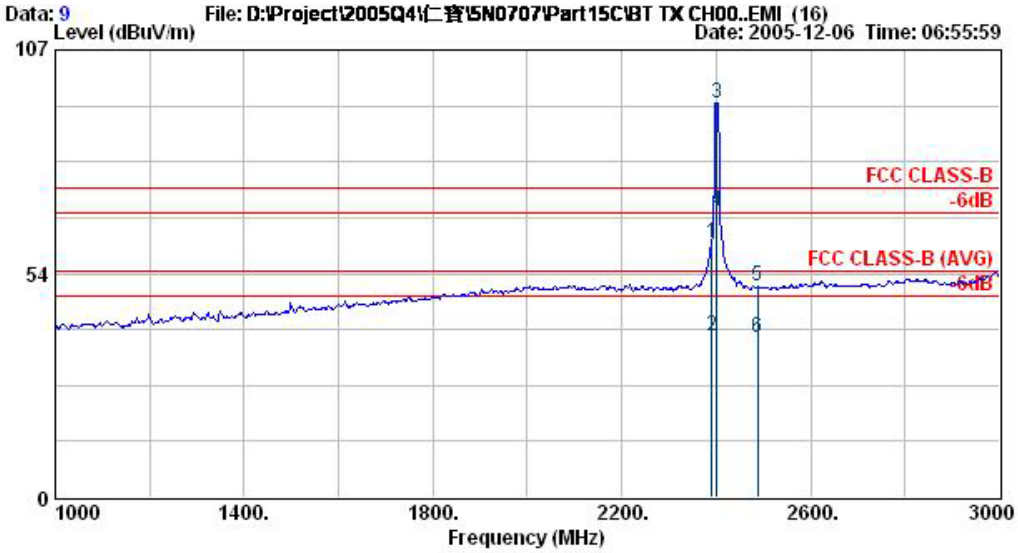
- Test Mode : Mode 1
- Polarization : Vertical

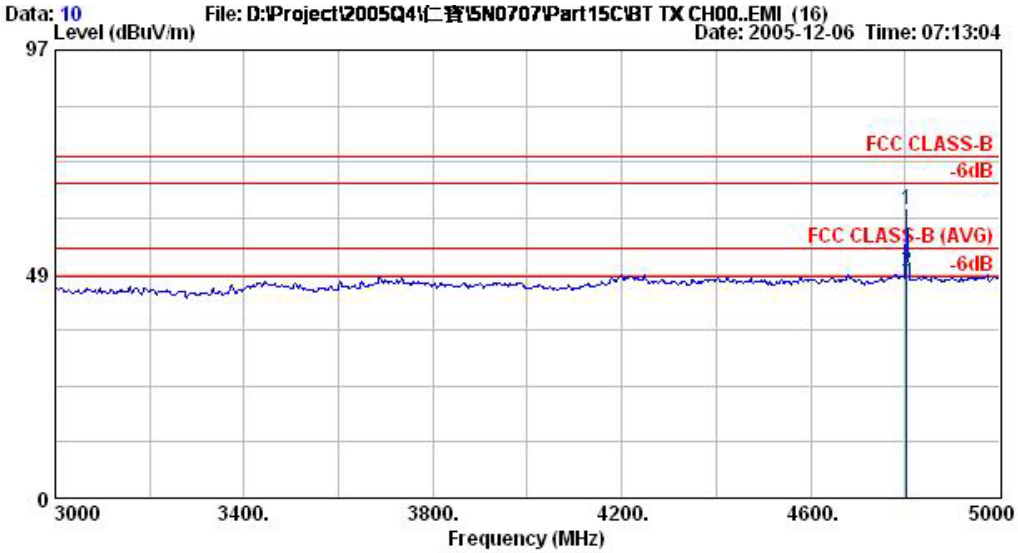
The test that passed at minimum margin was marked by the frame in the following table.



Site : 03CH06-HY
Condition : HF-ANT-071025-940201 VERTICAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5N0707
Memo : BT TX CH00;2402Mhz
Plane : E1

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		2390.00	60.98	-13.02	74.00	61.69	30.48	4.26	35.46	200	0	Peak
2		2390.00	38.62	-15.38	54.00	39.33	30.48	4.26	35.46	100	104	Average
3	X	2402.00	94.37			95.08	30.48	4.26	35.46	200	0	Peak
4	X	2402.00	68.49			69.20	30.48	4.26	35.46	100	104	Average
5		2488.00	50.35	-23.65	74.00	51.10	30.40	4.36	35.51	200	0	Peak
6		2488.00	38.36	-15.64	54.00	39.11	30.40	4.36	35.51	100	104	Average

Remark: #3 and #4 Fundamental Signal

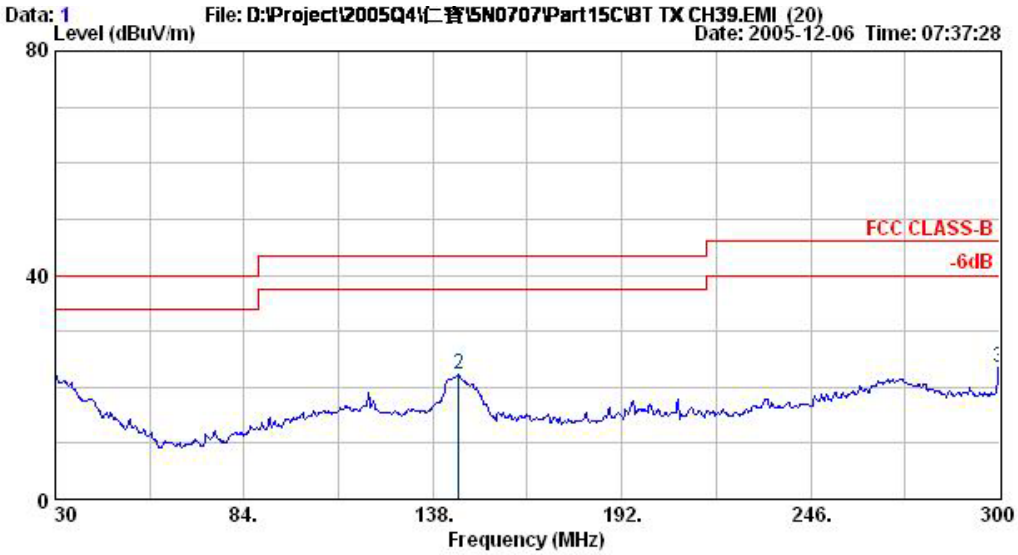


Site : 03CH06-HY
Condition : HF-ANT-071025-940201 VERTICAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5N0707
Memo : BT TX CH00;2402Mhz
Plane : E1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	4804.00	62.27	-11.73	74.00	59.00	33.16	6.21	36.10	200	360	Peak
2 !	4804.00	49.10	-4.90	54.00	45.83	33.16	6.21	36.10	100	161	Average

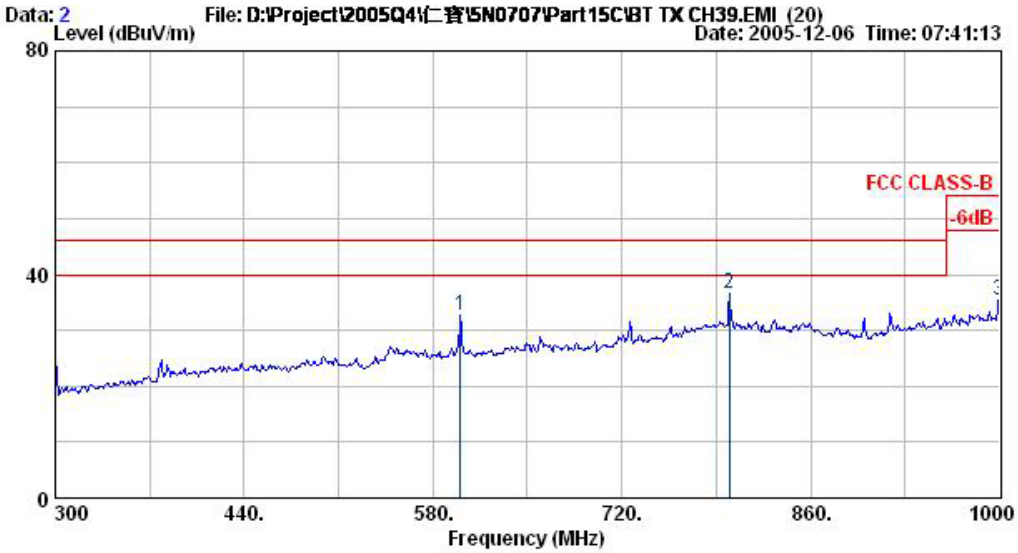
- Test Mode : Mode 2
- Polarization : Horizontal

The test that passed at minimum margin was marked by the frame in the following table.



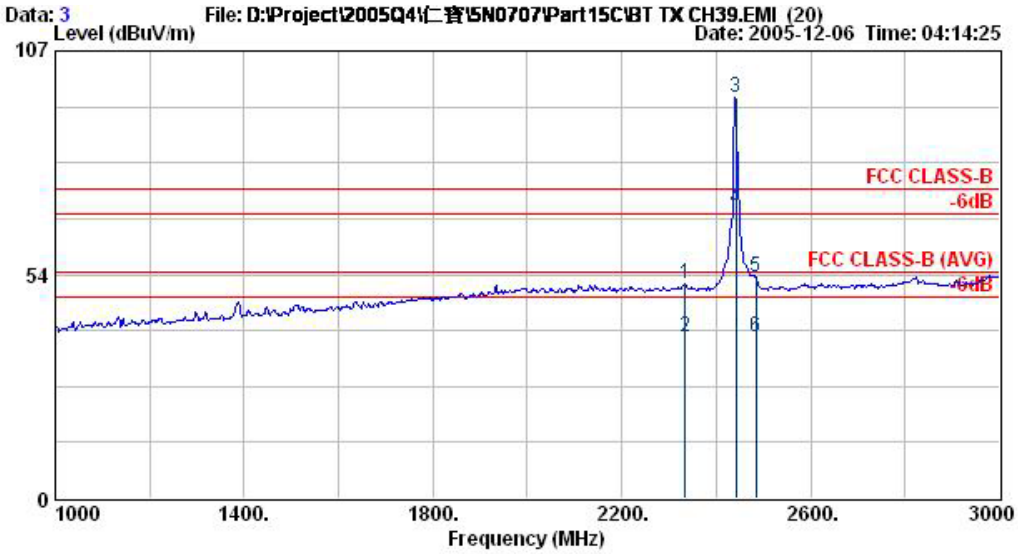
Site : 03CH06-HY
Condition : BI-LOG-2004-1122 HORIZONTAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5N0707
Memo : BT TX CH39;2441Mhz
Plane : E1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	30.00	22.09	-17.91	40.00	33.49	18.73	1.35	31.49	100	0	Peak
2 @	145.29	22.22	-21.28	43.50	40.90	9.85	2.94	31.49	100	0	Peak
3 @	300.00	23.37	-22.63	46.00	37.31	12.94	4.35	31.24	100	0	Peak



Site : 03CH06-HY
Condition : BI-LOG-2004-1122 HORIZONTAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5N0707
Memo : BT TX CH39;2441Mhz
Plane : E1

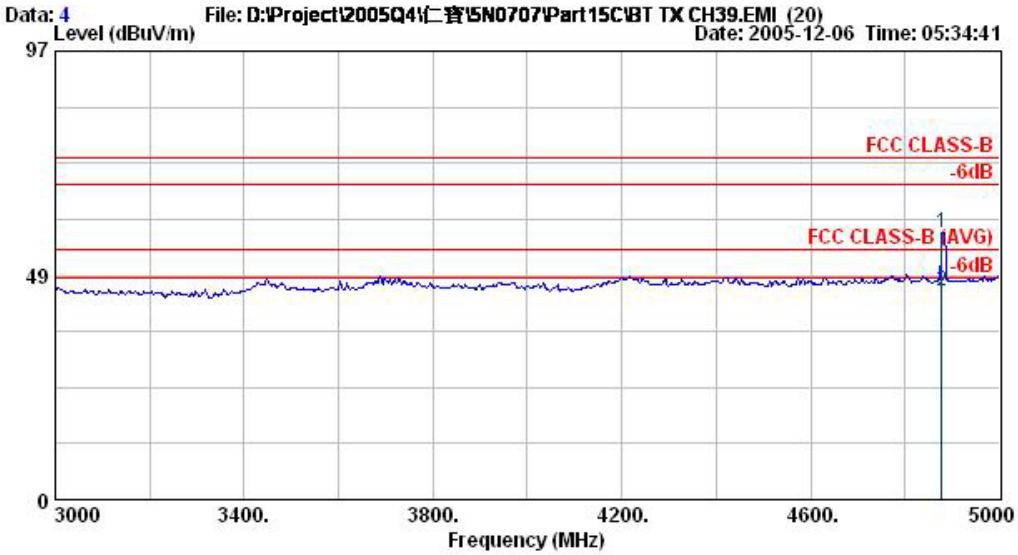
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	600.30	32.67	-13.33	46.00	39.02	17.94	6.35	30.64	100	0	Peak
2 @	799.80	36.51	-9.49	46.00	37.28	21.90	7.45	30.12	100	0	Peak
3 @	1000.00	35.28	-18.72	54.00	34.52	22.97	8.42	30.63	100	0	Peak



Site : 03CH06-HY
Condition : HF-ANT-071025-940201 HORIZONTAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5N0707
Memo : BT TX CH39;2441Mhz
Plane : E1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2334.00	51.19	-22.81	74.00	51.88	30.54	4.17	35.40	199	0	Peak
2 @	2334.00	38.76	-15.24	54.00	39.46	30.54	4.17	35.40	100	360	Average
3 @	2441.00	95.80			96.54	30.44	4.29	35.47	199	0	Peak
4 @	2441.00	69.18			69.91	30.44	4.33	35.49	100	360	Average
5 @	2483.50	52.75	-21.25	74.00	53.49	30.41	4.36	35.51	199	0	Peak
6 @	2483.50	38.53	-15.47	54.00	39.27	30.41	4.36	35.51	100	360	Average

Remark: #3 and #4 Fundamental Signal

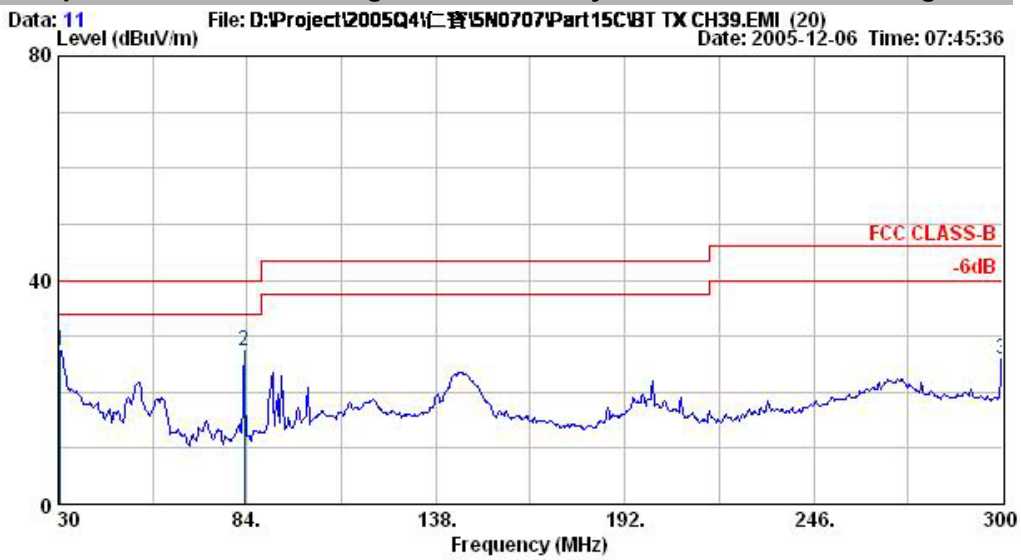


Site : 03CH06-HY
Condition : HF-ANT-071025-940201 HORIZONTAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5N0707
Memo : BT TX CH39;2441Mhz
Plane : E1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	4878.00	57.85	-16.15	74.00	54.32	33.39	6.30	36.16	200	0	Peak
2 @	4878.00	45.10	-8.90	54.00	41.57	33.39	6.30	36.16	100	336	Average

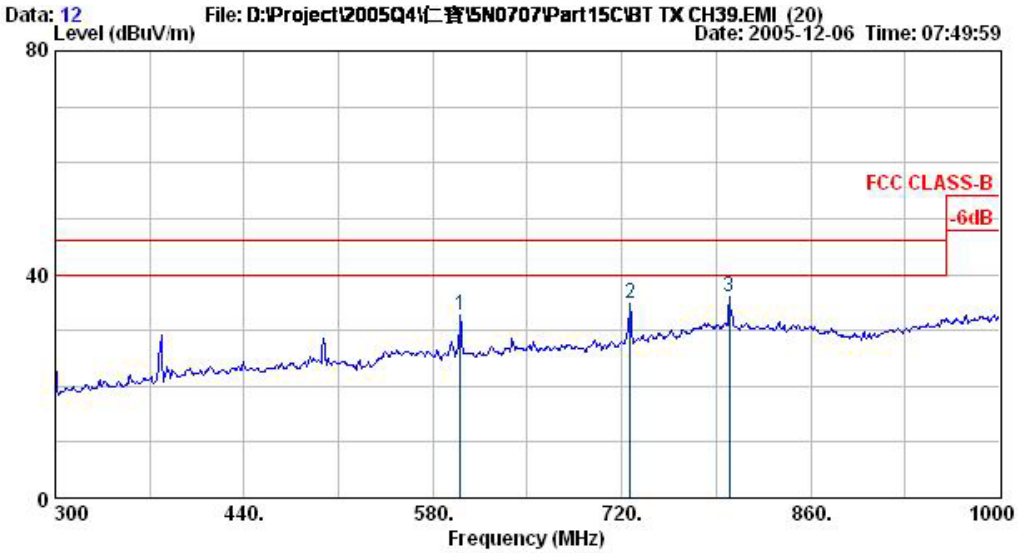
- Test Mode : Mode 2
- Polarization : Vertical

The test that passed at minimum margin was marked by the frame in the following table.



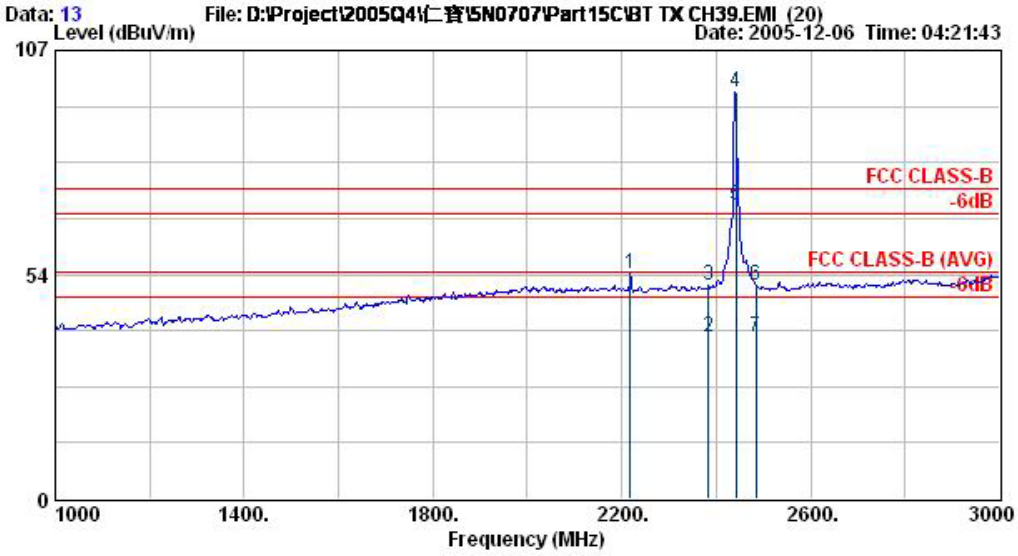
Site : 03CH06-HY
Condition : BI-LOG-2004-1122 VERTICAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5N0707
Memo : BT TX CH39;2441Mhz
Plane : E1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	30.54	27.50	-12.50	40.00	39.25	18.40	1.37	31.52	400	0	Peak
2 @	83.19	27.22	-12.78	40.00	48.94	7.66	2.20	31.58	400	0	Peak
3 @	300.00	25.77	-20.23	46.00	39.71	12.94	4.35	31.24	400	0	Peak



Site : 03CH06-HY
Condition : BI-LOG-2004-1122 VERTICAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5N0707
Memo : BT TX CH39;2441Mhz
Plane : E1

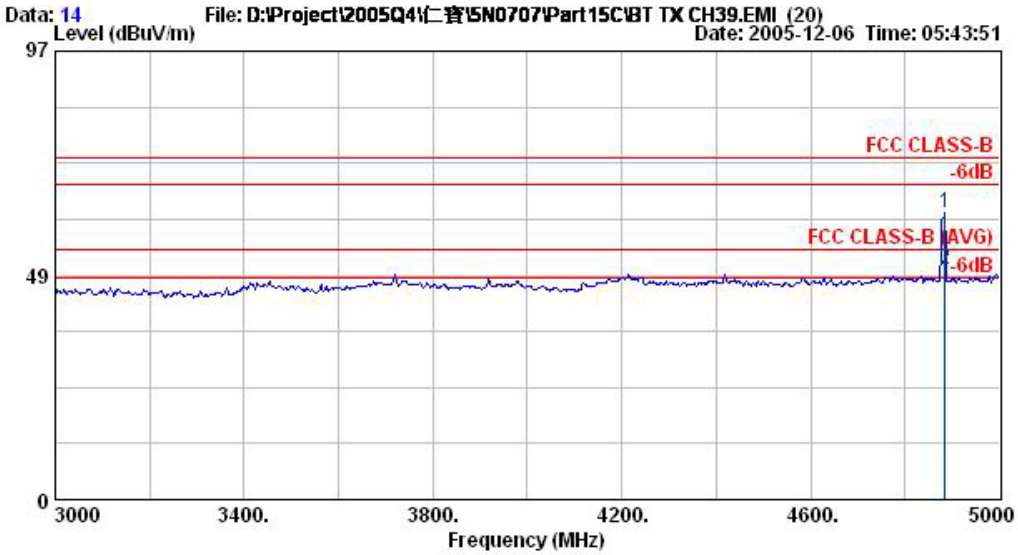
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	600.30	32.82	-13.18	46.00	39.17	17.94	6.35	30.64	100	0	Peak
2 @	726.30	34.69	-11.31	46.00	38.40	19.79	7.03	30.53	100	0	Peak
3 @	799.80	35.98	-10.02	46.00	36.75	21.90	7.45	30.12	100	0	Peak



Site : 03CH06-HY
Condition : HF-ANT-071025-940201 VERTICAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5N0707
Memo : BT TX CH39;2441Mhz
Plane : E1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2218.00	53.80	-20.20	74.00	54.47	30.62	4.04	35.33	200	360	Peak
2 @	2384.00	38.43	-15.57	54.00	39.14	30.50	4.23	35.44	100	103	Average
3 @	2384.00	50.80	-23.20	74.00	51.51	30.50	4.23	35.44	200	360	Peak
4 @	2441.00	97.11			97.85	30.44	4.29	35.47	200	360	Peak
5 @	2441.00	69.89			70.62	30.44	4.33	35.49	100	103	Average
6 @	2483.50	50.85	-23.15	74.00	51.59	30.41	4.36	35.51	200	360	Peak
7 @	2483.50	38.50	-15.50	54.00	39.24	30.41	4.36	35.51	100	103	Average

Remark: #3 and #4 Fundamental Signal

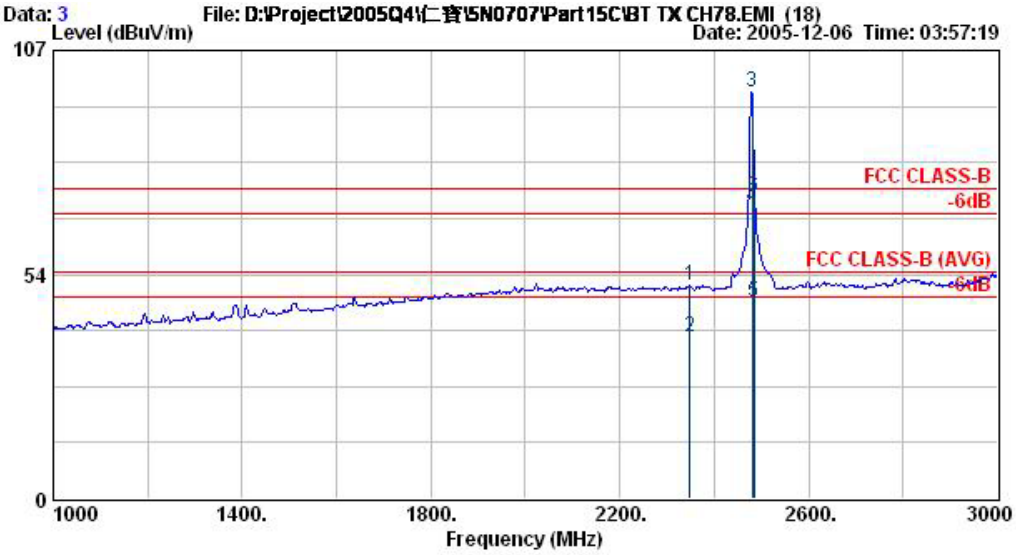


Site : 03CH06-HY
Condition : HF-ANT-071025-940201 VERTICAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5N0707
Memo : BT TX CH39;2441Mhz
Plane : E1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	4884.00	61.96	-12.04	74.00	58.43	33.39	6.30	36.16	200	360	Peak
2 @	4884.00	49.75	-4.25	54.00	46.22	33.39	6.30	36.16	100	169	Average

- Test Mode : Mode 3
- Polarization : Horizontal

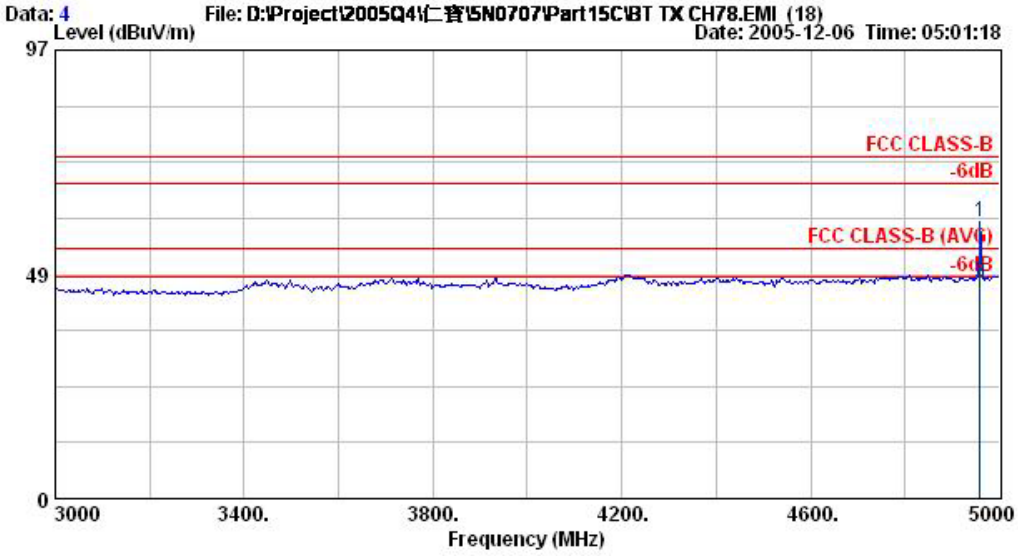
The test that passed at minimum margin was marked by the frame in the following table.



Site : 03CH06-HY
Condition : HF-ANT-071025-940201 HORIZONTAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5n0707
Memo : BT TX CH78;2480Mhz
Plane : E1

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		2348.00	50.91	-23.09	74.00	51.61	30.52	4.20	35.42	100	0	Peak
2		2348.00	38.56	-15.44	54.00	39.26	30.52	4.20	35.42	100	360	Average
3	X	2480.00	97.10			97.84	30.41	4.36	35.51	100	0	Peak
4	X	2480.00	69.66			70.40	30.41	4.36	35.51	100	360	Average
5		2483.50	47.00	-7.00	54.00	47.74	30.41	4.36	35.51	100	360	Average
6		2483.50	72.10	-1.90	74.00	72.84	30.41	4.36	35.51	100	0	Peak

Remark: #3 and #4 Fundamental Signal.

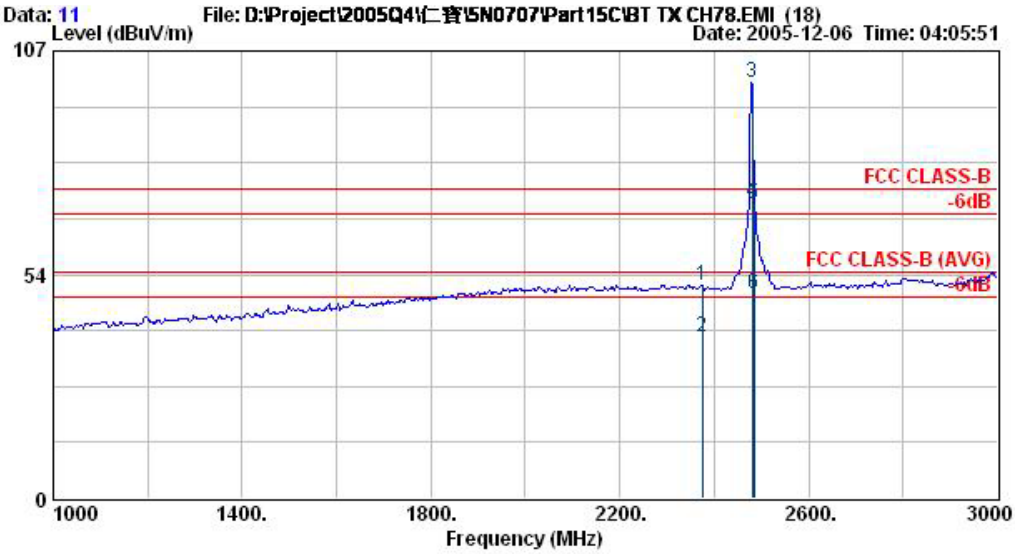


Site : 03CH06-HY
Condition : HF-ANT-071025-940201 HORIZONTAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5N0707
Memo : BT TX CH78;2480Mhz
Plane : E1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	4958.00	59.80	-14.20	74.00	55.95	33.68	6.39	36.23	200	0	Peak
2	4958.00	46.75	-7.25	54.00	42.90	33.68	6.39	36.23	100	335	Average

- Test Mode : Mode 3
- Polarization : Vertical

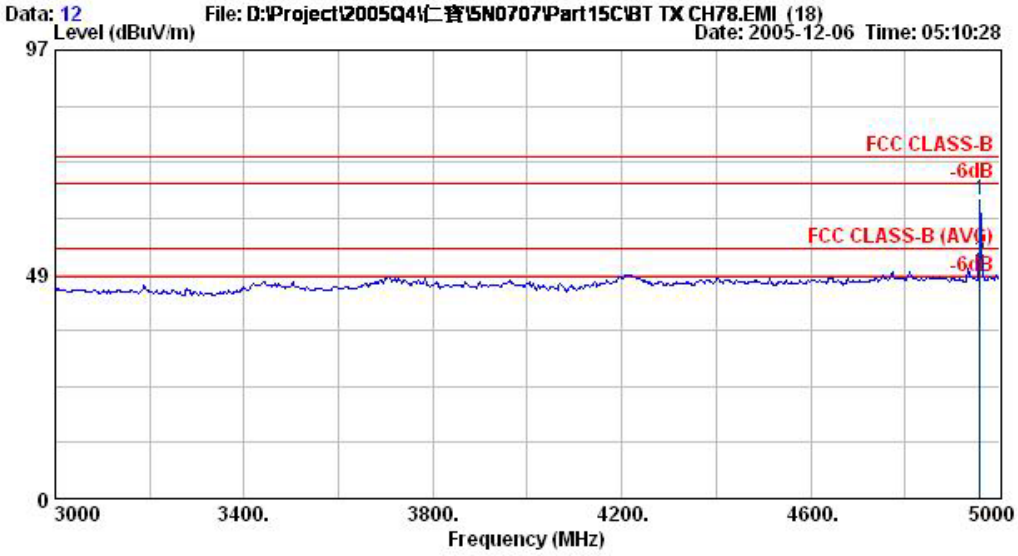
The test that passed at minimum margin was marked by the frame in the following table.



Site : 03CH06-HY
Condition : HF-ANT-071025-940201 VERTICAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5N0707
Memo : BT TX CH78;2480Mhz
Plane : E1

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		2374.00	50.84	-23.16	74.00	51.55	30.50	4.23	35.44	200	360	Peak
2		2374.00	38.50	-15.50	54.00	39.21	30.50	4.23	35.44	100	102	Average
3	@	2480.00	99.25			99.99	30.41	4.36	35.51	200	360	Peak
4	X	2480.00	70.78			71.52	30.41	4.36	35.51	100	102	Average
5	!	2483.50	70.49	-3.51	74.00	71.23	30.41	4.36	35.51	200	360	Peak
6	!	2483.50	48.75	-5.25	54.00	49.49	30.41	4.36	35.51	100	102	Average

Remark: #3 and #4 Fundamental Signal



Site : 03CH06-HY
Condition : HF-ANT-071025-940201 VERTICAL
EUT : GSM/GPRS/WCDMA Mobile Phone(Bluetooth)
Power : 120Vac/60Hz
Model : FR5N0707
Memo : BT TX CH78;2480Mhz
Plane : E1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	4958.00	64.69	-9.31	74.00	60.85	33.68	6.39	36.23	200	360	Peak
2 !	4958.00	51.28	-2.72	54.00	47.43	33.68	6.39	36.23	100	251	Average

Remark:

1. There is no more obvious spurious emission except the listings above.
2. E1 plane is the worst case.

5.10 Antenna Requirements

5.10.1 Standard Applicable

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

And according to FCC 47 CFR Section 15.247 (b), if directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

5.10.2 Antenna Connected Construction

The antenna used in this product is a embedded antenna without connecter and it is considered to meet antenna requirement of FCC.

5.10.3 Antenna Gain

The antenna gain of EUT is less than 6dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

6. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Feb. 19, 2005	Feb. 19, 2006	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001/009	9kHz – 30MHz	Apr. 26, 2005	Apr. 26, 2006	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001/008	9kHz – 30MHz	May 06, 2005	May 06, 2006	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450Hz	N/A	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 – 60Hz	N/A	N/A	Conduction (CO01-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9kHz – 30MHz	Dec. 23, 2004	Dec. 23, 2005	Conduction (CO01-HY)
Antenna Mast	INN-CO	MM3000	114/8000604/L	1m~4m	NCR	N/A	Radiation (03CH06-HY)
Bilog Antenna	Schaffner	CBL6112B	2885	30MHz~2GHz	Nov. 21, 2004	Nov. 20, 2006	Radiation (03CH06-HY)
Controller	INN-CO	CO2000	114/8000604/L	N/A	NCR	N/A	Radiation (03CH06-HY)
Digital Radio Communication	R&S	CMD55	832796/0061	RF Link	Feb. 18, 2004	Feb. 17, 2006	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Com-Power	AH118	071025	1G~18G	Feb. 01, 2005	Jan. 31, 2006	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESCS30	100356	9KHz~2.75GHz	Jun. 28, 2005	Jun. 27, 2006	Radiation (03CH06-HY)
PreAmplifier	Agilent	8449B	3008A01917	1~26.5GHz	Mar. 29, 2005	Mar. 28, 2006	Radiation (03CH06-HY)
PreAmplifier	Com-Power	PA-103	161055	1MHz~1000MHz	Mar. 29, 2005	Mar. 28, 2006	Radiation (03CH06-HY)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	9170-249	14G~40G	Jul. 21, 2004	Jul. 20, 2006	Radiation (03CH06-HY)
Spectrum Analyzer	Agilent	E4408B	MY44211030	9KHz~26.5GHz	Jul. 25, 2004	Jul. 24, 2006	Radiation (03CH06-HY)
Turn Table	INN-CO	DS2000	420/650/00	0~360 Degree	NCR	N/A	Radiation (03CH06-HY)

7. Uncertainty Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.10	Normal(k=2)	0.05
Cable loss	0.10	Normal(k=2)	0.05
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.39	Rectangular	0.80
Mismatch	+0.34/-0.35	U-shape	0.24
combined standard uncertainty Uc(y)	**1.13**		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	**2.26**		

Uncertainty of Radiated Emission Evaluation (30MHz ~ 1000MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.15	Normal(k=2)	0.08
Antenna factor calibration	1.12	Normal(k=2)	0.56
Cable loss calibration	0.12	Normal(k=2)	0.06
Pre Amplifier Gain calibration	0.13	Normal(k=2)	0.07
RCV/SPA specification	2.5	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1	Rectangular	0.29
Site imperfection	2.1	Rectangular	1.21
Mismatch	+0.39/-0.41	U-shaped	0.28
combined standard uncertainty Uc(y)	**1.58**		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	**3.16**		

Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of x_i		$u(x_i)$	Ci	$Ci*u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	±1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	±0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1= 0.197 Antenna VSWR Γ2= 0.194 Uncertainty=20log(1-Γ1*Γ2*Γ3)	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty Uc(y)	**2.36**				
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	**4.72**				