

# **FCC TEST REPORT**

**For**

**Bluetooth Dongle  
Model No.: BT-2045**

of

Applicant: Erite Technology Co., Ltd  
Address: 1F., No.10, Lane 151, Sec. 2, Dusing Rd., Banciao City,  
Taipei County 220, Taiwan (R.O.C.)

Tested and Prepared  
by



**ETS Product Service (Taiwan) CO., LTD**

**FCC Registration No.: 930600**

**Industry Canada filed test laboratory Reg. No. IC 5679**

**A2LA Accredited No.: 2300.01**

**PTCRB Accredited Type Certification Test House**

**FCC ID:VBI-BT2045**

**Report No.: W6M20704-8016-P-15**

Registration number: W6M20704-8016-P-15  
FCC ID: VBI-BT2045

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## **1 General Information**

### **1.1 Notes**

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.

The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.

Furthermore, there is no guarantee that a test sample which has Passed all the relevant tests conforms to a specification.

Neither is there any guarantee that such a test sample will interwork with other genuinely open systems. The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that its performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.

The test report may only be reproduced or published in full.

Reproduction or publication of extracts from the report requires the prior written approval of the ETS Product Service (Taiwan) CO., LTD.

### **Tester:**

May 29, 2007

Jay Chaing

A handwritten signature in cursive script that reads 'Jay Chaing'.

Date

ETS-Lab.

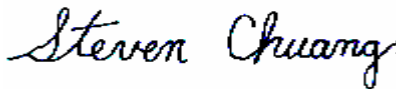
Name

Signature

### **Technical responsibility for area of testing:**

May 29, 2007

Steven Chuang

A handwritten signature in cursive script that reads 'Steven Chuang'.

Date

ETS

Name

Signature

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## **1.2 Testing laboratory**

### **1.2.1 Location**

OATS

No.5-1, Shuang Sing Village,  
LiShuei Rd., Wanli Township,  
Taipei County 207, Taiwan (R.O.C.)

Company

ETS Product Service ( Taiwan ) CO., LTD  
6F, NO. 58, LANE 188, RUEY-KUANG RD.  
NEIHU, TAIPEI 114, TAIWAN R.O.C.

Tel : 886-2-66068877

Fax : 886-2-66068879

### **1.2.2 Details of accreditation status**

**Accredited testing laboratory**

**A2LA accredited number: 2300.01**

**FCC filed test laboratory Reg. No. 930600**

**Industry Canada filed test laboratory Reg. No. IC 5679**

**PTCRB Accredited Type Certification Test House**

## **1.3 Details of approval holder**

Name:	Erite Technology Co., Ltd
Street:	1F., No.10, Lane 151, Sec. 2, Dusing Rd., Banciao City,
Town:	Taipei County 220,
Country:	Taiwan (R.O.C.)
Telephone:	+886-2-8687-3242
Fax:	+886-2-2675-4849
Teletex:	./.

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#### **1.4 Application details**

Date of receipt of application : April 24, 2007  
Date of receipt of test item : May 09, 2007  
Date of test : From May 10, 2007 to May 29, 2007

#### **1.5 General information of Test item**

Type of test item : Bluetooth Dongle

Model Number : BT-2045

Multi-listing model number : BD-848 , BD-898 , BD-508 , BD-901  
(The color and appearance are different. BT-2045 is black, and BD-848 is purple. BD-898, BD-508 and BD-901 use different outer coverings.)

Photos : see Appendix

Technical data

Frequency band : 2.400-2.4835 GHz

Operation Frequency : 2.402-2.480 GHz

Frequency 1 : 2.402 GHz

Frequency 2 : 2.441 GHz

Frequency 3 : 2.480 GHz

Operation modes : simplex

Modulation Type : FHSS

Antenna type : Dipole Antenna

Power supply : 5 VDC ( power on PC )

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**Manufacturer:**

(if different from applicant)

Name : ./.  
Street : ./.  
Town : ./.  
Country : ./.

Additional information : --

**1.6 Test standards**

Technical standard : FCC RULES PART 15 SUBPART B / SUBPART C § 15.249 : August 2006

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## **2 Technical test**

### **2.1 Summary of test results**

No deviations from the technical specification(s) were ascertained in the course of the tests performed.



**or**

The deviations as specified in 2.5 were ascertained in the course of the tests performed.



### **2.2 Test environment**

Temperature	: 23 °C
Relative humidity content	: 20 ... 75 %
Air pressure	: 86 ... 103 kPa
Details Power supply	: 5 VDC ( power on PC )
Extreme conditions parameters	: Not required

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## 2.3 Test Equipment List

No.	Test equipment	Type	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2006/10/16	2007/10/15
ETSTW-CE 002	PREREULATOR MODE DC POWER SUPPLY	None	None		Function Test	
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Function Test	
ETSTW-CE 004	ZWEILEITER-V-NETZNACHBILDUNG TWO-LINE V-NETWORK	ESH3-Z5	840731/011	R&S	2006/10/16	2007/10/15
ETSTW-CE 005	Line-Impedance Stabilisation Network	NNBM 8126D	137	Schwarzbeck	2006/10/16	2007/10/15
ETSTW-CE 006	IMPULSBEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	In House Certificate	
ETSTW-CE 008	ABSORBING CLAMP	MDS 21	3469	Schwarzbeck	2005/10/24	2007/10/23
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2006/8/17	2007/8/16
ETSTW-CE 013	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T4-02	20242	FCC	2005/12/8	2007/12/7
ETSTW-CE 014	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T2-02	20241	FCC	2005/12/7	2007/12/6
ETSTW-CE 015	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T8-02	20307	FCC	2006/11/7	2008/11/6
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2006/11/21	2007/11/20
ETSTW-RE 002	Function Generator	33220A	MY43004982	Agilent	2005/10/14	2007/10/13
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2006/10/20	2007/10/19
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2006/10/30	2007/10/29
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2006/10/12	2007/10/11
ETSTW-RE 010	PROGRAMMABLE LINEAR POWER SUPPLY	LPS-305	30503070181	MOTECH	Function Test	
ETSTW-RE 011	PROGRAMMABLE LINEAR POWER SUPPLY	LPS-305	30503070165	MOTECH	Function Test	
ETSTW-RE 017	Log-Periodic Antenna	HL025	352886/001	R&S	2006/5/4	2008/5/3
ETSTW-RE 018	MICROWAVE HORN ANTENNA	AT4560	27212	AR	2004/11/8	2007/11/7
ETSTW-RE 020	MICROWAVE HORN ANTENNA	AT4002A	306915	AR	Function Test	
ETSTW-RE 021	SWEEP GENERATOR	SWM05	835130/010	R&S	2006/10/11	2007/10/10
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	EMCO	2004/6/30	2007/6/29
ETSTW-RE 028	Log-Periodic DipoleArray Antenna	3148	34429	EMCO	2006/5/26	2008/5/25
ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	2006/5/26	2008/5/25
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	EMCO	2006/5/3	2008/5/2
ETSTW-RE 032	Millivoltmeter	URV 55	849086/013	R&S	2006/10/11	2007/10/10
ETSTW-RE 033	WaveRunner 6000A Serise Oscilloscope	WAVERUNNER 6100A	LCRY0604P14508	LeCroy	2006/7/27	2007/7/26
ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2005/10/17	2007/10/16
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2007/1/11	2009/1/10
ETSTW-RE 043	Log-Periodic Dipole Antenna	HL223	100166	R&S	2006/5/8	2008/5/7
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2006/5/29	2008/5/28



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ETSTW-RE 048	Triple Loop Antenna	HXYZ 9170	HXYZ 9170-134	Schwarzbeck	2005/3/22	2008/3/21
ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2007/5/02	2009/5/01
ETSTW-RE 055	SPECTRUM ANALYZER	FSU-26	200074	R&S	2006/7/28	2007/7/27
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	Function Test	

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## 2.4 General Test Procedure

**POWER LINE CONDUCTED INTERFERENCE:** The procedure used was ANSI STANDARD C63.4-2003 using a 50μH LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

**RADIATION INTERFERENCE:** The test procedure used was according to ANSI STANDARD C63.4-2003 employing a spectrum analyzer. For investigated frequency is equal to or below 1GHz, the RBW and VBW of the spectrum analyzer was 100 kHz and 100kHz respectively with an appropriate sweep speed. For investigated frequency is above 1GHz, both of RBW and VBW of the spectrum analyzer were 1 MHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The ambient temperature of the EUT was 23°C with a humidity of 40 %.

**FORMULA OF CONVERSION FACTORS:** The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBμV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

Freq (MHz)	METER READING + ACF + CABLE LOSS (to the receiver) = FS
33	20 dBμV + 10.36 dB + 6 dB = 36.36 dBμV/m @3m

**ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES:** The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table). The EUT was placed in the center of the table. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to 10<sup>th</sup> harmonic of the fundamental.

Peak readings were taken in three (3) orthogonal planes and the highest readings.

Measurements were made by ETS Dr. Genz GmbH at the registered open field test site located at No.5-1, Shuang Sing Village, LiShuei Rd., Wanli Township, Taipei County 207, Taiwan (R.O.C.) The Registration Number: 930600.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

**ANTENNA & GROUND:**

**This unit uses Dipole Antenna (see photo).**

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### **3 Test results (enclosure)**

<b>TEST CASE</b>	<b>Para. Number</b>	<b>Required</b>	<b>Test passed</b>	<b>Test failed</b>
Peak Output Power	15.249 (a)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spurious Emissions radiated – Transmitter operating	15.249 (e)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spurious Emissions conducted – Transmitter operating	15.249 (e)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radiated Emission from Digital Part And Receiver L.O.	15.109	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Out of Band Spurious Emission, Band edge-Transmitter operating	15.249 (e)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Power Line Conducted Emission	15.207	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The follows is intended to leave blank.

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### 3.1 Peak Output Power (transmitter)

FCC Rule: 15.249 (b)

This measurement applies to equipment with an integral antenna and to equipment with an antenna connector and equipped with an antenna as declared by the applicant.

The power was measured with modulation (declared by the applicant).

#### Normal Mode

Test conditions		Conducted Power		
		Channel A [dBm]	Channel B [dBm]	Channel C [dBm]
$T_{nom} = 23^{\circ}\text{C}$	$V_{nom} = 3.3\text{ V}$	-2.65	-2.33	-2.27

Test conditions		Radiated Power		
		Channel A [dBm]	Channel B [dBm]	Channel C [dBm]
$T_{nom} = 23^{\circ}\text{C}$	$V_{nom} = 3.3\text{ V}$	--	--	--

#### EDR Mode

Test conditions		Conducted Power		
		Channel A [dBm]	Channel B [dBm]	Channel C [dBm]
$T_{nom} = 23^{\circ}\text{C}$	$V_{nom} = 3.3\text{ V}$	-0.65	-0.51	-0.40

Test conditions		Radiated Power		
		Channel A [dBm]	Channel B [dBm]	Channel C [dBm]
$T_{nom} = 23^{\circ}\text{C}$	$V_{nom} = 3.3\text{ V}$	--	--	--

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028  
ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044

Comments: Please see attached diagrams as appendix.

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### 3.2 Equivalent isotropic radiated power

Because using an permanent antenna there are no deviations from the radiated test results according 3.1.

#### 3.2.1 Transmitter

##### Integral Antenna:

At the transmitter the measurement was transacted with the modulation declared by the manufacturer and the maximum available output power of the EUT.

In this arrangement the EUT fulfils the requirements of the FCC rules § 15.249, subpart C, This unit uses permanent antenna. There is no provision for an external antenna (see photo).

### 3.3 RF Exposure Compliance Requirements

Not applicable for this Bluetooth Dongle for the low power level.

### 3.4 Out of Band Radiated Emissions

FCC Rule: 15.249 (d)(e), 15.35(b)

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

For frequency above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

Limits:

Frequency of Emission (MHz)	Field strength (microvolts/meter)	Field Strength (dB microvolts/meter)
30 - 88	100	40.0
88 – 216	150	43.5
216 – 960	200	46.5
Above 960	500	54.0

For frequencies above 1 GHz (Peak measurements).

Limit + 20 dB

$$54.0 \text{ dB}\mu\text{V/m} + 20 \text{ dB} = 74 \text{ dB}\mu\text{V/m}$$

Or

Must be antenuatted at least 50dB below the level of fundament

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028  
ETSTW-RE 029 ETSTW-RE 030 ETSTW-RE 042 ETSTW-RE 043  
ETSTW-RE 044

Comment: Please see attached diagrams as appendix.

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### 3.5 Spurious emission (tx)

Spurious emission was measured with modulation (declared by manufacturer).

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

For frequencies above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

SAMPLE CALCULATION OF LIMIT. ALL results will be updated by an automatic measuring system in accordance with point 2.3.

The peak and average spurious emission plots was measured with the average limits.  
The critical peak value listed in the table agree with the above calculated limits.

#### Summary table with radiated data of the test plots

CH 0		Temperature(°C): 26		Humidity(%): 60		Date: 2007/5/19				
Antenna Polarization	Mark	Frequency MHz	RX_R dBuV	Ant_F dB/m	Emission dBuV/m	Limit dBuV/m	Margin dB	Ant.Pos cm	Table Pos deg.	Detector
H		4804.228	53.23	-1.30	53.93	74	-20.07	164	320	peak
	*	4804.228	51.58	-1.30	52.28	54	-1.72	164	320	AVG
		7206.413	47.55	1.89	51.44	74	-22.56	182	250	peak
V		1498.998	49.75	-11.41	40.34	74	-33.66	100	320	peak
	*	2280.561	45.00	-5.66	41.34	74	-32.66	100	310	peak
		4801.603	43.37	-1.30	44.07	74	-29.93	161	314	peak
	*	7206.413	44.39	1.89	48.28	74	-25.72	183	254	peak

CH 39		Temperature(°C): 26		Humidity(%): 60		Date: 2007/5/19				
Antenna Polarization	Mark	Frequency MHz	RX_R dBuV	Ant_F dB/m	Emission dBuV/m	Limit dBuV/m	Margin dB	Ant.Pos cm	Table Pos deg.	Detector
H		4882.145	53.83	-1.3	54.53	74	-19.47	160	320	peak
	*	4882.145	51.74	-1.3	52.44	54	-1.56	160	320	AVG
		7326.653	46.97	1.85	50.82	74	-23.18	179	259	peak
V		1505.010	50.12	-11.30	40.82	74	-33.18	100	320	peak
	*	2280.561	46.03	-5.66	42.37	74	-31.63	100	310	peak
		4881.764	42.98	-1.30	43.68	74	-30.32	169	323	peak
	*	7318.637	44.00	1.84	47.84	74	-26.16	180	251	peak

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CH 78      Temperature(°C): 26      Humidity(%): 60      Date: 2007/5/19

Antenna Polarization	Mark	Frequency MHz	RX_R dBuv	Ant_F dB/m	Emission dBuv/m	Limit dBuv/m	Margin dB	Ant.Pos cm	Table Pos deg.	Detector
H		4960.140	54.79	-1.06	55.73	74	-18.27	165	320	peak
	*	4960.140	51.52	-1.06	52.46	54	-1.54	165	320	AVG
		7440.140	52.28	1.8	56.08	74	-17.92	185	257	peak
		7440.140	45.22	1.8	49.02	54	-4.98	185	257	AVG
V	*	1366.734	55.95	-12.3	45.65	74	-28.35	100	320	peak
		2082.164	49.27	-6.96	44.31	74	-29.69	100	310	peak
		4961.924	47.10	-1.05	48.05	74	-25.95	163	328	peak
	*	7446.894	45.43	1.77	49.20	74	-24.8	187	255	peak

- Note**
1. Correction Factor = Antenna factor + Cable loss - Preamplifier
  2. The formula of measured value as: Test Result = Reading + Correction Factor
  3. Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average
  4. All not in the table noted test results are more than 20 dB below the relevant limits.
  5. Please see attached diagrams as appendix.

**TEST RESULT (Transmitter):** The unit DOES meet the FCC requirements.

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 055

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### 3.6 Radiated Emissions from Digital Part and Receiver of Transceiver

#### Receiver Part

#### Summary table with radiated data of the test plots

CH 0 Temperature(°C): 26

Humidity(%): 60

Date: 2007/5/21

Antenna Polarization	Mark	Frequency MHz	RX_R dBuv	Ant_F dB/m	Emission dBuv/m	Limit dBuv/m	Margin dB	Ant.Pos cm	Table Pos deg.	Detector
H	*	167.435	12.68	13.85	32.53	43.5	-10.97	365	153	peak
	*	716.633	8.91	23.2	34.92	46	-11.08	145	136	peak
	*	1368.74	51.01	-12.3	40.71	74	-33.29	176	180	peak
V	*	174.469	12.34	14.27	32.61	43.5	-10.89	136	156	peak
	*	716.633	9.93	23.2	37.13	46	-8.87	358	137	peak
	*	1368.74	54.81	-12.3	44.51	74	-29.49	174	183	peak
	*	2084.17	47.85	-6.94	42.91	74	-31.09	145	124	peak

CH 39 Temperature(°C): 26

Humidity(%): 60

Date: 2007/5/21

Antenna Polarization	Mark	Frequency MHz	RX_R dBuv	Ant_F dB/m	Emission dBuv/m	Limit dBuv/m	Margin dB	Ant.Pos cm	Table Pos deg.	Detector
H	*	175.551	10.03	14.33	30.36	43.5	-13.14	363	151	peak
	*	652.104	11.2	22.08	36.27	46	-9.73	143	132	peak
	*	1368.74	50.88	-12.3	40.58	74	-33.42	170	186	peak
V	*	175.551	11.1	14.33	31.43	43.5	-12.07	138	154	peak
	*	748.898	9.98	22.81	36.79	46	-9.21	356	138	peak
	*	1368.74	55	-12.3	44.70	74	-29.3	175	182	peak
	*	2084.17	49.22	-6.94	44.28	74	-29.72	148	125	peak

CH 78 Temperature(°C): 26

Humidity(%): 60

Date: 2007/5/21

Antenna Polarization	Mark	Frequency MHz	RX_R dBuv	Ant_F dB/m	Emission dBuv/m	Limit dBuv/m	Margin dB	Ant.Pos cm	Table Pos deg.	Detector
H	*	32.1643	9.50	13.78	29.28	40	-10.72	361	152	peak
	*	694.188	10.53	23.28	36.68	46	-9.32	144	141	peak
	*	1368.74	51.30	-12.3	41.00	74	-33	143	152	peak
V	*	175.551	11.12	14.33	31.45	43.5	-12.05	135	152	peak
	*	656.313	11.07	22.23	37.30	46	-8.7	365	139	peak
	*	1368.74	55.54	-12.3	45.24	74	-28.76	173	189	peak
	*	2084.17	48.04	-6.94	43.10	74	-30.9	148	126	peak



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## Digital Part

Temperature(°C): 26

Humidity(%): 60

Date: 2007/5/21

Antenna Polarization	Mark	Frequency MHz	RX_R dBuv	Ant_F dB/m	Emission dBuv/m	Limit dBuv/m	Margin dB	Ant.Pos cm	Table Pos deg.	Detector
H	*	166.8938	13.1	3.53	22.63	30	-7.37	389	78	peak
		605.8116	16.53	11.87	32.4	37	-4.60	179	128	peak
	*	720.8417	14.85	14.88	33.73	37	-3.27	156	135	peak
V	*	166.8938	14.92	3.00	23.92	30	-6.08	123	75	peak
		716.6332	11.29	14.87	30.16	37	-6.84	365	138	peak
	*	960.7214	11.28	16.20	31.48	37	-5.52	387	149	peak

- Note**
1. Correction Factor = Antenna factor + Cable loss - Preamplifier
  2. The formula of measured value as: Test Result = Reading + Correction Factor
  3. Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average
  4. All not in the table noted test results are more than 20 dB below the relevant limits.
  5. Please see attached diagrams as appendix.

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028 ETSTW-RE 029 ETSTW-RE 030 ETSTW-RE 042 ETSTW-RE 043 ETSTW-RE 044

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### 3.7 Radiated Emission on the band edge

From the following plots, they show that the fundamental emissions are confined in the specified band and they are at least 50 dB below the carrier level at band edge (2400 and 2483.5 MHz). It meets the requirement of section 15.249(d).

Test conditions Tnom = 23°C, Vnom = 120V Frequency [MHz]	Transmitter field strength of Radiated Emission	Transmitter field strength of Radiated Emission
	(Peak Detector)	(Average Detector)
	[dBμV/m]	
2390.000	32.07	--
2401.804	85.75	
2480.361	81.68	--
2483.500	30.51	

Limit:

Frequency Range (MHz)	Limit (dBμV/m)	
902 – 928	Peak	Average
2400 – 2483.5	74	54
5725 – 5875		
24000 - 24250		

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028 ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044

Comment: Please see attached diagram as appendix.

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### 3.8 Power Line Conducted Emission

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the table bellows with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

This measurement was transact first with instrumentation using an average and peak detector and a 10 kHz bandwidth. If the peak detector achieves a calculated level, the measurement is repeated by an instrumentation using a quasi-peak detector.

Frequency	Level (dBμV)	
	quasi-peak	average
150 kHz	lower limit line	Lower limit line

Temperature(°C): 26

Humidity(%): 60

Date: 2007/5/23

LISN type	Mark	Frequency MHz	Reading (dBUV)	Correction Factor (dB)	Test Result (dBUV)	Limit (dBUV)	Margin (dB)	Detector
N	*	0.201	37.76	10.1	47.86	63.57	-15.71	QP
		0.201	26.32	10.1	36.42	53.57	-17.15	AVG
		0.538	15.42	10.1	25.52	56	-30.48	QP
		0.538	10.52	10.1	20.62	46	-25.38	AVG
		10.651	13.17	10.1	23.27	60	-36.73	QP
		10.651	9.61	10.1	19.71	50	-30.29	AVG
L1	*	0.202	37.86	10.1	47.96	63.53	-15.57	QP
		0.202	26.19	10.1	36.29	53.53	-17.24	AVG
		0.537	15.99	10.1	26.09	56	-29.91	QP
		0.537	6.04	10.1	16.14	46	-29.86	AVG
		15.54	16.02	10.1	26.12	60	-33.88	QP
		15.54	12.74	10.1	22.84	50	-27.16	AVG

- Note:**
1. The formula of measured value as: **Test Result = Reading + Correction Factor**
  2. The **Correction Factor = Cable Loss + LISN Insertion Loss**
  3. Detector function in the form : **PK = Peak, QP = Qusai Peak, AV = Average**
  4. All not in the table noted test results are more than 20 dB below the relevant limits.
  5. Please see attached diagrams as appeddix.

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**Limits:**

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi Peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Test equipment used: ETSTW-CE 001 ETSTW-CE 003 ETSTW-CE 004 ETSTW-CE 006 ETSTW-CE 011

## **Appendix**

### **A Measurement diagrams**

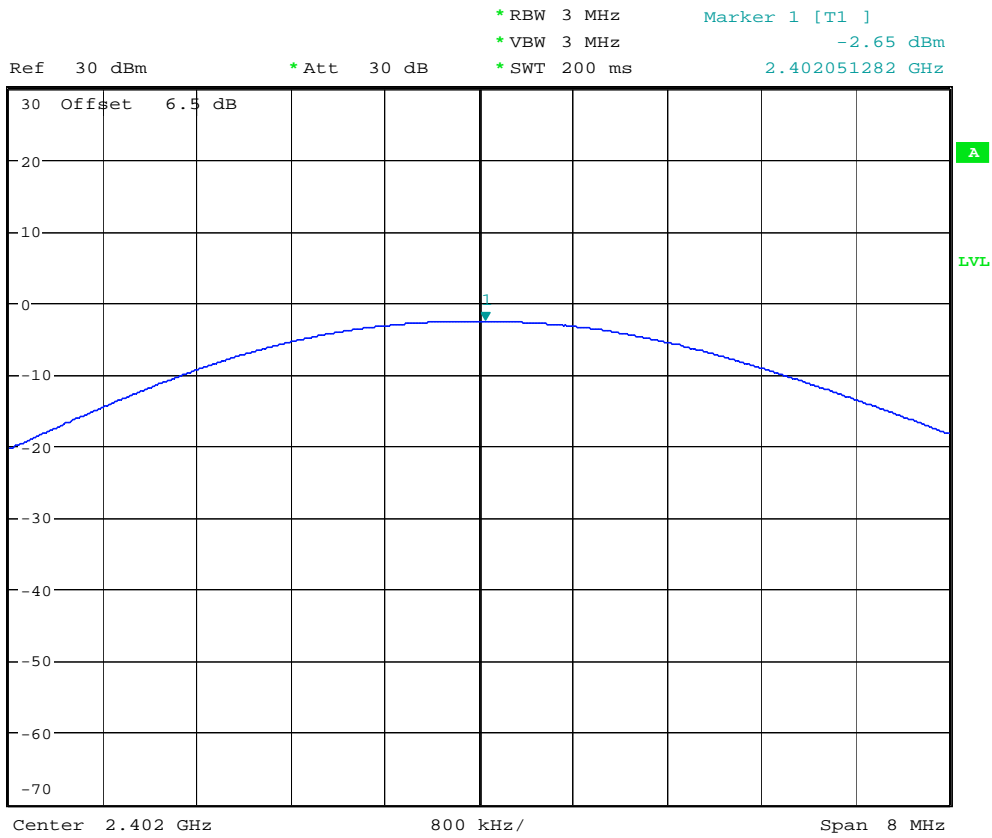
1. Peak Output Power (transmitter)
2. Spurious Emissions radiated  
(The measurement diagrams plots attached below are preliminary wideband scan with a peak detector for reference only. The final test results are listed on section 3.5)
3. Radiated Emissions from Digital Part and Receiver of Transceiver  
(The measurement diagrams plots attached below are preliminary wideband scan with a peak detector for reference only. The final test results are listed on section 3.6)
4. Radiated Emission on the band edge
5. Power Line Conducted Emission  
(The measurement diagrams plots attached below are preliminary wideband scan with a peak and average detector for reference only. The final test results are listed on section 3.8)

### **B Photos**

1. External Photos
2. Internal Photos
3. Set Up Photo of Radiated Emission
4. Set Up Photo of Conducted Emission



1 PK  
MAXH

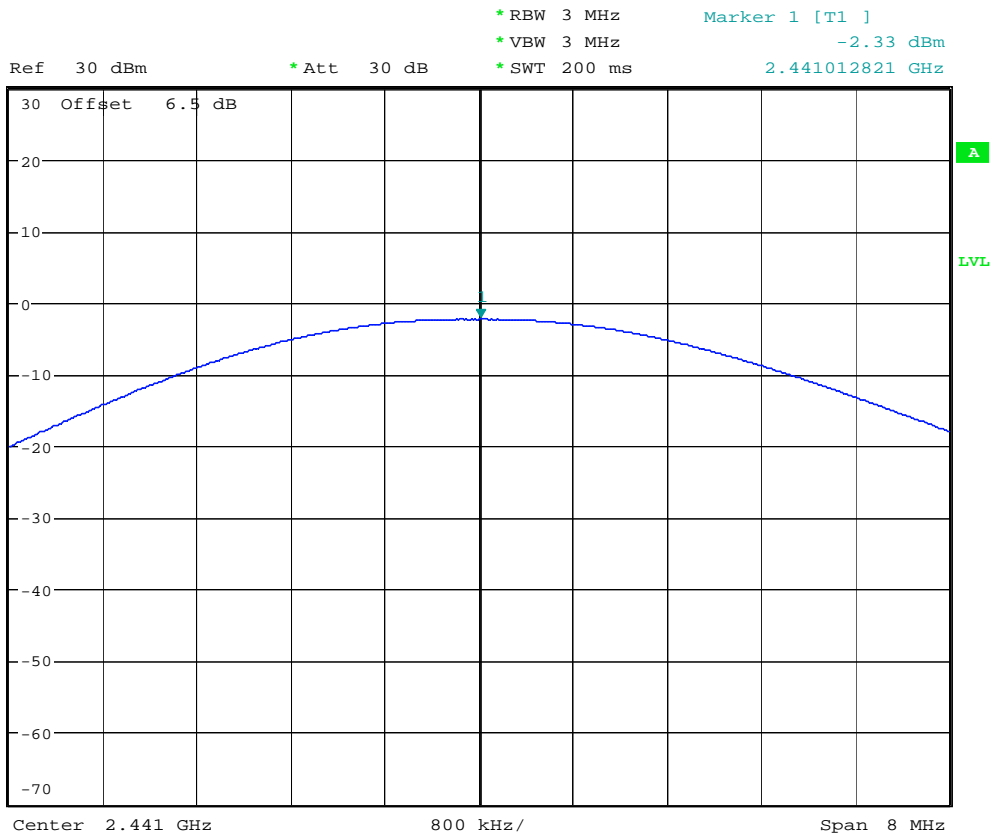


Max Output Power ch0

Date: 22.MAY.2007 21:04:05



1 PK  
MAXH

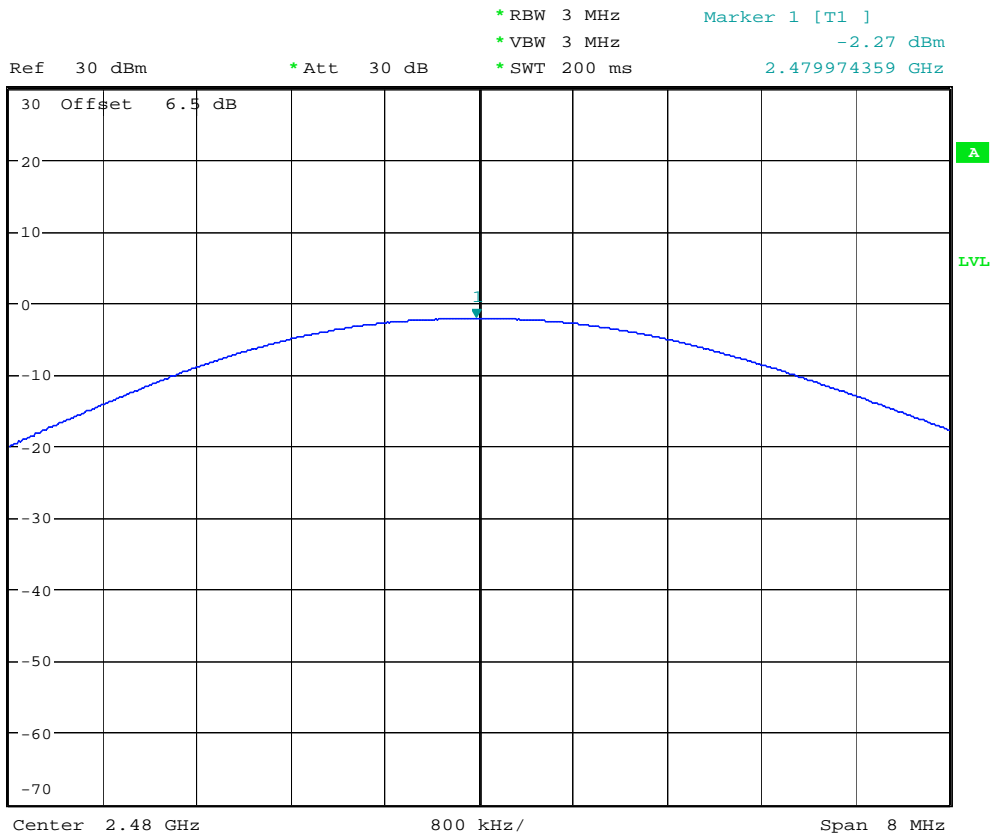


Max Output Power ch39

Date: 22.MAY.2007 21:03:45



1 PK  
MAXH



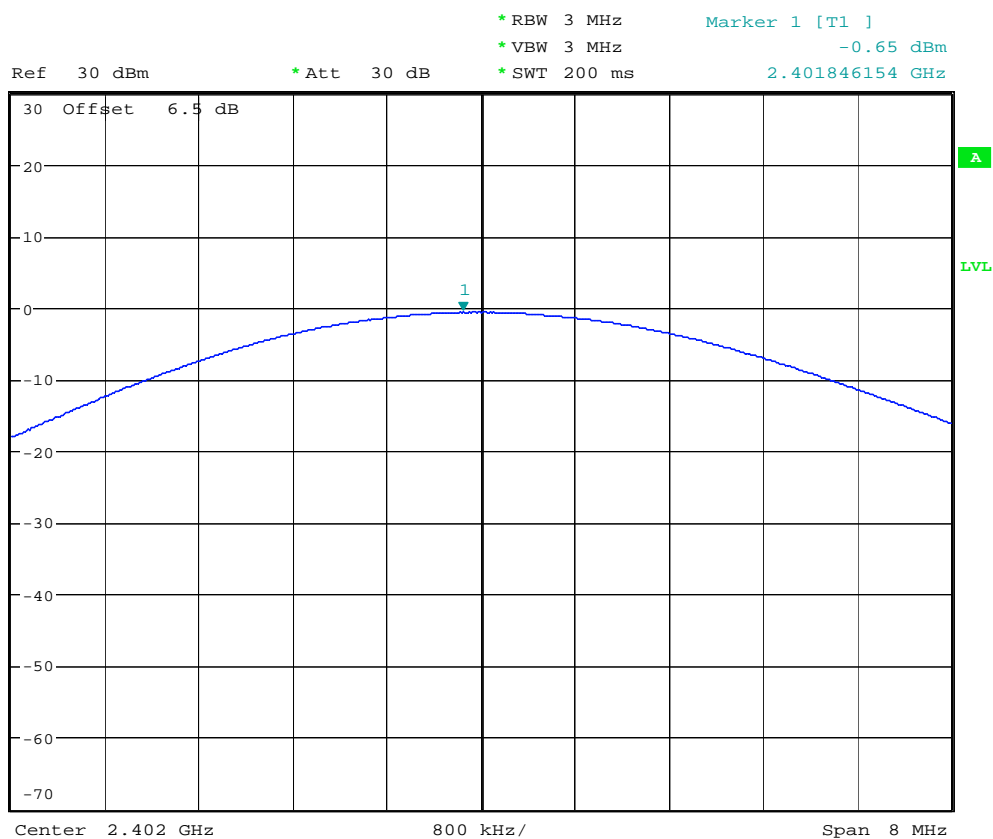
Max Output Power ch78

Date: 22.MAY.2007 21:03:24





1 PK  
MAXH

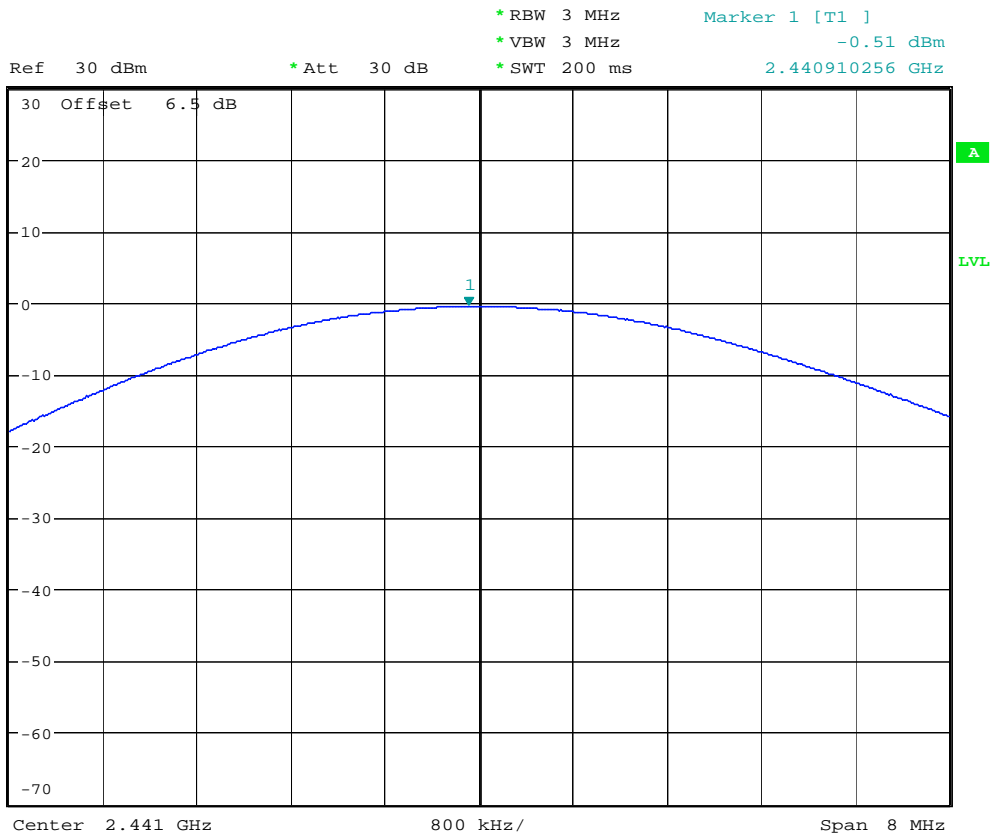


Max Output Power ch0 EDR MODE

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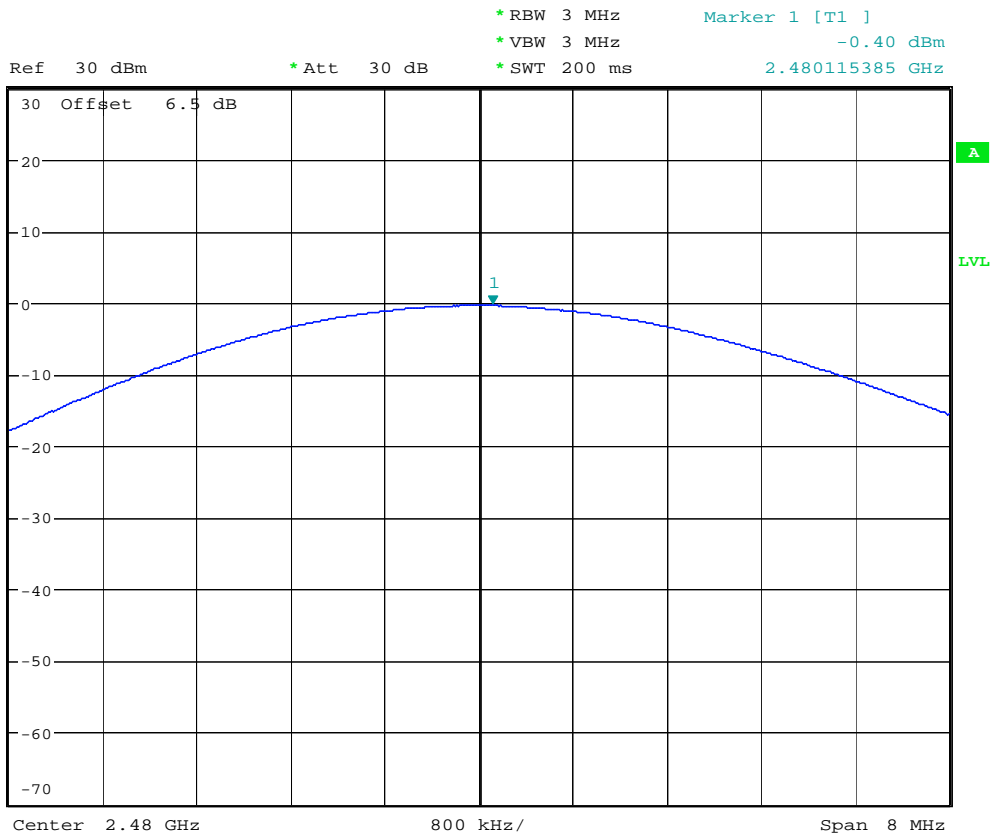
1 PK  
MAXH



Max Output Power ch39 EDR MODE  
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1 PK  
MAXH

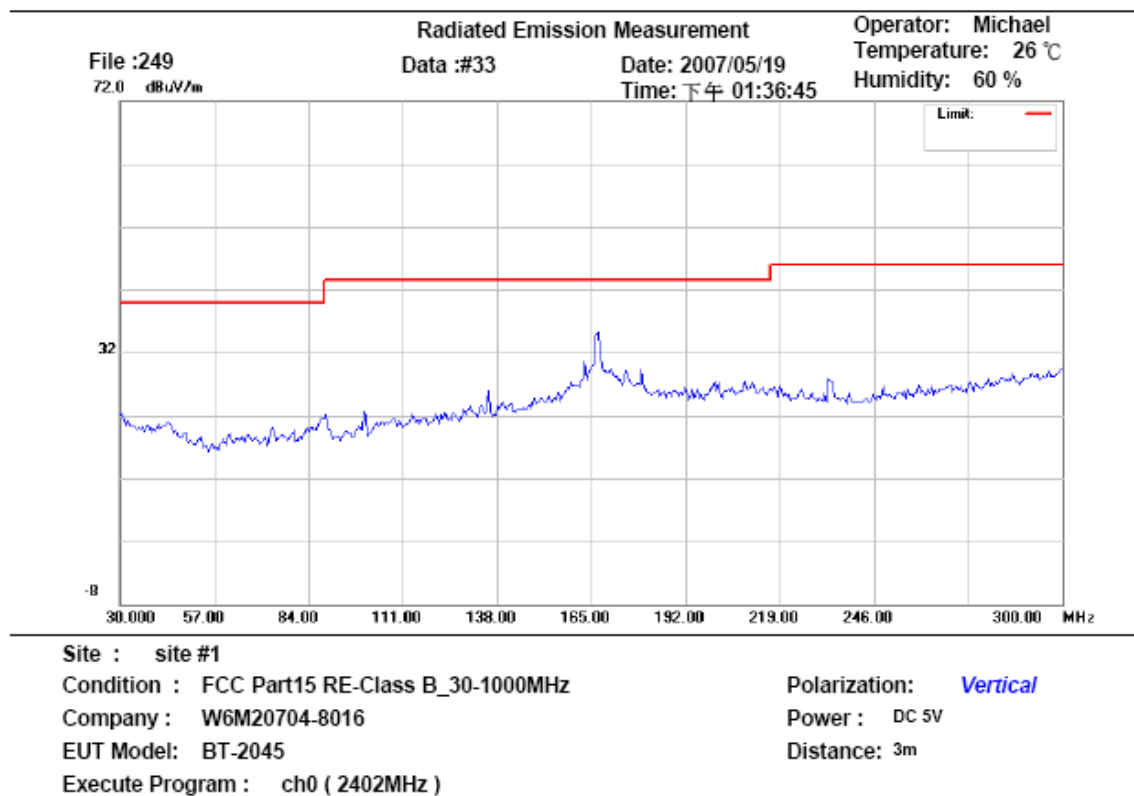
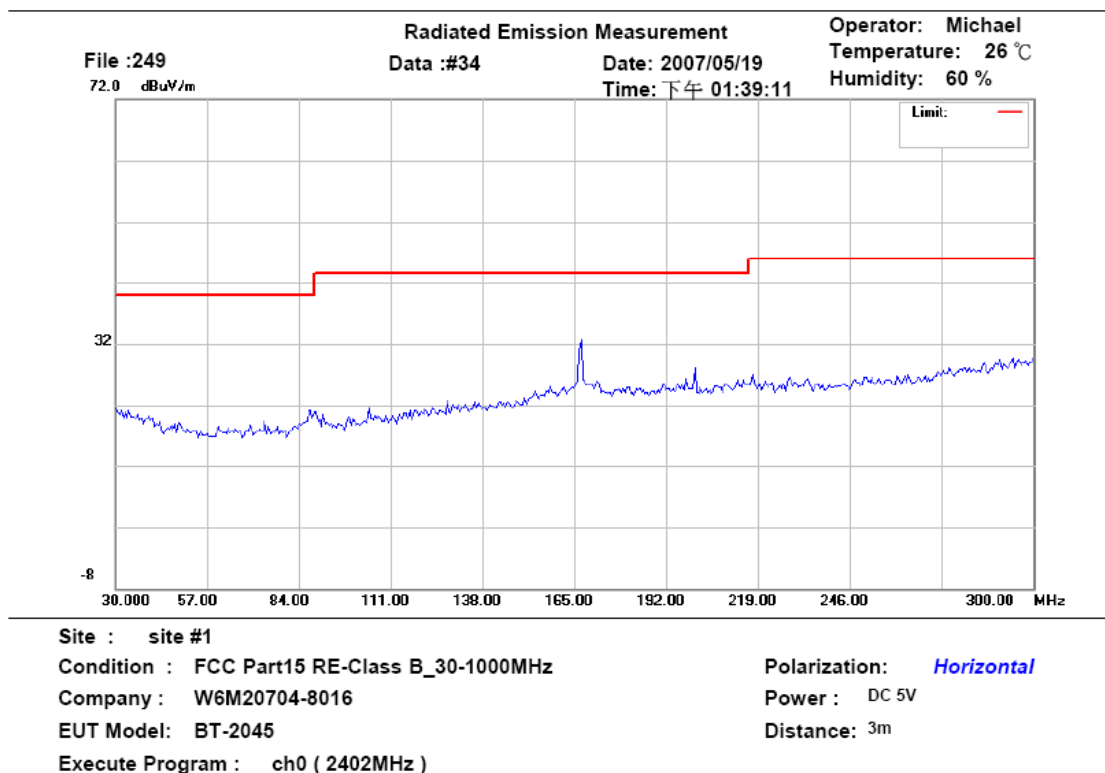


Max Output Power ch78 EDR MODE  
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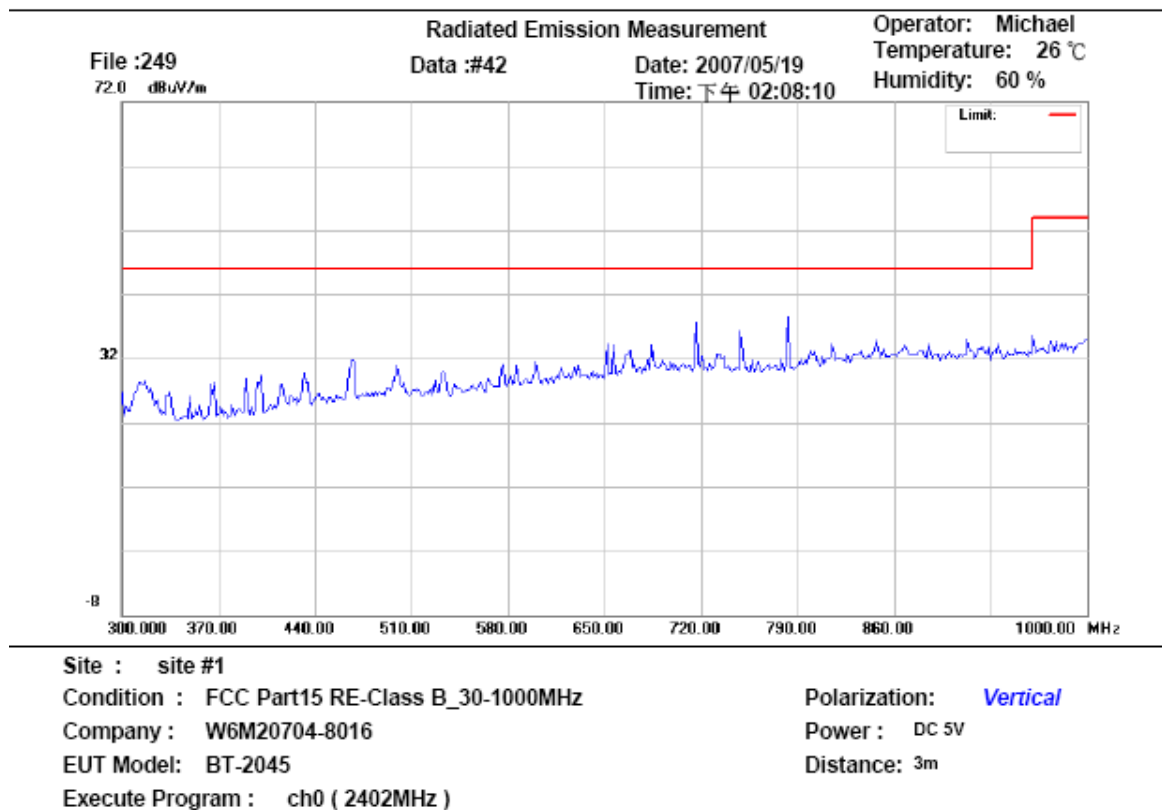
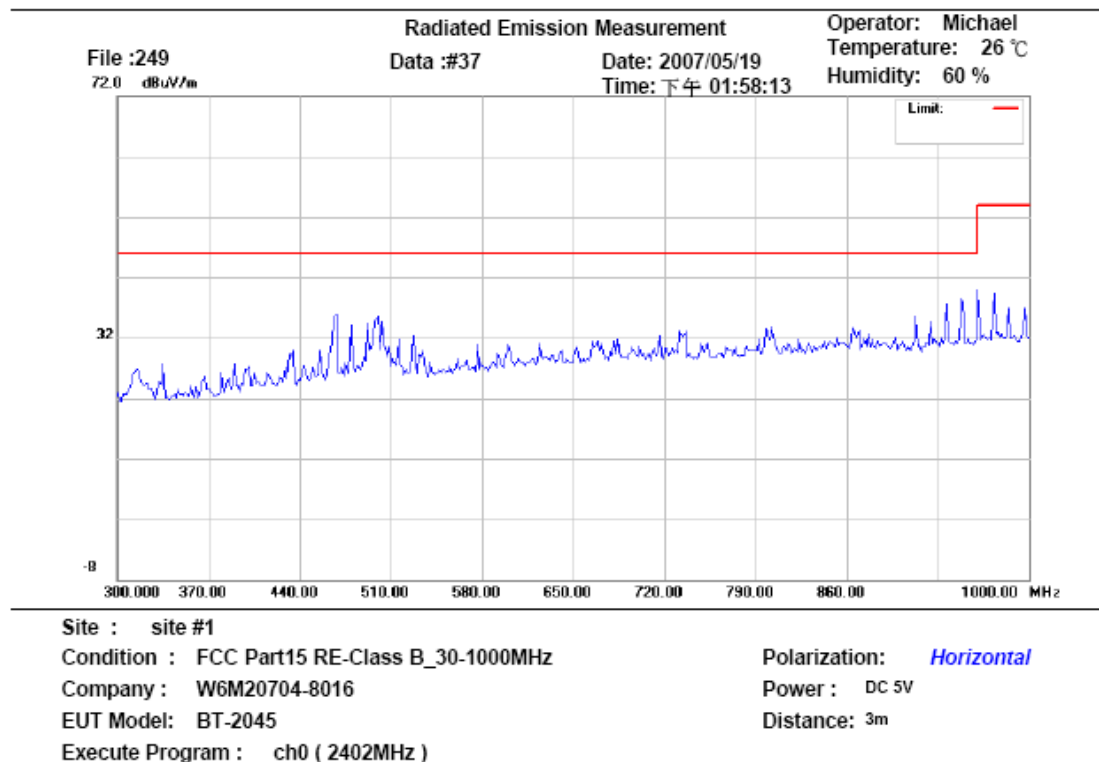
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FCC ID: VBI-BT2045

Transmitter Part

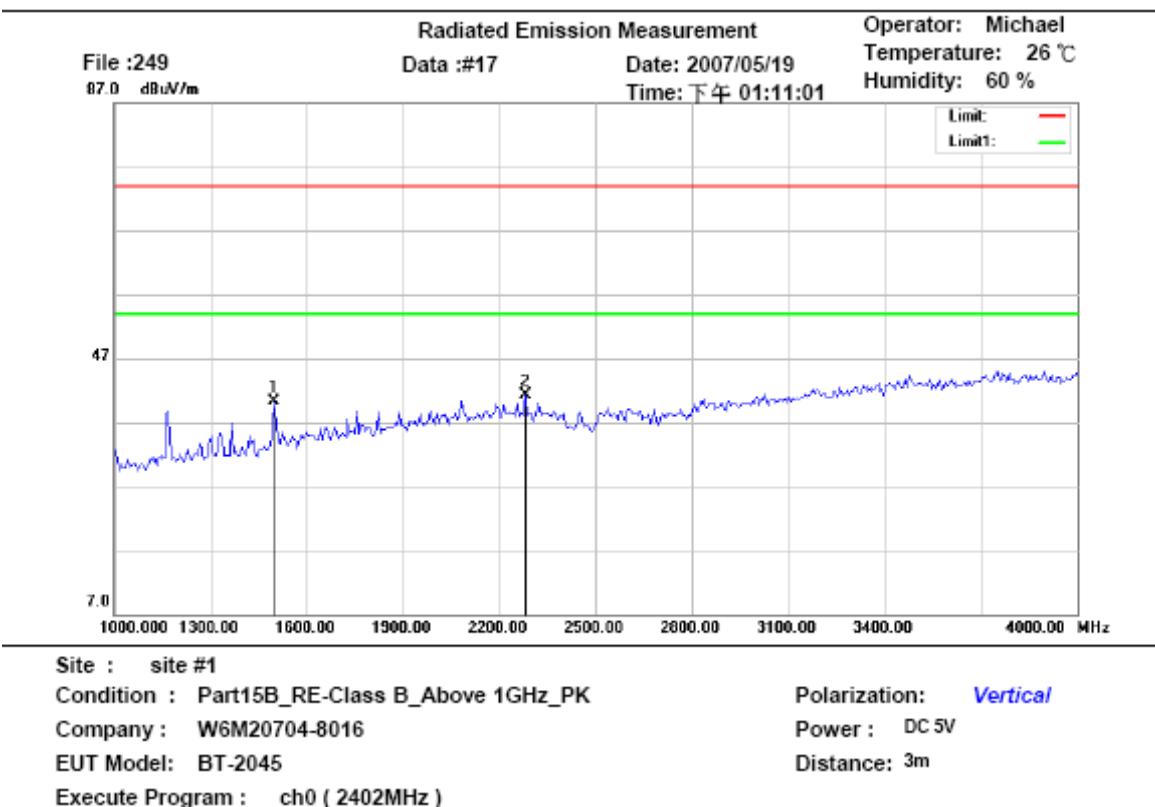
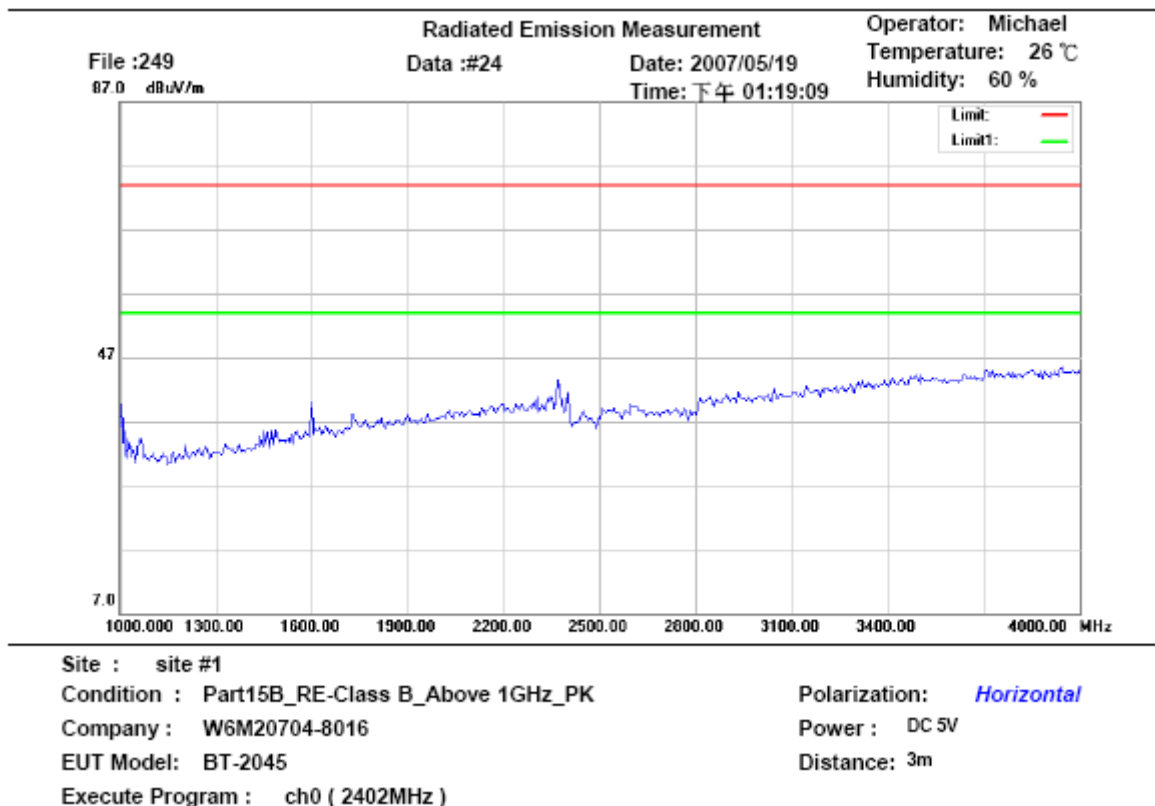
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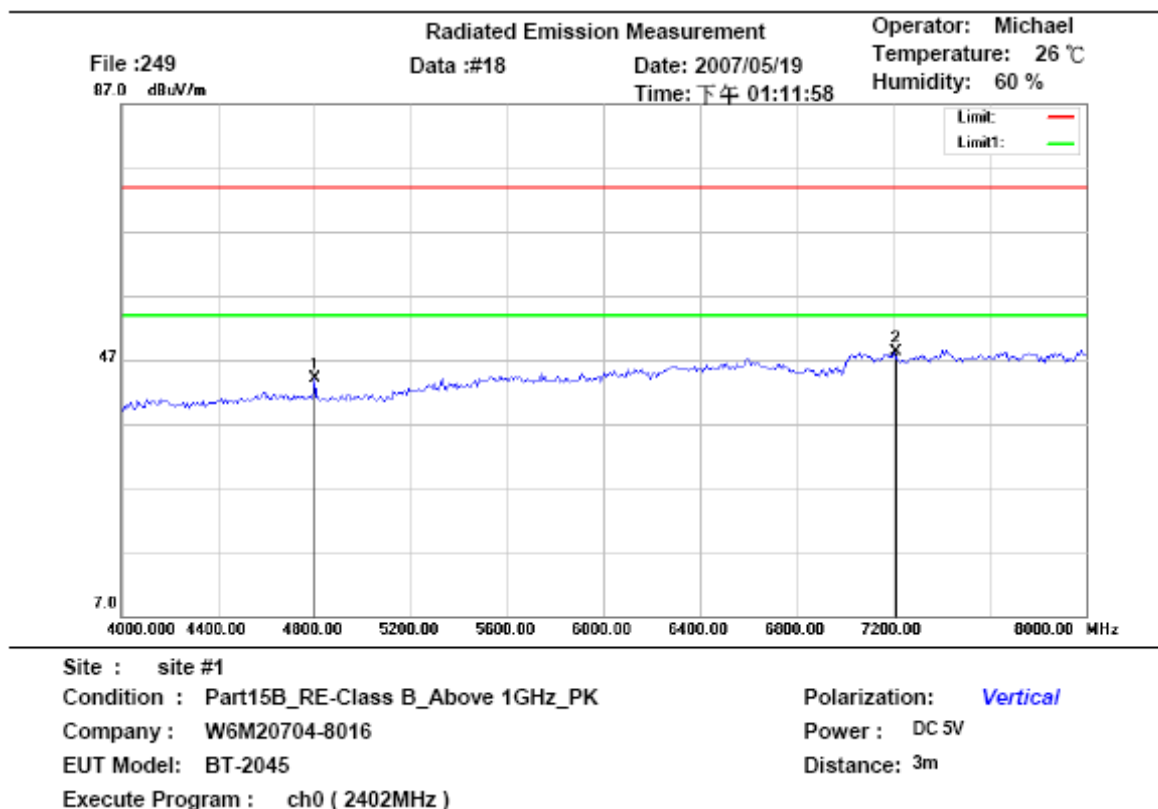
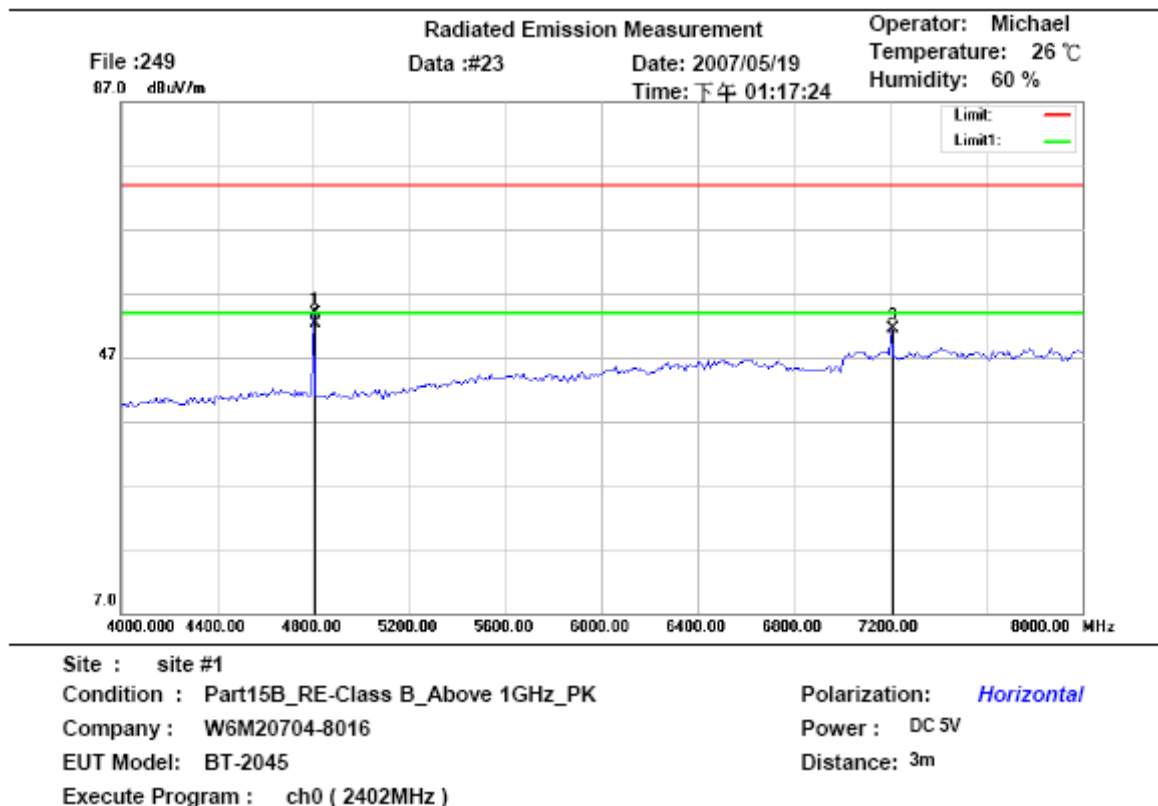
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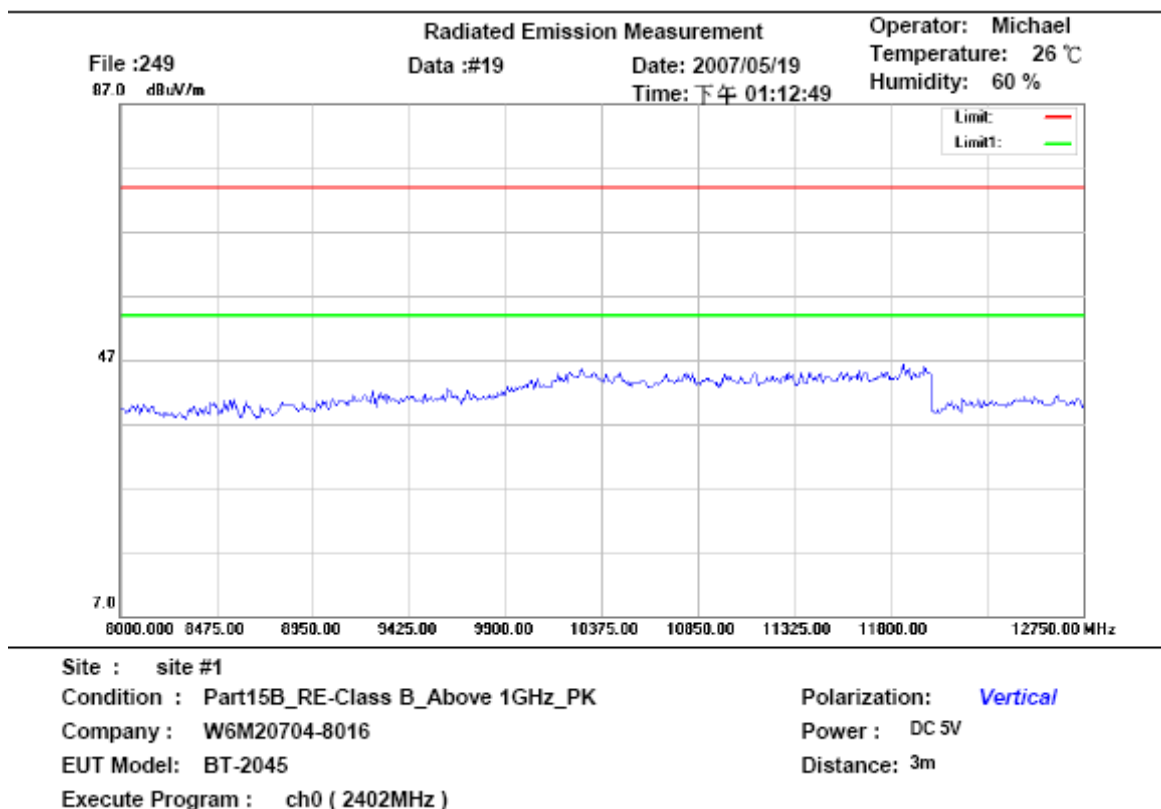
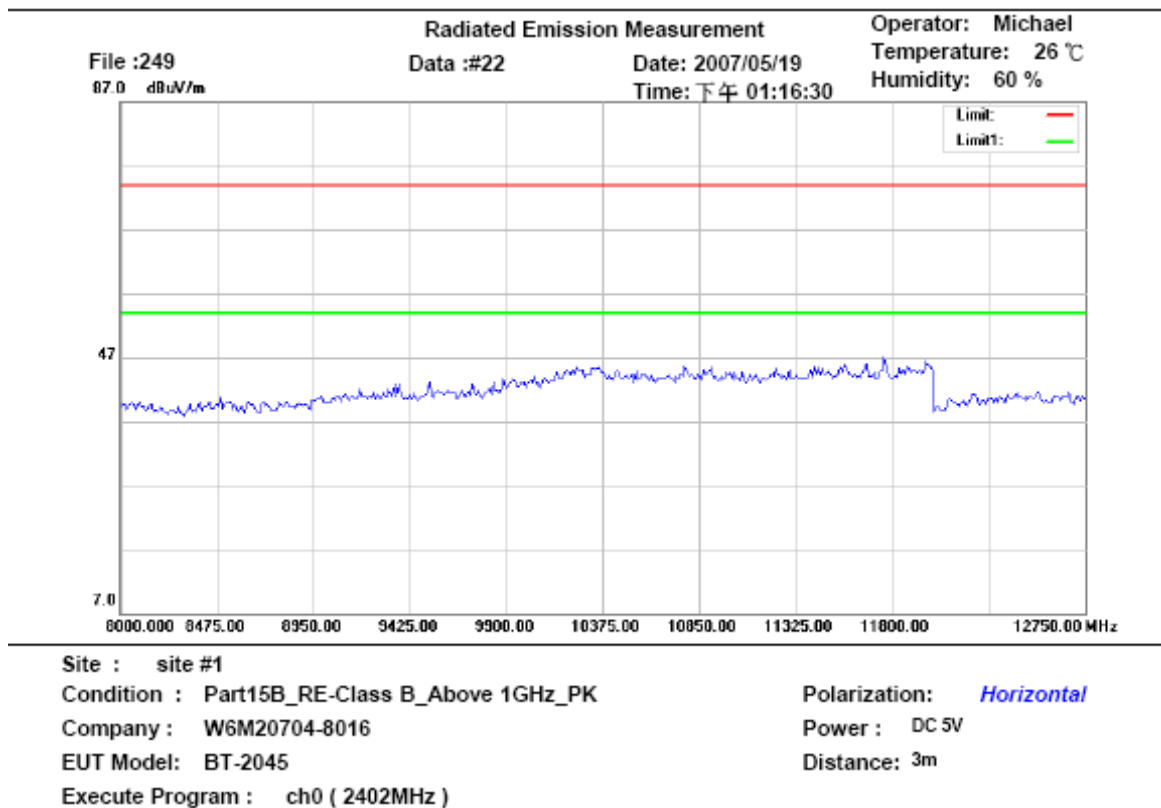


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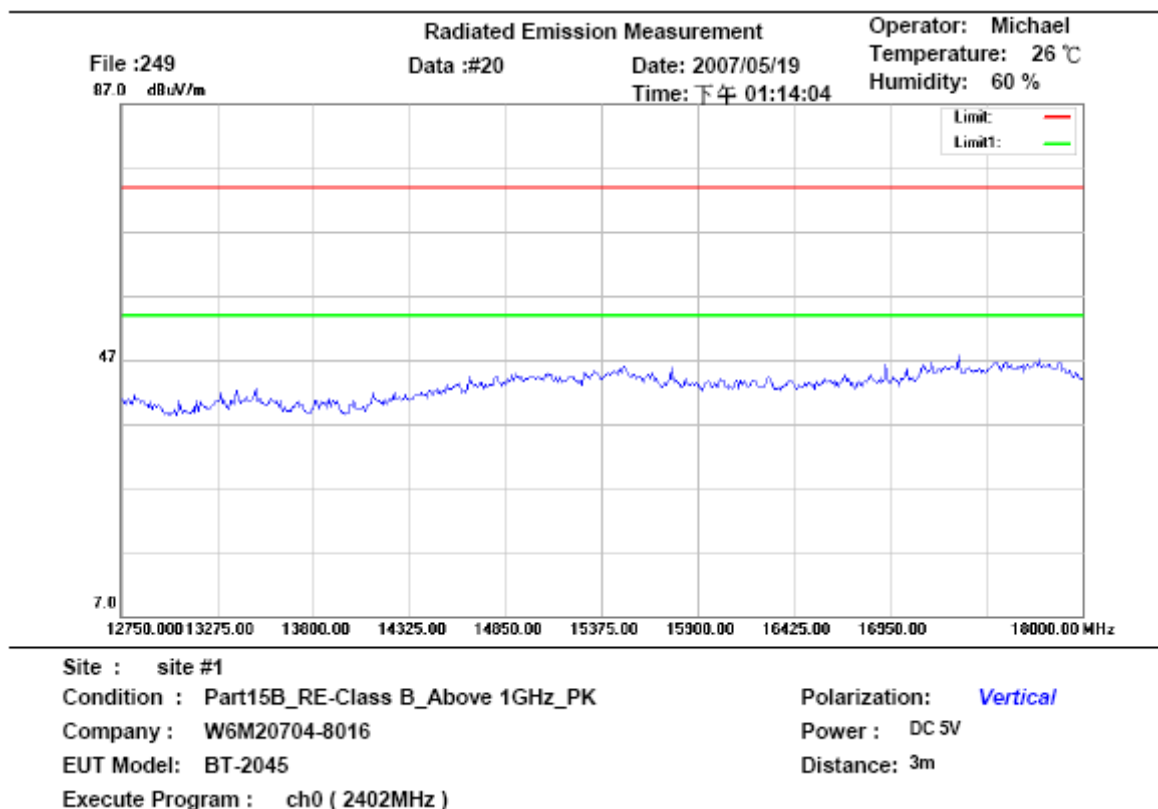
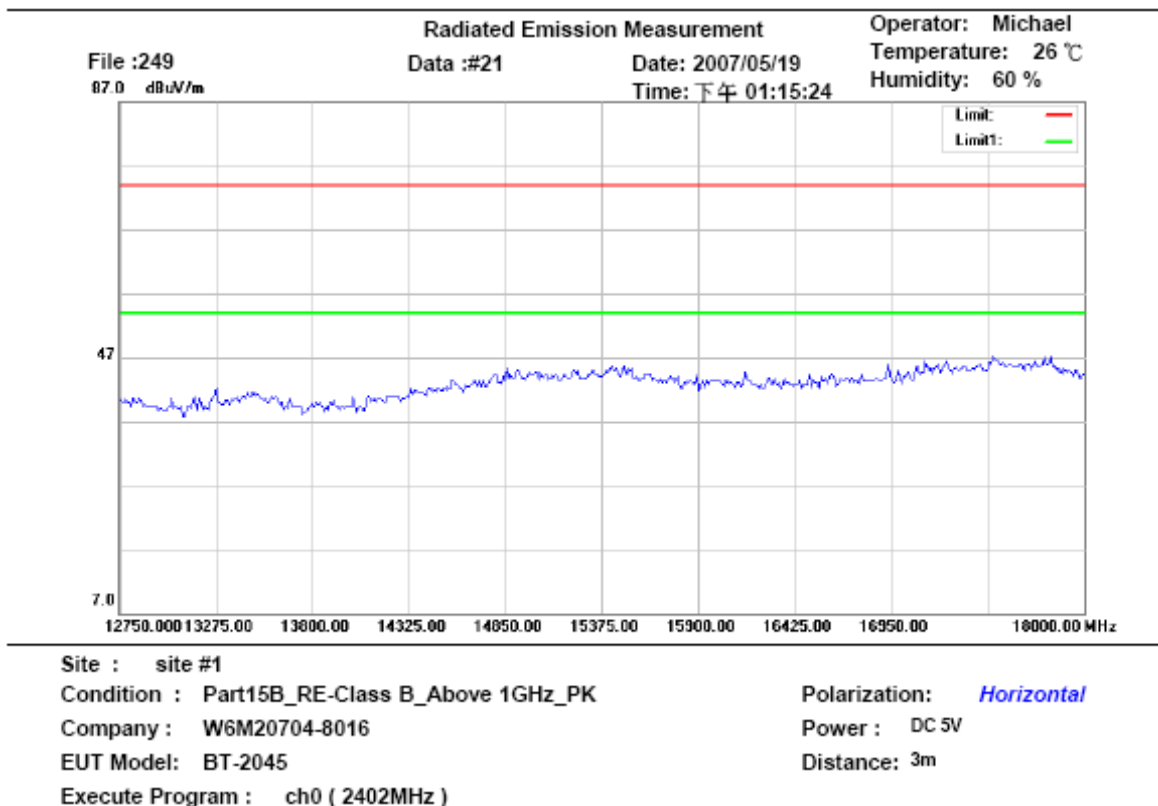




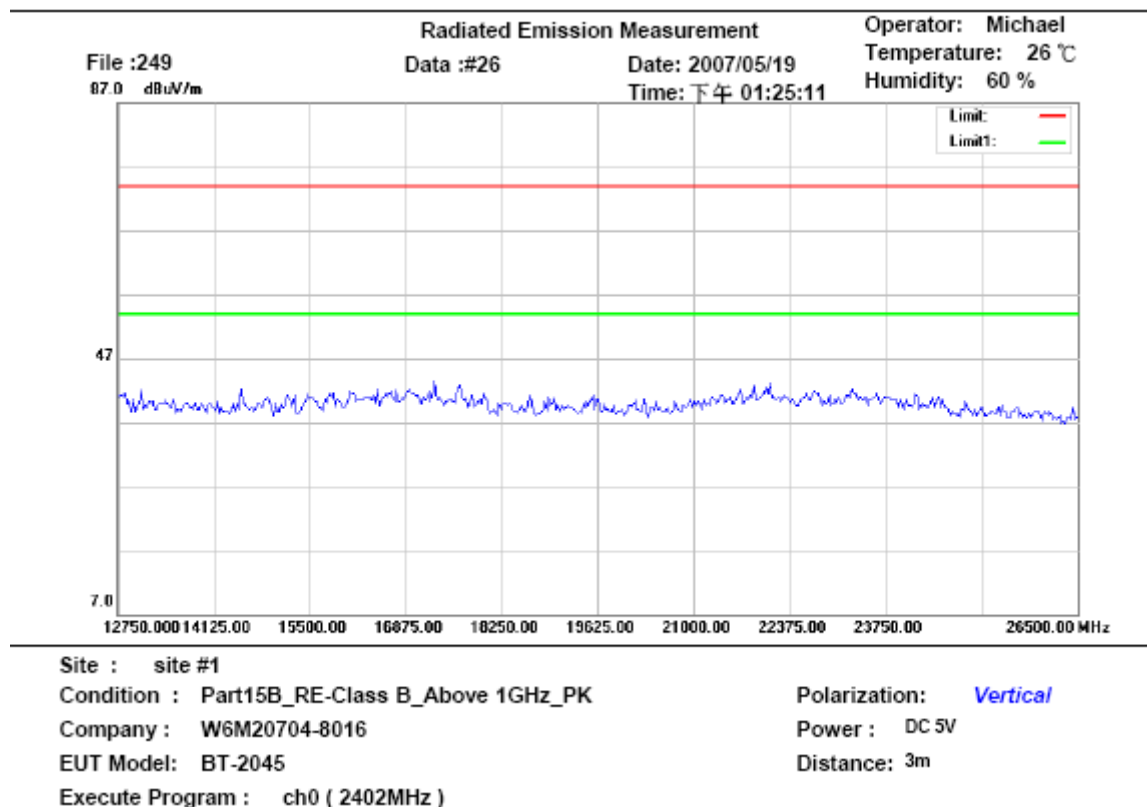
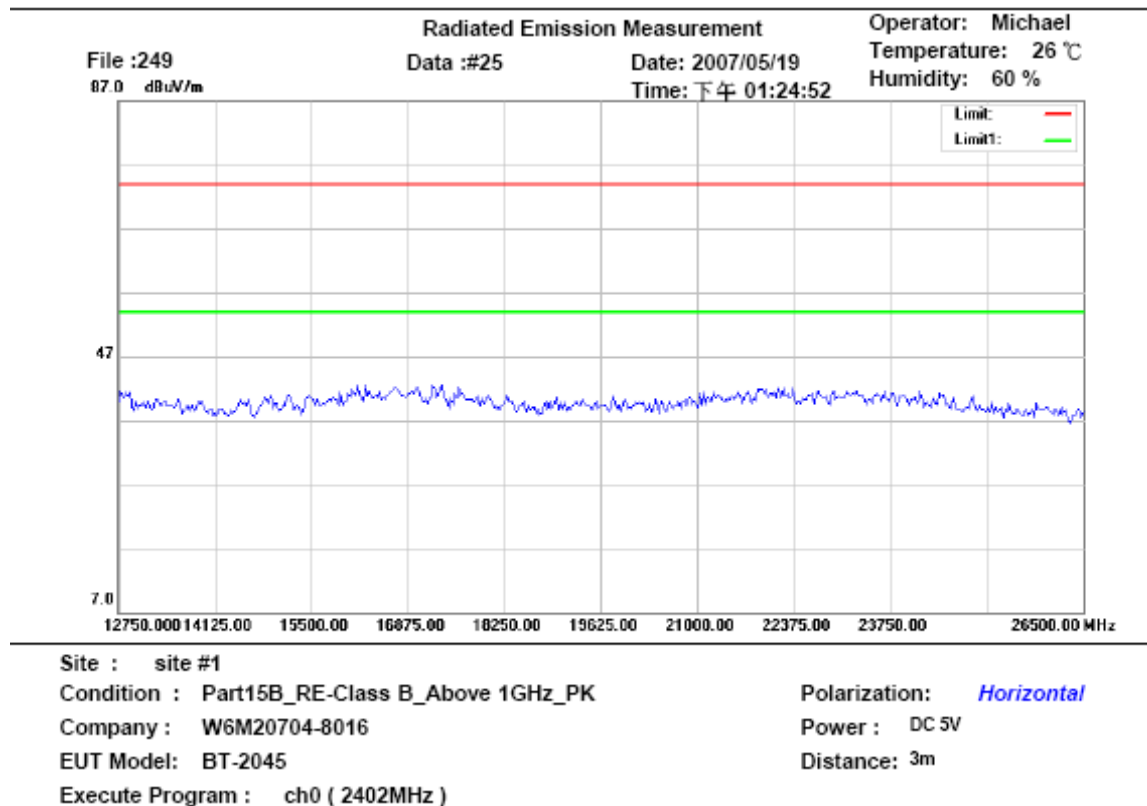
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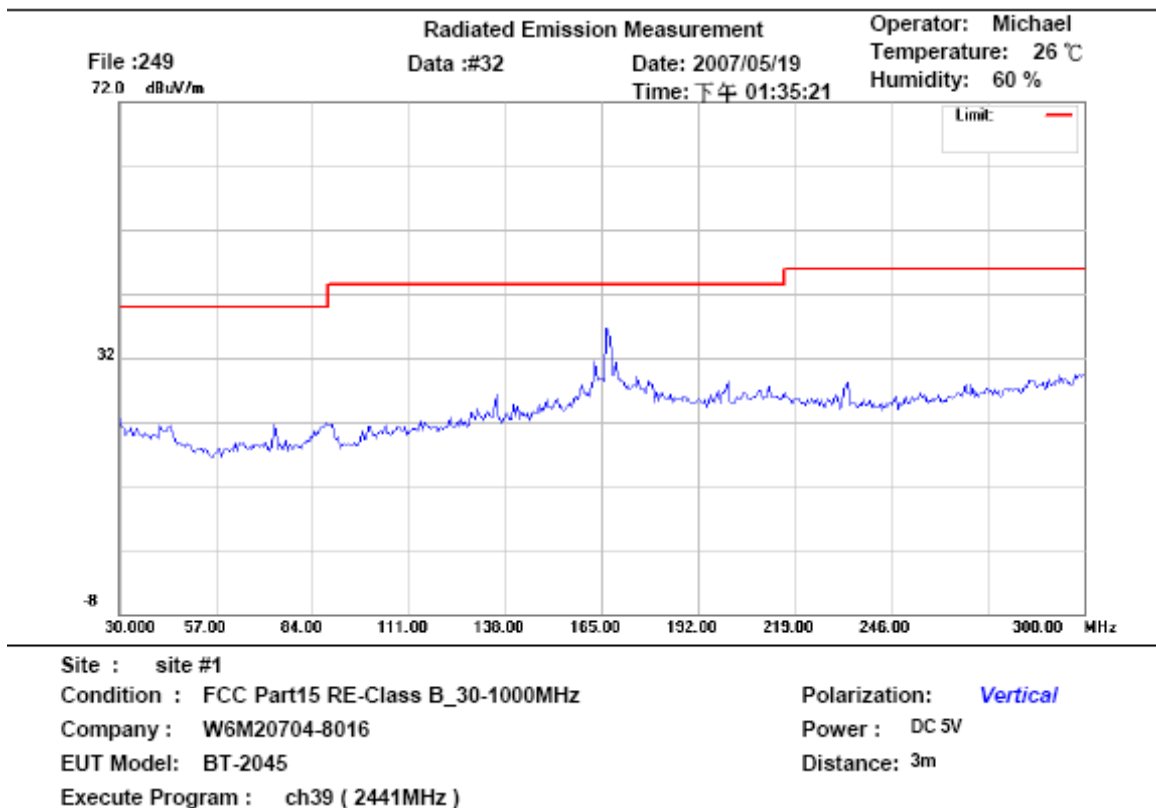
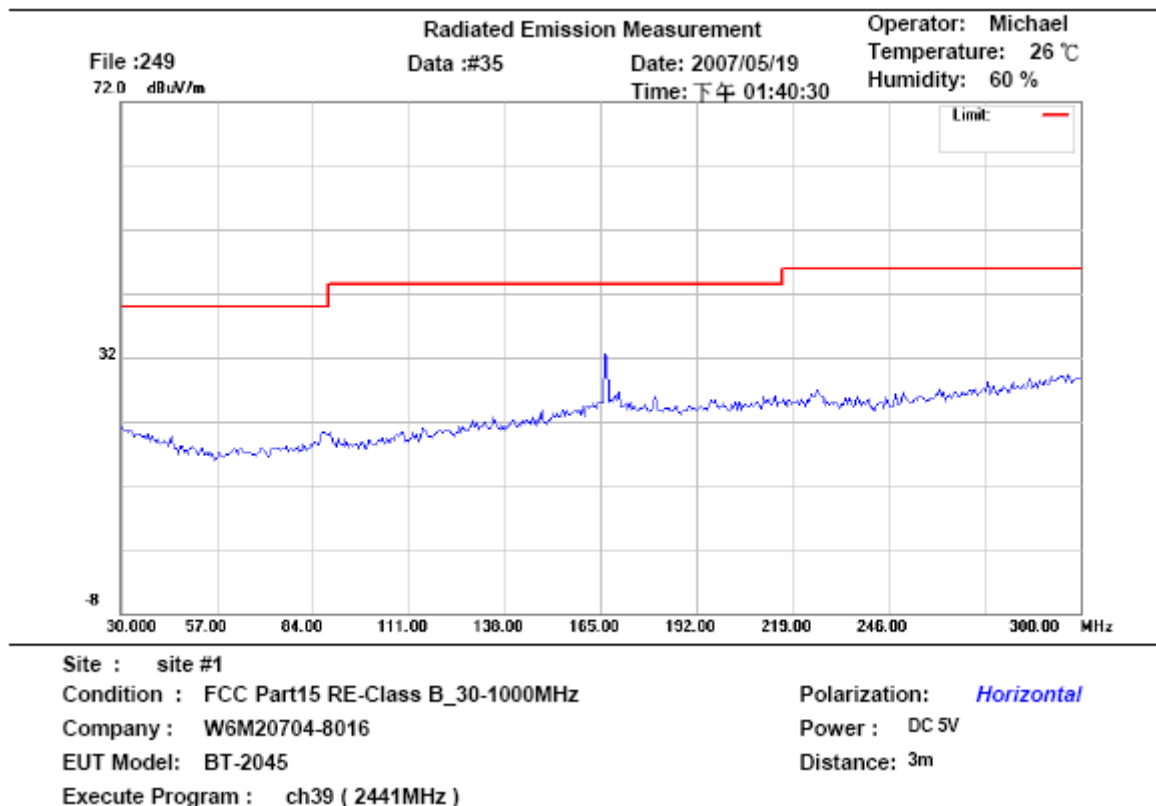
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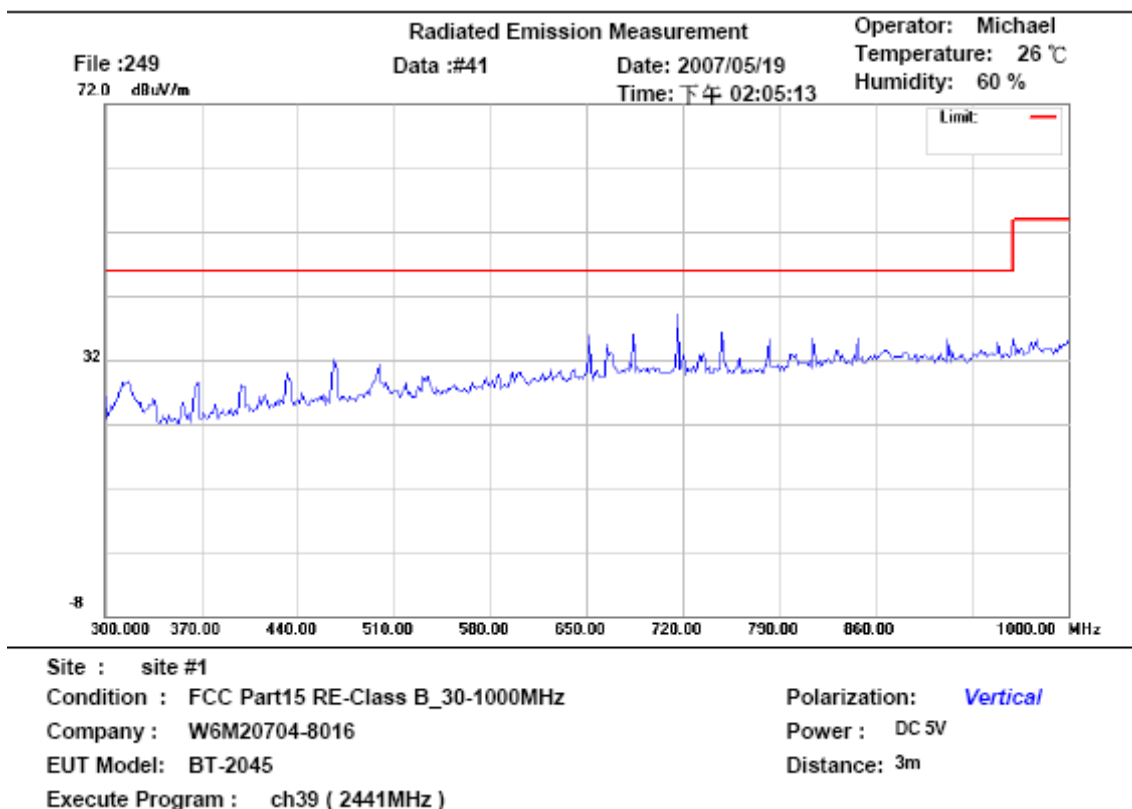
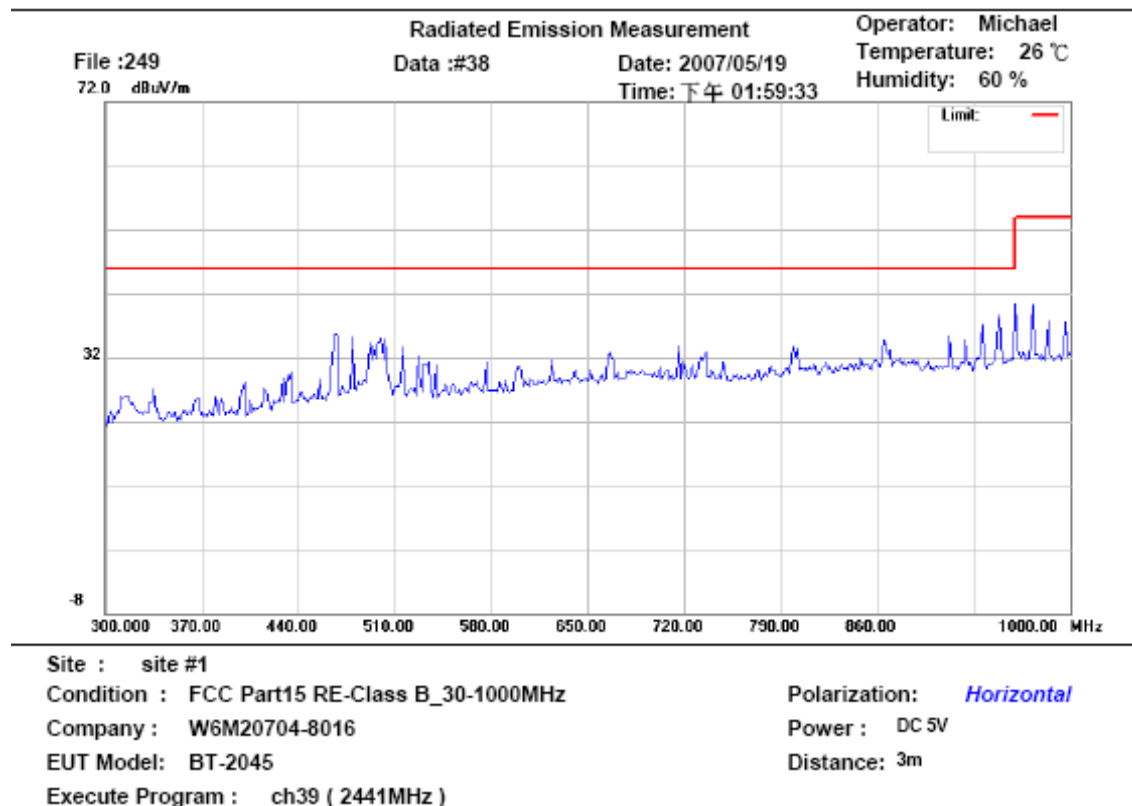
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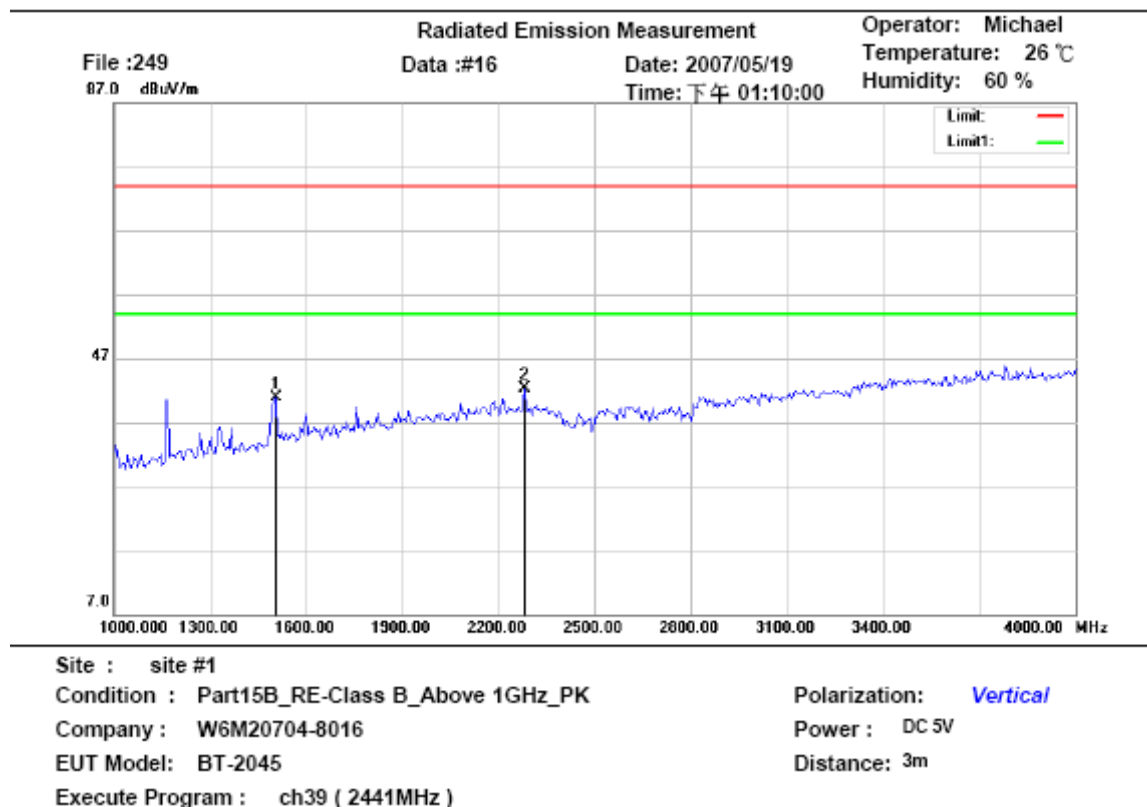
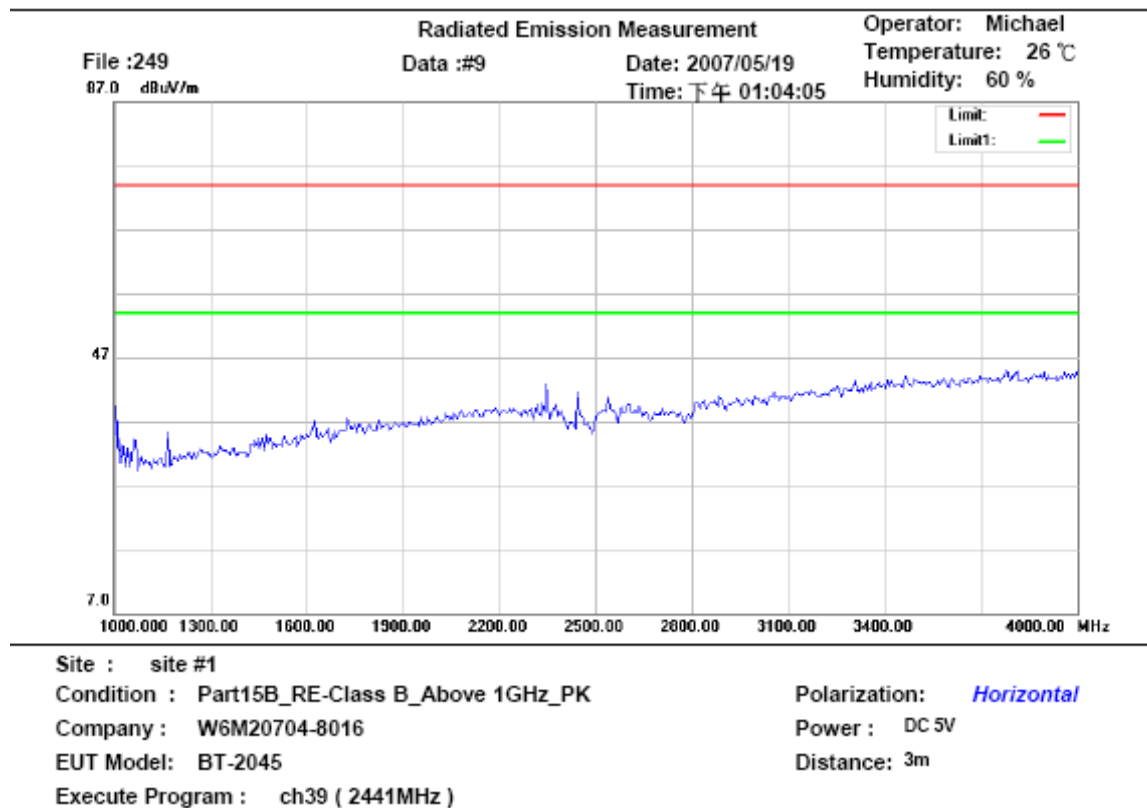
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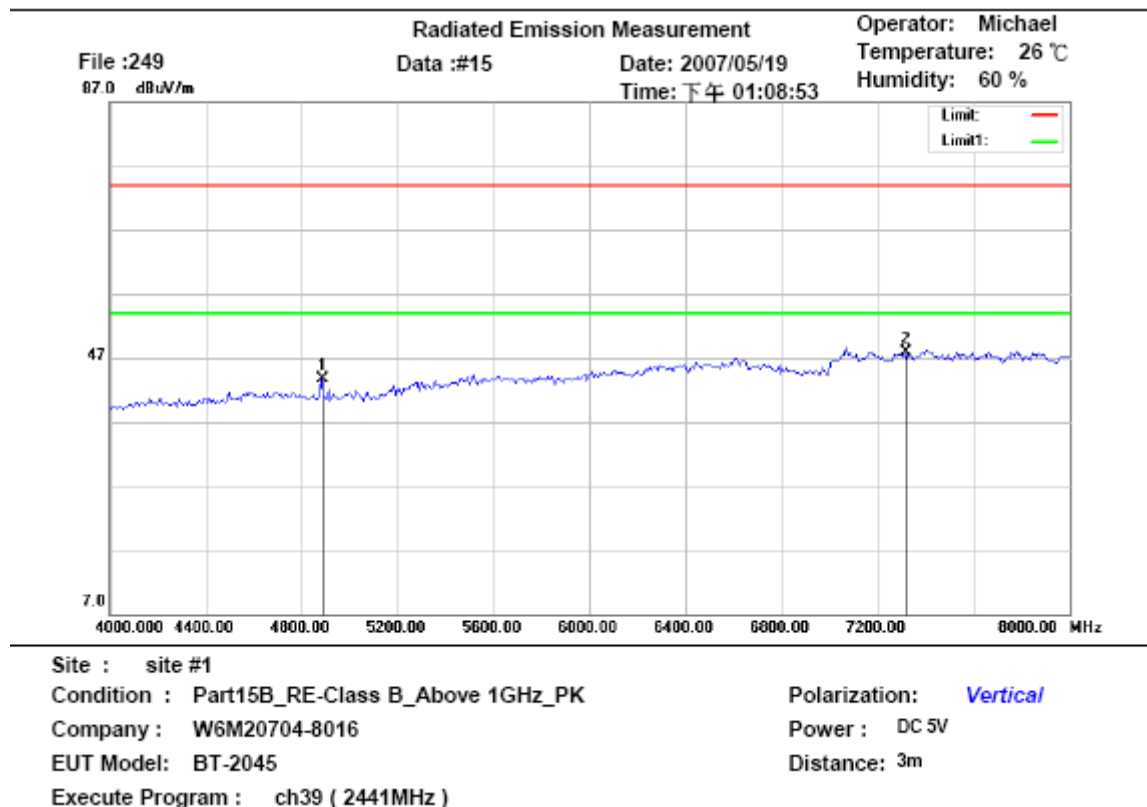
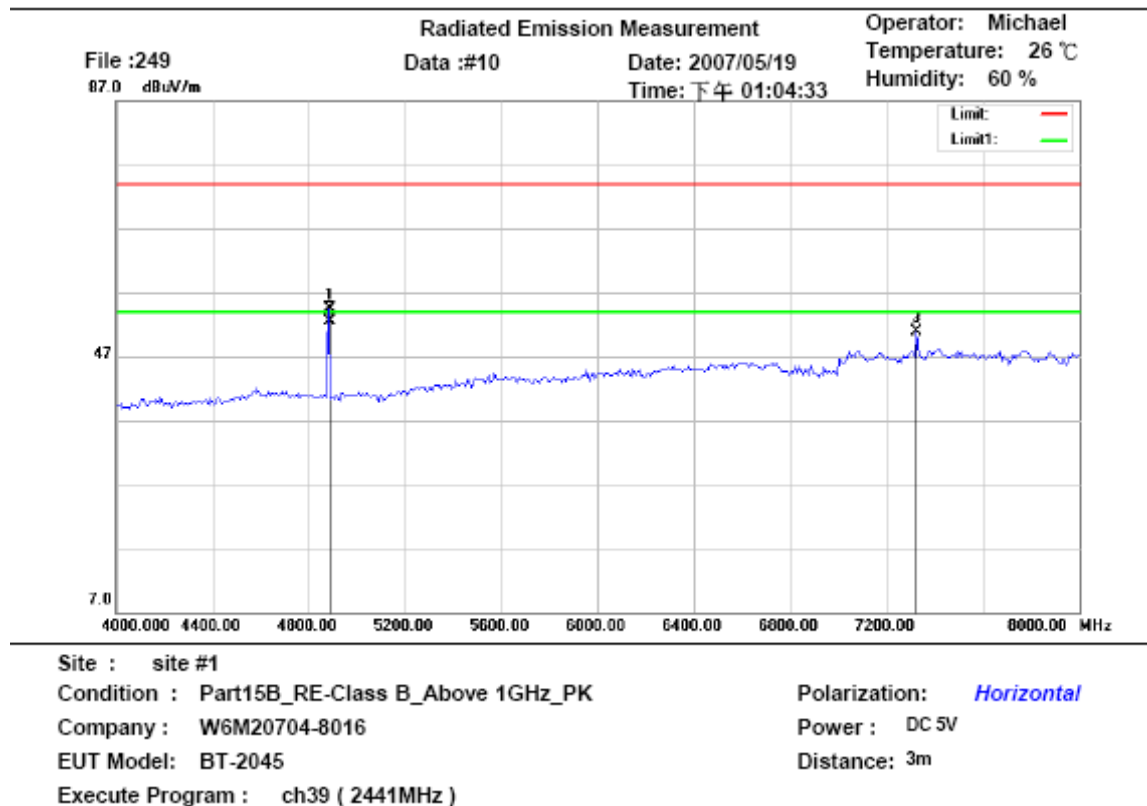
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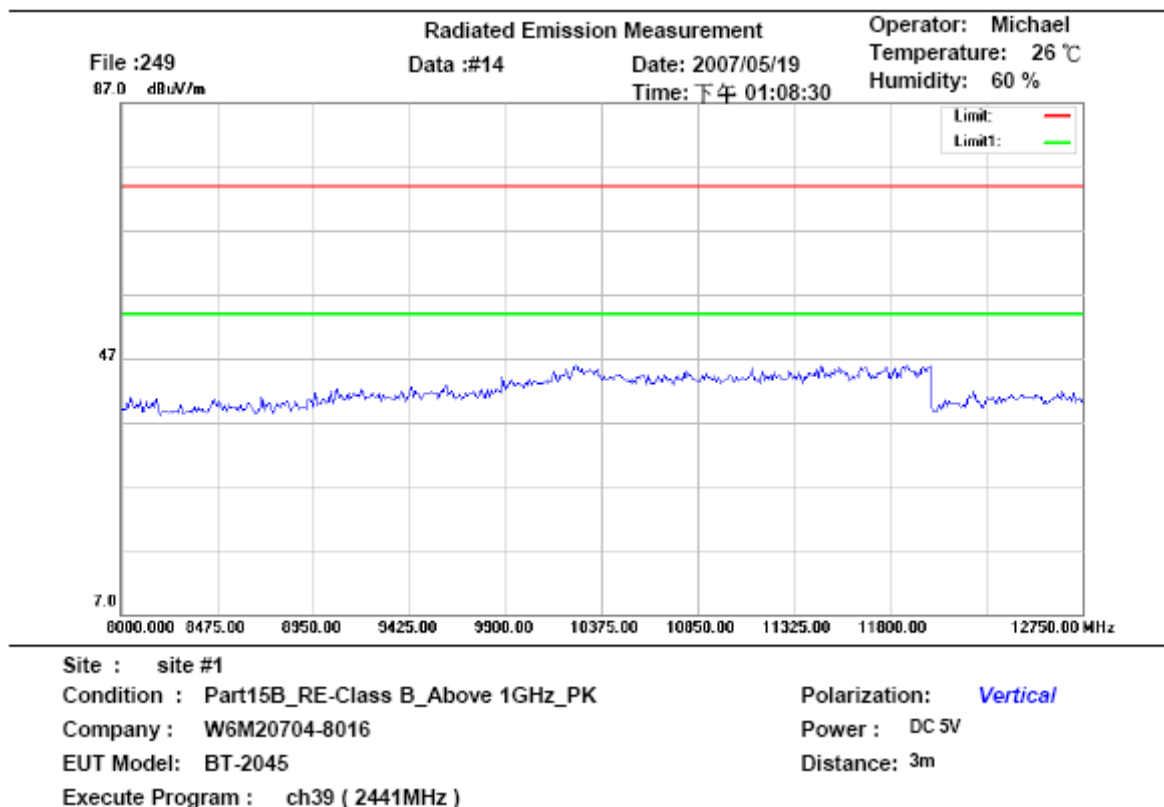
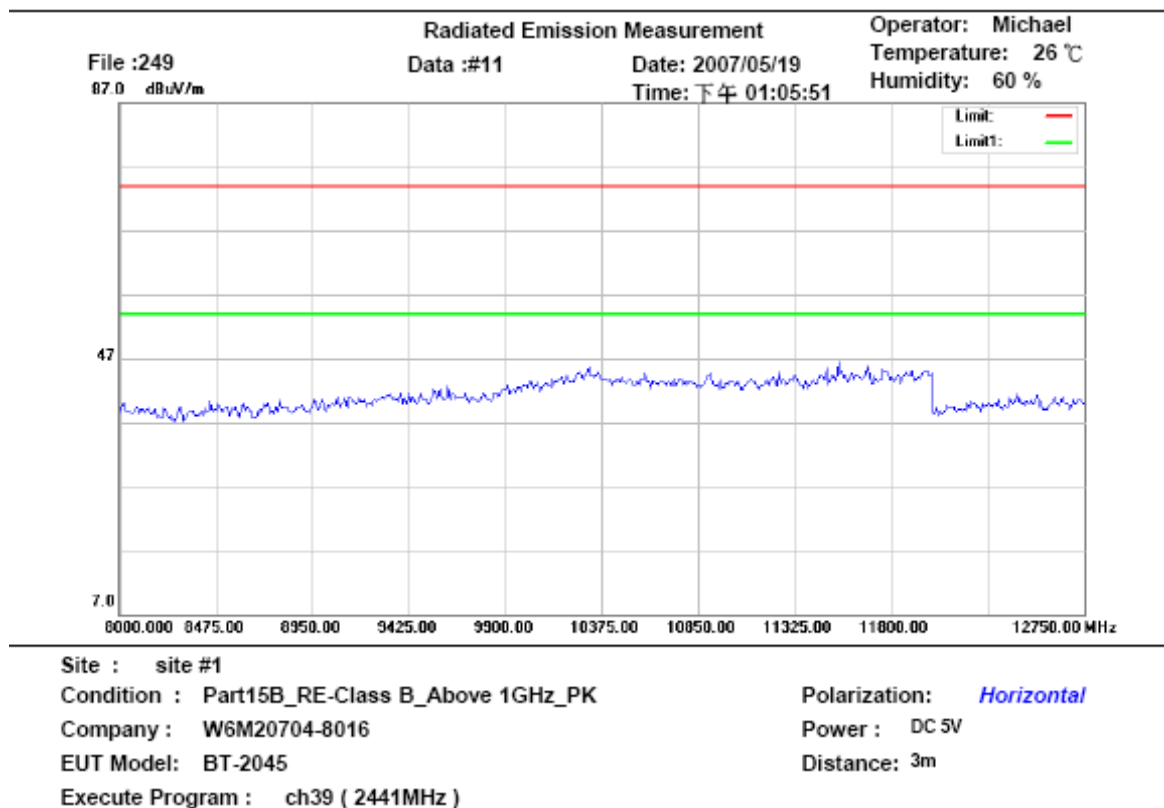
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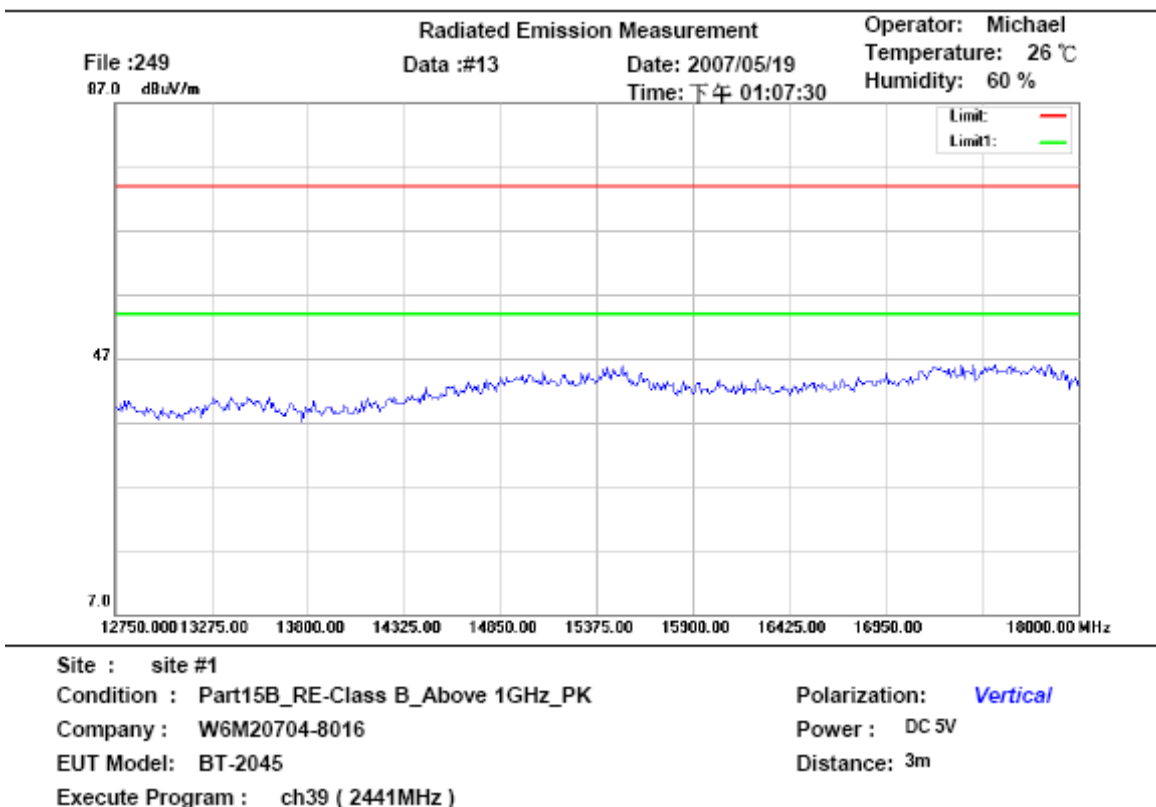
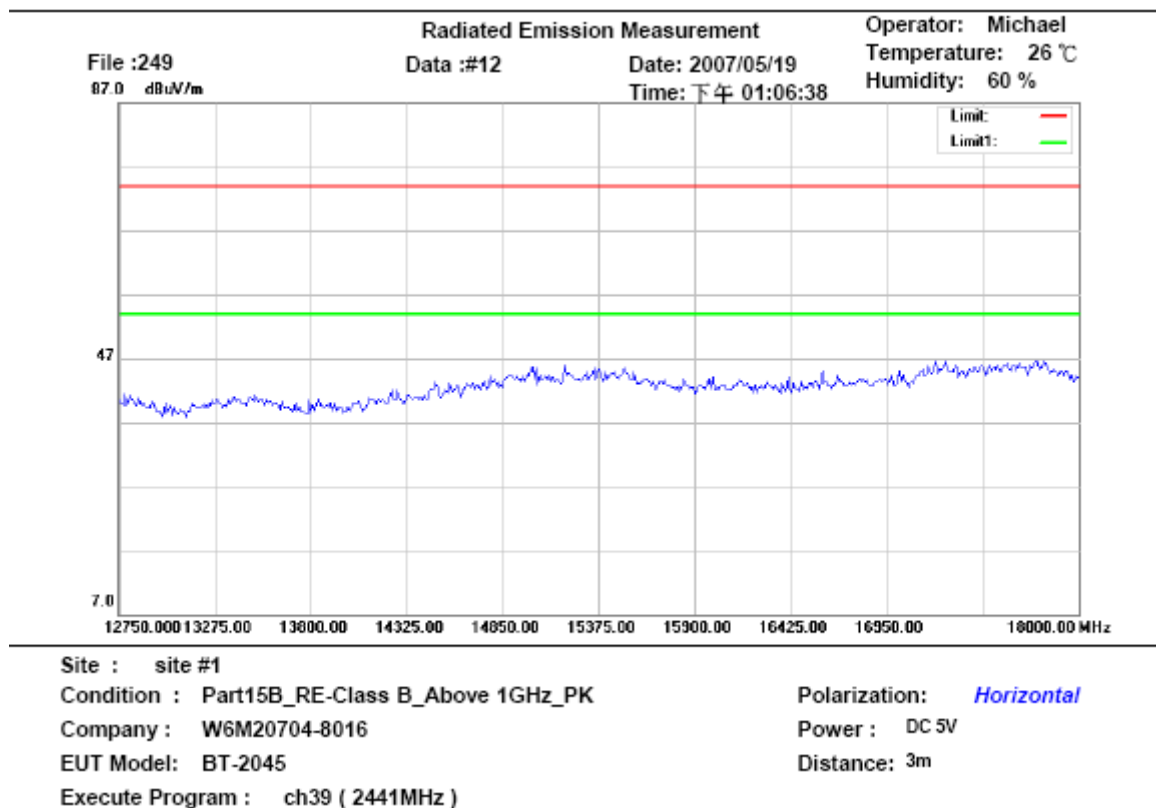


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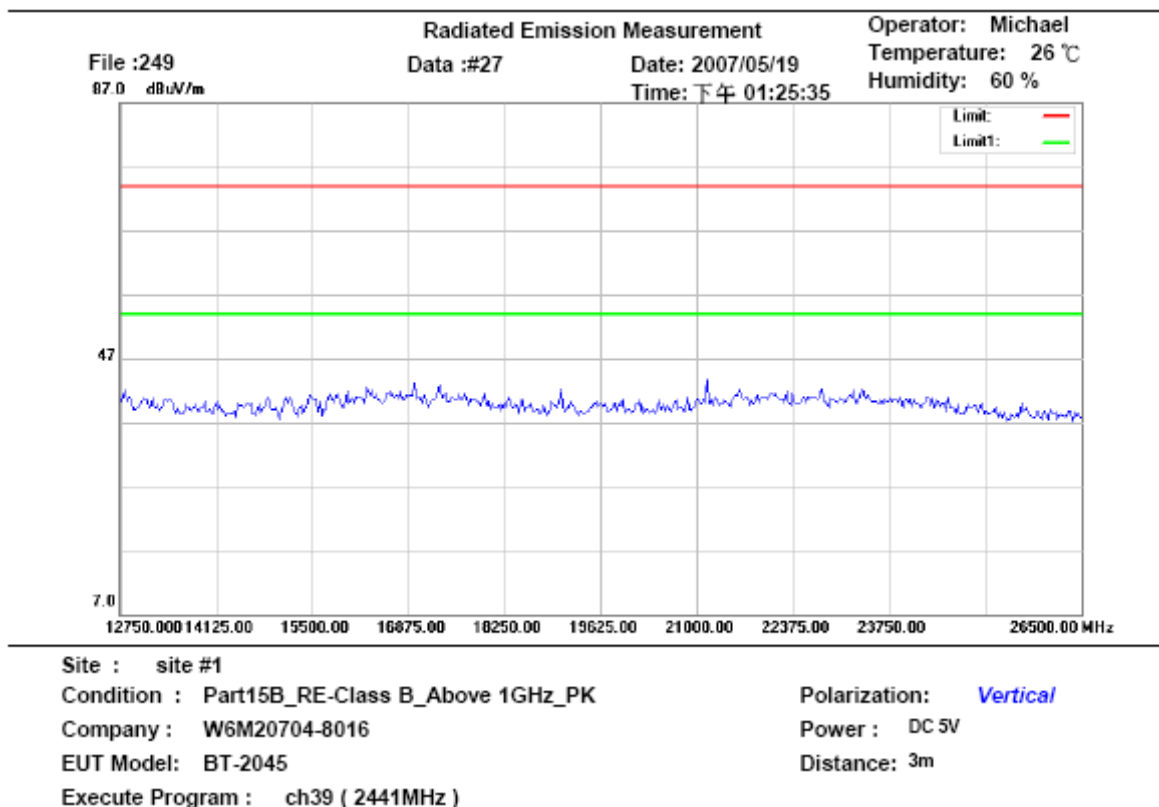
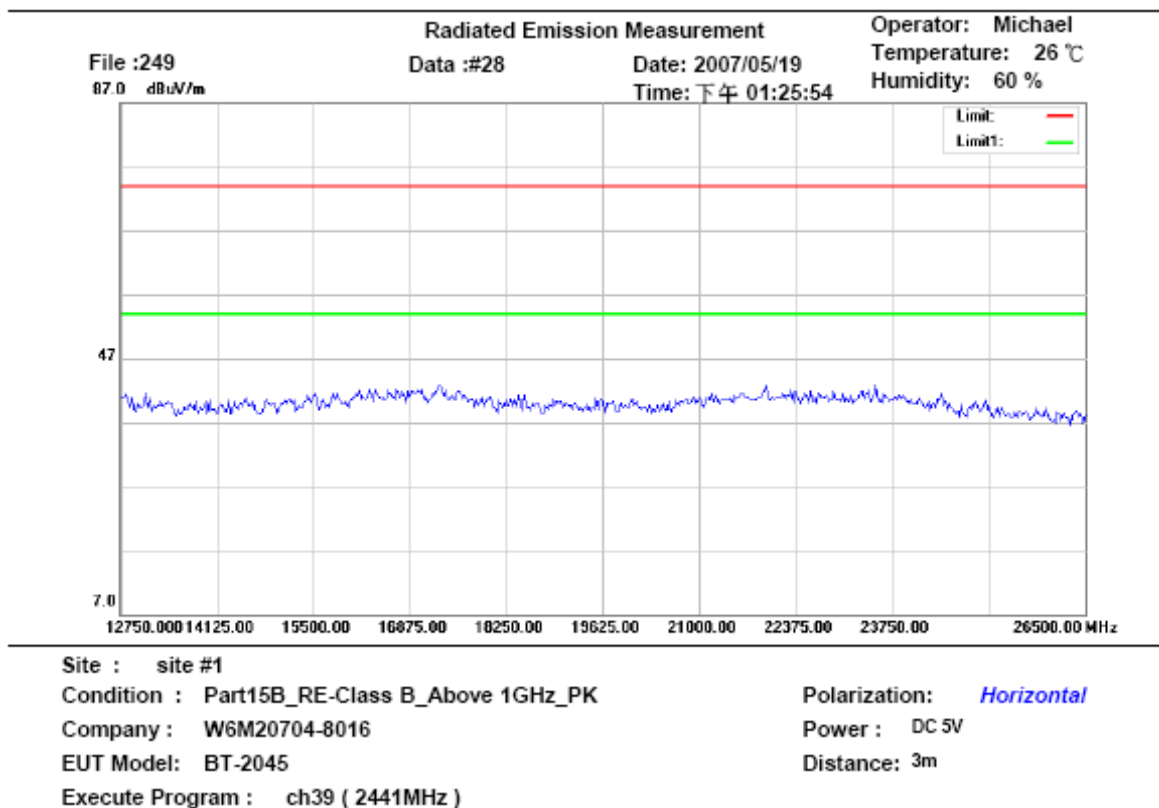




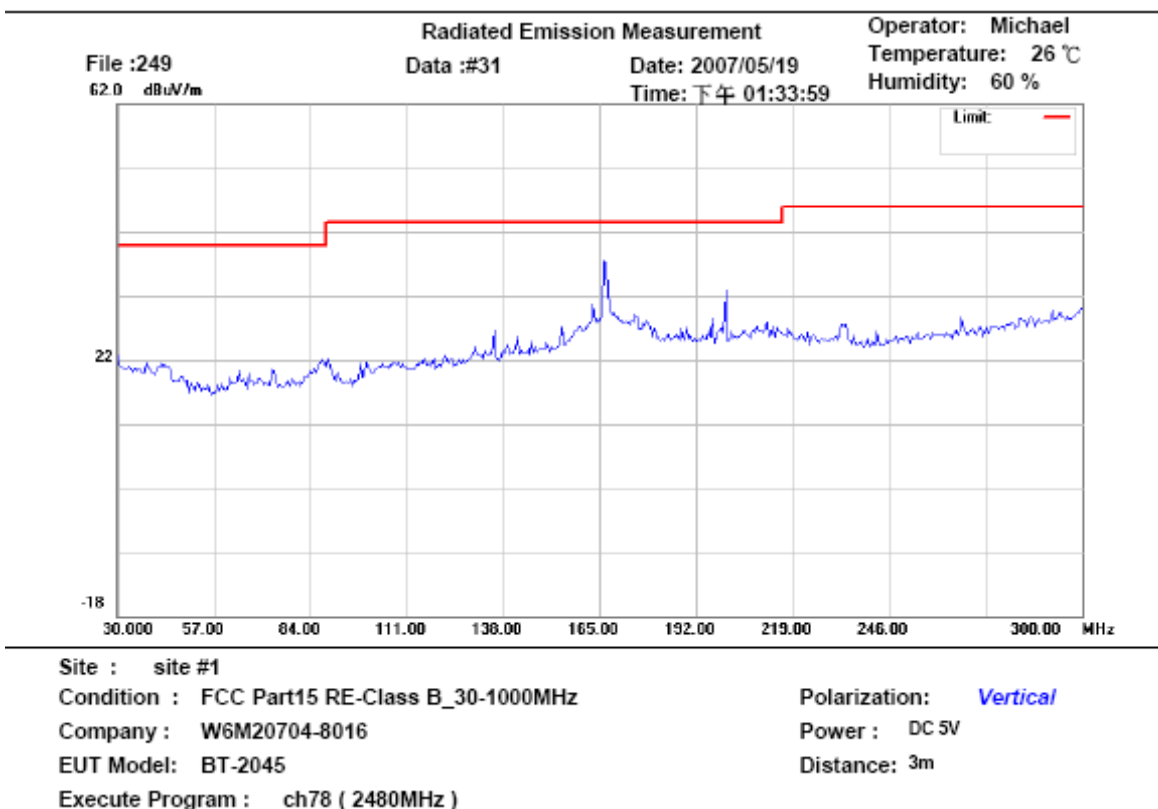
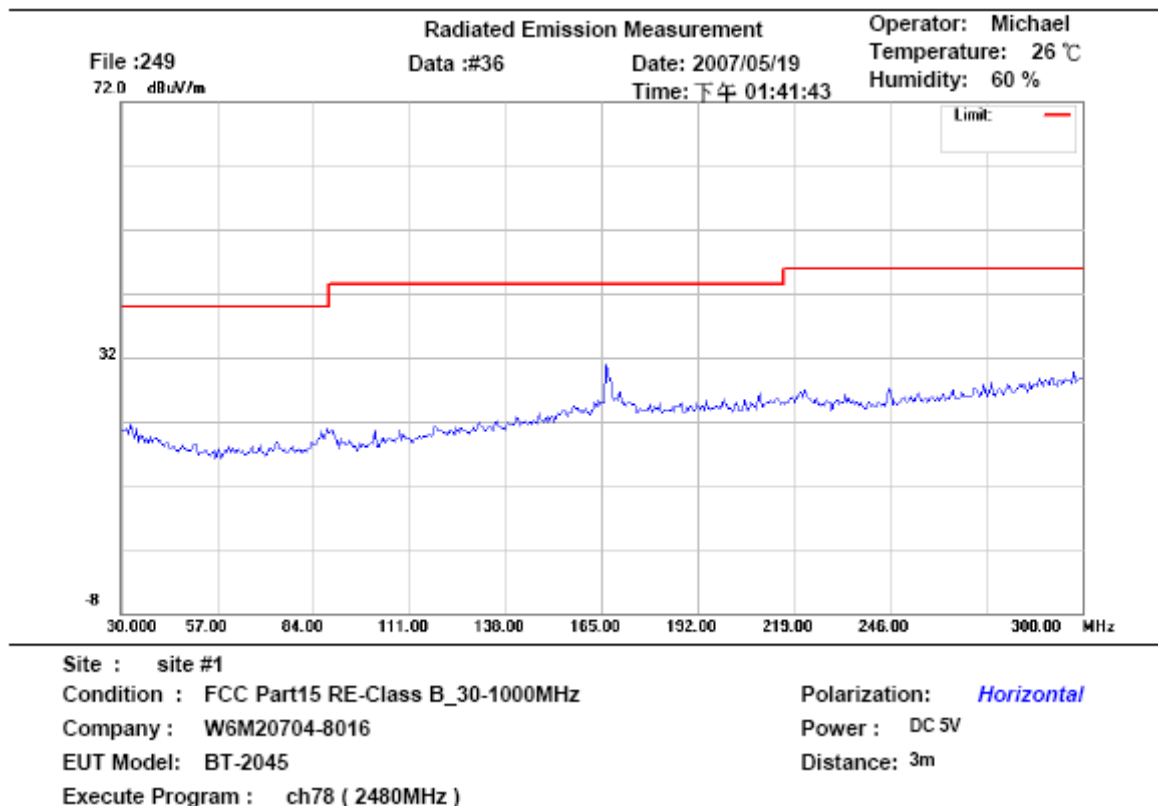
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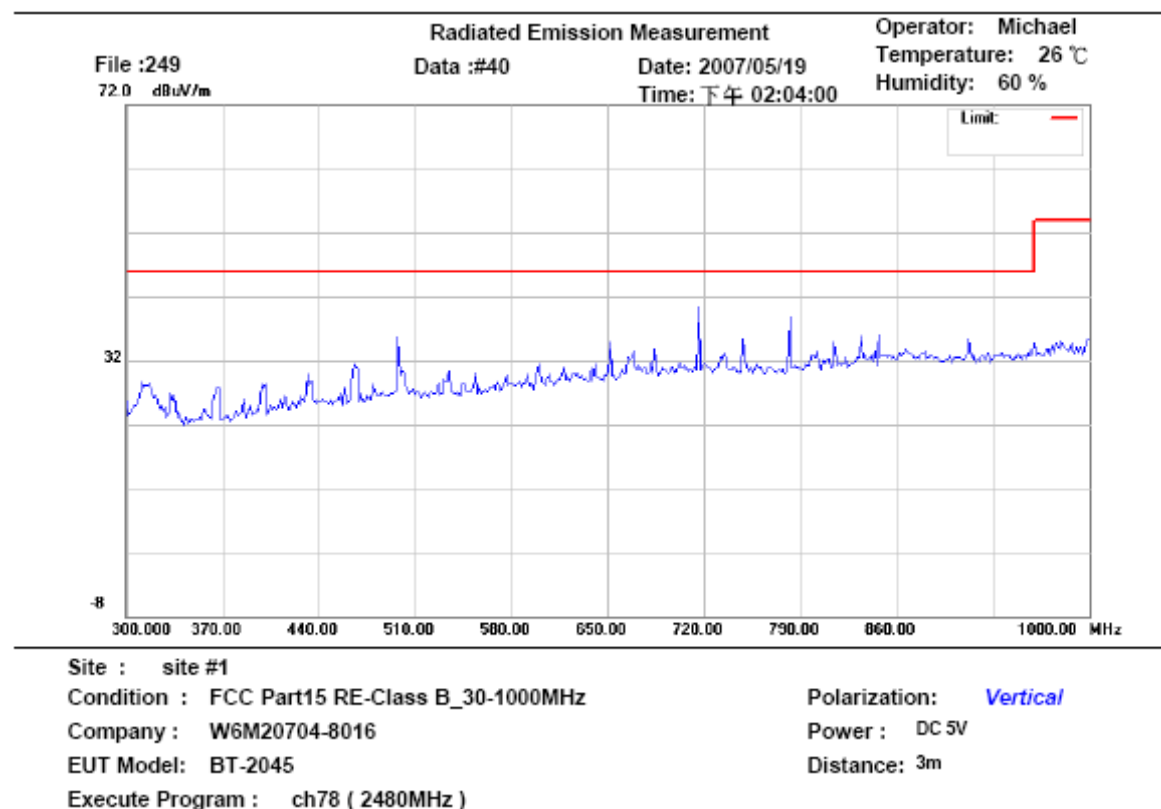
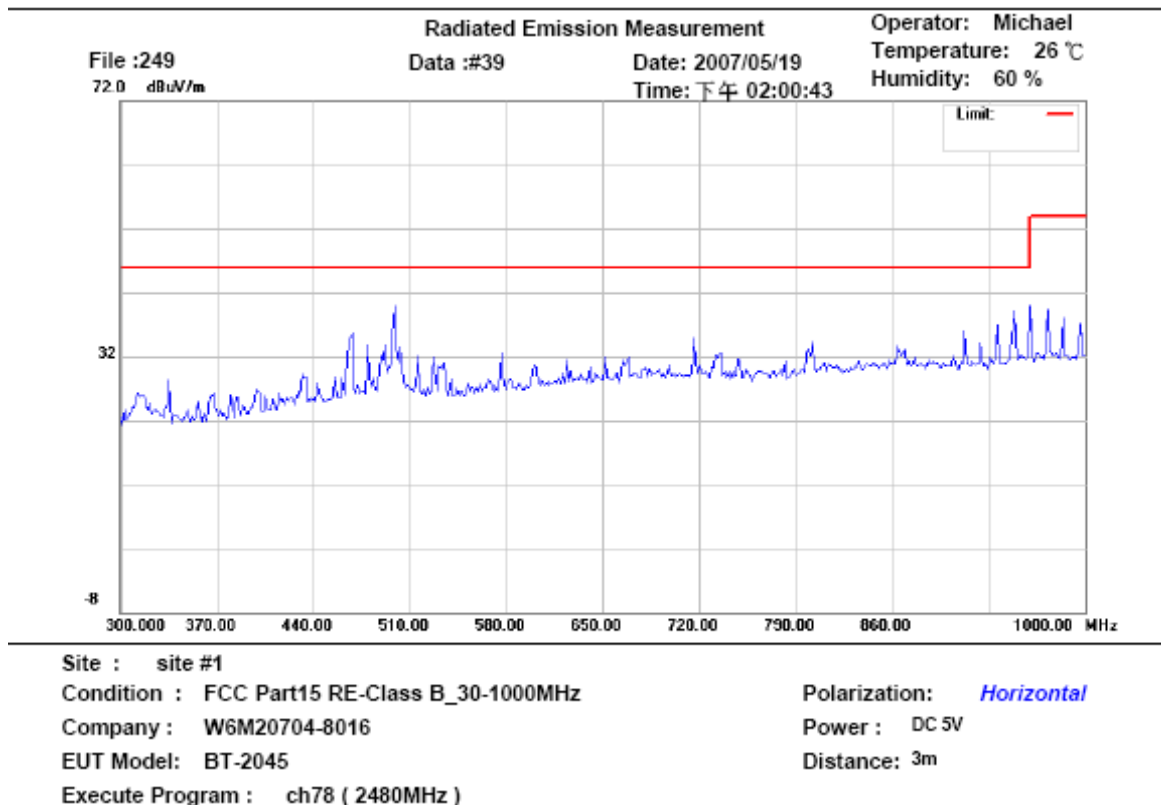
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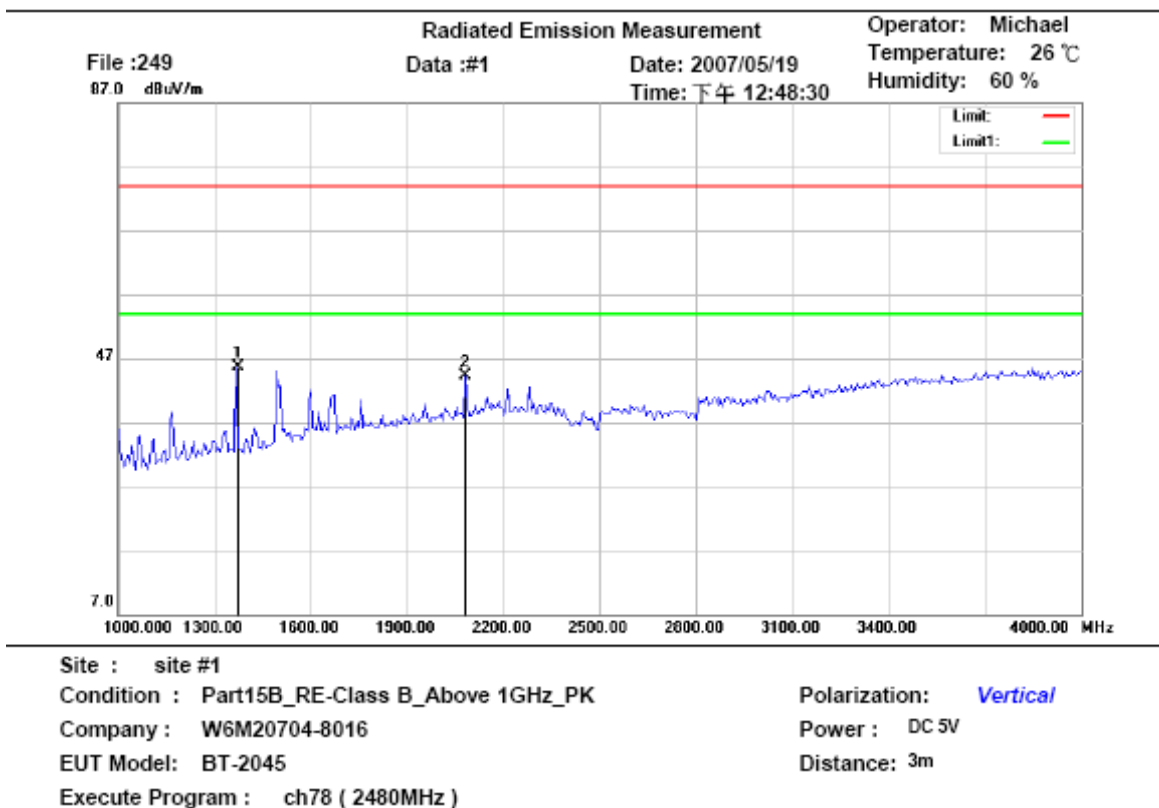
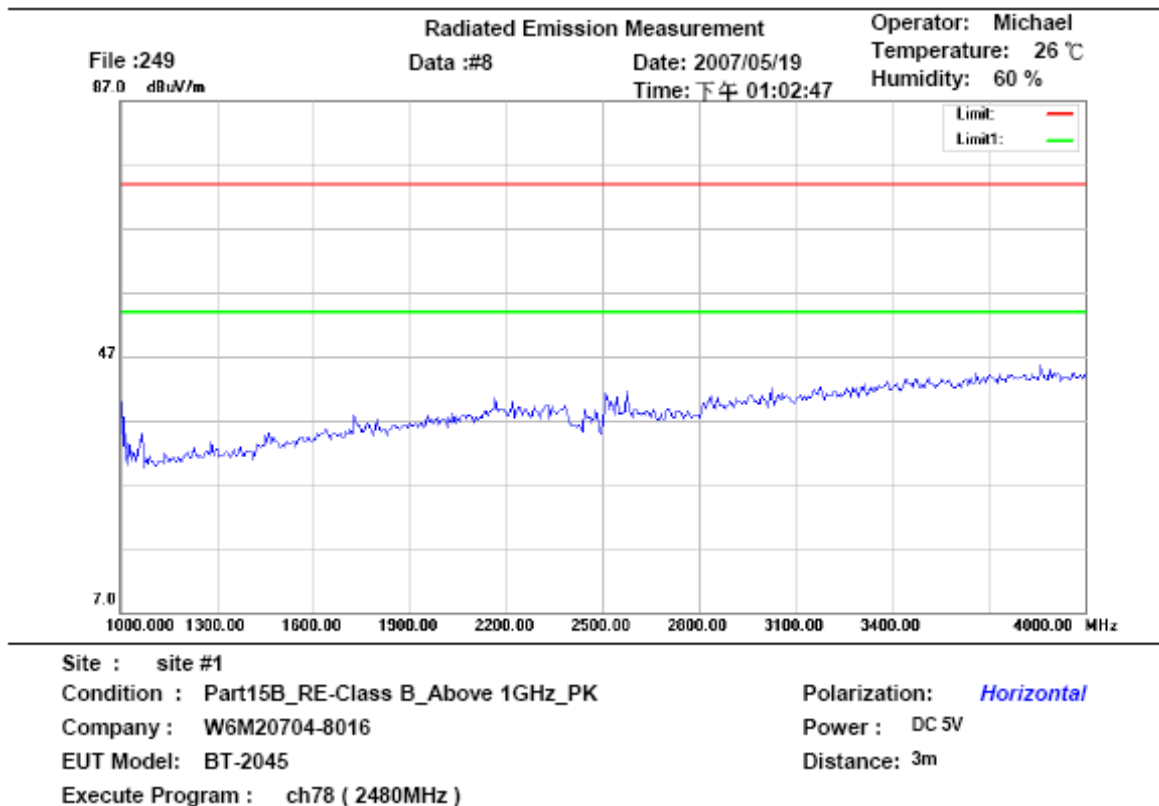
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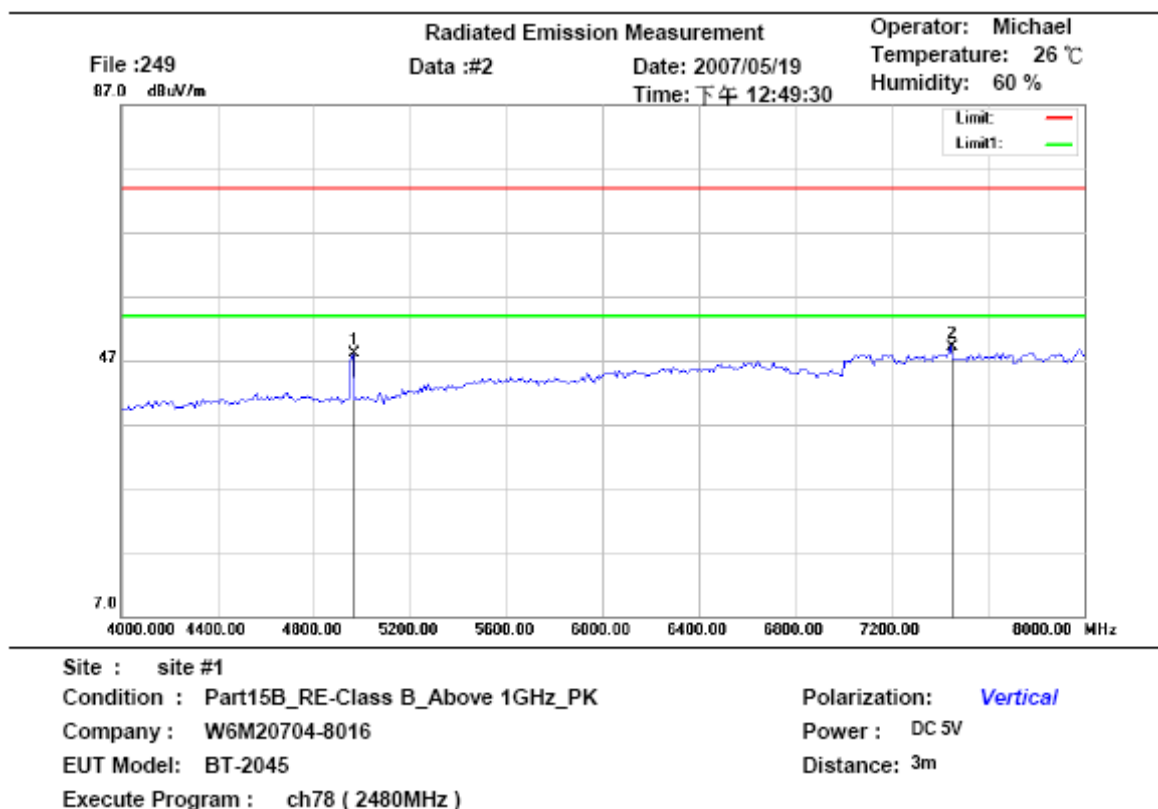
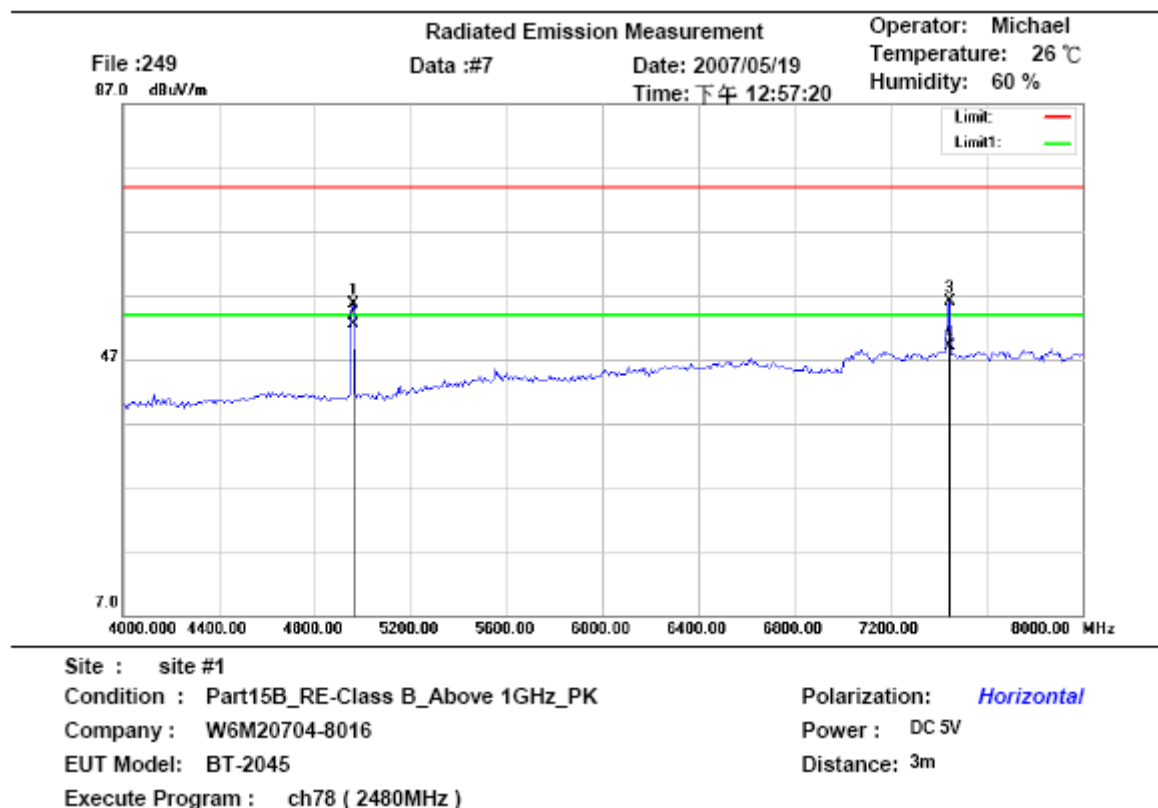
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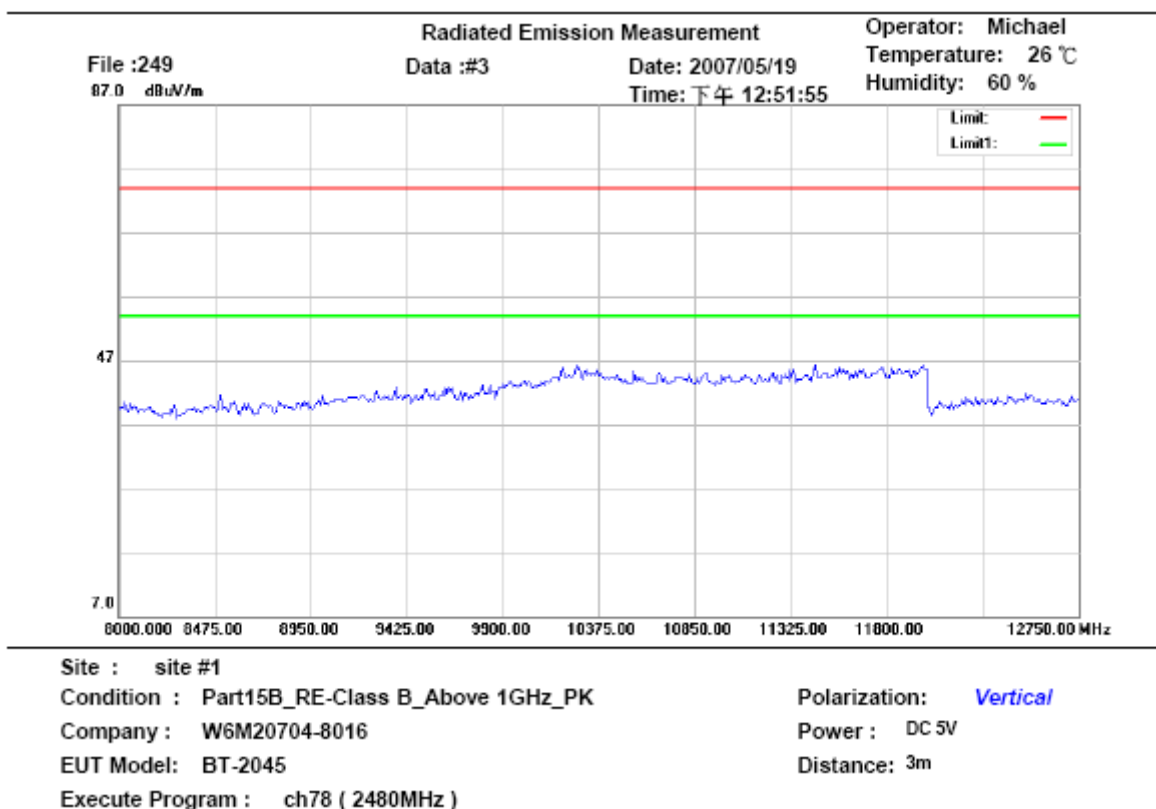
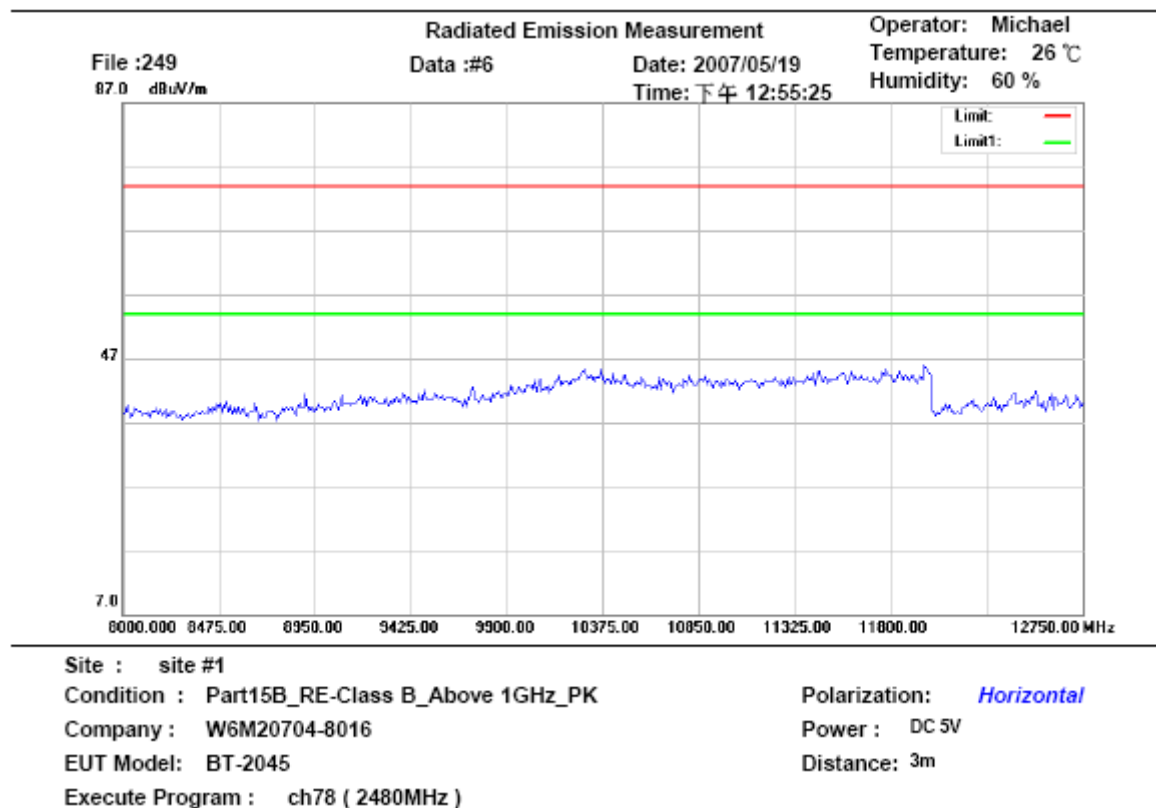
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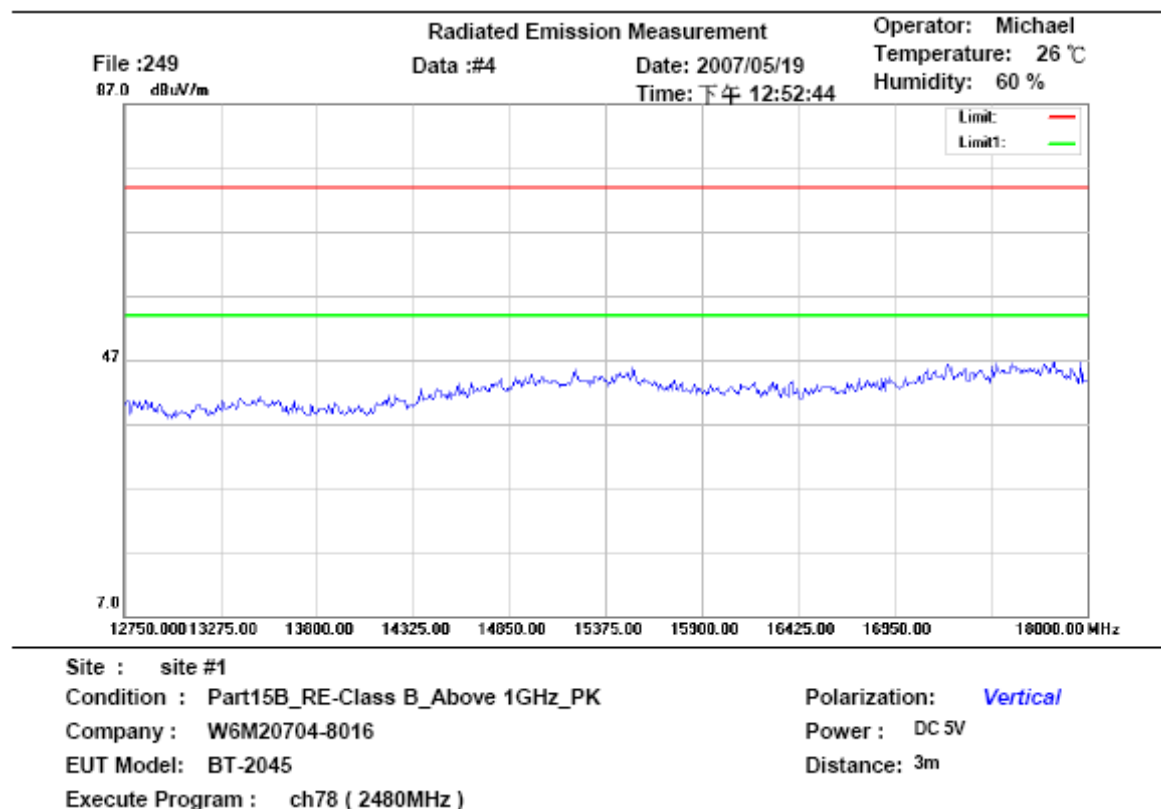
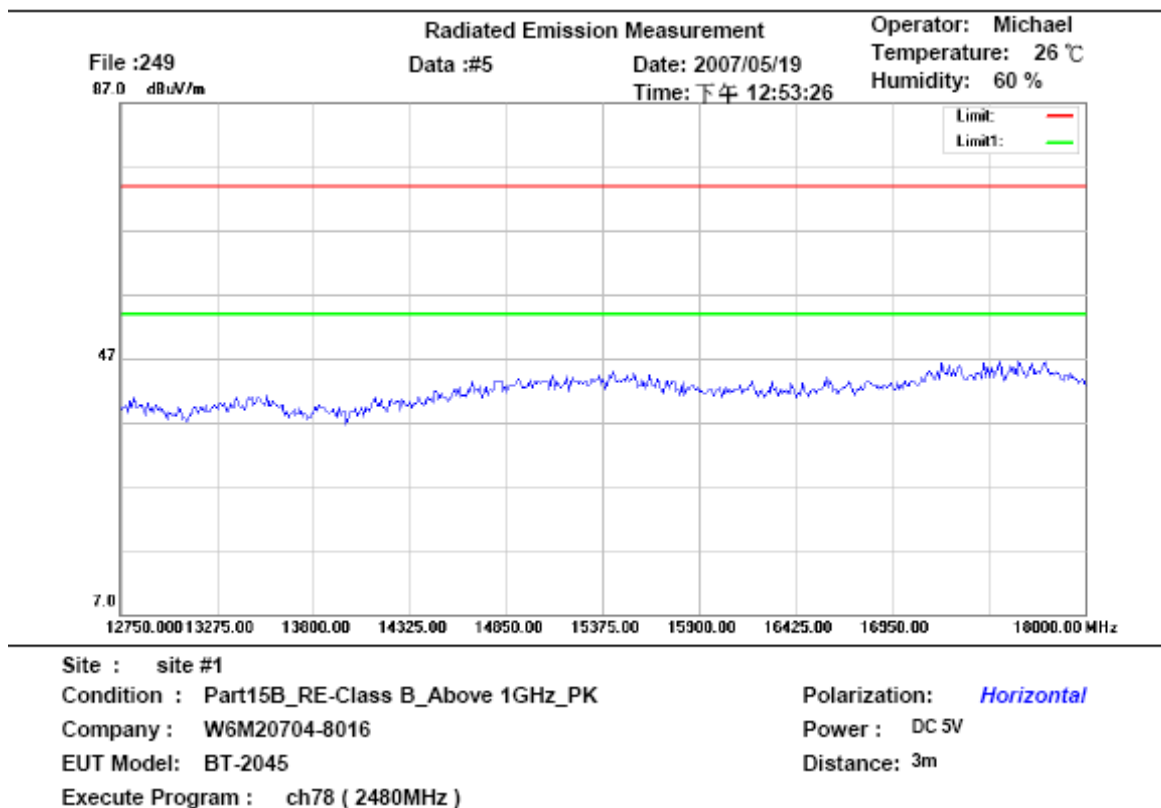
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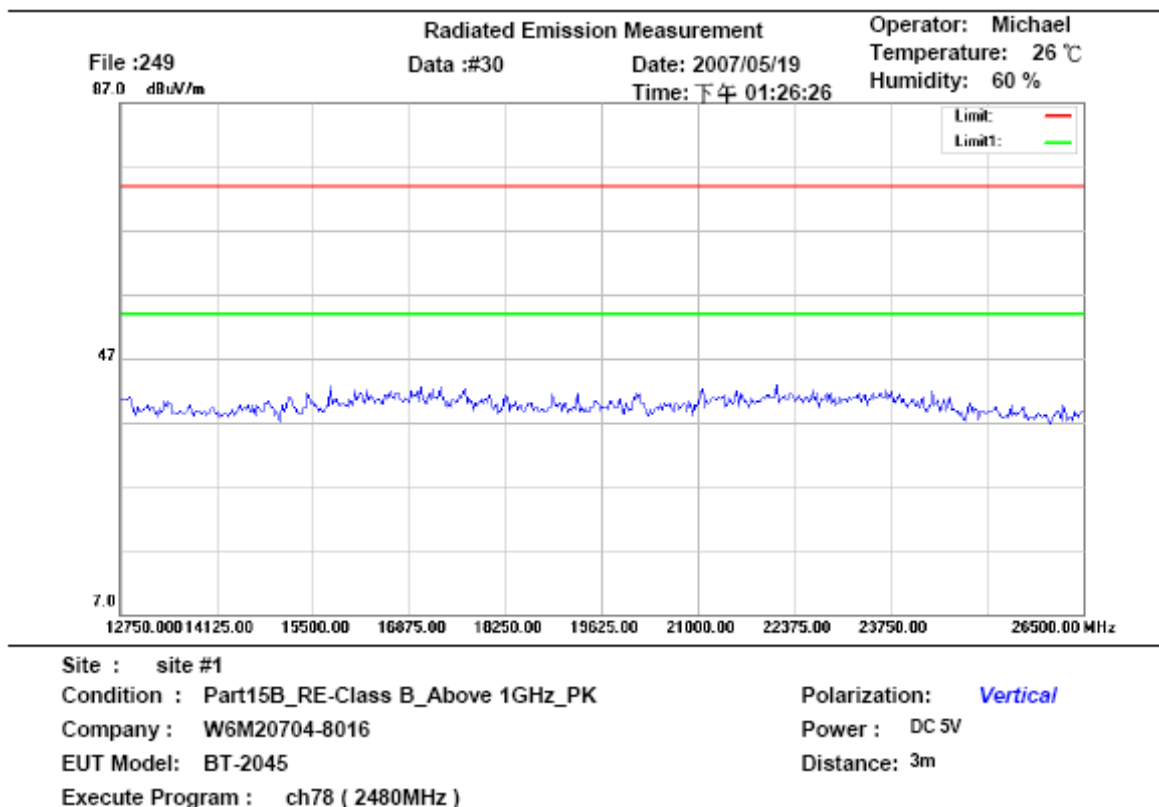
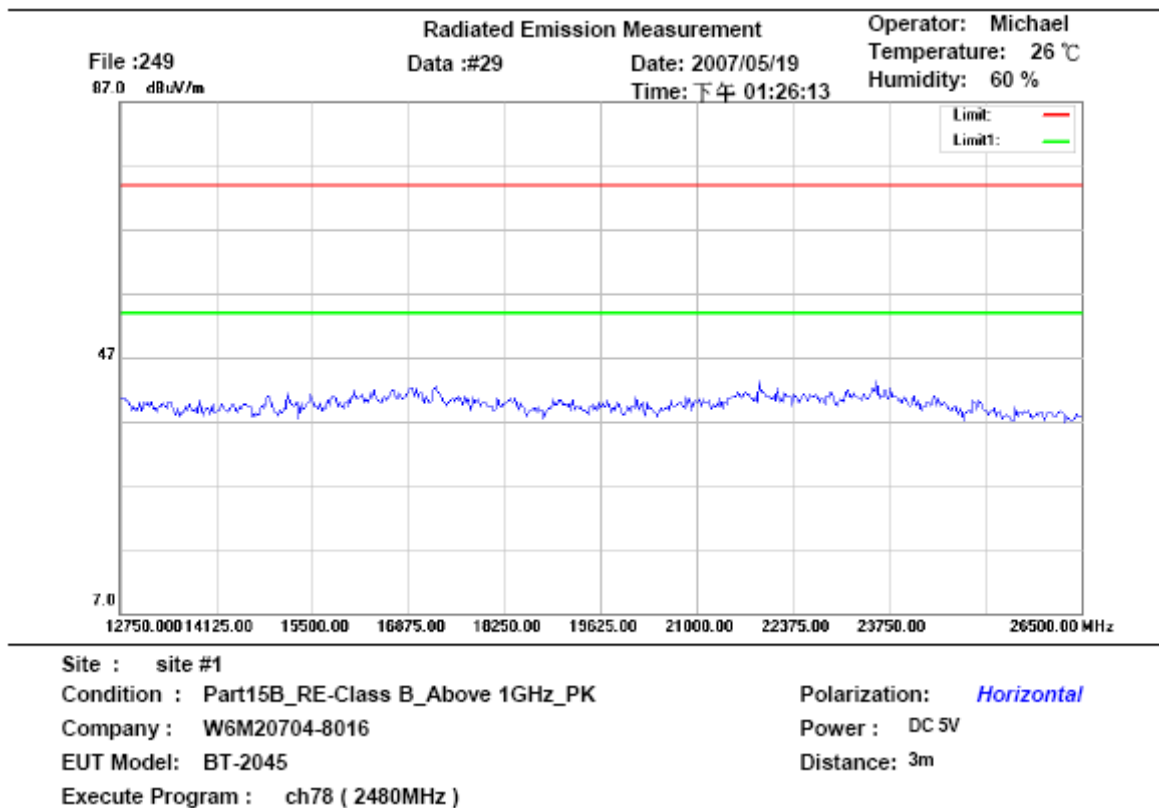


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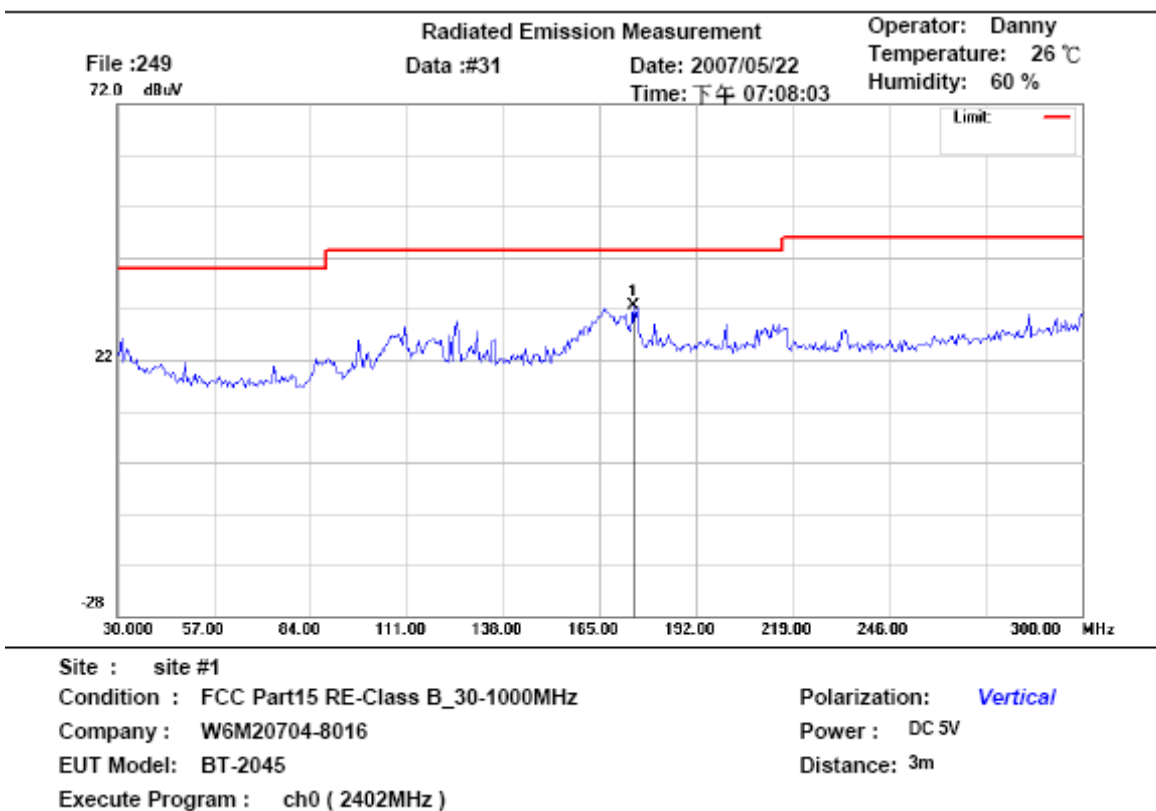
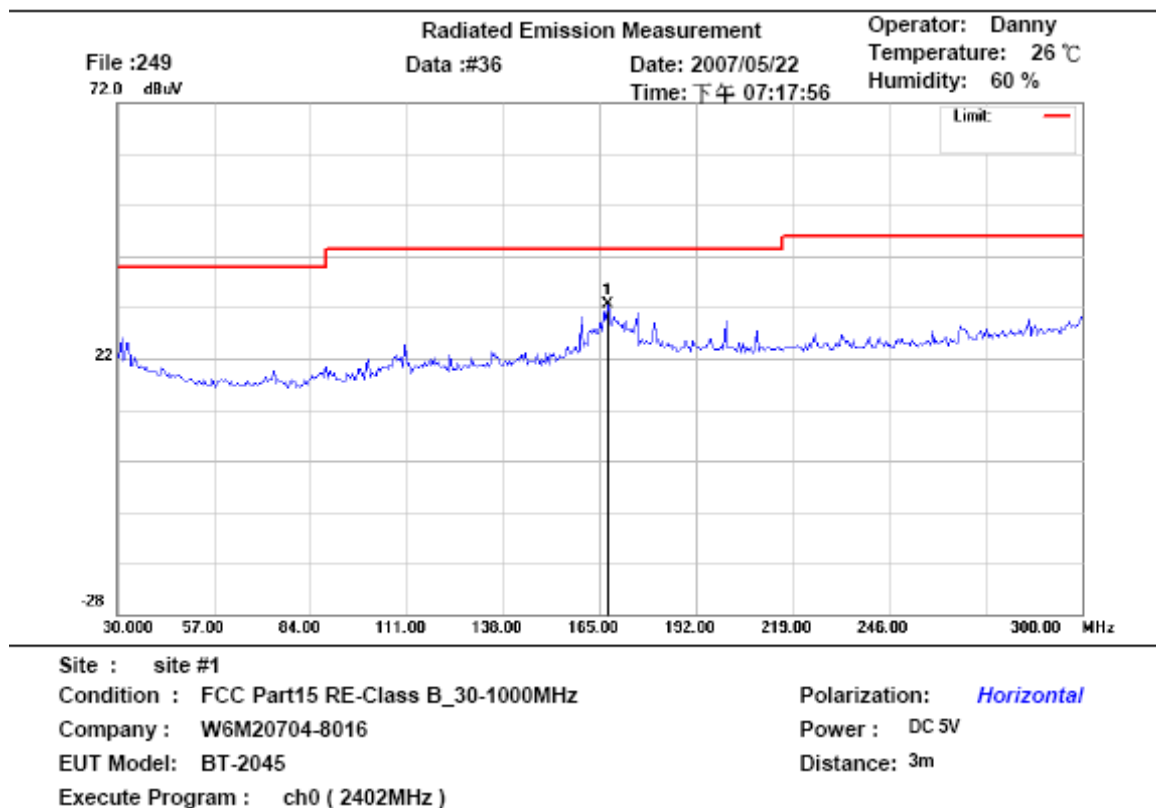
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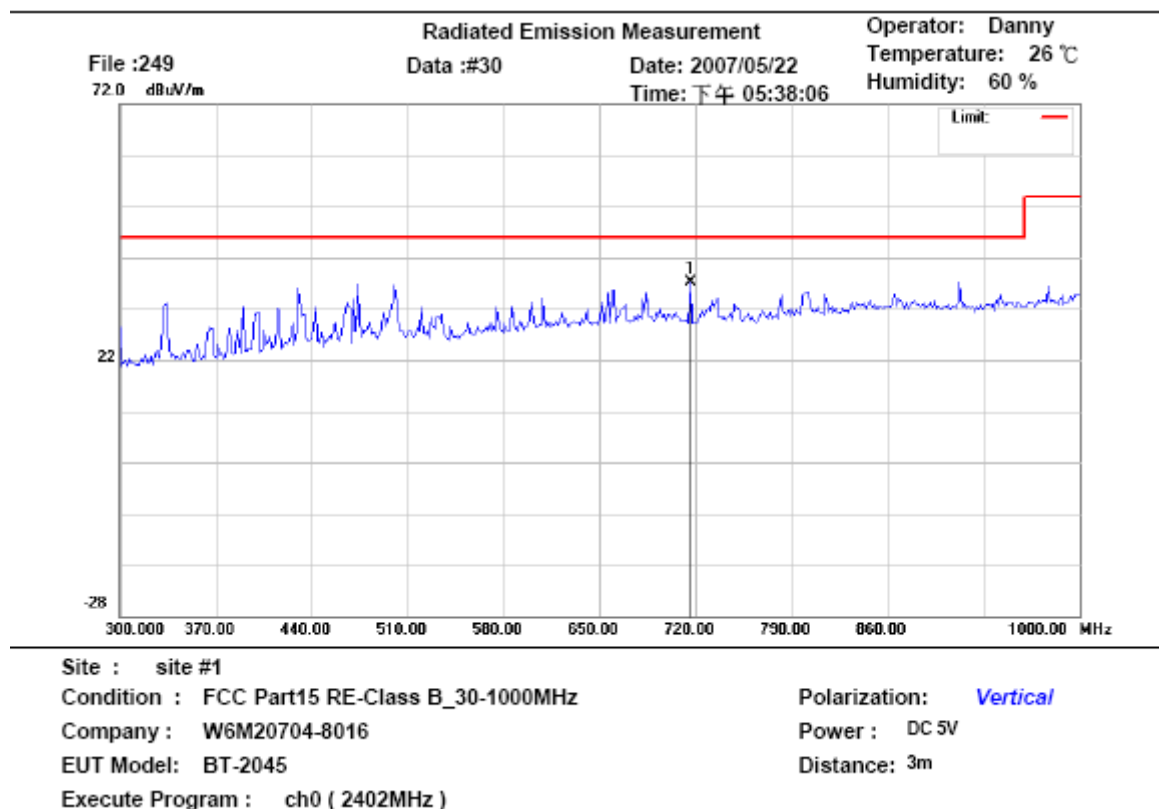
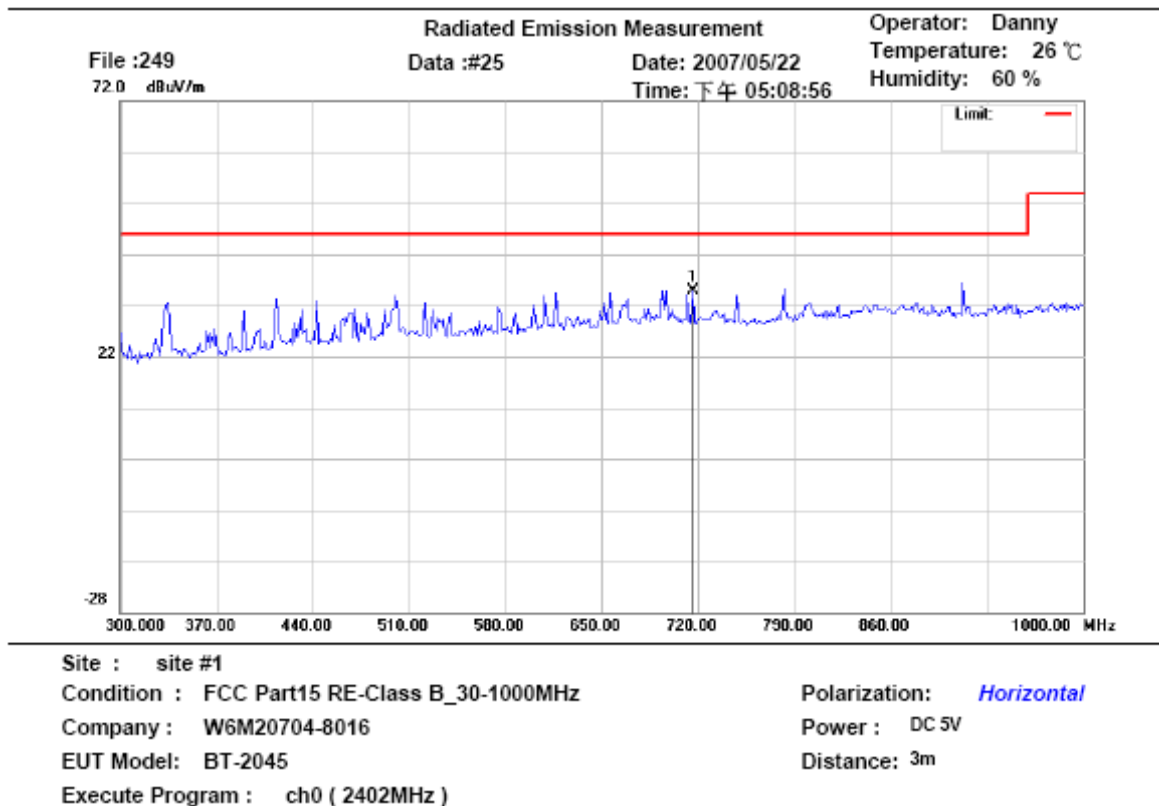
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## Receiver Part

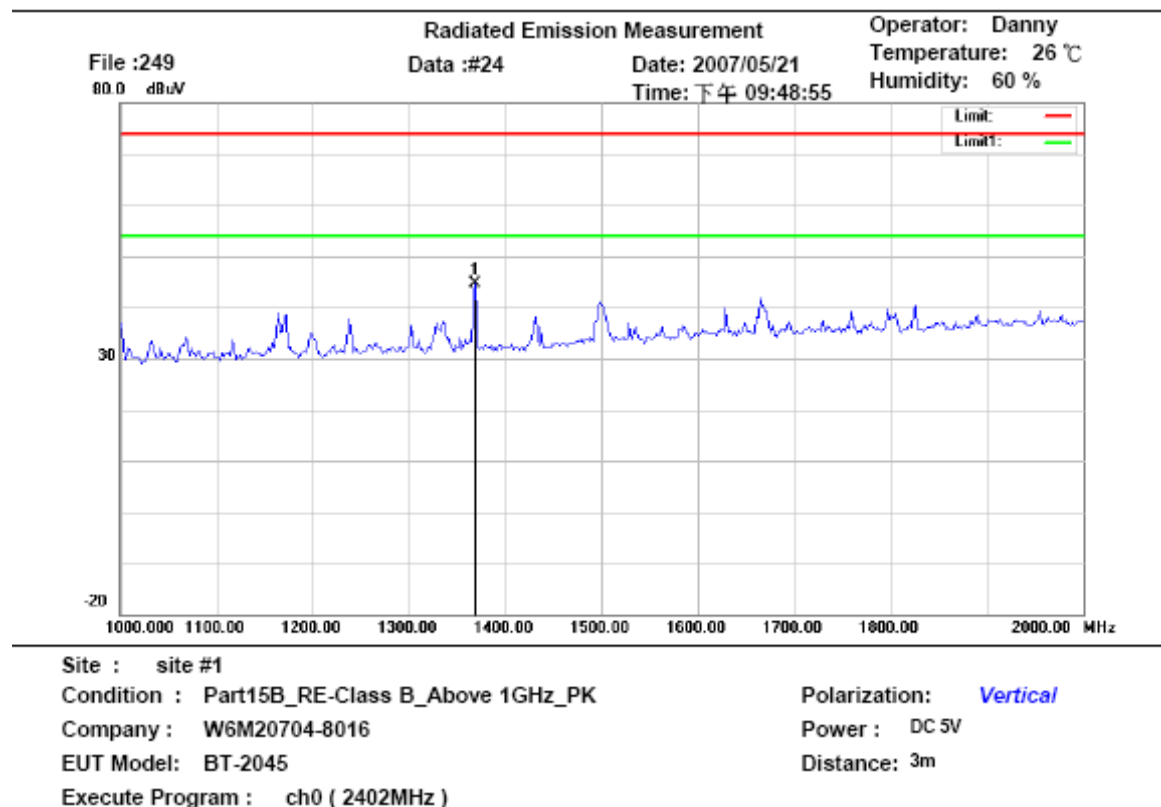
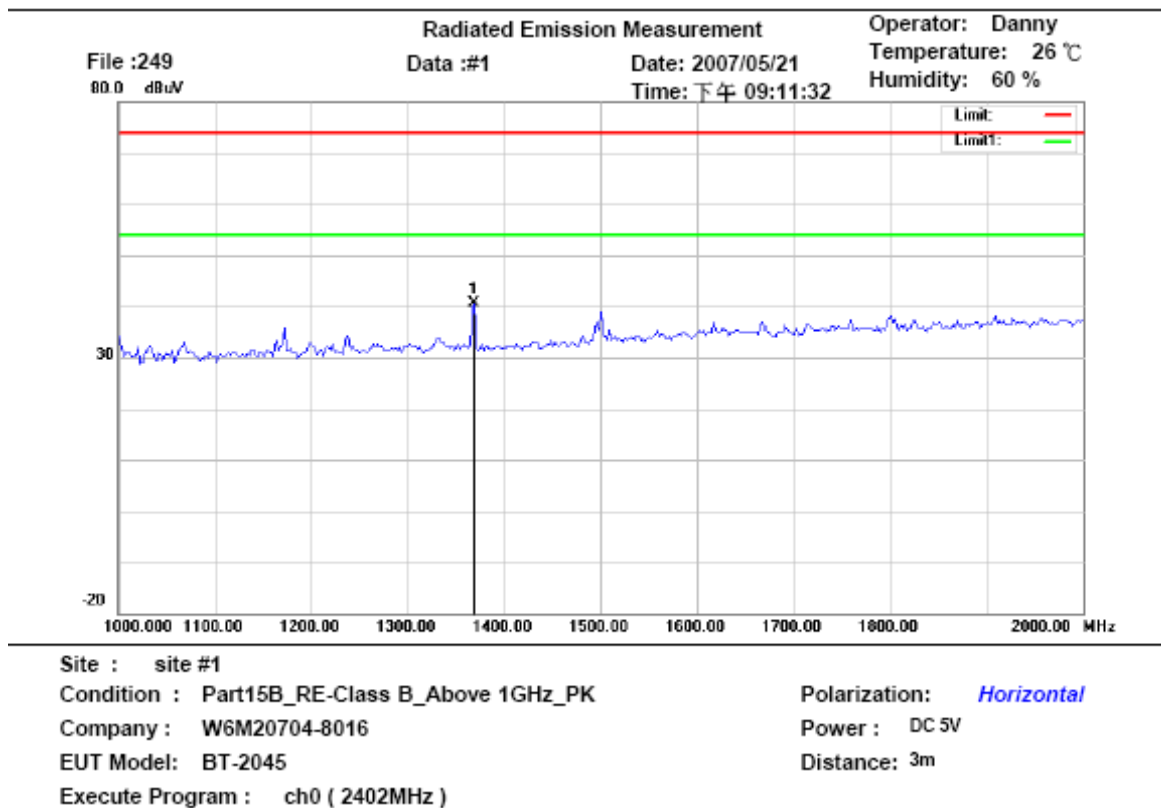
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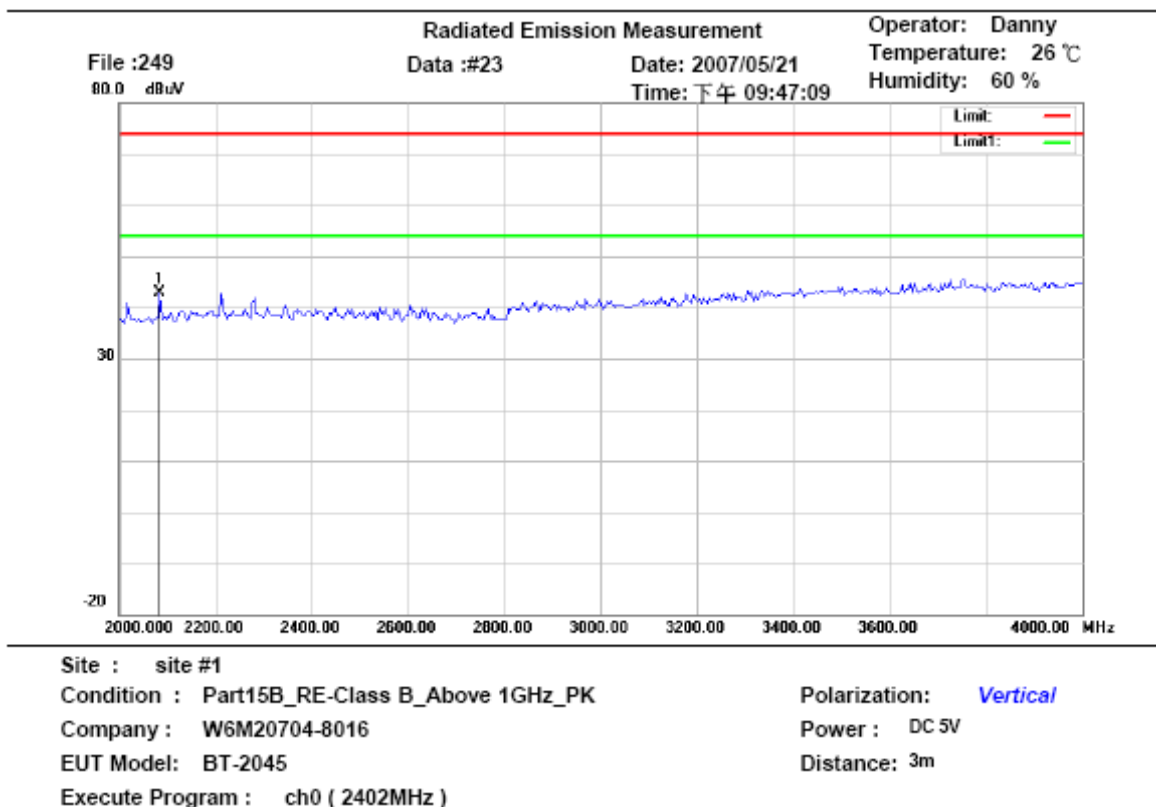
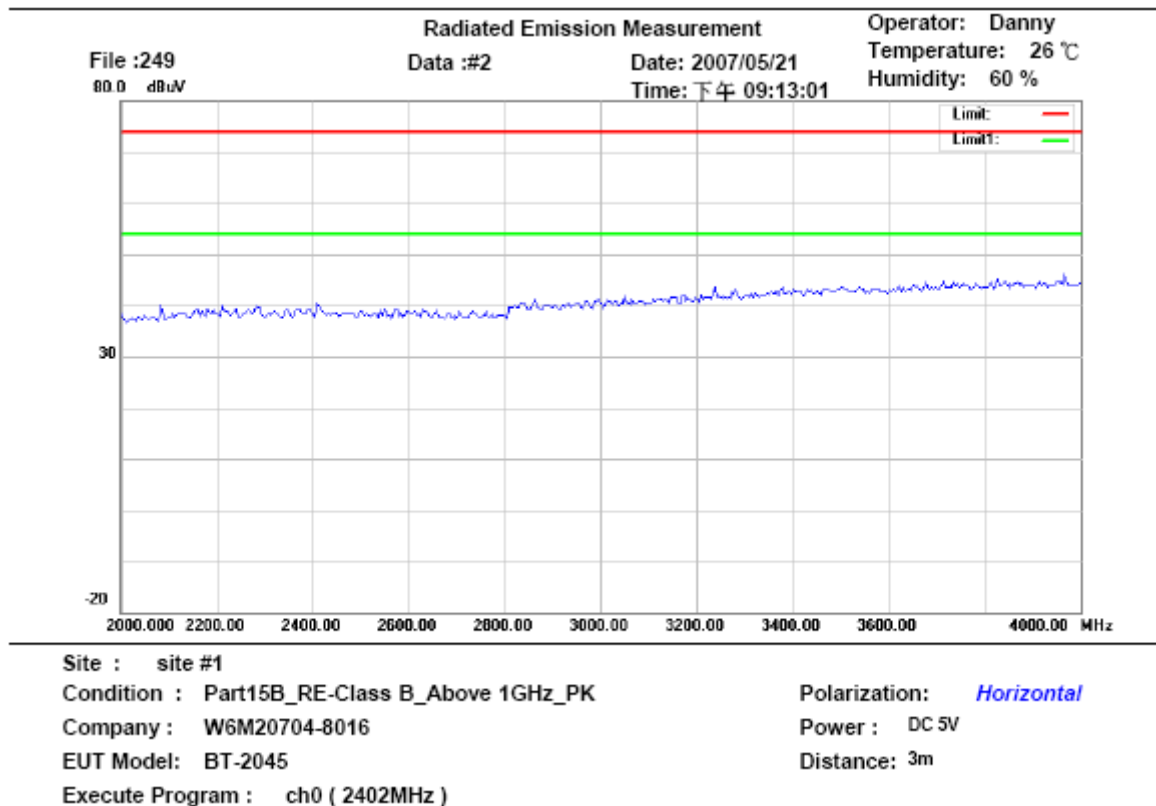
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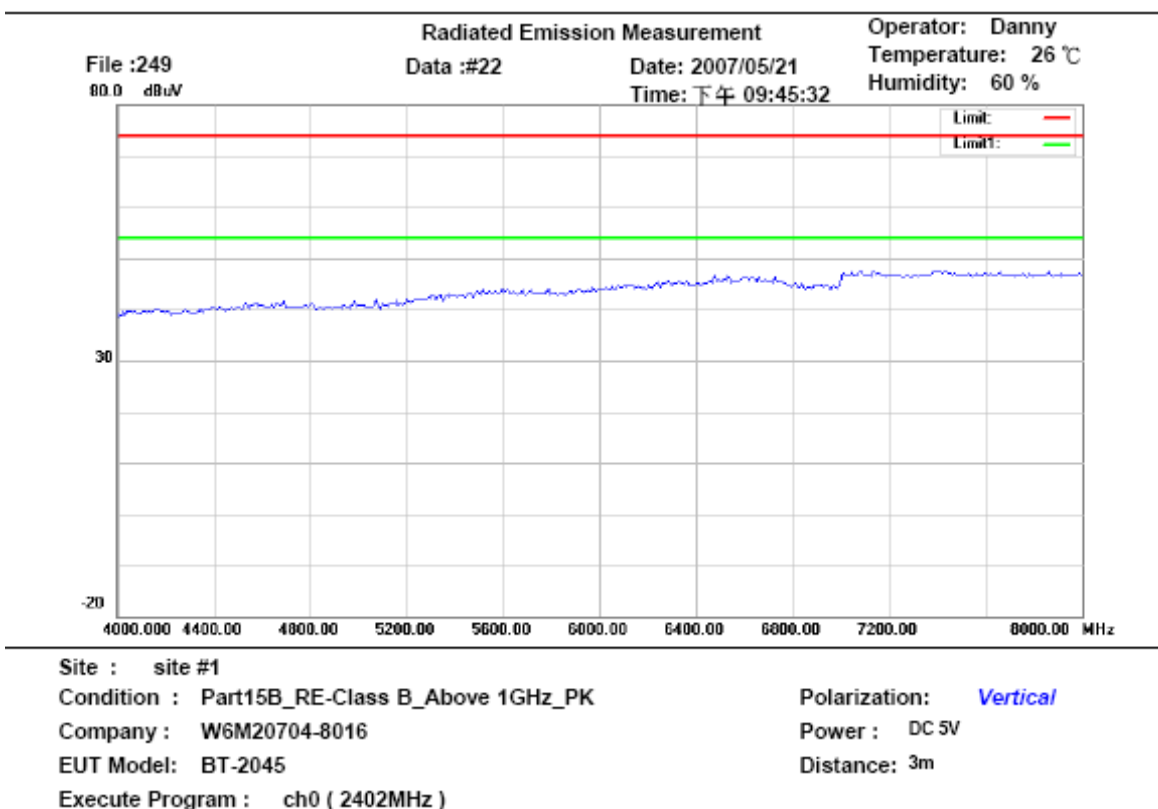
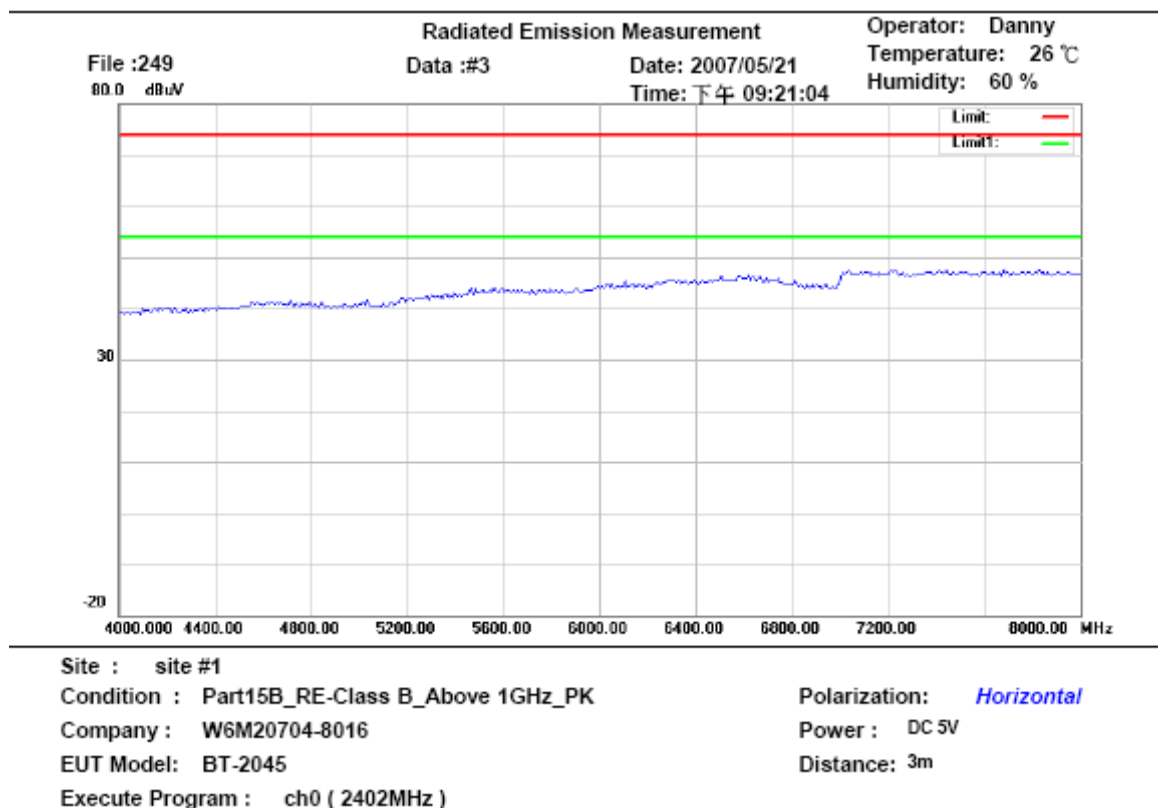
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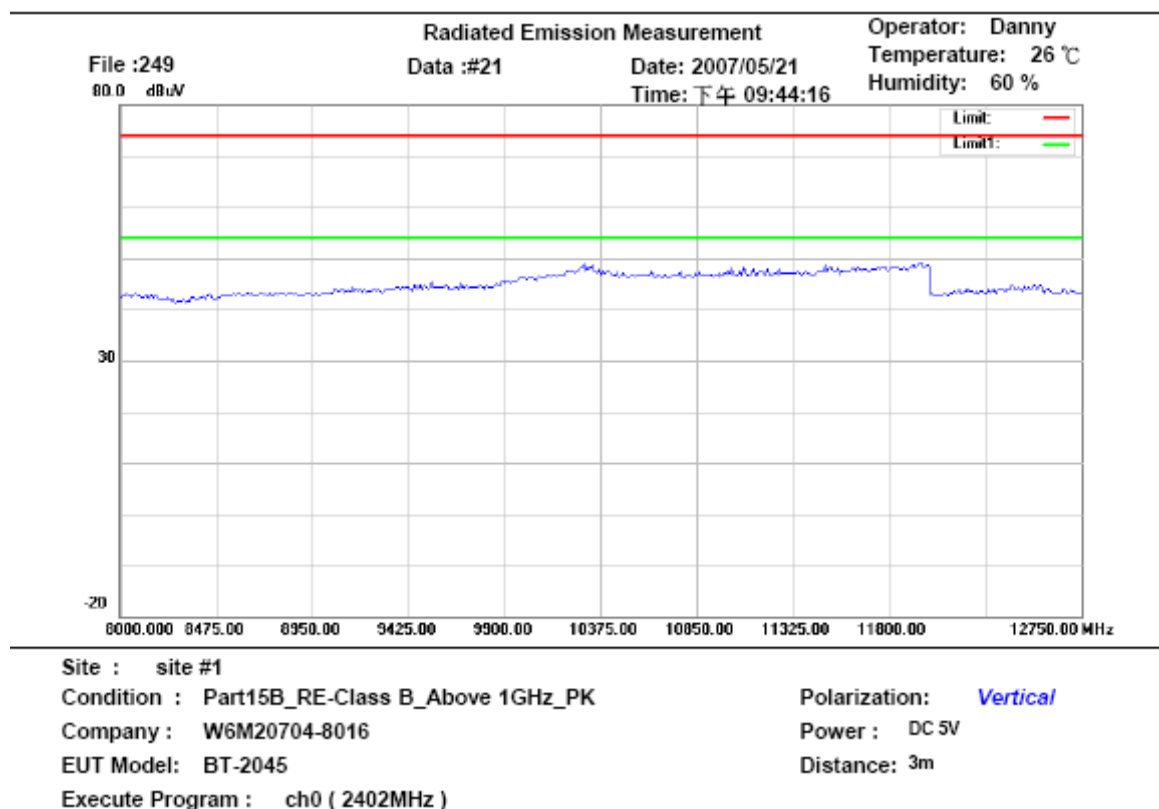
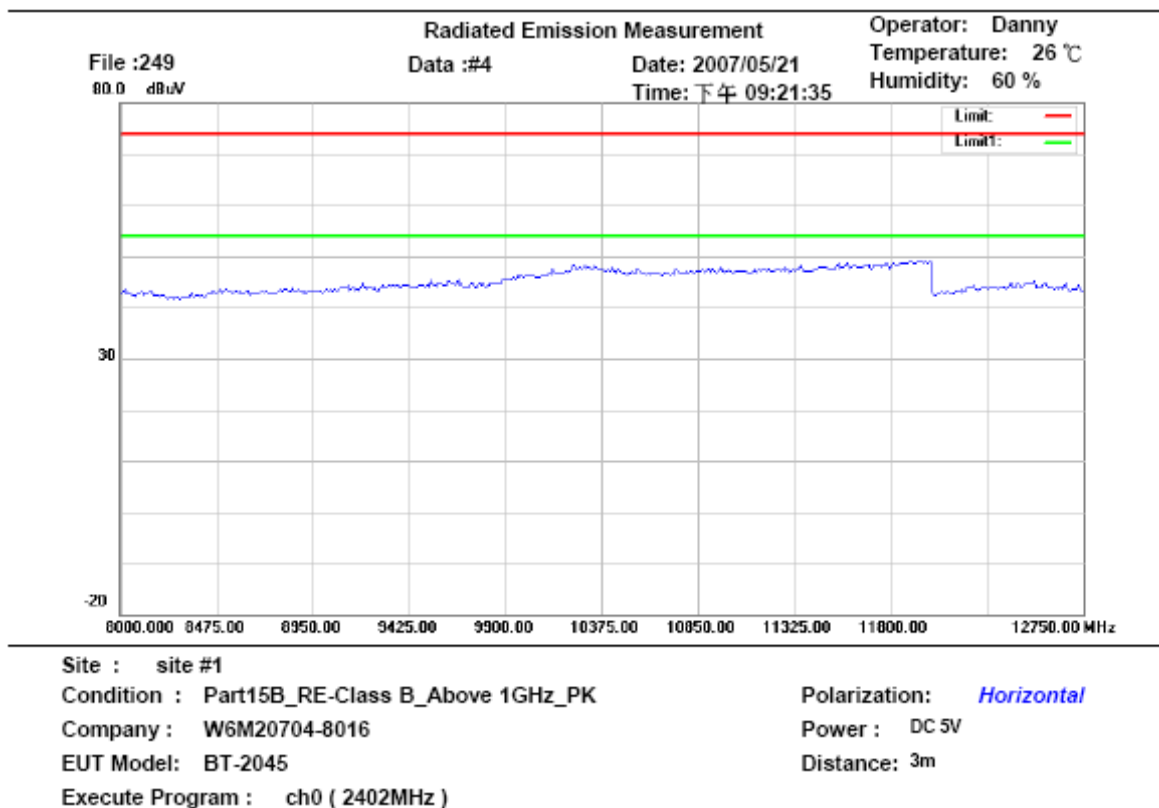
Registration number: W6M20704-8016-P-15  
FCC ID: VBI-BT2045



Registration number: W6M20704-8016-P-15  
FCC ID: VBI-BT2045

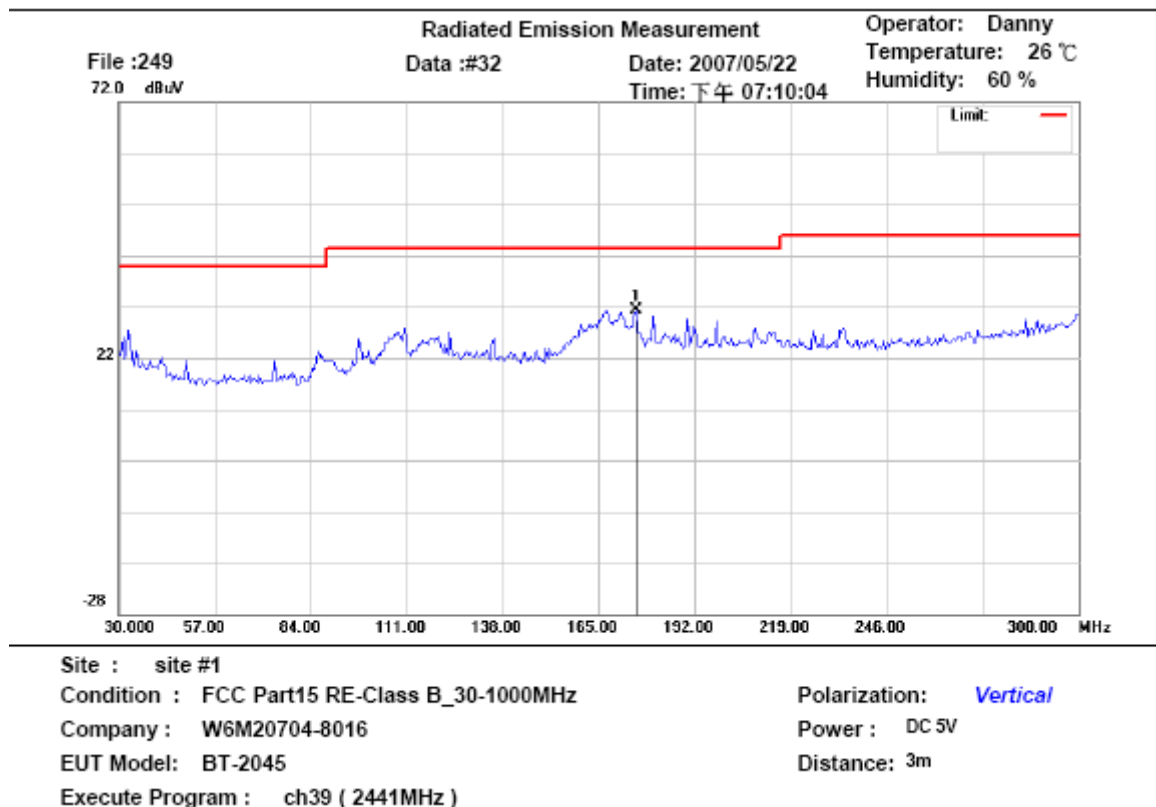
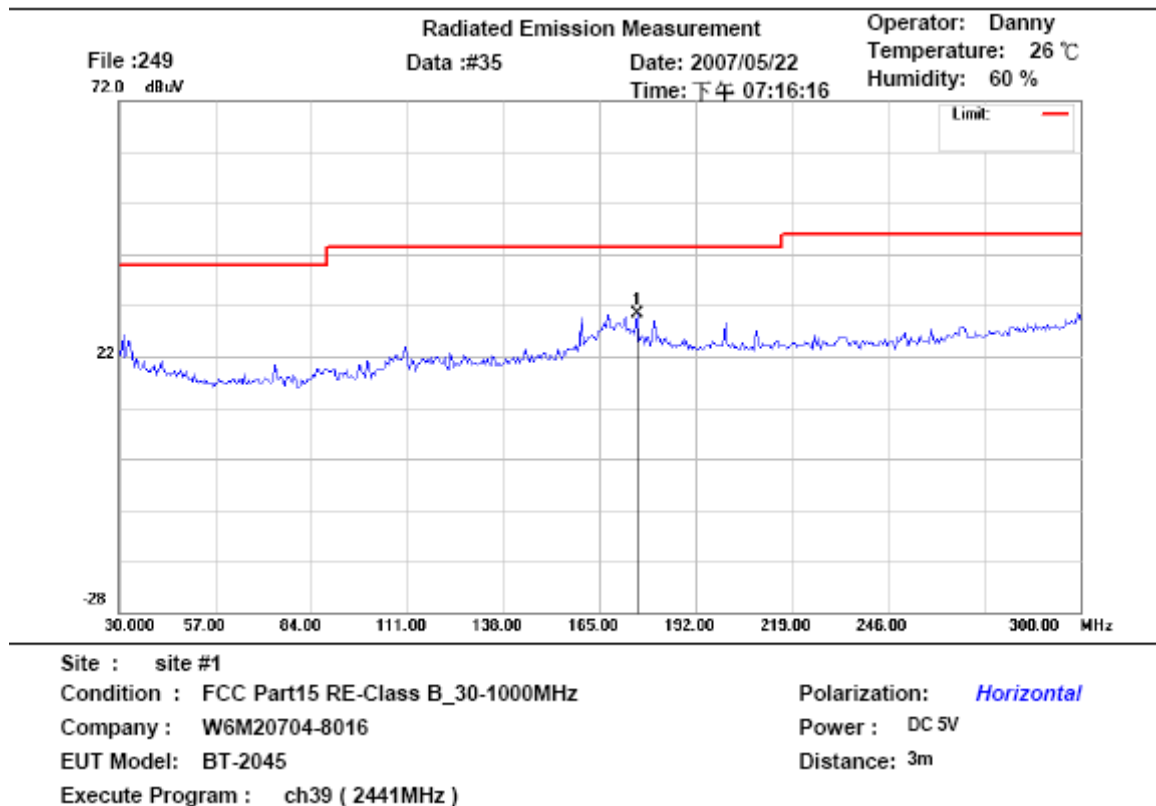


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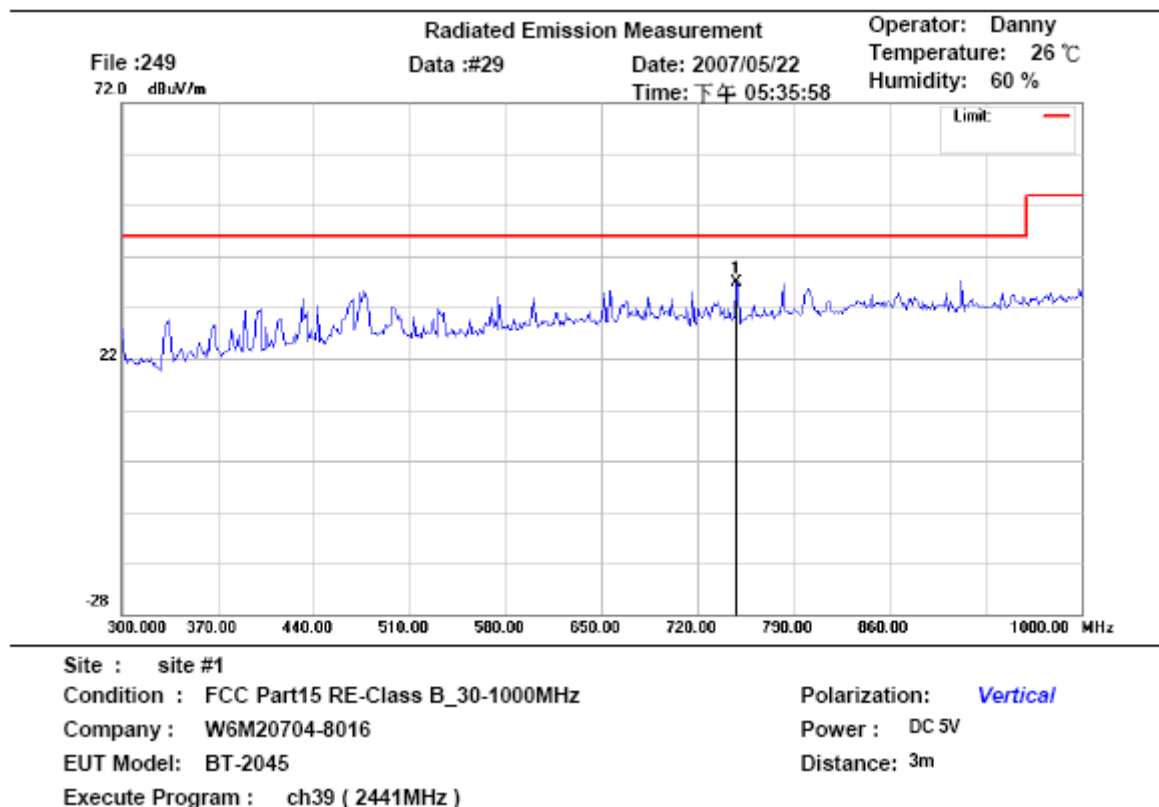
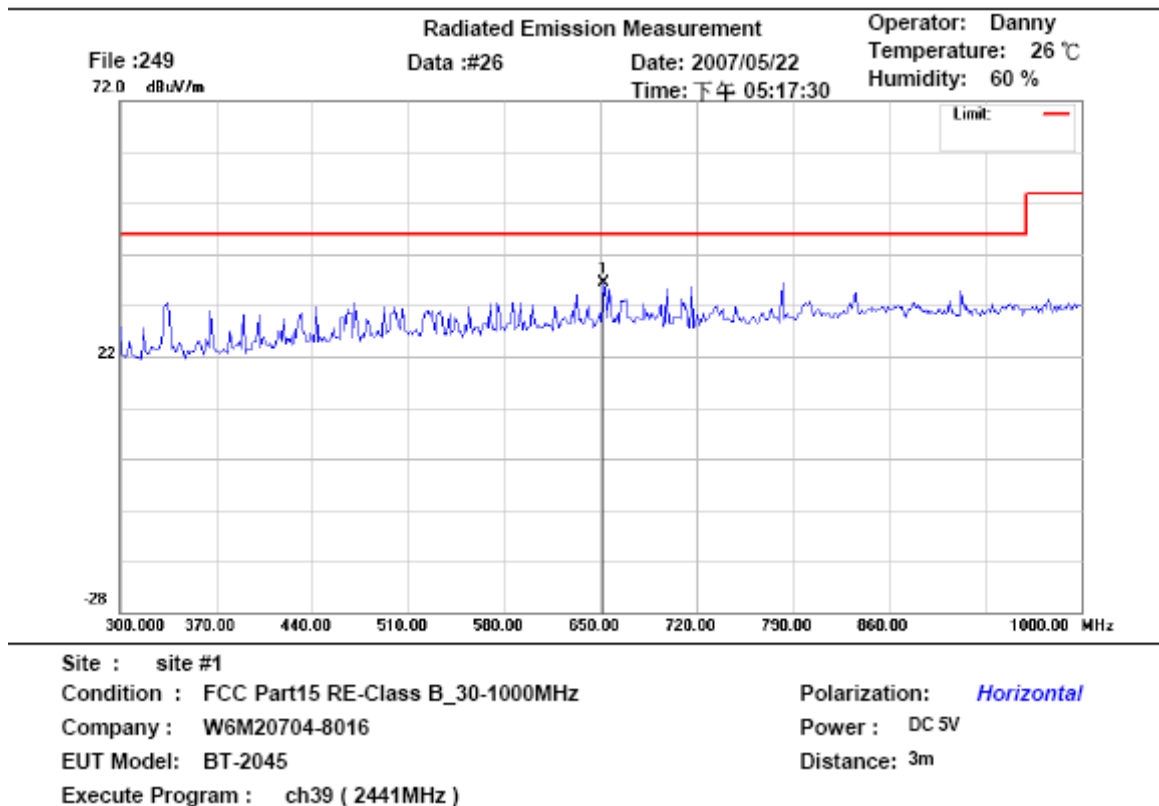




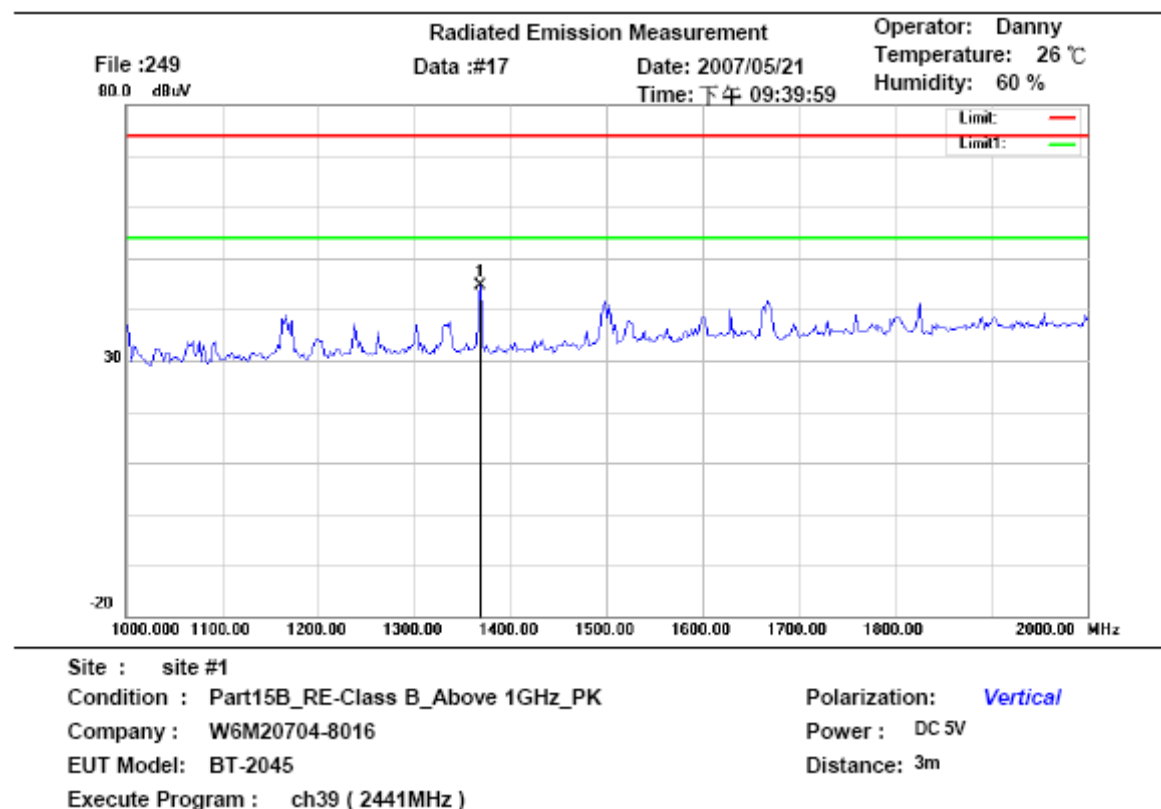
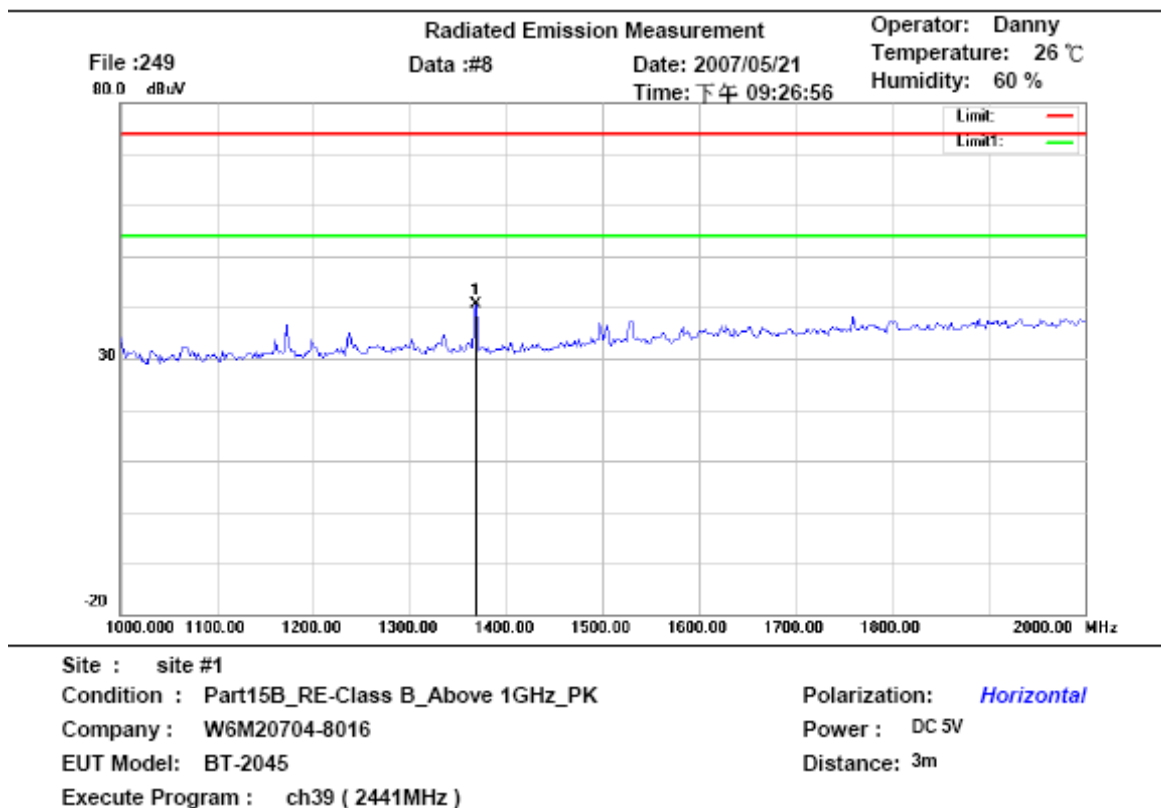
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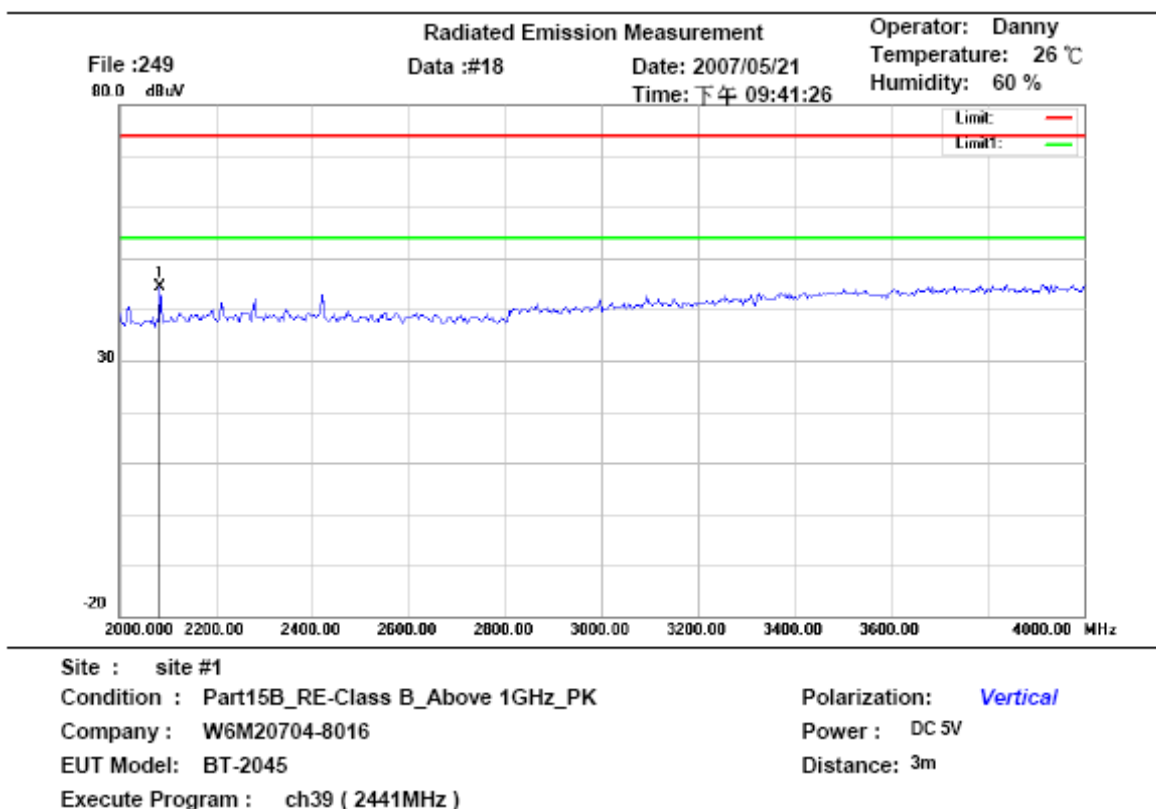
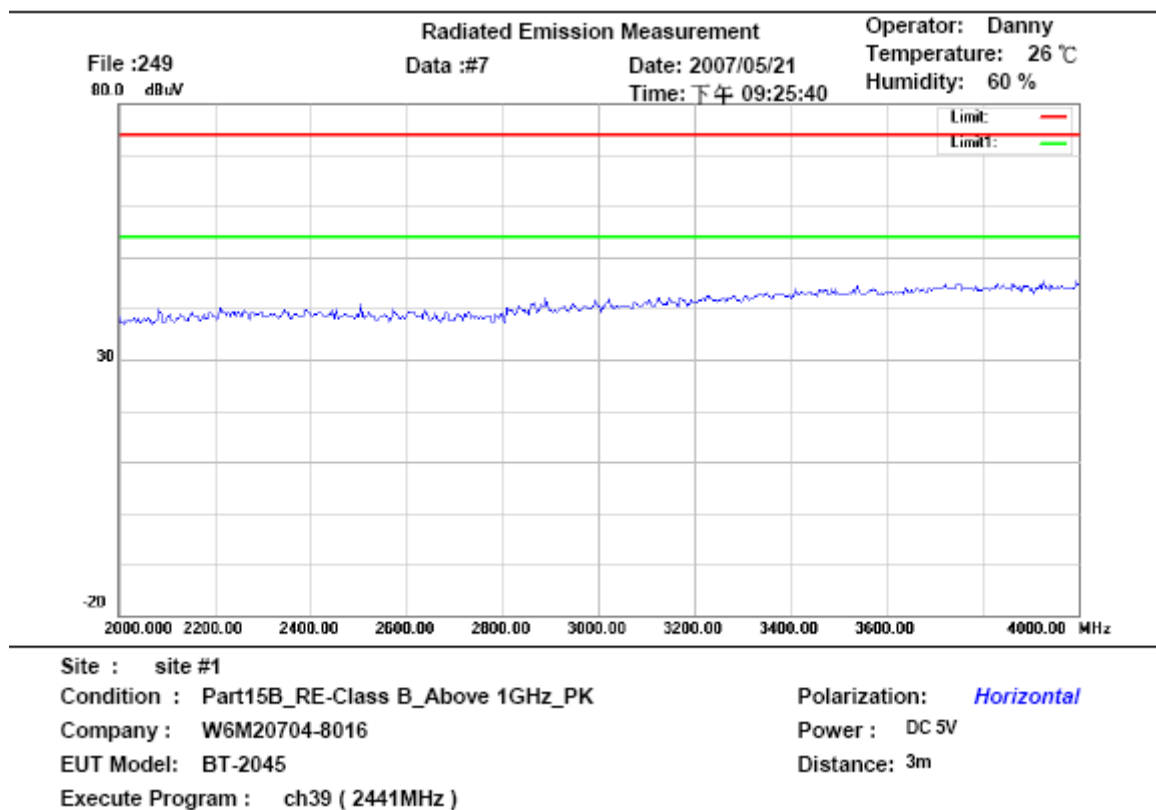
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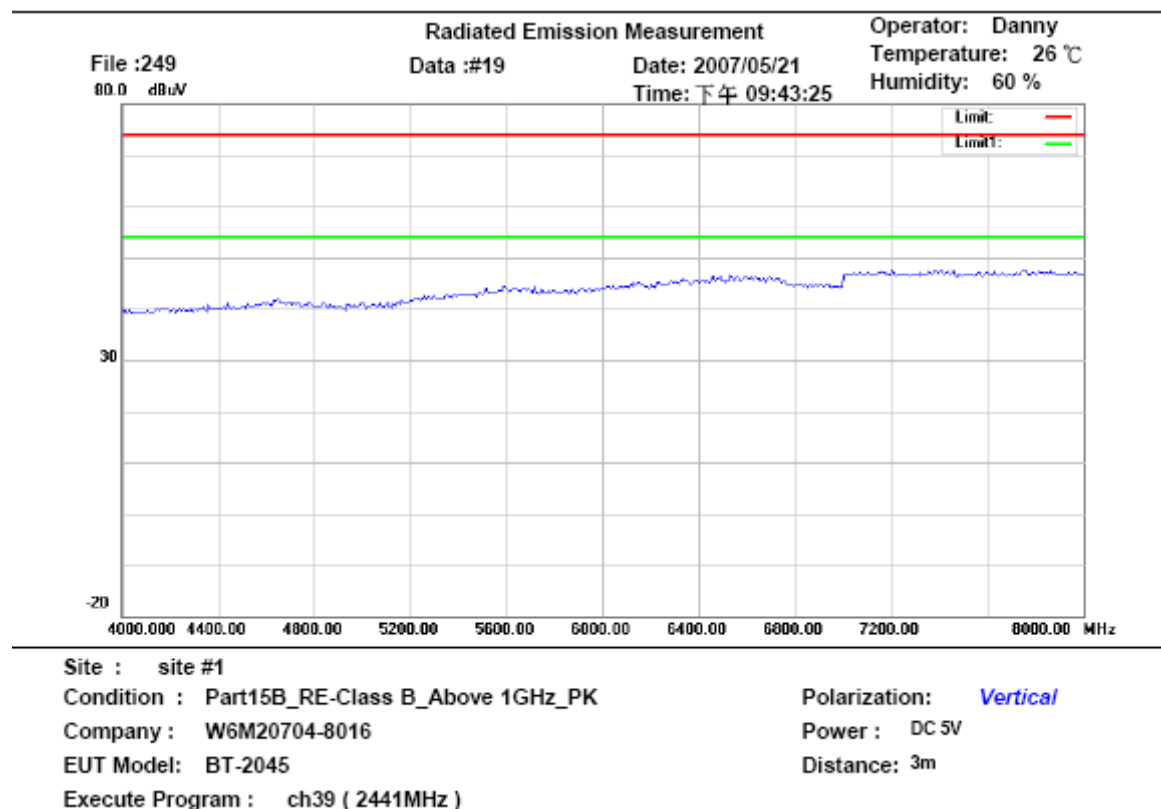
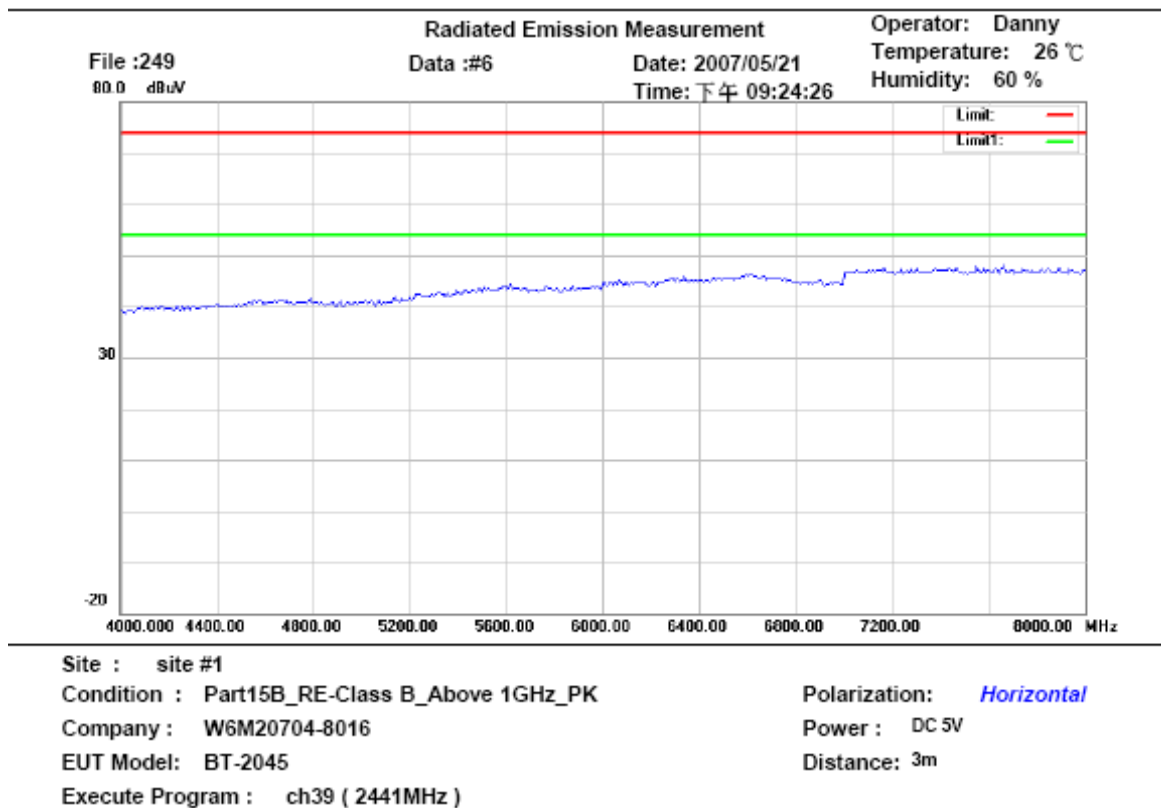
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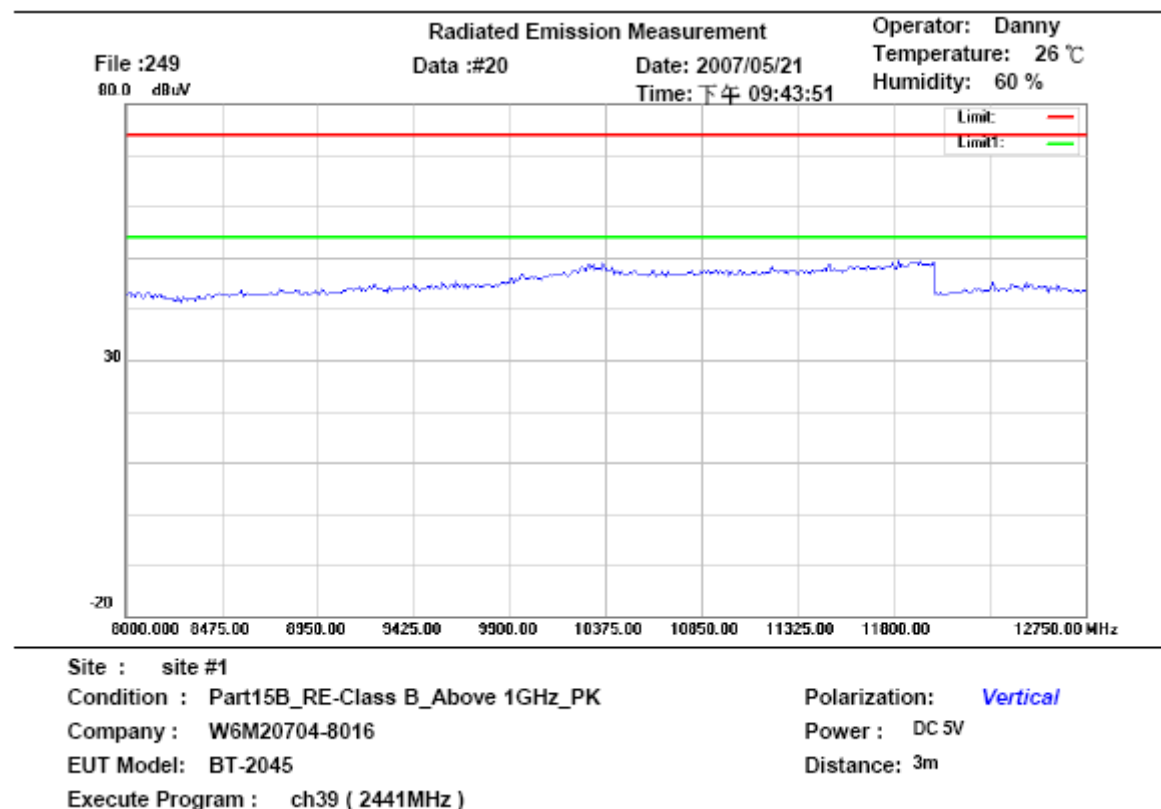
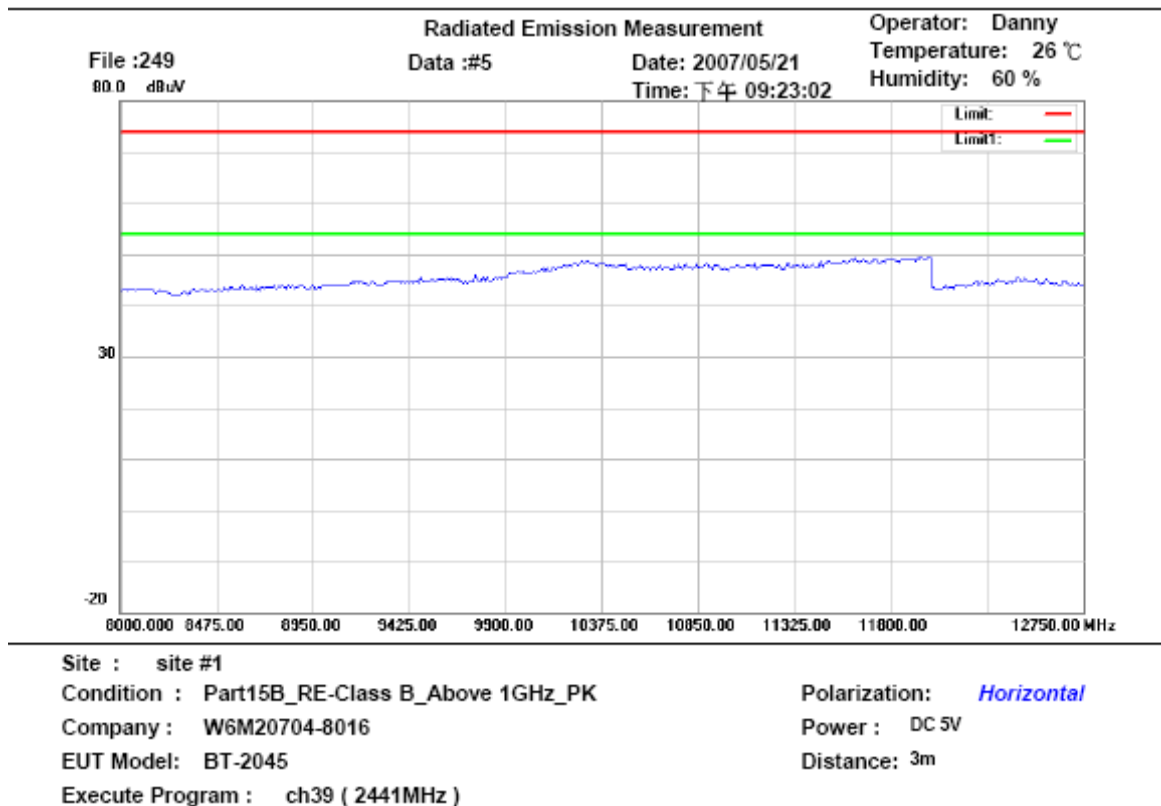
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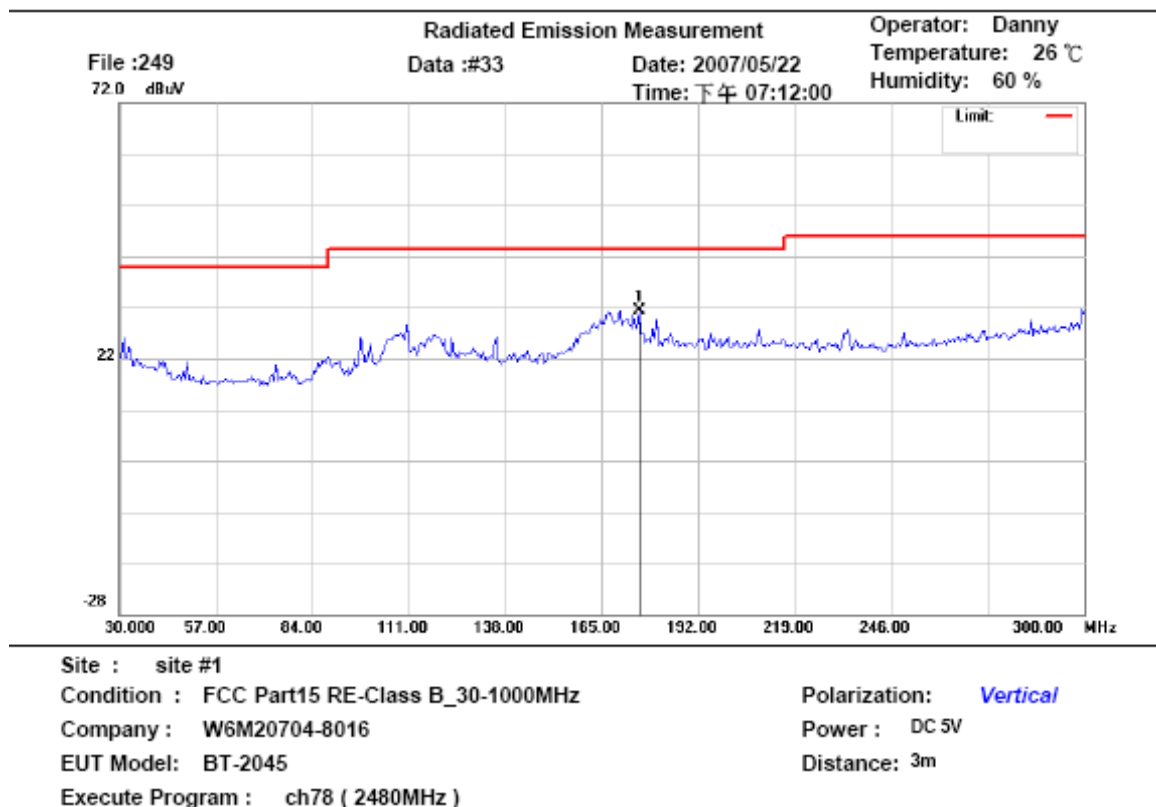
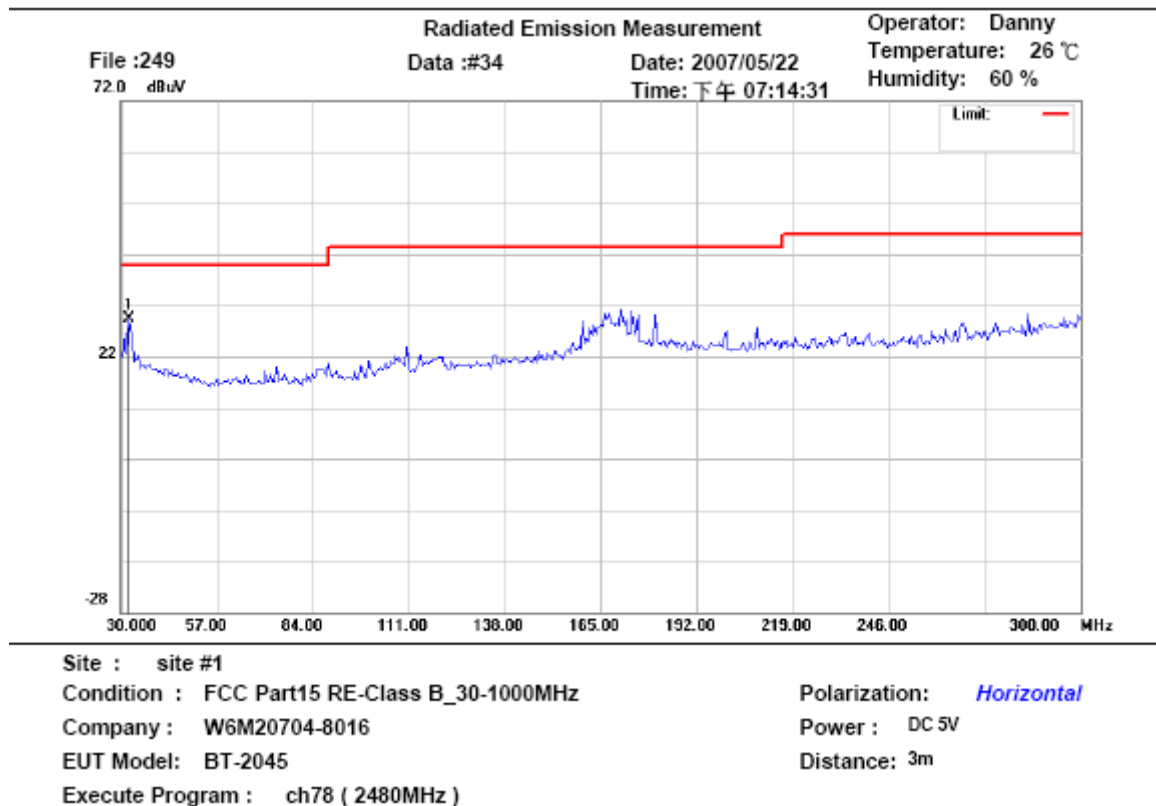
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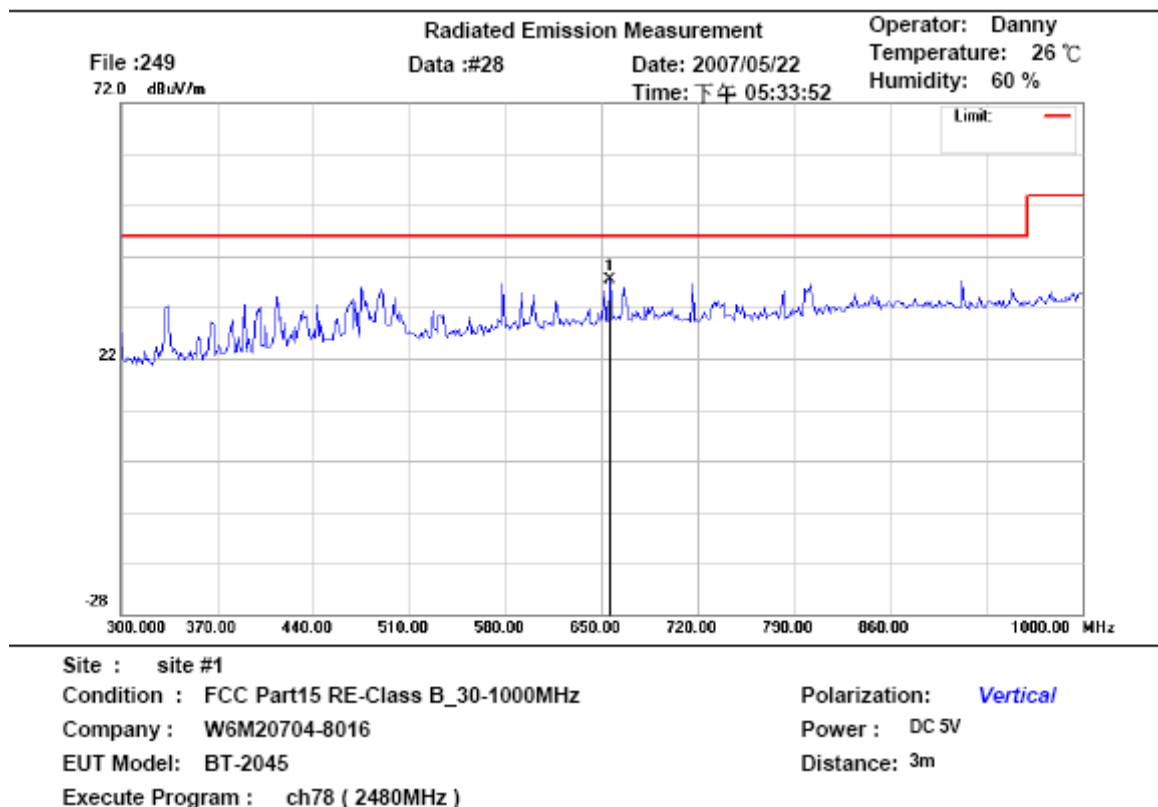
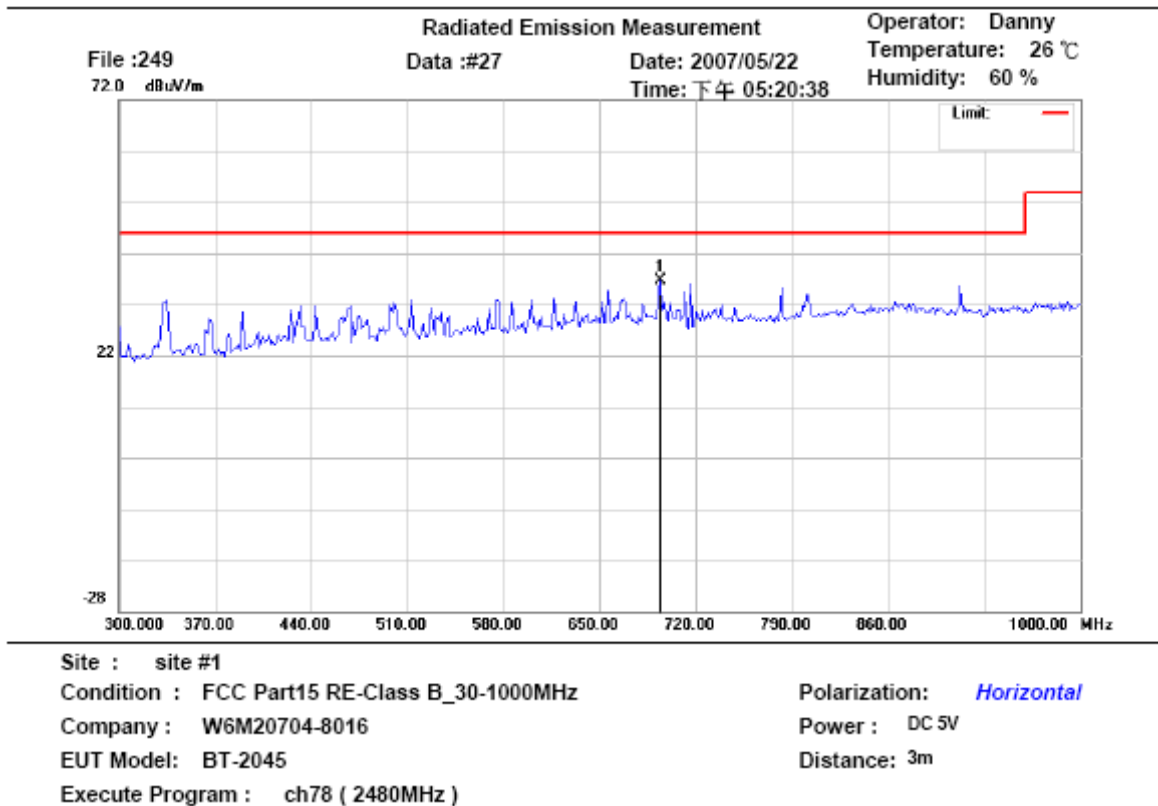
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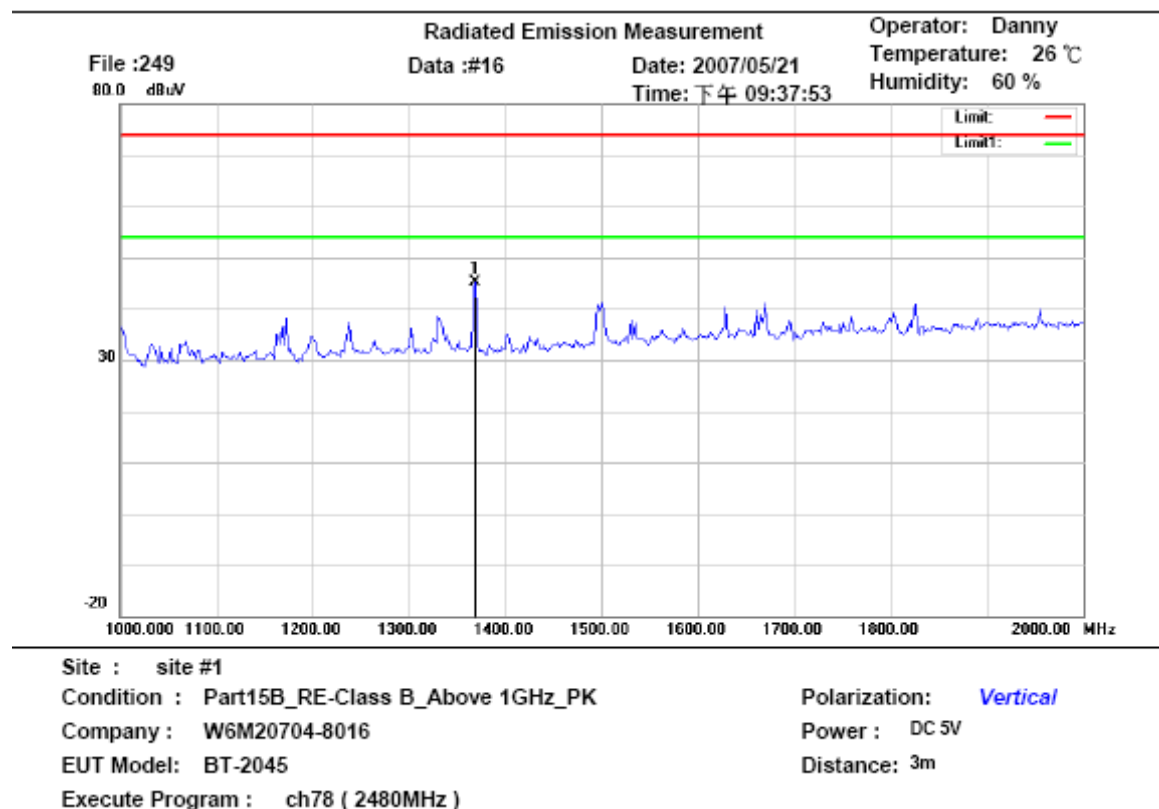
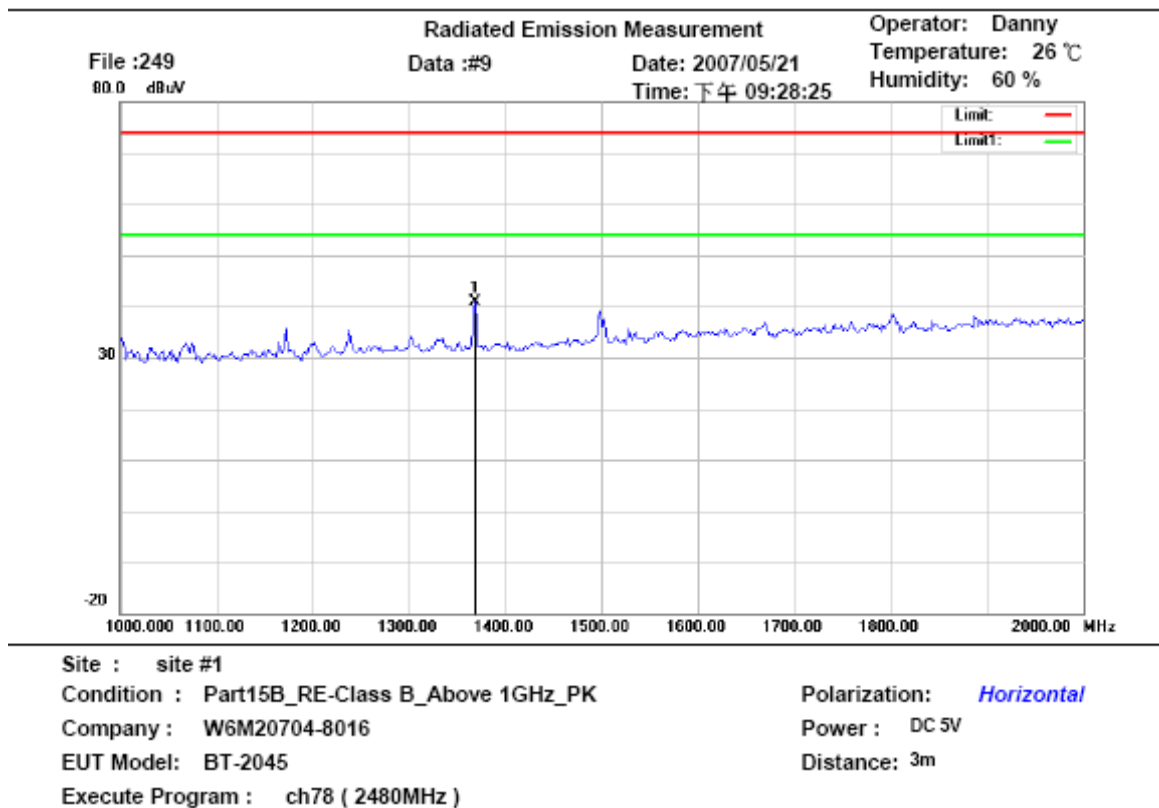


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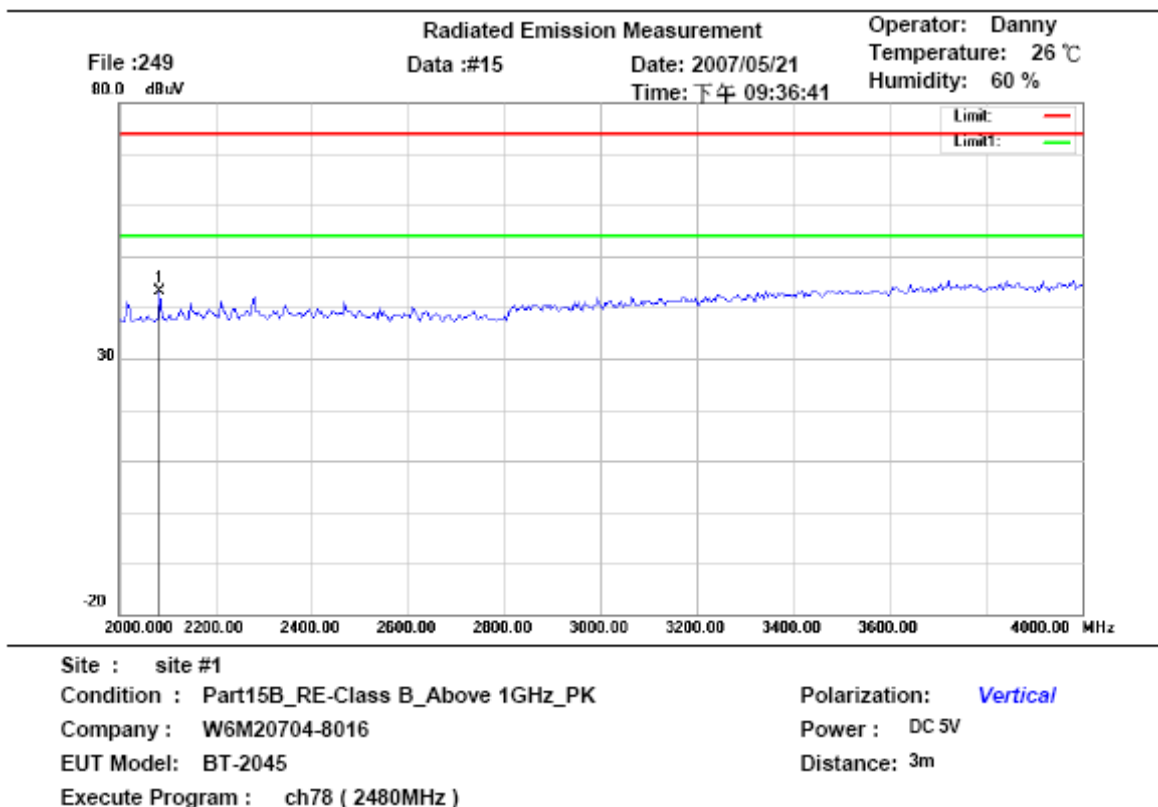
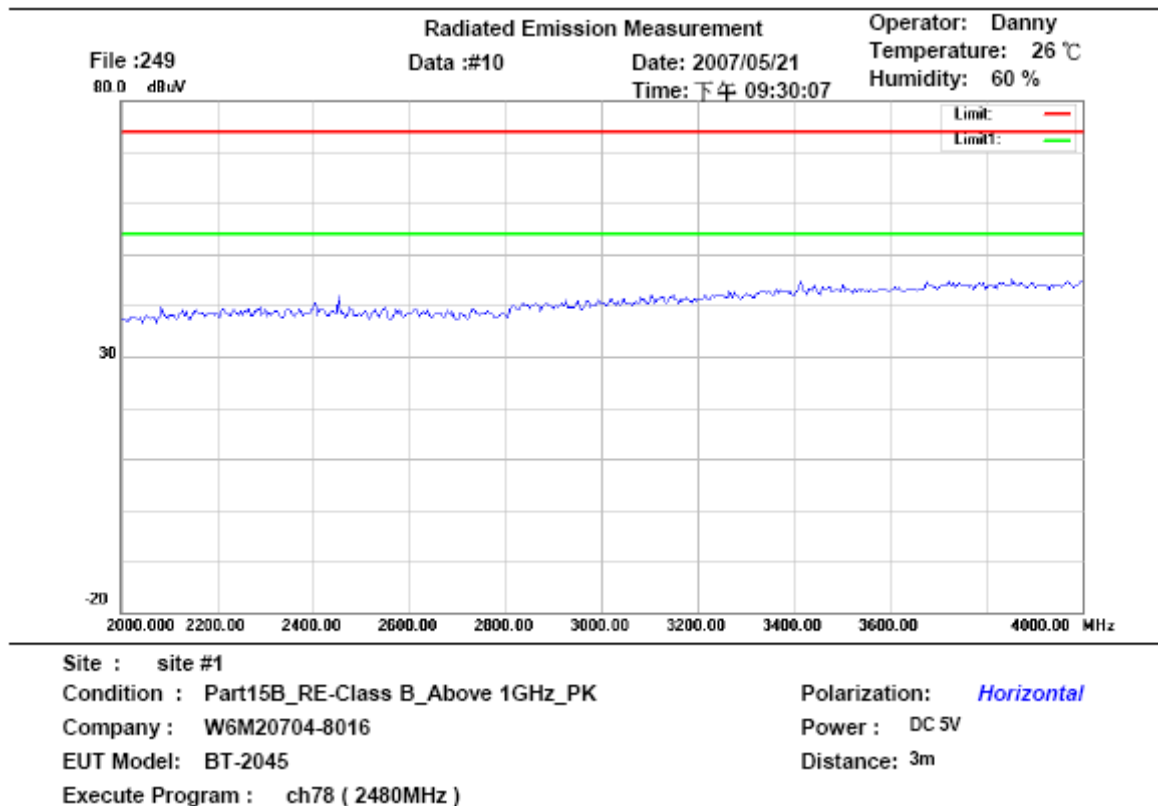




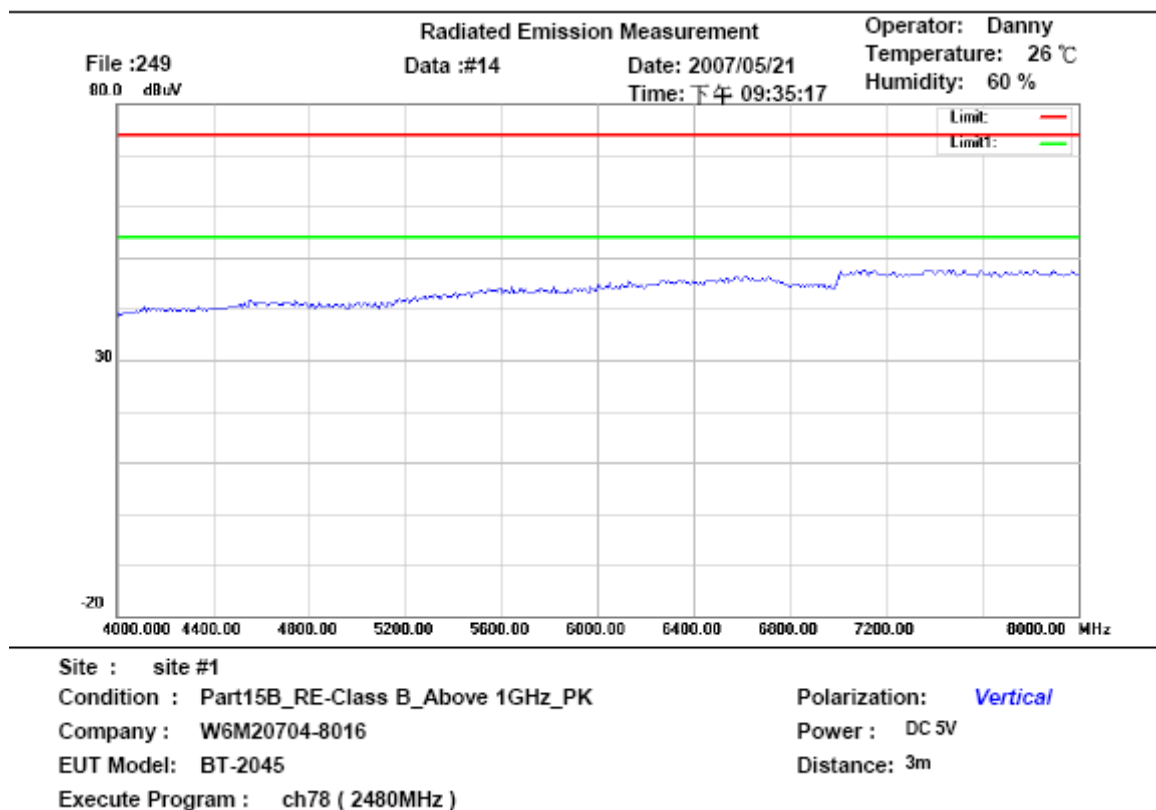
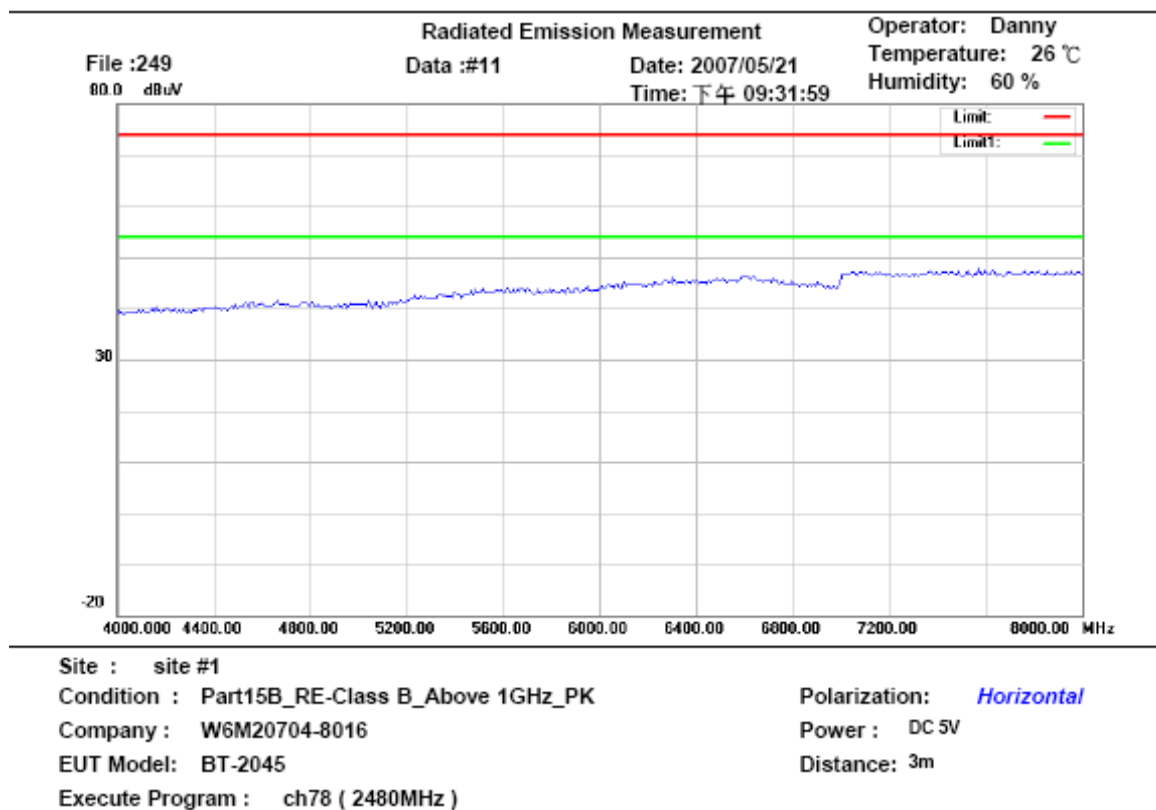
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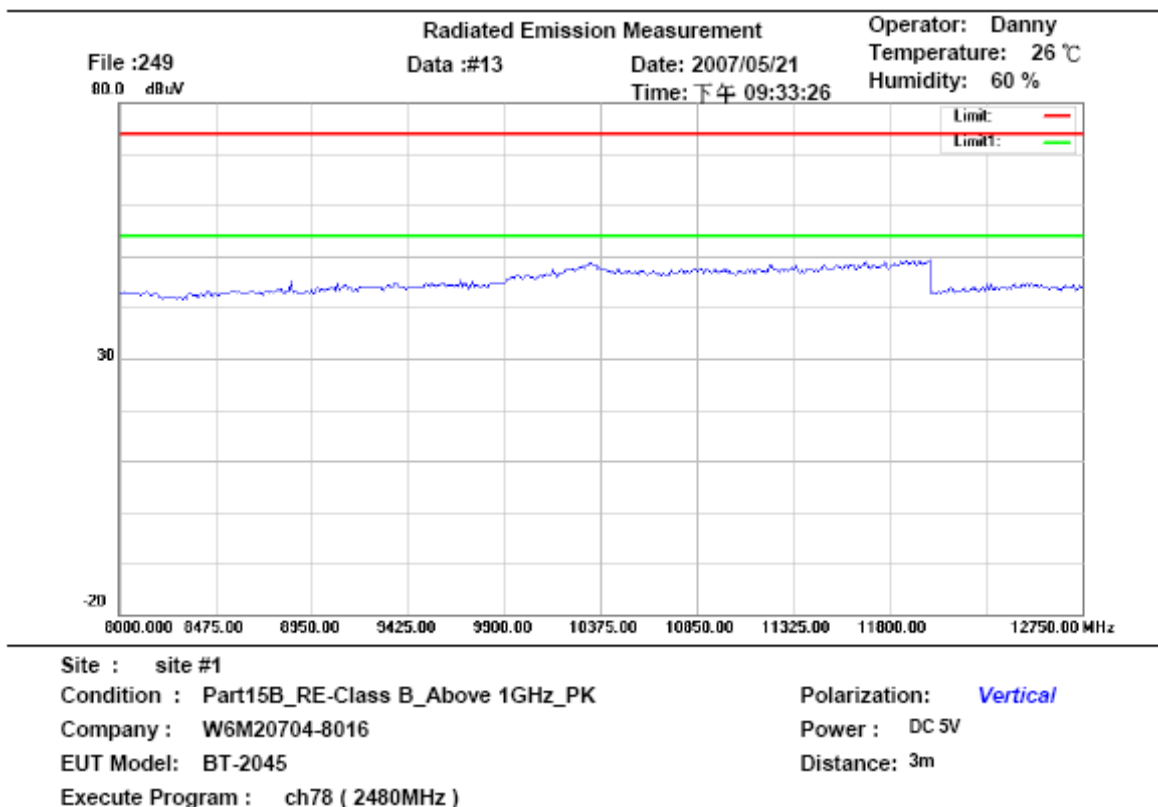
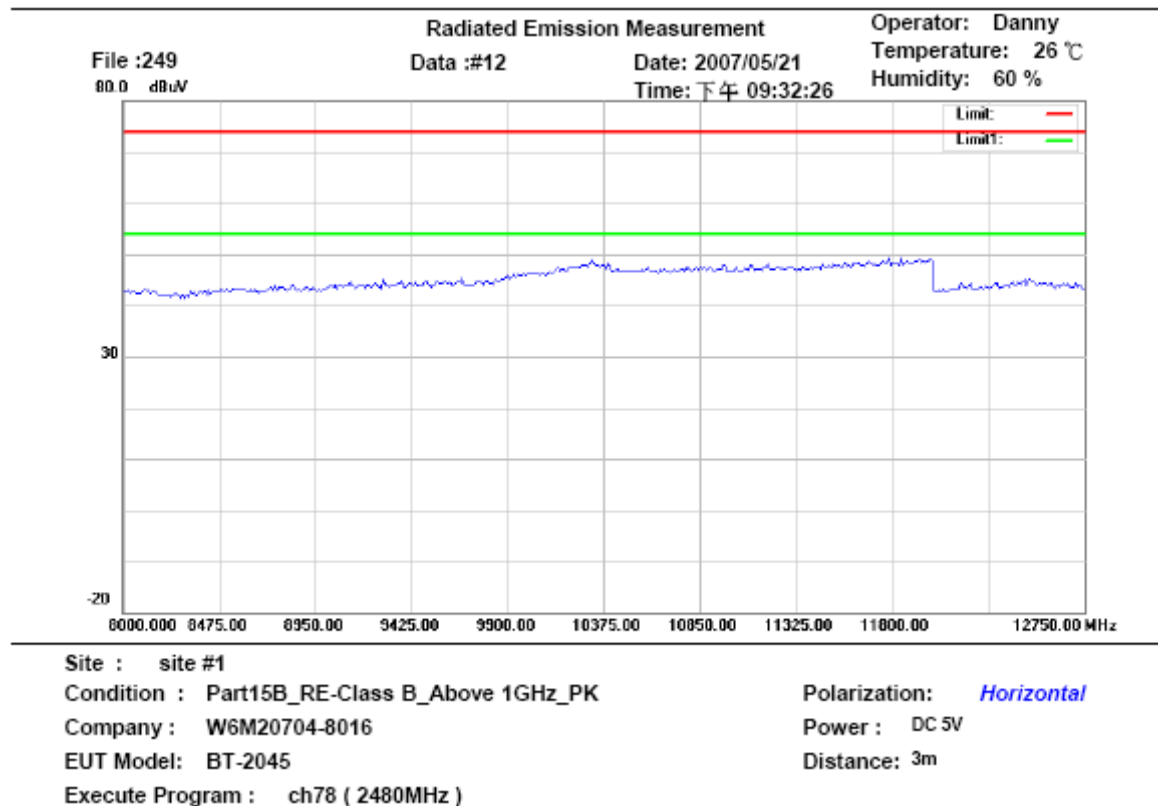
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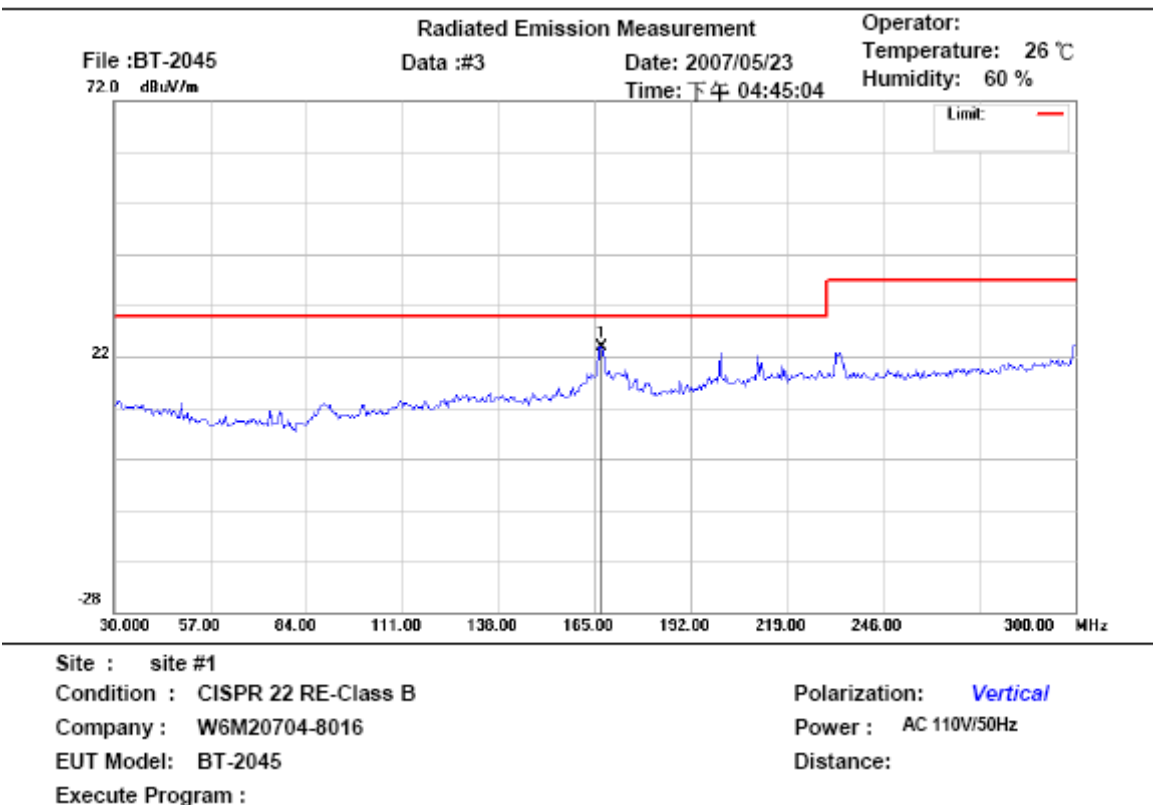
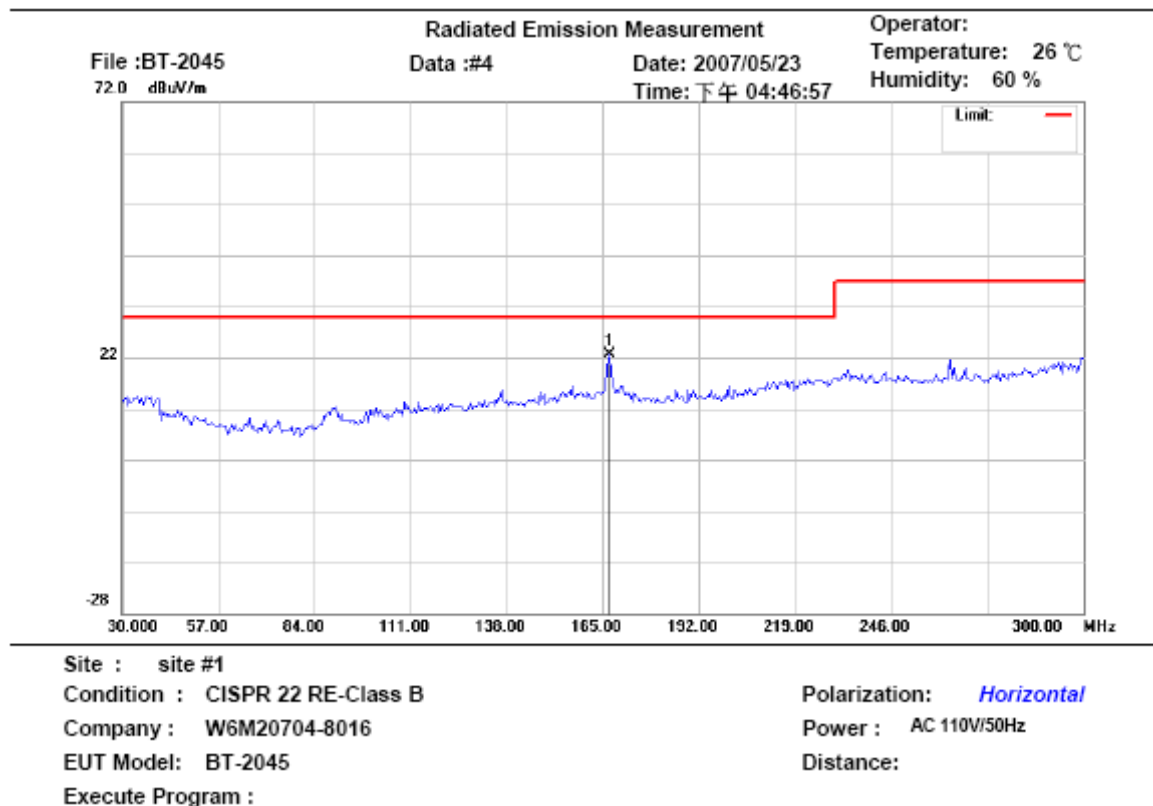
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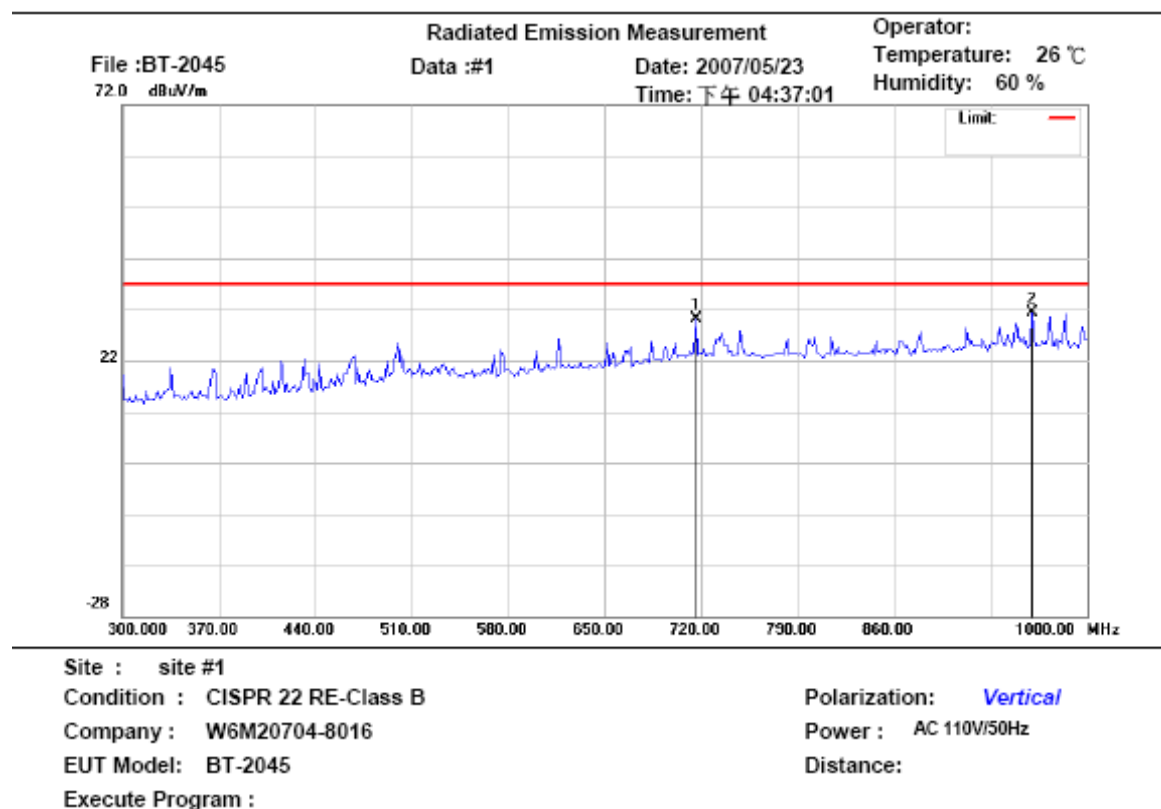
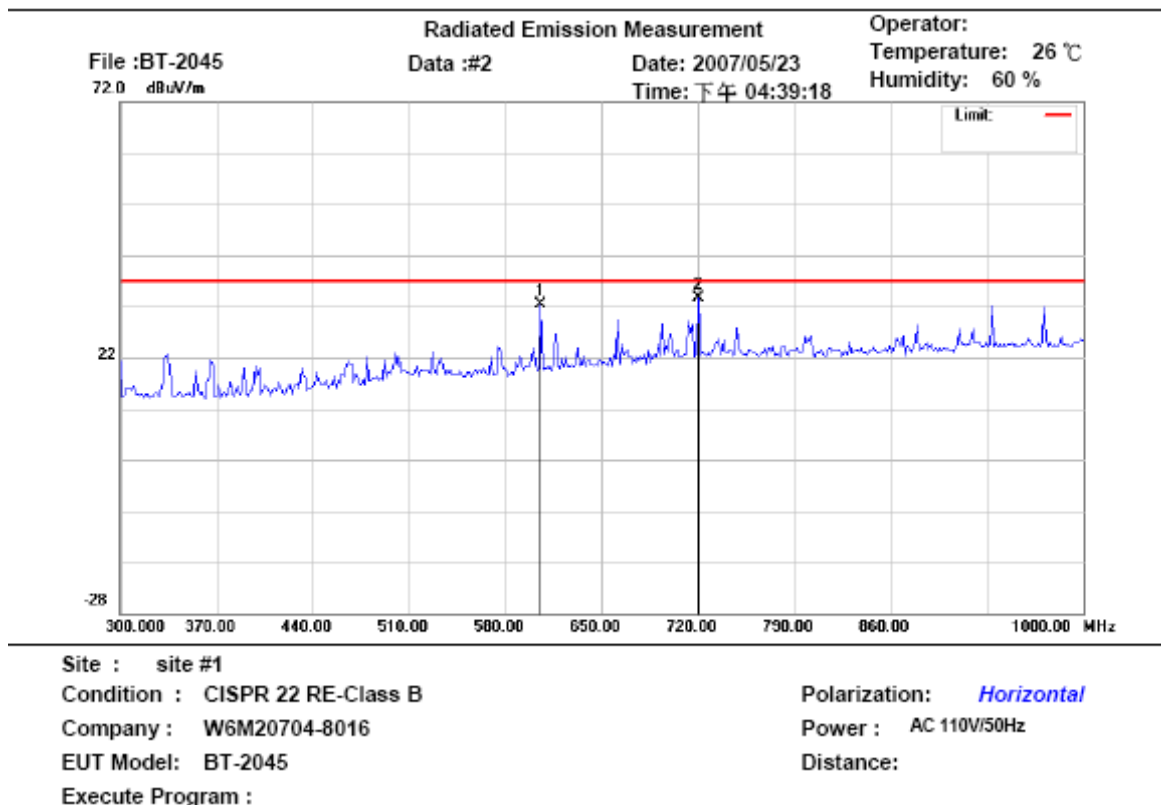
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FCC ID: VBI-BT2045

## Digital Part

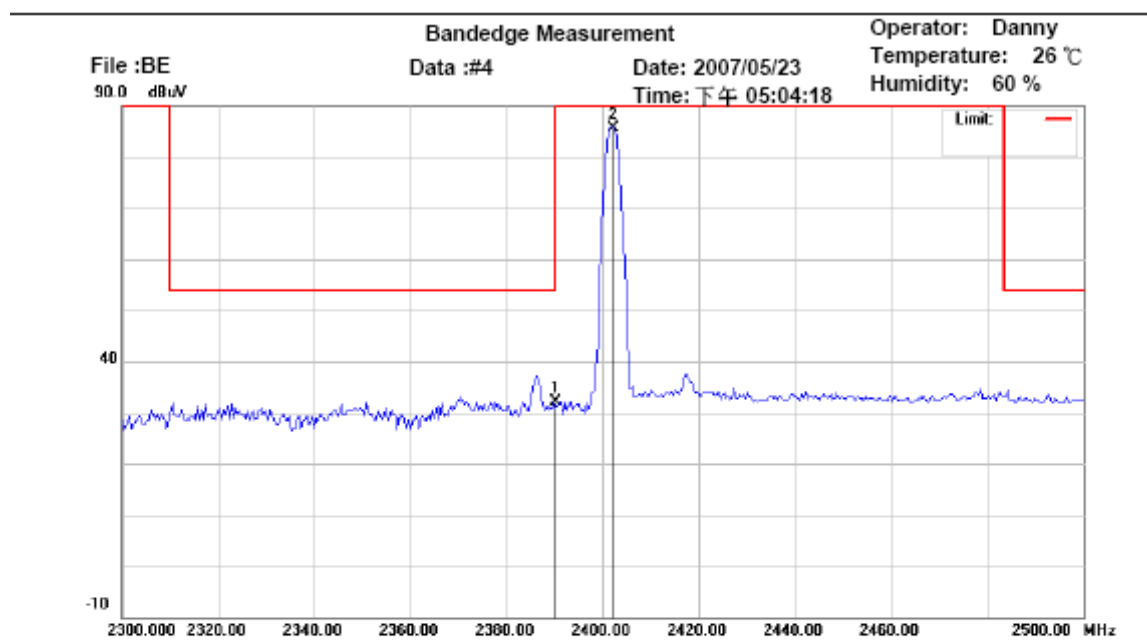
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FCC ID: VBI-BT2045



Registration number: W6M20704-8016-P-15  
FCC ID: VBI-BT2045



Registration number: W6M20704-8016-P-15  
FCC ID: VBI-BT2045



Site : site #1

Condition : FCC Restriction Band 2000-4000\_AV

Company : W6M20704-8016

EUT Model: BT-2045

Execute Program : ch0 ( 2402MHz )

Note :

Polarization:

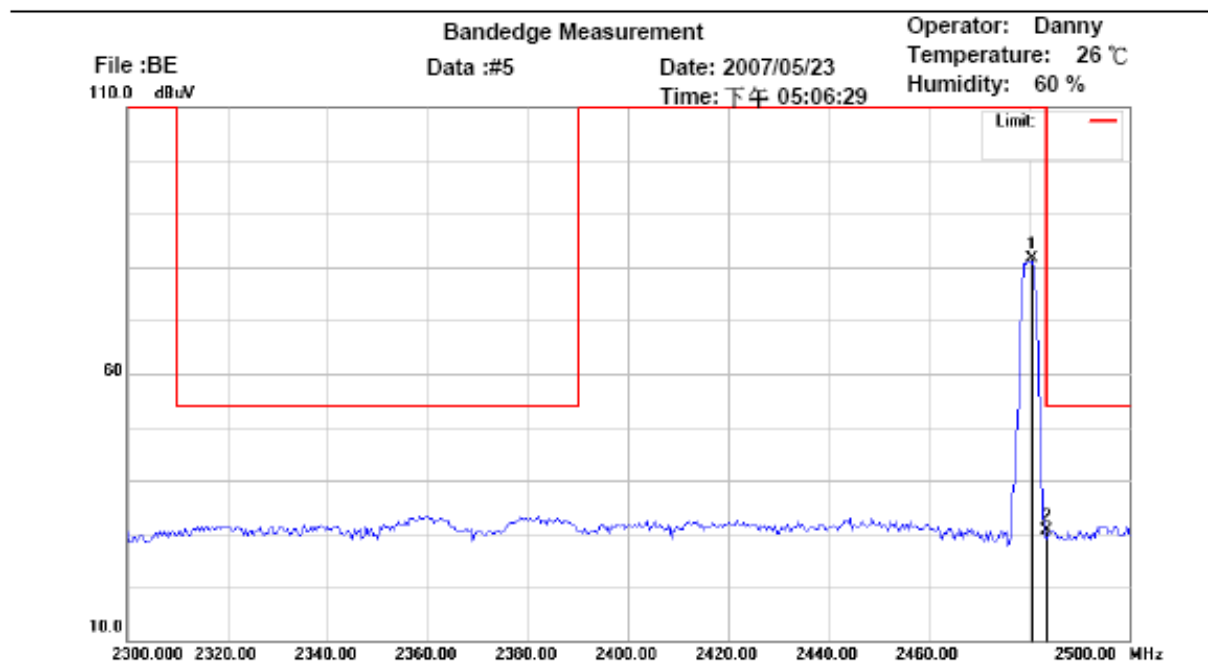
Power : AC 230V/50Hz

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	2390.000	35.22	peak	-3.15	32.07	54.00			-21.93	
	2401.804	88.85	peak	-3.10	85.75	200.00			-114.2	



Registration number: W6M20704-8016-P-15  
 FCC ID: VBI-BT2045



Site : site #1

Condition : FCC Restriction Band 2000-4000\_AV

Company : W6M20704-8016

EUT Model: BT-2045

Execute Program : ch78 ( 2480MHz )

Note :

Polarization:

Power : AC 230V/50Hz

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	2480.361	84.78	peak	-3.10	81.68	200.00			-118.3	
*	2483.500	33.61	peak	-3.10	30.51	54.00			-23.49	

Registration number: W6M20704-8016-P-15  
FCC ID: VBI-BT2045

