

# **FCC Test Report**

FCC ID : SH6MDBT40

Equipment : BT4.0 module

Model No. : MDBT40

Brand Name : Raytac

Applicant : Raytac Corporation

Address : 5F., No.3, Jiankang Rd., Zhonghe Dist, New

Taipei City, Taiwan, 23586

Standard : 47 CFR FCC Part 15.247

Received Date : Jan. 12, 2014

Tested Date : Jan. 23 ~ Jan. 29, 2014

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:

Gary Chang / Manage

Iac-MRA



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Report No.: FR412101AE Report Version: Rev. 02



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## **Release Record**

Report No.	Version	Description	Issued Date
FR412101AE	Rev. 01	Initialissue	Feb. 12, 2014
FR412101AE	Rev. 02	Modified extender board and emissions below 30MHz information	Feb. 17, 2014

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## **Summary of Test Results**

FCC Rules	Test Items	Measured	Result
15.207	AC Power Line Conducted Emissions	[dBuV]: 0.164MHz 45.39 (Margin -9.86dB) - AV	Pass
15.247(d)	Radiated Emissions	[dBuV/m at 3m]: 4884.00MHz	Pass
15.209	Radiated Effissions	51.36 (Margin -2.64dB) - AV	rass
15.247(b)(3)	Fundamental Emission Output Power	Power[dBm]: 4.38	Pass
15.247(a)(2)	6dB Bandwidth	Meet the requirement of limit	Pass
15.247(e)	Power Spectral Density	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

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## 1 General Description

## 1.1 Information

### 1.1.1 Product Details

## 1.1.2 Specification of the Equipment under Test (EUT)

RF General Information							
Frequency Range (MHz)  Bluetooth Ch. Freq. (MHz)  Channel Number  Data Rate							
2400-2483.5	BT LE	2402-2480	0-39 [40]	1 Mbps			
Note 1: Bluetooth BF	Note 1: Bluetooth BR uses a GFSK (1Mbps).						

#### 1.1.3 Antenna Details

Ant. No.	Туре	Model	Manufacturer	Gain (dBi)	Connector
1	Chip	AT7020 Series	Advanced Ceramic X	1.3	N/A

## 1.1.4 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	3Vdc from Host
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#### 1.1.5 Accessories

N/A

### 1.1.6 Channel List

	Frequency	band (MHz)			2400~2	2483.5	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
37	2402	9	2422	18	2442	28	2462
0	2404	10	2424	19	2444	29	2464
1	2406	38	2426	20	2446	30	2466
2	2408	11	2428	21	2448	31	2468
3	2410	12	2430	22	2450	32	2470
4	2412	13	2432	23	2452	33	2472
5	2414	14	2434	24	2454	34	2474
6	2416	15	2436	25	2456	35	2476
7	2418	16	2438	26	2458	36	2478
8	2420	17	2440	27	2460	39	2480

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## 1.1.7 Test Tool and Duty Cycle

Test tool	Hardware control
Duty cycle of test signal (%)	18.50%
Duty Factor (dB)	7.33

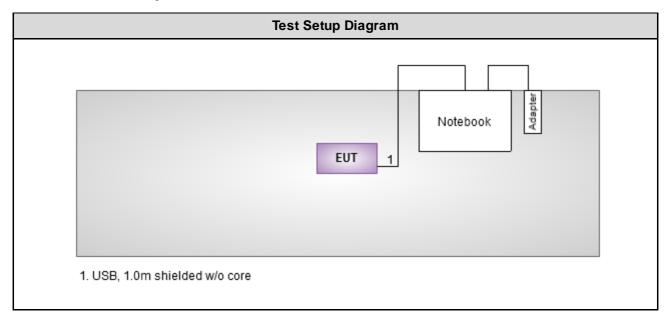
## 1.1.8 Power Setting

Modulation Mode		Test Frequency (MHz)	
Woddiation Wode	2402	2442	2480
GFSK/1Mbps	Default	Default	Default

## 1.2 Local Support Equipment List

	Support Equipment List								
No.	Equipment	Brand	Model	S/N	FCC ID	Signal cable / Length (m)			
1	Notebook	DELL	E6430		DoC	USB 1.0m non-shielded cable w/o core.			
2	Extender board	Raytac Corporation	MDBT40IT01						

## 1.3 Test Setup Chart



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## 1.4 Test Equipment List and Calibration Data

Test Item Conducted Emission										
Test Site	Conduction room 1 / (C	Conduction room 1 / (CO01-WS)								
Instrument	Manufacturer	Manufacturer Model No. Serial No. Calibration Date Calibration Until								
EMC Receiver	R&S	ESCS 30	100169	Oct. 15, 2013	Oct. 14, 2014					
LISN	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-667	Nov. 23, 2013	Nov 22, 2014					
LISN (Support Unit)	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-666	Dec. 04, 2013	Dec. 03, 2014					
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Apr. 24, 2013	Apr. 23, 2014					
50 ohm terminal (Support Unit) NA 50 04 Apr. 22, 2013 Apr. 21, 2014										
Note: Calibration Inter	val of instruments listed	above is one year.								

Test Item	Radiated Emission	Radiated Emission							
Test Site	966 chamber1 / (03Ch	H01-WS)							
Instrument	Manufacturer Model No. Serial No. Calibration Date Calibra								
Spectrum Analyzer	R&S	FSV 40	101063	Feb. 18, 2013	Feb. 17, 2014				
Receiver	R&S	ESR3	101658	Jan. 10, 2014	Jan. 09, 2015				
Bilog Antenna	Bilog Antenna SCHWARZBECK VULB9168		VULB9168-522	Jan. 3, 2014	Jan. 02, 2015				
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Feb. 18, 2013	Feb. 17, 2014				
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Dec. 27, 2013	Dec. 26, 2014				
Amplifier	Burgeon	BPA-530	100219	Nov 22, 2013	Nov. 21, 2014				
Amplifier	Agilent	83017A	MY39501308	Dec. 16, 2013	Dec. 15, 2014				
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 16, 2013	Dec. 15, 2014				
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 16, 2013	Dec. 15, 2014				
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 16, 2013	Dec. 15, 2014				
RF Cable-R03m	Woken	CFD400NL-LW	CFD400NL-001	Dec. 16, 2013	Dec. 15, 2014				
RF Cable-R10m	Woken	CFD400NL-LW	CFD400NL-002	Dec. 16, 2013	Dec. 15, 2014				
control	EM Electronics	EM1000	60612	N/A	N/A				

Loop Antenna	R&S	HFH2-Z2	100330	Nov. 15, 2012	Nov. 14, 2014	
Amplifier	EM	EM18G40G	060572	Jun. 20, 2013	Jun. 19, 2015	
Note: Calibration Interval of instruments listed above is two year.						

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Test Item	RF Conducted						
Test Site	(TH01-WS)	TH01-WS)					
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until		
Spectrum Analyzer	R&S	FSV 40	101063	Feb. 18, 2013	Feb. 17, 2014		
Power Meter	Anritsu	ML2495A	1241002	Oct. 24, 2013	Oct. 23, 2014		
Power Sensor	Anritsu MA2411B 1027366 Oct. 24, 2013 Oct. 23, 2014						
Note: Calibration Interval of instruments listed above is one year.							

#### 1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.247

ANSI C63.10-2009

FCC KDB 558074 D01 DTS Meas Guidance v03r01

Note: The EUT has been tested and complied with FCC part 15B requirement. FCC Part 15B test results are issued to another report.

## 1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Uncertainty			
Parameters	Uncertainty		
Bandwidth	±35.286 Hz		
Conducted power	±0.536 dB		
Frequency error	±35.286 Hz		
Temperature	±0.3 °C		
Conducted emission	±2.946 dB		
AC conducted emission	±2.43 dB		
Radiated emission	±2.49 dB		

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## 2 Test Configuration

## 2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	22°C / 61%	Skys Huang
Radiated Emissions	03CH01-WS	20°C / 62%	Haru Yang
RF Conducted	TH01-WS	23°C / 60%	Felix Sung

FCC site registration No.: 657002IC site registration No.: 10807A-1

### 2.2 The Worst Test Modes and Channel Details

Test item	Mode	Test Frequency (MHz)	Data Rate (Mbps)	Test Configuration
AC Power Line Conducted Emissions	BT LE	2402	1Mbps	-
Radiated Emissions < 1GHz	BT LE	2402	1Mbps	-
Radiated Emissions > 1 GHz	BT LE	2402, 2442, 2480	1Mbps	-
Fundamental Emission Output Power				
6dB bandwidth	BT LE	2402, 2442, 2480	1Mbps	-
Power spectral density				

### NOTE:

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The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The Y-plane results were found as the worst case and were shown in this report.



## 3 Transmitter Test Results

## 3.1 AC Power Line Conducted Emissions

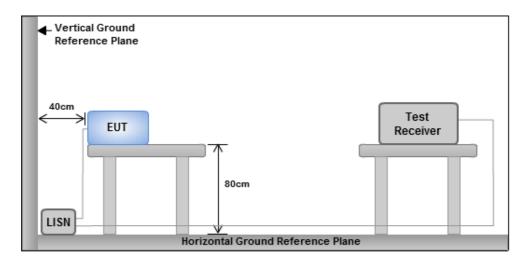
#### 3.1.1 Limit of AC Power Line Conducted Emissions

Conducted Emissions Limit				
Frequency Emission (MHz) Quasi-Peak Average				
0.15-0.5	66 - 56 *	56 - 46 *		
0.5-5	56	46		
5-30	60	50		
Note 1: * Decreases with the logarithm of the frequency.				

#### 3.1.2 Test Procedures

- 1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
- The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
- 3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
- 4. This measurement was performed with AC 120V/60Hz

#### 3.1.3 Test Setup



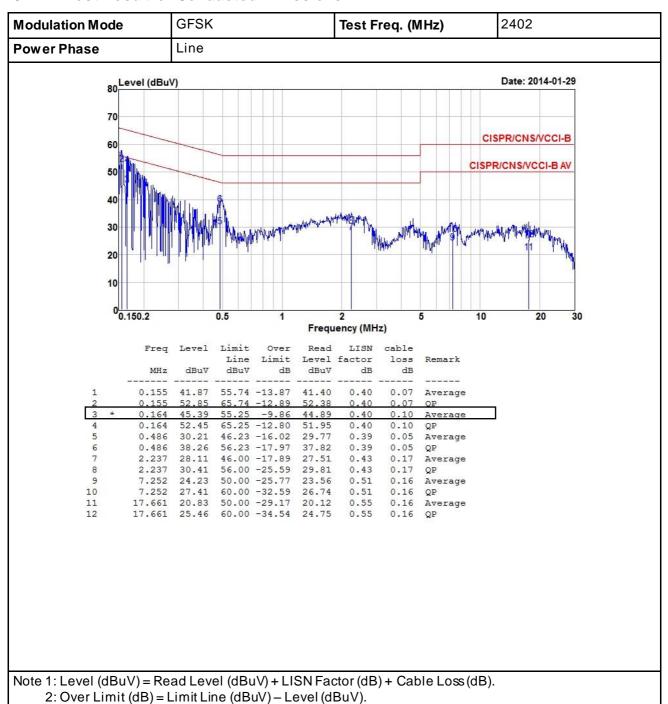
Note: 1. Support units were connected to second LISN.

Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

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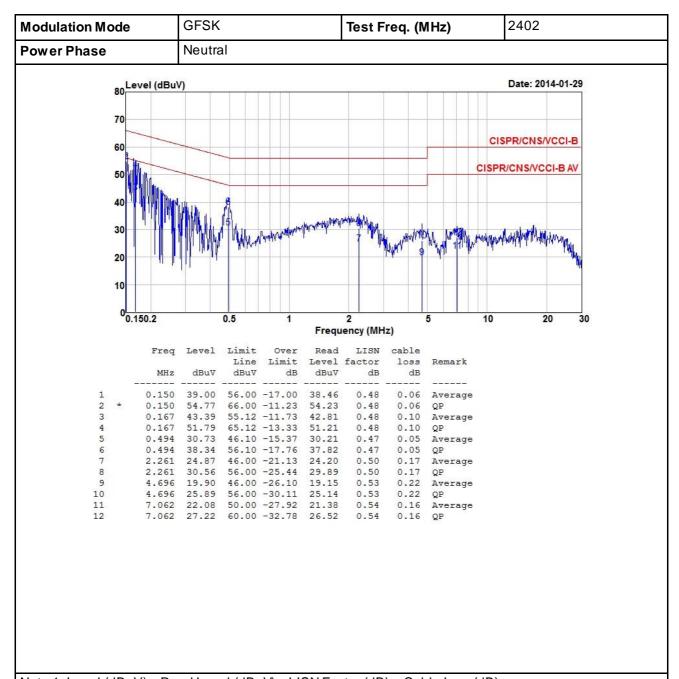


#### 3.1.4 Test Result of Conducted Emissions



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Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).

2: Over Limit (dB) = Limit Line (dBuV) - Level (dBuV).

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## 3.2 6dB and Occupied Bandwidth

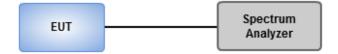
#### 3.2.1 Limit of 6dB Bandwidth

The minimum 6dB bandwidth shall be at least 500 kHz.

#### 3.2.2 Test Procedures

- 1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
- 2. Detector = Peak, Trace mode = max hold.
- 3. Sweep = auto couple, Allow the trace to stabilize.
- 4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

### 3.2.3 Test Setup

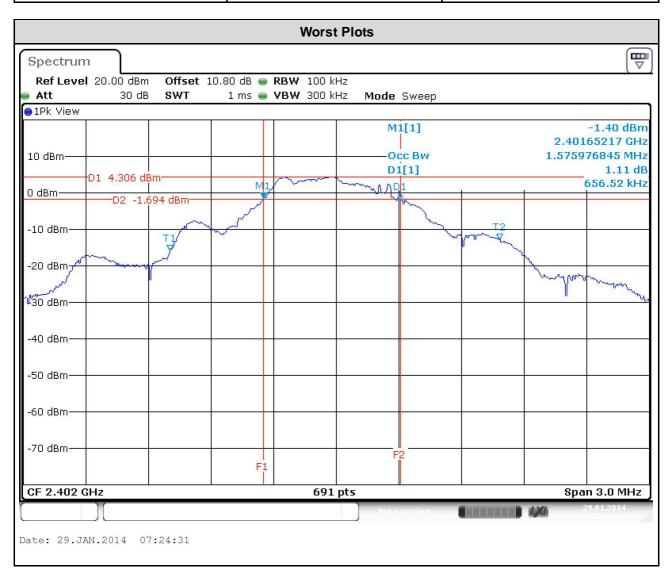


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## 3.2.4 Test Result of 6dB and Occupied Bandwidth

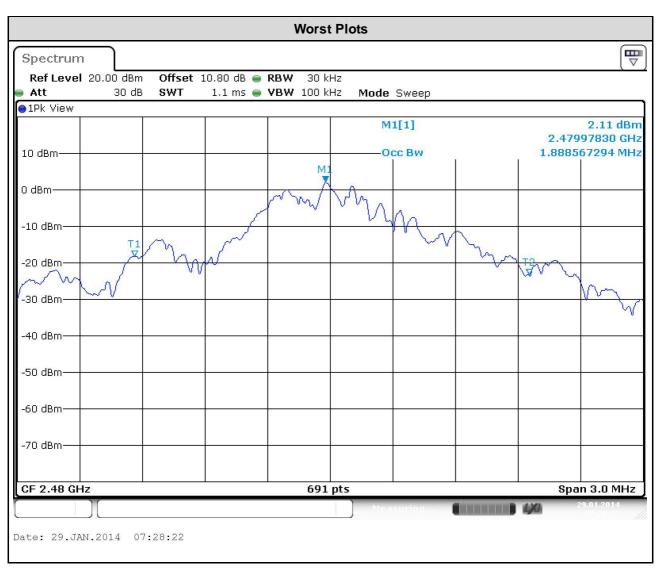
Freq. (MHz)	6dB Bandwidth (kHz)	Limit (kHz)
2402	656.52	500
2442	678.26	500
2480	743.48	500



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Freq. (MHz)	99% Occupied Bandwidth (MHz)
2402	1.2590
2442	1.7106
2480	1.8886



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## 3.3 RF Output Power

#### 3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1 Watt.

X	Antenna gain <= 6dBi, no any corresponding reduction is in output power limit.		
☐ Antenna gain > 6dBi		enna gain > 6dBi	
		Non Fixed, point to point operations. The conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB	
		Fixed, point to point operations Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point Operations, maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.	

Systems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point operations, no any corresponding reduction is in transmitter peak output power

#### 3.3.2 Test Procedures

- - ☐ Spectrum analyzer
    - 1. Set RBW = 1MHz, VBW = 3MHz, Detector = Peak.
    - 2. Sweep time = auto, Trace mode = max hold, Allow trace to fully stabilize.
    - 3. Use the spectrum analyzer channel power measurement function with the band limits set equal to the DTS bandwidth edges.

#### 

- A broadband Peak RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

#### 

1. A broadband Average RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100%, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

#### 3.3.3 Test Setup



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## 3.3.4 Test Result of Maximum Output Power

Freq. (MHz)	Peak Conducted Power (dBm)	Limit (dBm)
2402	4.38	30
2442	4.29	30
2480	4.02	30

Freq. (MHz)	Average Conducted Power (dBm)	Limit (dBm)
2402	4.28	30
2442	4.20	30
2480	3.98	30

Note: Average power is for reference only.

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## 3.4 Power Spectral Density

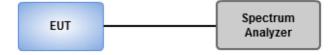
### 3.4.1 Limit of Power Spectral Density

Power spectral density shall not be greater than 8 dBm in any 3 kHz band.

#### 3.4.2 Test Procedures

- Maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit.
  - 1. Set the RBW = 3kHz, VBW = 10kHz.
  - 2. Detector = Peak, Sweep time = auto couple.
  - 3. Trace mode = max hold, allow trace to fully stabilize.
  - 4. Use the peakmarker function to determine the maximum amplitude level.
- ☐ Maximum (average) conducted output power was used to demonstrate compliance to the fundamental output power limit.
  - 1. Set the RBW = 100kHz, VBW = 300 kHz.
  - 2. Detector = RMS, Sweep time = auto couple.
  - 3. Set the sweep time to: ≥ 10 x (number of measurement points in sweep) x (maximum data rate per stream).
  - 4. Perform the measurement over a single sweep.
  - 5. Use the peakmarker function to determine the maximum amplitude level.\

## 3.4.3 Test Setup

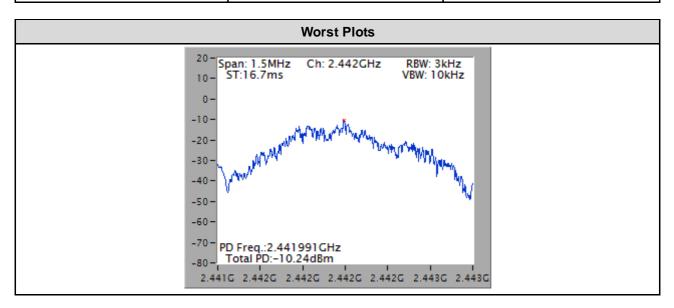


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## 3.4.4 Test Result of Power Spectral Density

Freq. (MHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)
2402	-11.03	8
2442	-10.24	8
2480	-10.86	8



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## 3.5 Emissions in Restricted Frequency Bands

#### 3.5.1 Limit of Emissions in Restricted Frequency Bands

Restricted Band Emissions Limit									
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)						
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300						
0.490~1.705	24000/F(kHz)	33.8 - 23	30						
1.705~30.0	30	29	30						
30~88	100	40	3						
88~216	150	43.5	3						
216~960	200	46	3						
Above 960	500	54	3						

#### Note 1

Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

#### 3.5.2 Test Procedures

- 1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at a height of 0.8 m test table above the ground plane.
- 2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
- 3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

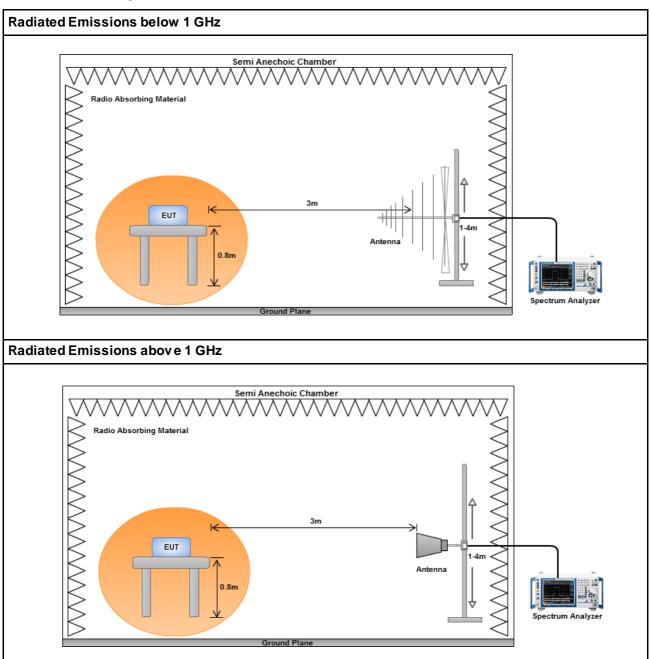
#### Note:

- 1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
- 2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
- 3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

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## 3.5.3 Test Setup

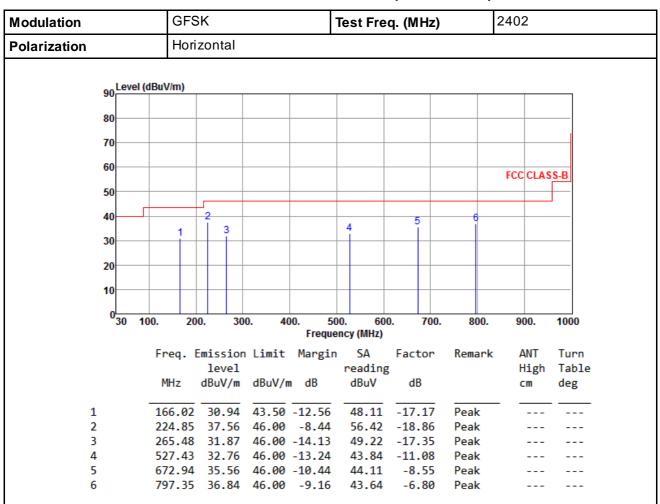


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### 3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)



Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor, cable loss and amplifier gain

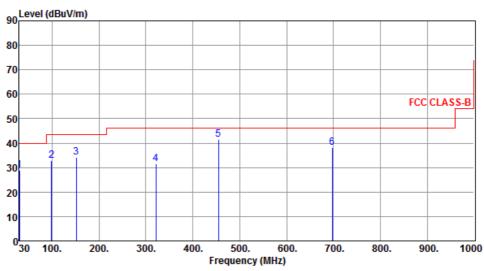
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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Modulation	GFSK	Test Freq. (MHz)	2402
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV		Remark	ANT High cm	Turn Table deg
4		20. 70	40.00	44 22	46.40	47.70			
1	30.41	28.78	40.00	-11.22	46.48	-17.70	QP		
2	98.48	32.91	43.50	-10.59	54.93	-22.02	Peak		
3	151.96	34.26	43.50	-9.24	51.07	-16.81	Peak		
4	321.38	31.56	46.00	-14.44	47.24	-15.68	Peak		
5	454.64	41.49	46.00	-4.51	53.93	-12.44	Peak		
6	697.51	38.28	46.00	-7.72	46.55	-8.27	Peak		

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

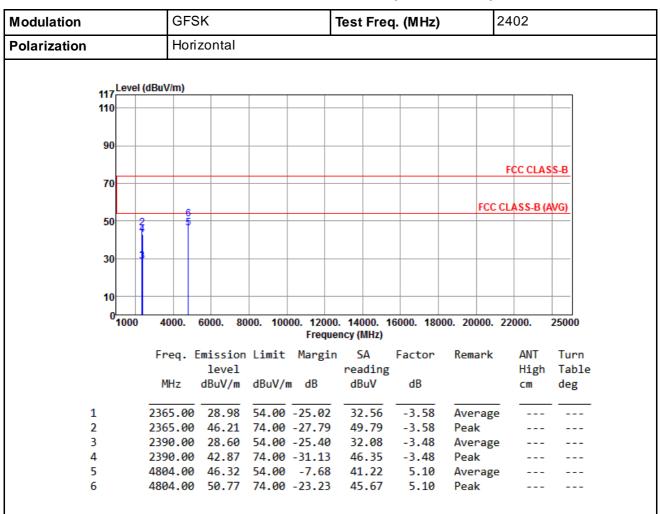
\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m). Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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### 3.5.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for GFSK



Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

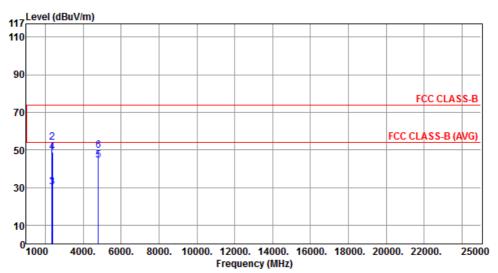
\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Modulation	GFSK	Test Freq. (MHz)	2402
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m		SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2365.00	30 20	54.00	-23 80	33.78	-3.58	Average		
_									
2	2365.00	53.99	74.00	-20.01	57.57	-3.58	Peak		
3	2390.00	30.38	54.00	-23.62	33.86	-3.48	Average		
4	2390.00	48.58	74.00	-25.42	52.06	-3.48	Peak		
5	4804.00	44.61	54.00	-9.39	39.51	5.10	Average		
6	4804.00	49.72	74.00	-24.28	44.62	5.10	Peak		

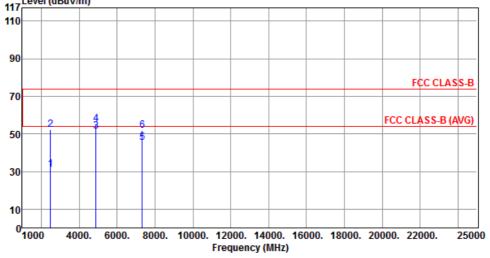
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB) \*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Modulation	ation GFSK		Test	Test Freq. (MHz)			24	2442					
Polarization	arization Horizontal												
447	Level (dBı	ıV/m)											
111/													



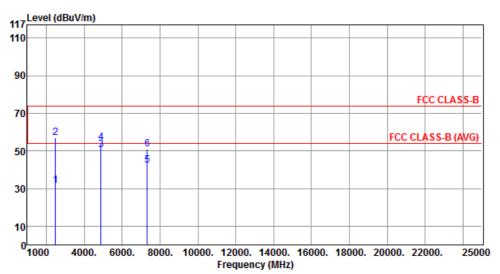
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2487.50	31.19	54.00	-22.81	34.27	-3.08	Average		
2	2487.50	52.16	74.00	-21.84	55.24	-3.08	Peak		
3	4884.00	51.36	54.00	-2.64	46.11	5.25	Average		
4	4884.00	55.09	74.00	-18.91	49.84	5.25	Peak		
5	7326.00	45.31	54.00	-8.69	35.87	9.44	Average		
6	7326.00	51.87	74.00	-22.13	42.43	9.44	Peak		

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB) \*Factor includes antenna factor, cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Modulation	GFSK	Test Freq. (MHz)	2442
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ü	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2487.50	31.43	54.00	-22.57	34.51	-3.08	Average		
2	2487.50	56.92	74.00	-17.08	60.00	-3.08	Peak		
3	4884.00	50.63	54.00	-3.37	45.38	5.25	Average		
4	4884.00	54.24	74.00	-19.76	48.99	5.25	Peak		
5	7326.00	42.20	54.00	-11.80	32.76	9.44	Average		
6	7326.00	50.75	74.00	-23.25	41.31	9.44	Peak		

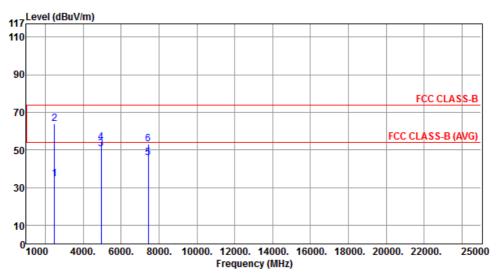
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB) \*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Horizontal		



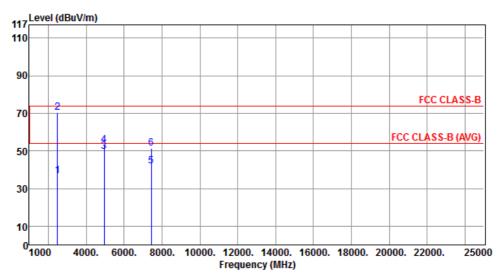
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2483.50	34.62	54.00	-19.38	37.72	-3.10	Average		
2	2483.50	63.92	74.00	-10.08	67.02	-3.10	Peak		
3	4960.00	50.46	54.00	-3.54	45.08	5.38	Average		
4	4960.00	54.03	74.00	-19.97	48.65	5.38	Peak		
5	7440.00	45.95	54.00	-8.05	36.26	9.69	Average		
6	7440.00	53.27	74.00	-20.73	43.58	9.69	Peak		

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB) \*Factor includes antenna factor, cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m		SA reading dBuV		Remark	ANT High cm	Turn Table deg
1	2483.50	36.75	54.00	-17.25	39.85	-3.10	Average		
2		70.43		-3.57	73.53	-3.10	Peak		
3	4960.00	49.86	54.00	-4.14	44.48	5.38	Average		
4	4960.00	53.09	74.00	-20.91	47.71	5.38	Peak		
5	7440.00	41.88	54.00	-12.12	32.19	9.69	Average		
6	7440.00	51.55	74.00	-22.45	41.86	9.69	Peak		

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB) \*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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## 3.6 Emissions in non-restricted Frequency Bands

#### 3.6.1 Emissions in non-restricted frequency bands limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz

#### 3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.6.3 Test Procedures

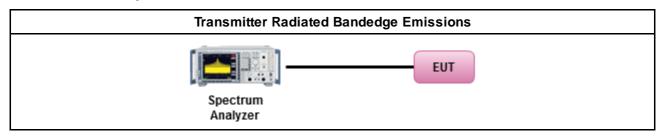
#### Reference level measurement

- 1. Set RBW=100kHz, VBW = 300kHz, Detector = Peak, Sweep time = Auto
- 2. Trace = max hold, Allow Trace to fully stabilize
- 3. Use the peakmarker function to determine the maximum PSD level

#### Emission level measurement

- 1. Set RBW=100kHz, VBW = 300kHz, Detector = Peak, Sweep time = Auto
- 2. Trace = max hold, Allow Trace to fully stabilize
- 3. Scan Frequency range is up to 25GHz
- 4. Use the peakmarker function to determine the maximum amplitude level

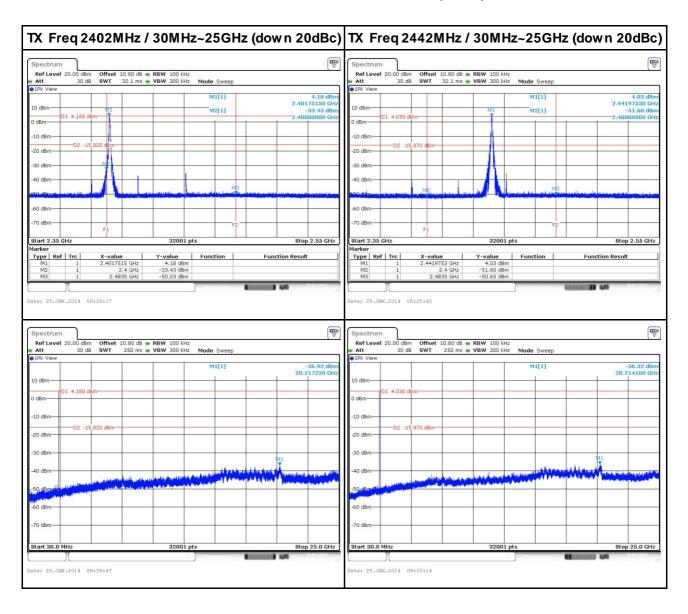
#### 3.6.4 Test Setup



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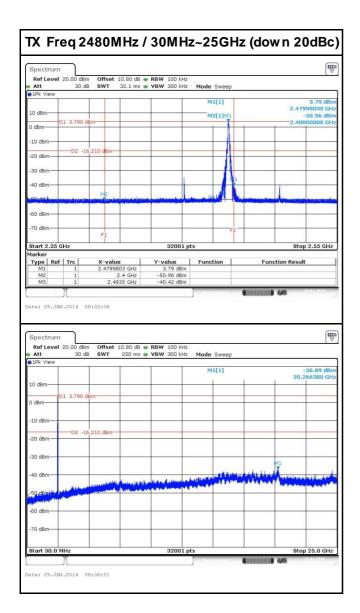


## 3.6.5 Test Result of Emissions in non-restricted Frequency Bands



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## 4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp, it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our dients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our dients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan Hsiang. Location map can be found on our website <a href="http://www.icertifi.com.tw">http://www.icertifi.com.tw</a>.

Linkou Kwei Shan

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No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei
City, Taiwan, R.O.C.

No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan
Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information

Tel: 886-3-271-8666 Fax: 886-3-318-0155

Email: ICC\_Service@icertifi.com.tw

==END===

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