Type of Modulation: GFSK

The number hopping channel is 79.

7.6.2. Type of Modulation: 8-DPSK

The number hopping channel is 79.









8. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

8.1. Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9020A	MY48011382	Sep. 22, 08'	Sep. 21, 09'

8.2. Block Diagram of Test Setup

The same as section.4.2.

8.3. Specification Limits (§15.247(b)-(1))

The Limits of maximum Peak Output Power for frequency hopping systems in 2400-2483.5MHz is: 0.125Watt. (21dBm)

8.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in 4.4 except the test set up replaced by section 8.2.

8.5. Test Procedure follow DA00-705

The transmitter output was connected to the spectrum analyzer. Span can encompass the waveform RBW=VBW=1MHz Sweep=Auto

8.6. Test Results

PASSED. All the test results are attached in next pages.

[Note: Two types of modulation (GFSK and 8-DPSK) were reported in this report.]

EUT : Bluetooth Embedded Module M/N : BCM92046MD_EMB

Test Date : Aug. 03, 2009 Temperature : 26 Humidity : 53 %

8.6.1.Type of Modulation: GFSK

No.	Channel	Test Frequency	Peak Output Power	Limit
1.	0	2402MHz	1.278dBm	21dBm
2.	39	2441MHz	1.201dBm	21dBm
3.	78	2480MHz	0.828dBm	21dBm

8.6.2.Type of Modulation: 8-DPSK

No.	Channel	Test Frequency	Peak Output Power	Limit
1.	0	2402MHz	-1.451dBm	21dBm
2.	39	2441MHz	-2.359dBm	21dBm
3.	78	2480MHz	-4.973dBm	21dBm

💷 Agilent S	pectrum Analyz	er - Swept SA							
Marker	50 Q 1 2.40184	0000000 (Input: R	F PNO: Fast (IFGain:Low	Trig: Free R Atten: 16 d8	lun B	Avg Type: L Avg[Hold>1	.og-Pwr 100/100	04:27:1	06 PM 3ul 31, 2009 RACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N N
10 dB/div	Ref 5.00) dBm					M	kr1 2.401 1.	840 GHz 278 dBm
-5.00				_ 1_					
-15.0							$\overline{}$		
-25.0	T	1							
-35.0	1							لر	m
-55.0									المور .
-65.0									
-75.0									
-85.0									
Center 2 #Res BV	2.402000 G V 1.0 MHz	Hz	#V	BW 1.0 MHz			Swee	Span ep 1.00 ms	5.000 MHz (1001 pts)
MSG						STATUS			

Figure 1: GFSK, Channel 0, Frequency: 2402MHz





D Agilent Spi	ictrum Analyzer - Sv	vept SA		<i>,</i> 1	<u> </u>				
1,00	50 Q		AC.	SENSE:INT	ALI	GNAUTO		04:50:	42 PM 3ul 31, 200
Marker 1	2.47983000	Input: RF	PNO: Fast 🕞	Trig: Free F Atten: 16 d	Run	Avg Type: Avg Hold>	Log-Pwr 100/100	TF	DET P NNNN
10 dB/div	Ref 5.00 dB	m					M	kr1 2.479 0.	830 GHz 828 dBm
500				¶1_					
-5.00									
-15.0									
-25.0									
-35.0								l	N
-45.0									The second
-55.0									
-65.0									
-75.0									
-85.0									
Center 2.	480000 GHz						-	Span	5.000 MHz
#Res BW	1.0 MHZ		#VB	W 1.0 MHz		STATUS	Swe	ep 1.00 ms	: (1001 pts

Figure 3: GFSK, Channel 78, Frequency: 2480MHz

Figure 4: 8-DPSK, Channel 0, Frequency: 2402MHz

D Agilent Spectrum Analyzer - Swept SA			
U 50 Ω	AC SENSE:INT	ALIGNAUTO	10:30:44 AM Aug 06, 2005
Marker 1 2.401847000000 GHz Input: RF	PNO: Fast 🕞 Trig: Free IFGain:Low Atten: 16	Run Avg Hold>100/100 dB	DET P NNNN
10 dB/div Ref 5.00 dBm			Mkr1 2.401 847 GHz -1.451 dBm
Log	1		
-5.00			
in and the second se			
-15.0			
-25.0			
-35.0			
-45.0			
-55.0			
-65.0			
-75.0			
-85.0			
Center 2.402000 GHz #Res BW 1.0 MHz	#VBW 1.0 MHz		Span 3.000 MHz Sweep 1.00 ms (1001 pts)
MSG		STATUS	

D Agilent Spe	ctrum Analyzer - Sw	rept SA		,	1 9				
1,00	50 Q		AC.	SENSE:INT	AL	IGNAUTO		10:30:3	0 AM Aug 06, 2009
Marker 1	2.44085000	0000 GHz Input: RF	PNO: Fast Gain:Low	Trig: Free Atten: 16 d	Run IB	Avg Type: Avg Held>*	Log-Pwr 100/100	T	TYPE MWWWWWW DET P NNNN
10 dB/div	Ref 5.00 dBi	m					M	kr1 2.440 -2.	850 GHz 359 dBm
				↓ ¹					
-5.00							and the second days		
-15.0									
+25.0									
-35.0									
-45.0									
-55.0									
-65.0									
-75.0									
~ 0.0									
-85.0									
Center 2.4 #Res BW	141000 GHz 1.0 MHz		#VB	W 1.0 MHz			Swe	Span ep 1.00 ms	3.000 MHz (1001 pts)
MSG						STATUS		-	

Figure 5: 8-DPSK, Channel 39, Frequency: 2441MHz

Figure 6: 8-DPSK, Channel 78, Frequency: 2480MHz



9. EMISSION LIMITATIONS MEASUREMENT

9.1. Test Equipment

The following test equipment was used during the emission limitations measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9020A	MY48011382	Sep. 22, 08'	Sep. 21, 09'

9.2. Block Diagram of Test Setup

The same as section.4.2.

9.3. Specification Limits (§15.247(c))

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)).(This test result attaching to §3.6.3)

9.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

9.5. Test Procedure follow DA00-705

The transmitter output was connected to the spectrum analyzer. Set both RBW and VBW of spectrum analyzer to 100kHz with frequency range from 30MHz to 25GHz.

9.6. Test Results

PASSED. All the test results are attached in next pages.

[Note: Two types of modulation (GFSK and 8-DPSK) were reported in this report.]

EUT : Bluetooth Embedded Module M/N : BCM92046MD_EMB

Test Date : Aug. 03, 2009 Temperature : 26 Humidity : 53 %

- 9.6.1. Type of Modulation: GFSK
 - 1. 2402MHz: During 30MHz~25GHz bandwidth. In the 1.603GHz, the -55.982dBm is max value that is lower than 20dB of primary channel.
 - 2. 2441MHz: During 30MHz~25GHz bandwidth. In the 1.603GHz, the -56.139dBm is max value that is lower than 20dB of primary channel.
 - 3. 2480MHz: During 30MHz~25GHz bandwidth. In the 1.603GHz, the -55.636dBm is max value that is lower than 20dB of primary channel.

Note: The peak above the limit line is the carrier frequency.

- 9.6.2. Type of Modulation: 8-DPSK
 - 1. 2402MHz: During 30MHz~25GHz bandwidth. In the 1.603GHz, the -53.600dBm is max value that is lower than 20dB of primary channel.
 - 2. 2441MHz: During 30MHz~25GHz bandwidth. In the 1.628GHz, the -52.174dBm is max value that is lower than 20dB of primary channel.
 - 3. 2480MHz: During 30MHz~25GHz bandwidth. In the 1.653GHz, the -51.432dBm is max value that is lower than 20dB of primary channel.
 - Note: The peak above the limit line is the carrier frequency.


Figure 1: GFSK, Channel 0, Frequency: 2402MHz





🗊 Agil	ent Spectru	m Analyz	cer - Swept	SA						04.47	
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MSG		•						STATUS		00p 0.010	(1001 100

Figure 3: GFSK, Channel 78, Frequency: 2480MHz

Figure 4: 8-DPSK, Channel 0, Frequency: 2402MHz

💵 Agilent Spectrum Analyzer - Swept SA 📃 🗖 🔀											
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MSG								STATUS			



Figure 5: 8-DPSK, Channel 39, Frequency: 2441MHz



💷 Agi	lent Spec	trum A	nalyzer - Swep	t SA							
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MSG								STATUS			

10.BAND EDGES MEASUREMENT

10.1. Test Equipment

The following test equipment was used during the band edges measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9020A	MY48011382	Sep. 22, 08'	Sep. 21, 09'

10.2.Block Diagram of Test Setup

The same as section.4.2.

10.3. Specification Limits (§15.247(c))

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)). (This test result attaching to §3.6.3)

10.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

10.5. Test Procedure follow DA00-705

The transmitter output was connected to the spectrum analyzer. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100kHz bandwidth from band edge.

10.6.Test Results

PASSED. All the test results are attached in next pages.

[Note: Two types of modulation (GFSK and 8-DPSK) were reported in this report.]

EUT: Bluetooth Embedded Module M/N: BCM92046MD_EMB

Test Date : Aug. 03, 2009 Temperature : 26 Humidity : 53 %

10.6.1. Type of Modulation: GFSK

- 1. Upper Band edge: The highest emission level is 63.474dBm on 2.39990GHz_o
- 2. Below Band edge : The highest emission level is 66.897dBm on 2.48360GHz_o

10.6.2. Type of Modulation: 8-DPSK

- 1. Upper Band edge: The highest emission level is 51.455dBm on 2.39990GHz_o
- 2. Below Band edge : The highest emission level is 58.818dBm on 2.48360GHz_o



Figure 1: Upper Band edge (GFSK)



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MSG									STATUS			



Figure 1: Upper Band edge (8-DPSK)

Figure 2: Below Band edge (8-DPSK)



11.DEVIATION TO TEST SPECIFICATIONS

[NONE]