

# FCC Partial Test Report

**FCC ID** : VQK-M02  
**Equipment** : Mobile Phone  
**Model No.** : M02  
**Brand Name** : FUJITSU  
**Applicant** : FUJITSU LIMITED  
**Address** : 1-1, Kamikodanaka 4-chome, Nakahara-ku,  
Kawasaki 211-8588, Japan  
**Standard** : 47 CFR FCC Part 15.247  
**Received Date** : Nov. 24, 2015  
**Tested Date** : Nov. 24 ~ Dec. 03, 2015

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 / Manager



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## Release Record

Report No.	Version	Description	Issued Date
FR560301-02AD	Rev. 01	Initial issue	Dec. 17, 2015

## Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	AC Power Line Conducted Emissions	[dBuV]: 0.183MHz 42.97 (Margin -21.36dB) - QP	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 61.04MHz 32.98 (Margin -7.02dB) - PK	Pass
15.247(b)(1)	Conducted Output Power	Power [dBm]: 10.67	Pass

# 1 General Description

## 1.1 Information

This report is issued as a supplementary report to original ICC report no. FR560301AD. PCB/trace layouts, product form factor and antenna are identical except following items:

✧ Wi-Fi:

5GHz function is removed by software setting and hardware modification. Hardware modification-Remove components of 5GHz transmission path to cancel 5GHz function that will not affect 2.4GHz function since 2.4GHz and 5GHz transmission path is separately.

✧ LTE: B26 814 ~849 MHz: Activated by software.

✧ Without Fingerprint: Remove components.

✧ Change AC adapter.

✧ Same cradle as original report, change model name from F-51 to FAR-CR105.

In this report, AC power line conducted emissions, radiated emission and conducted power had been re-tested and only its data was presented in the following sections.

### 1.1.1 Product Details

<b>Product Name</b>	Mobile Phone
<b>Brand Name</b>	FUJITSU
<b>Model Name</b>	M02
<b>IMEI Code</b>	353546070006049 / 353546070006353
<b>H/W Version</b>	v3.0.0
<b>S/W Version</b>	R021.3

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

RF General Information				
Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number	Data Rate
2400-2483.5	BR	2402-2480	0-78 [79]	1 Mbps
2400-2483.5	EDR	2402-2480	0-78 [79]	2 Mbps
2400-2483.5	EDR	2402-2480	0-78 [79]	3 Mbps
Note 1: RF output power specifies that Maximum Peak Conducted Output Power.				
Note 2: Bluetooth BR uses a GFSK.				
Note 3: Bluetooth EDR uses a combination of $\pi/4$ -DQPSK and 8DPSK.				

### 1.1.3 Antenna Details

Ant. No.	Type	Connector	Gain (dBi)	Remarks
1	$\lambda/4$ Monopole	N/A	-0.63	---

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

<b>Power Supply Type</b>	5.0Vdc from AC adapter 3.8Vdc from Battery
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### 1.1.5 Accessories

No.	Equipment	Description
1	Adapter	Brand Name: Fujitsu Limited Model Name: FMV-AC346 Input rating: 100-240Vac, 50/60Hz, 0.3A Output rating: 5.0Vdc, 2A 1.1m USB shielded cable without core (for charging use)
2	Cradle	Brand Name: Fujitsu Limited Model Name: FAR-CR105 Input rating: 5Vdc, 1.5A Output rating: 5.0Vdc, 1.5A
3	Battery (Unremovable)	Brand Name: Fujitsu Limited Model Name: CA54310-0064 Power Rating: 3.8Vdc, 2330mAh, 8.9Wh

### 1.1.6 Channel List

Frequency band (MHz)				2400~2483.5			
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461	---	---

### 1.1.7 Test Tool

Test Tool	QRCT, Version: 3.0.54.0
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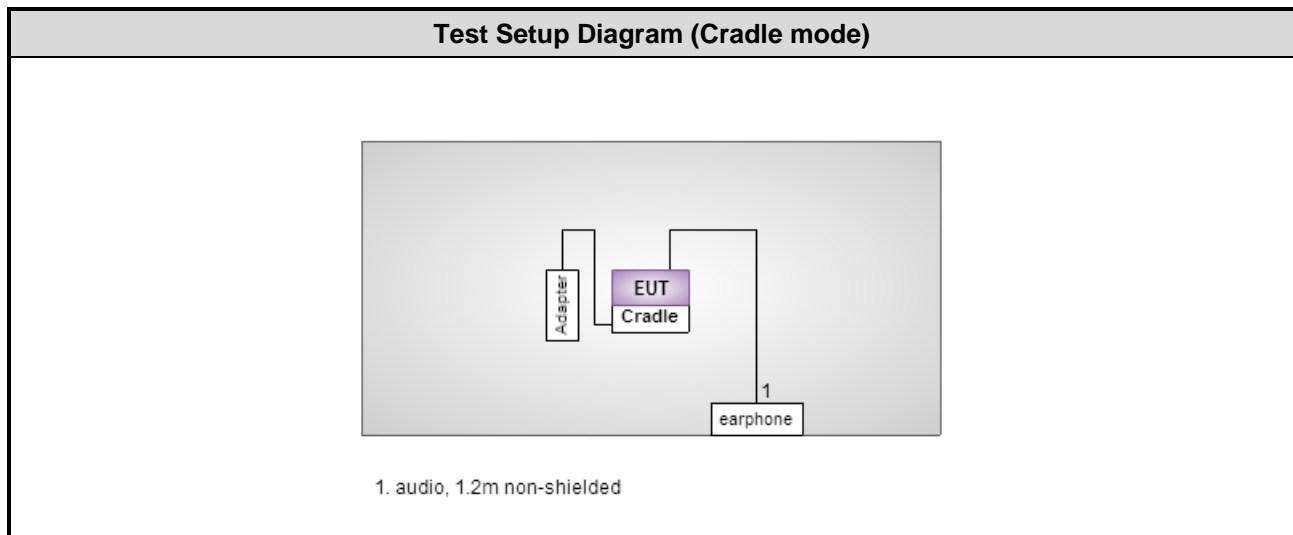
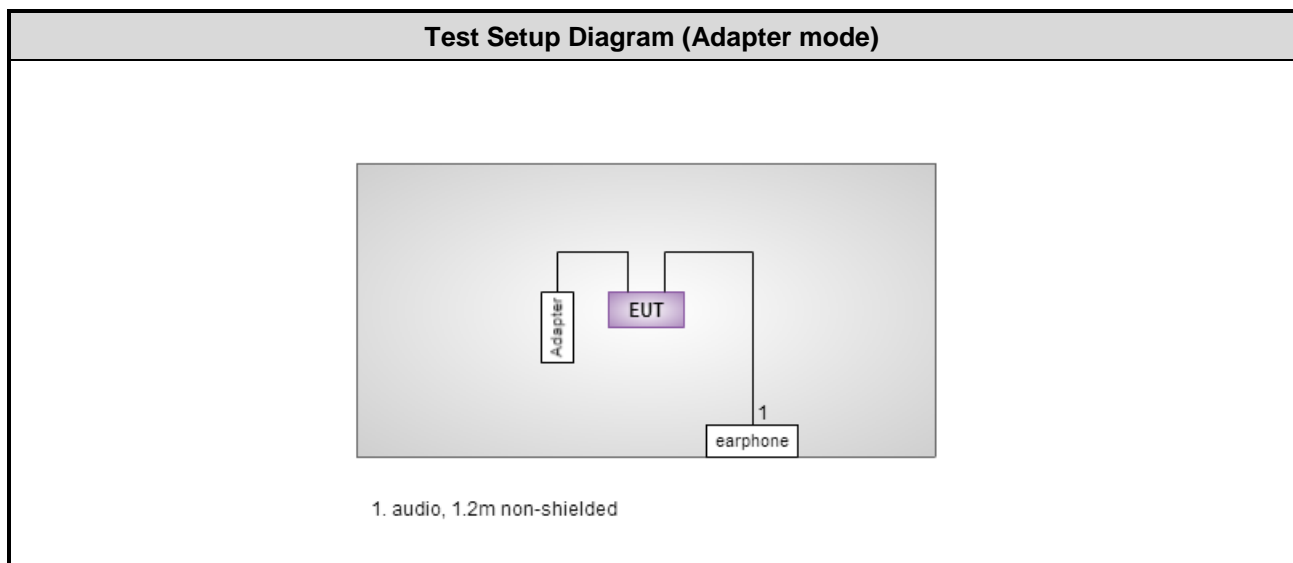
### 1.1.8 Power Setting

Modulation Mode	Test Frequency (MHz)		
	2402	2441	2480
GFSK/1Mbps	9	9	9
8DPSK/3Mbps	9	9	9

## 1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	S/N	Signal cable / Length (m)
1	Earphone	APPLE	MD827FE/A	6	1.2m non-shielded.

## 1.3 Test Setup Chart





## 1.4 The Equipment List

<b>Test Item</b>	Conducted Emission				
<b>Test Site</b>	Conduction room 1 / (CO01-WS)				
<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Calibration Date</b>	<b>Calibration Until</b>
EMC Receiver	R&S	ESCS 30	100169	Oct. 21, 2015	Oct. 20, 2016
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 13, 2015	Nov. 12, 2016
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Dec. 31, 2014	Dec. 30, 2015
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

<b>Test Item</b>	Radiated Emission				
<b>Test Site</b>	966 chamber 2 / (03CH02-WS)				
<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Calibration Date</b>	<b>Calibration Until</b>
Spectrum Analyzer	R&S	FSV40	101499	Dec. 31, 2014	Dec. 30, 2015
Receiver	R&S	ESR3	101657	Jan. 15, 2015	Jan. 14, 2016
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-523	Nov. 09, 2015	Nov. 08, 2016
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1095	Oct. 07, 2015	Oct. 06, 2016
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2015	Nov. 03, 2016
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 16, 2015	Nov. 15, 2016
Preamplifier	Burgeon	BPA-530	100218	Nov. 03, 2015	Nov. 02, 2016
Preamplifier	Agilent	83017A	MY39501309	Sep. 22, 2015	Sep. 21, 2016
Preamplifier	EMC	EMC184045B	980192	Sep. 01, 2015	Aug. 31, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16140/4	Dec. 16, 2014	Dec. 15, 2015
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16018/4	Dec. 16, 2014	Dec. 15, 2015
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16015/4	Dec. 16, 2014	Dec. 15, 2015
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-003	Dec. 16, 2014	Dec. 15, 2015
LF cable 10M	EMCC	CFD400-E	CFD400-001	Jun. 17, 2015	Jun. 16, 2016
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

<b>Test Item</b>	RF Conducted				
<b>Test Site</b>	(TH01-WS)				
<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Calibration Date</b>	<b>Calibration Until</b>
Spectrum Analyzer	R&S	FSV40	101063	Feb. 03, 2015	Feb. 02, 2016
Power Meter	Anritsu	ML2495A	1241002	Sep. 21, 2015	Sep. 20, 2016
Power Sensor	Anritsu	MA2411B	1207366	Sep. 21, 2015	Sep. 20, 2016
AC POWER SOURCE	APC	AFC-500W	F312060012	Oct. 26, 2015	Oct. 25, 2016
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
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

FCC Public notice DA 00-705

ANSI C63.10-2013

## 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
Conducted power	$\pm 0.808$ dB
AC conducted emission	$\pm 2.90$ dB
Radiated emission $\leq 1$ GHz	$\pm 3.62$ dB
Radiated emission $> 1$ GHz	$\pm 5.60$ dB

## 2 Test Configuration

### 2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	20°C / 61%	Peter Lin
Radiated Emissions	03CH02-WS	21°C / 62%	Anderson Hung Warren Lee
RF Conducted	TH01-WS	23°C / 65%	Felix Sung

➤ FCC site registration No.: 657002

➤ IC site registration No.: 10807A-2

### 2.2 The Worst Test Modes and Channel Details

The tests reported herein were performed according to the original worst case conditions in original report no. FR560301AD.

Test item	Mode	Test Frequency (MHz)	Data Rate
Conducted Emissions	8DPSK	2480	3Mbps
Radiated Emissions ≤ 1GHz	8DPSK	2480	3Mbps
Radiated Emissions > 1GHz	8DPSK	2480	3Mbps
Conducted Output Power	GFSK	2402, 2441, 2480	1Mbps
	π/4 QDPSK	2402, 2441, 2480	2Mbps
	8DPSK	2402, 2441, 2480	3Mbps

**NOTE:**

- The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Z-plane** results were found as the worst case and were shown in this report.
- The EUT had been tested by following test configurations for spurious emission below 1GHz.
  - Configuration 1 : Adapter mode
  - Configuration 2 : Cradle mode

### 3 Transmitter Test Results

#### 3.1 Conducted Emissions

##### 3.1.1 Limit of 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.
2. 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  $\Omega$  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

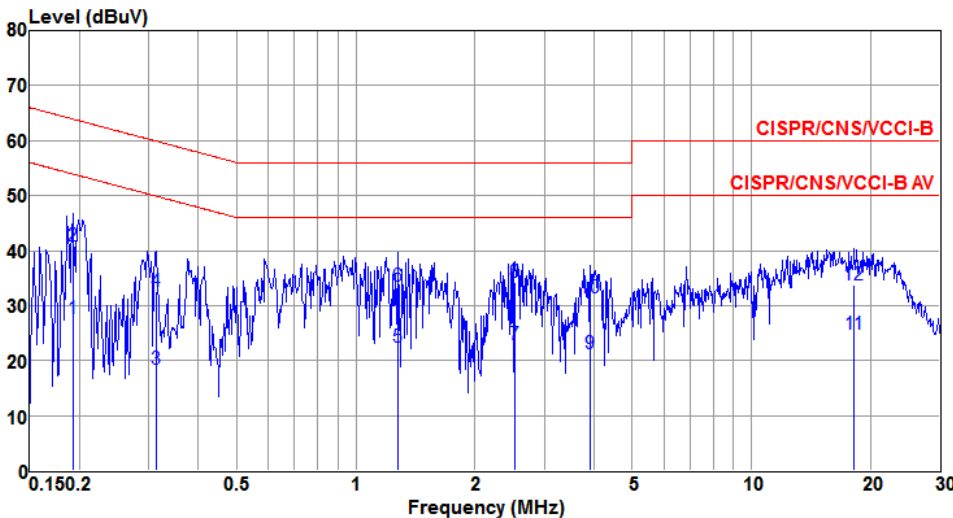
##### 3.1.3 Test Setup



- Note: 1. Support units were connected to second LISN.  
 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

### 3.1.4 Test Result of Conducted Emissions

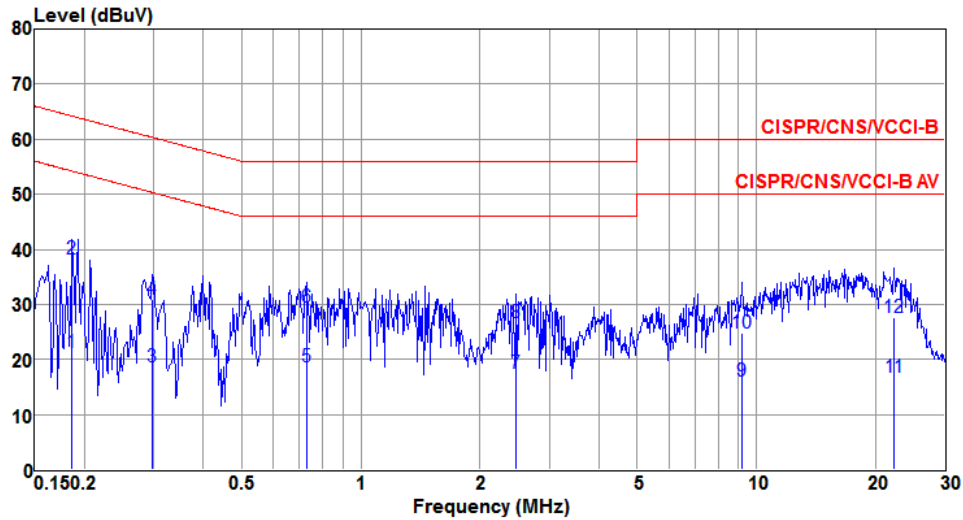
Modulation Mode	8DPSK	Test Freq. (MHz)	2480
Power Phase	Line	Test Configuration	1

	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.192	27.73	53.93	-26.20	27.53	0.11	0.09	Average
2	0.192	40.88	63.93	-23.05	40.68	0.11	0.09	QP
3	0.313	18.36	49.88	-31.52	18.14	0.12	0.10	Average
4	0.313	32.54	59.88	-27.34	32.32	0.12	0.10	QP
5	1.276	22.50	46.00	-23.50	22.17	0.14	0.19	Average
6	1.276	33.48	56.00	-22.52	33.15	0.14	0.19	QP
7	2.527	22.82	46.00	-23.18	22.39	0.17	0.26	Average
8@	2.527	34.25	56.00	-21.75	33.82	0.17	0.26	QP
9	3.922	21.30	46.00	-24.70	20.80	0.19	0.31	Average
10	3.922	31.29	56.00	-24.71	30.79	0.19	0.31	QP
11	18.232	24.68	50.00	-25.32	24.25	0.35	0.08	Average
12	18.232	33.68	60.00	-26.32	33.25	0.35	0.08	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).  
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

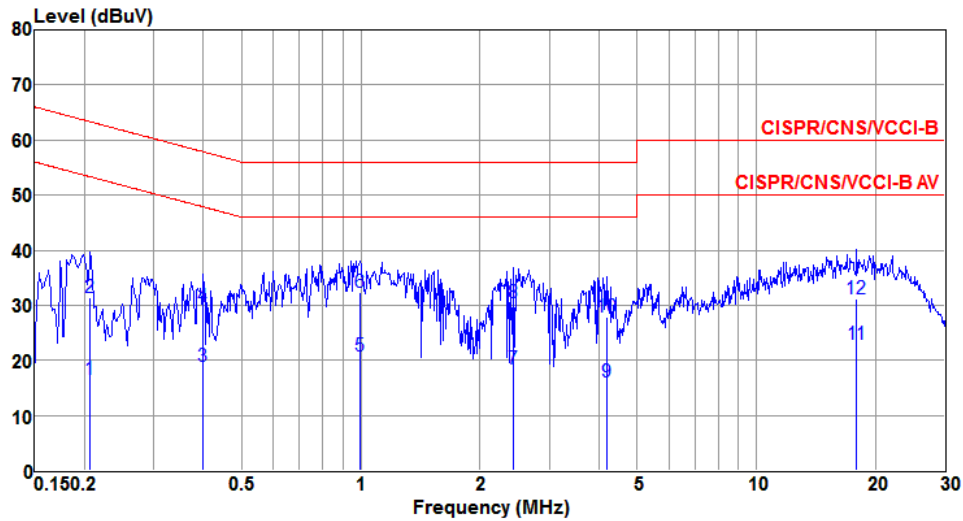
Modulation Mode	8DPSK	Test Freq. (MHz)	2480
Power Phase	Neutral	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.186	21.34	54.20	-32.86	21.14	0.11	0.09	Average
2@	0.186	38.19	64.20	-26.01	37.99	0.11	0.09	QP
3	0.297	18.60	50.32	-31.72	18.38	0.12	0.10	Average
4	0.297	30.84	60.32	-29.48	30.62	0.12	0.10	QP
5	0.727	18.54	46.00	-27.46	18.27	0.13	0.14	Average
6	0.727	29.43	56.00	-26.57	29.16	0.13	0.14	QP
7	2.474	17.38	46.00	-28.62	16.95	0.17	0.26	Average
8	2.474	26.75	56.00	-29.25	26.32	0.17	0.26	QP
9	9.204	16.08	50.00	-33.92	15.52	0.26	0.30	Average
10	9.204	24.83	60.00	-35.17	24.27	0.26	0.30	QP
11	22.298	16.78	50.00	-33.22	16.31	0.42	0.05	Average
12	22.298	27.67	60.00	-32.33	27.20	0.42	0.05	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).  
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

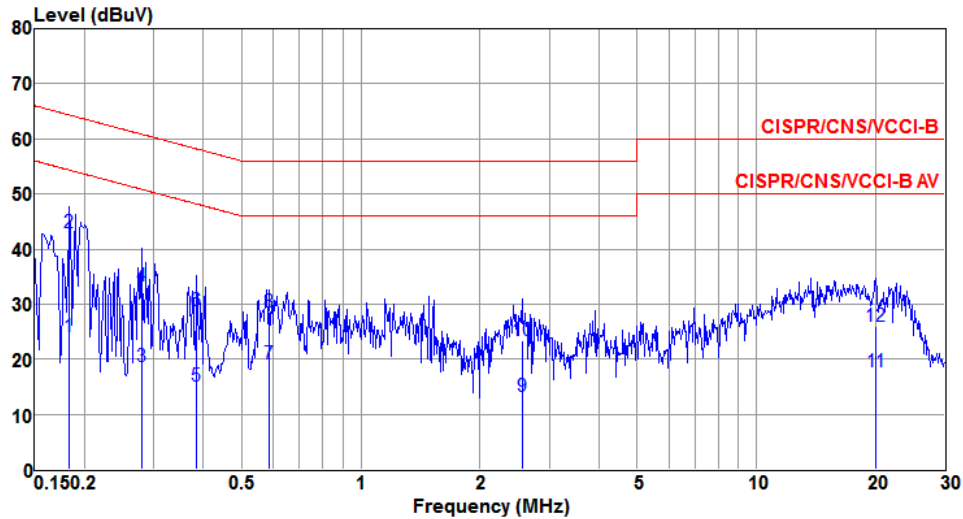
Modulation Mode	8DPSK	Test Freq. (MHz)	2480
Power Phase	Line	Test Configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.207	16.63	53.32	-36.69	16.43	0.11	0.09	Average
2	0.207	31.30	63.32	-32.02	31.10	0.11	0.09	QP
3	0.400	18.96	47.86	-28.90	18.72	0.13	0.11	Average
4	0.400	29.77	57.86	-28.09	29.53	0.13	0.11	QP
5	0.994	20.76	46.00	-25.24	20.47	0.13	0.16	Average
6	0.994	32.35	56.00	-23.65	32.06	0.13	0.16	QP
7	2.435	18.50	46.00	-27.50	18.07	0.17	0.26	Average
8	2.435	30.38	56.00	-25.62	29.95	0.17	0.26	QP
9	4.180	15.96	46.00	-30.04	15.46	0.19	0.31	Average
10	4.180	27.81	56.00	-28.19	27.31	0.19	0.31	QP
11	17.944	23.00	50.00	-27.00	22.56	0.35	0.09	Average
12	17.944	31.27	60.00	-28.73	30.83	0.35	0.09	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).  
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation Mode	8DPSK	Test Freq. (MHz)	2480
Power Phase	Neutral	Test Configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.183	24.10	54.33	-30.23	23.90	0.11	0.09	Average
2@	0.183	42.97	64.33	-21.36	42.77	0.11	0.09	QP
3	0.279	18.54	50.85	-32.31	18.32	0.12	0.10	Average
4	0.279	33.36	60.85	-27.49	33.14	0.12	0.10	QP
5	0.385	15.05	48.17	-33.12	14.80	0.14	0.11	Average
6	0.385	28.76	58.17	-29.41	28.51	0.14	0.11	QP
7	0.585	19.15	46.00	-26.85	18.88	0.14	0.13	Average
8	0.585	28.59	56.00	-27.41	28.32	0.14	0.13	QP
9	2.554	13.12	46.00	-32.88	12.69	0.17	0.26	Average
10	2.554	23.27	56.00	-32.73	22.84	0.17	0.26	QP
11	20.056	17.70	50.00	-32.30	17.28	0.40	0.02	Average
12	20.056	26.07	60.00	-33.93	25.65	0.40	0.02	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).  
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).



## 3.2 Unwanted Emissions into Restricted Frequency Bands

### 3.2.1 Limit of Unwanted Emissions into 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:**  
Quasi-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

**Note 2:**  
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.

### 3.2.2 Test Procedures

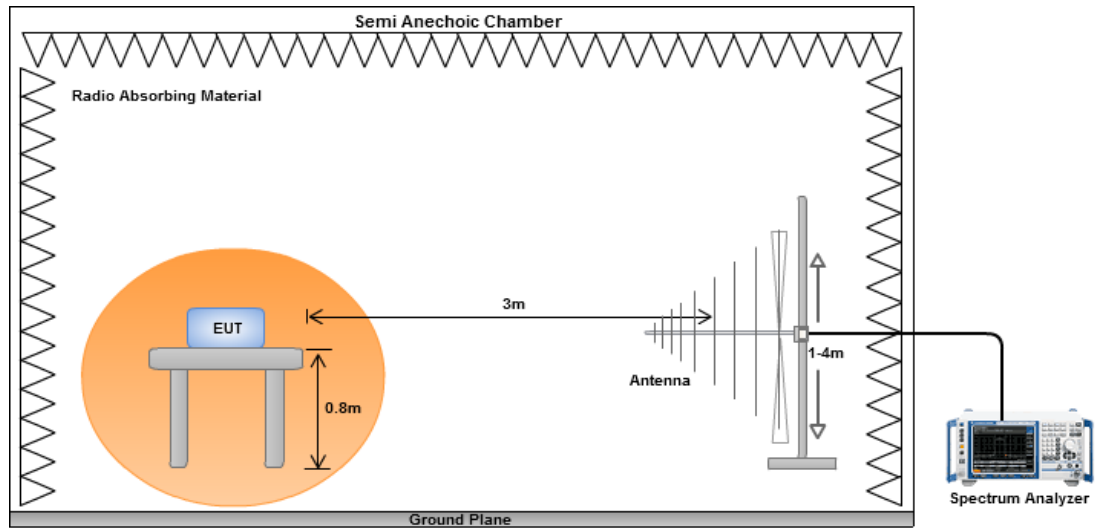
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
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:

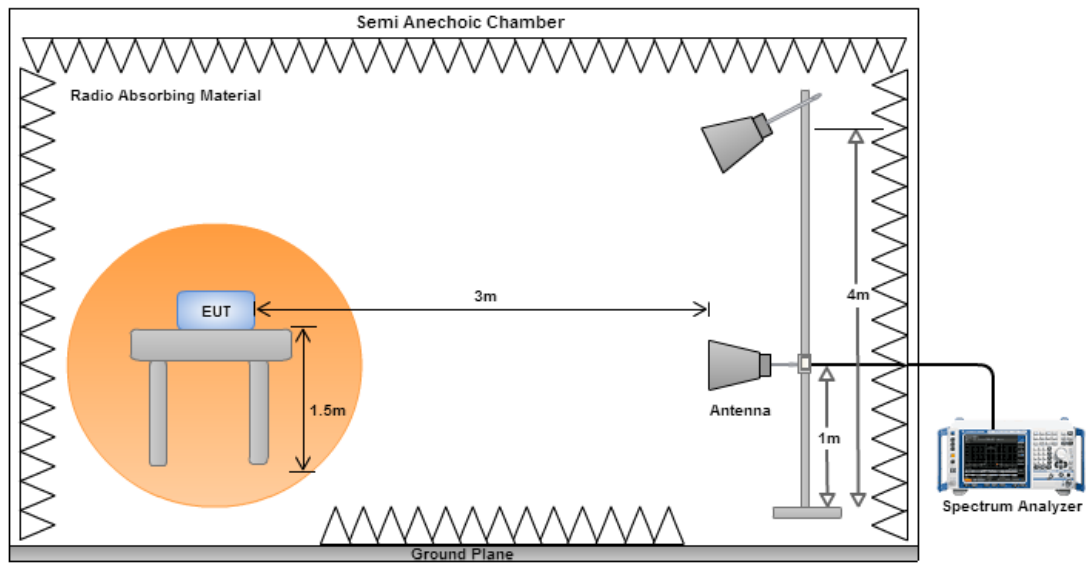
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. Radiated emission above 1GHz / Peak value  
RBW=1MHz, VBW=3MHz and Peak detector  
  
Radiated emission above 1GHz / Average value for harmonics  
The average value is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula for DH5 packet type which has worst duty factor:
3. 
$$20\log (\text{Duty cycle}) = 20\log \frac{1\text{s} / 1600 * 5}{100 \text{ ms}} = -30.1\text{dB}$$
4. Radiated emission above 1GHz / Average value for other emissions  
RBW=1MHz, VBW=1/T and Peak detector

### 3.2.3 Test Setup

#### Radiated Emissions below 1 GHz

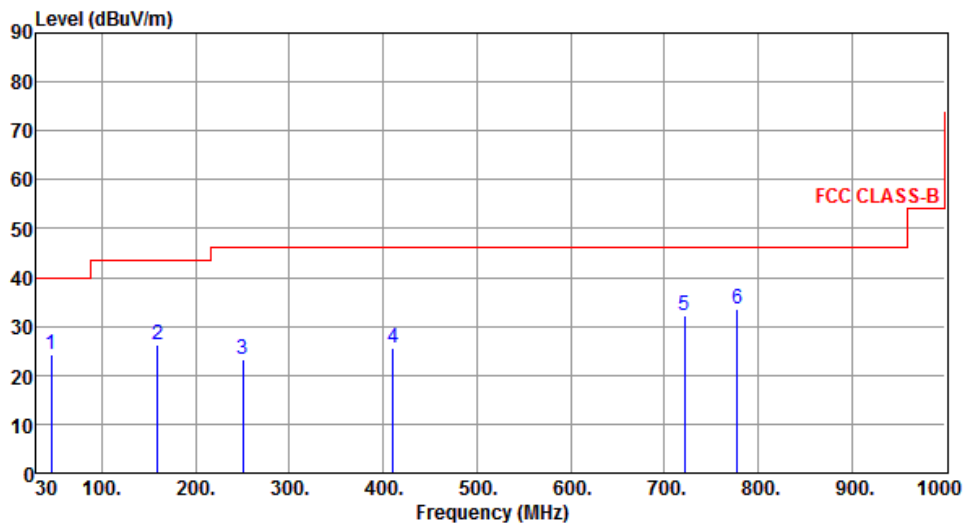


#### Radiated Emissions above 1 GHz



### 3.2.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)\_Adapter mode

Modulation	8DPSK	Test Freq. (MHz)	2480
Polarization	Horizontal	Test Configuration	1

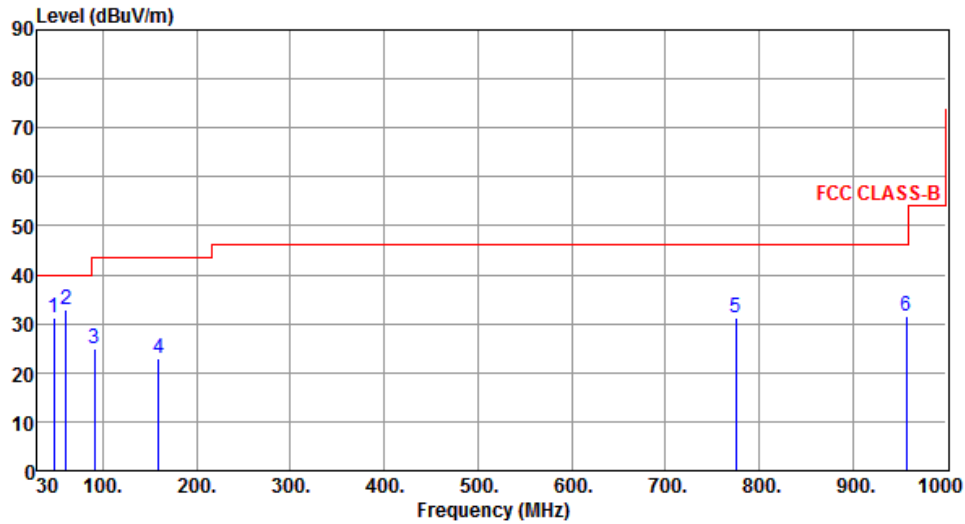
  


The graph displays the radiated unwanted emissions for an adapter mode transmitter. The y-axis represents the Level in dBuV/m, ranging from 0 to 90. The x-axis represents the Frequency in MHz, ranging from 30 to 1000. A red line indicates the FCC CLASS-B limit, which is 40 dBuV/m from 30 to 100 MHz, 45 dBuV/m from 100 to 1000 MHz, and 55 dBuV/m from 1000 to 10000 MHz. Six measured peaks are labeled with blue numbers 1 through 6, corresponding to the data in the table below.

	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	45.52	24.23	40.00	-15.77	35.81	-11.58	Peak	---	---
2	159.01	26.20	43.50	-17.30	37.88	-11.68	Peak	---	---
3	250.19	23.41	46.00	-22.59	36.20	-12.79	Peak	---	---
4	410.24	25.54	46.00	-20.46	33.98	-8.44	Peak	---	---
5	721.61	32.15	46.00	-13.85	35.08	-2.93	Peak	---	---
6	777.87	33.46	46.00	-12.54	35.71	-2.25	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.

Modulation	8DPSK	Test Freq. (MHz)	2480
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	47.46	31.06	40.00	-8.94	42.67	-11.61	Peak	---	---
2	61.04	32.98	40.00	-7.02	45.87	-12.89	Peak	---	---
3	91.11	24.81	43.50	-18.69	42.72	-17.91	Peak	---	---
4	159.01	23.08	43.50	-20.42	34.76	-11.68	Peak	---	---
5	774.96	31.21	46.00	-14.79	33.49	-2.28	Peak	---	---
6	957.32	31.55	46.00	-14.45	31.51	0.04	Peak	---	---

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

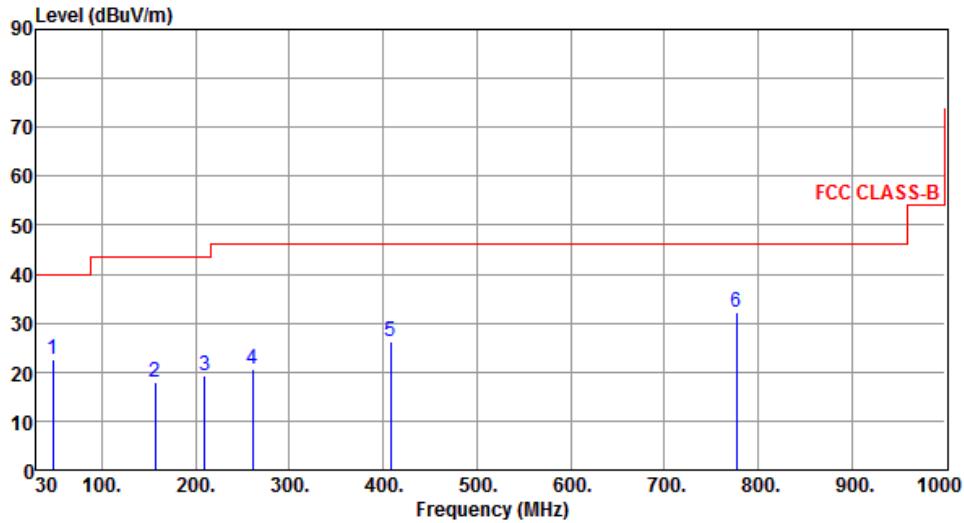
\*Factor includes antenna factor , cable loss and amplifier gain

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.

### 3.2.5 Transmitter Radiated Unwanted Emissions (Below 1GHz)\_Cradle mode

Modulation	8DPSK	Test Freq. (MHz)	2480
Polarization	Horizontal	Test Configuration	2

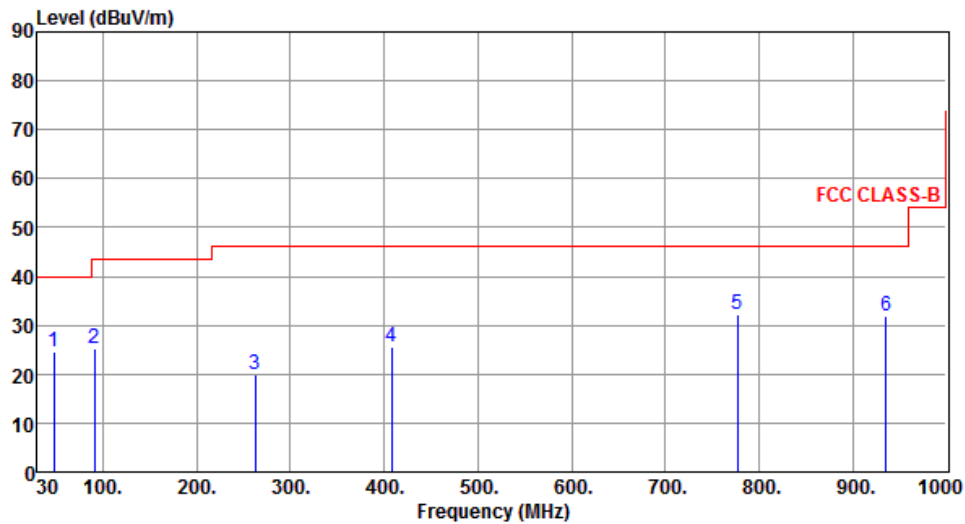
  


The graph displays the radiated unwanted emissions for a transmitter in Cradle mode. The y-axis represents the Level in dBuV/m, ranging from 0 to 90. The x-axis represents the Frequency in MHz, ranging from 30 to 1000. A red line indicates the FCC CLASS-B limit, which is 40 dBuV/m from 30 to 100 MHz, 45 dBuV/m from 100 to 1000 MHz, and 55 dBuV/m from 1000 to 10000 MHz. Six measured peaks are labeled with numbers 1 through 6, corresponding to the data in the table below.

	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	47.46	22.73	40.00	-17.27	34.34	-11.61	Peak	---	---
2	157.07	17.99	43.50	-25.51	29.72	-11.73	Peak	---	---
3	209.45	19.40	43.50	-24.10	33.83	-14.43	Peak	---	---
4	260.86	20.71	46.00	-25.29	33.21	-12.50	Peak	---	---
5	408.30	26.33	46.00	-19.67	34.80	-8.47	Peak	---	---
6	776.90	32.06	46.00	-13.94	34.31	-2.25	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.

Modulation	8DPSK	Test Freq. (MHz)	2480
Polarization	Vertical	Test Configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	47.46	24.54	40.00	-15.46	36.15	-11.61	QP	104	217
2	91.11	25.15	43.50	-18.35	43.06	-17.91	Peak	---	---
3	262.80	19.89	46.00	-26.11	32.29	-12.40	Peak	---	---
4	408.30	25.56	46.00	-20.44	34.03	-8.47	Peak	---	---
5	776.90	32.29	46.00	-13.71	34.54	-2.25	Peak	---	---
6	935.98	31.92	46.00	-14.08	32.12	-0.20	Peak	---	---

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

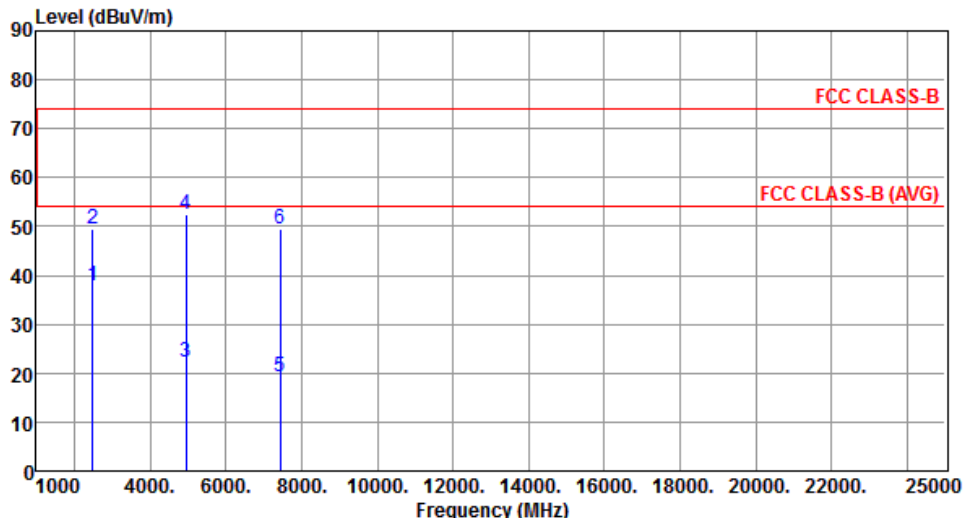
\*Factor includes antenna factor , cable loss and amplifier gain

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.

### 3.2.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 8DPSK

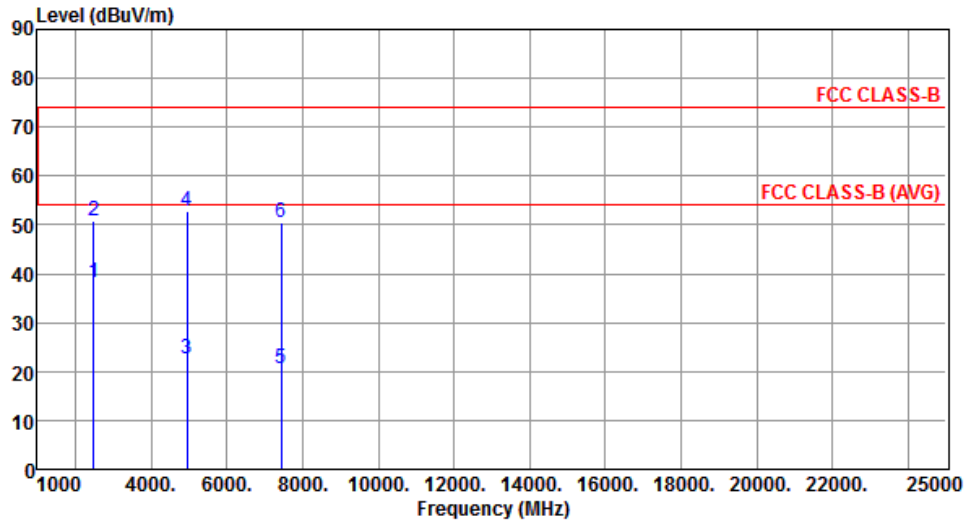
Modulation	8DPSK	Test Freq. (MHz)	2480
Polarization	Horizontal	Test Configuration	1

	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	37.90	54.00	-16.10	40.27	-2.37	Average	184	325
2	2483.50	49.56	74.00	-24.44	51.93	-2.37	Peak	184	325
3	4960.00	22.26	54.00	-31.74	16.99	5.27	Average	207	240
4	4960.00	52.36	74.00	-21.64	47.09	5.27	Peak	207	240
5	7440.00	19.22	54.00	-34.78	9.08	10.14	Average	208	20
6	7440.00	49.32	74.00	-24.68	39.18	10.14	Peak	208	20

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).

Modulation	8DPSK	Test Freq. (MHz)	2480
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	38.15	54.00	-15.85	40.52	-2.37	Average	150	239
2	2483.50	50.85	74.00	-23.15	53.22	-2.37	Peak	150	239
3	4960.00	22.73	54.00	-31.27	17.46	5.27	Average	155	279
4	4960.00	52.83	74.00	-21.17	47.56	5.27	Peak	155	279
5	7440.00	20.45	54.00	-33.55	10.31	10.14	Average	267	215
6	7440.00	50.55	74.00	-23.45	40.41	10.14	Peak	267	215

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).



### 3.3 Conducted Output Power

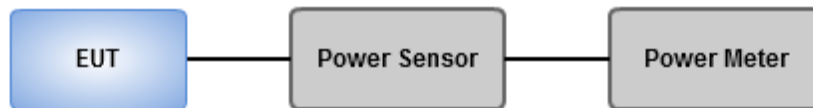
#### 3.3.1 Limit of Conducted Output Power

- ☐ 1 Watt  
For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band.
- ☒ 0.125 Watt  
For all other frequency hopping systems in the 2400–2483.5 MHz band.
- ☐ 0.125 Watt  
For Frequency hopping systems operating in the 2400–2483.5 MHz band have hopping channel carrier frequencies that are separated by two-thirds of the 20 dB bandwidth of the hopping channel.

#### 3.3.2 Test Procedures

1. A wideband power meter is used for power measurement. Bandwidth of power sensor and meter is 50MHz
2. 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



### 3.3.4 Test Result of Conducted Output Power

Modulation Mode	Freq. (MHz)	Output Power (mW)	Output Power (dBm)	Limit (mW)
GFSK	2402	8.57	9.33	125
GFSK	2441	9.62	9.83	125
GFSK	2480	10.12	10.05	125
π/4 DQPSK	2402	9.44	9.75	125
π/4 DQPSK	2441	10.64	10.27	125
π/4 DQPSK	2480	11.27	10.52	125
8DPSK	2402	9.84	9.93	125
8DPSK	2441	11.04	10.43	125
8DPSK	2480	11.67	<b>10.67</b>	125

Modulation Mode	Freq. (MHz)	AV Output Power (mW)	AV Output Power (dBm)
GFSK	2402	8.28	9.18
GFSK	2441	9.31	9.69
GFSK	2480	9.71	<b>9.87</b>
π/4 DQPSK	2402	5.62	7.50
π/4 DQPSK	2441	6.15	7.89
π/4 DQPSK	2480	6.70	8.26
8DPSK	2402	5.50	7.40
8DPSK	2441	6.05	7.82
8DPSK	2480	6.73	8.28

Note: Average power is for reference only.

## 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 clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients 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 <http://www.icertifi.com.tw>.

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==END==