FCC Test Report

FCC ID	:	**VQK-F01H**
Equipment	:	**Mobile Phone**
Model No.	:	**F-01H**
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	:	**Jun. 03, 2015**
Tested Date	:	**Jul. 14 ~ Jul. 15, 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

Testing Laboratory
2732

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Release Record

Report No.	Version	Description	Issued Date
FR560301AE	Rev. 01	Initial issue	Aug. 07, 2015

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	AC Power Line Conducted Emissions	[dBuV]: 2.900MHz 33.24 (Margin -12.76dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 12010.00MHz 45.16 (Margin -8.84dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Power [dBm]: 1.76	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

1 General Description

1.1 Information

1.1.1 Product Details

Product Name	Mobile Phone
Brand Name	FUJITSU
Model Name	F-01H
IMEI Code	354017060100571 / 354017060117070
H/W Version	v2.1.1
S/W Version	R019.1e

1.1.2 Specification of the Equipment under Test (EUT)

RF General Information				
Frequency Range (MHz)	**Bluetooth Mode**	**Ch. Freq. (MHz)**	**Channel Number**	**Data Rate**
2400-2483.5	V4.1 LE	2402-2480	0-39 [40]	1 Mbps
Note 1: Bluetooth LE (Low energy) uses GFSK modulation.				

1.1.3 Antenna Details

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

1.1.4 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	5.0Vdc from AC adapter 3.8Vdc from Battery

1.1.5 Accessories

No.	Equipment	Description
1	Cradle	Brand Name: Fujitsu Limited Model Name: F51 Input rating: 5Vdc, 1.5A Output rating: 5.0Vdc, 1.5A
2	Battery (Unremovable)	Brand Name: NTT Docomo 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)
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

1.1.7 Test Tool and Duty Cycle

Test tool	QRCT, Version: 3.0.54.0
Duty cycle of test signal (%)	66.51%
Duty Factor (dB)	1.77

1.1.8 Power Setting

Modulation Mode	Test Frequency (MHz)		
	2402	2440	2480
GFSK/1Mbps	Default	Default	Default

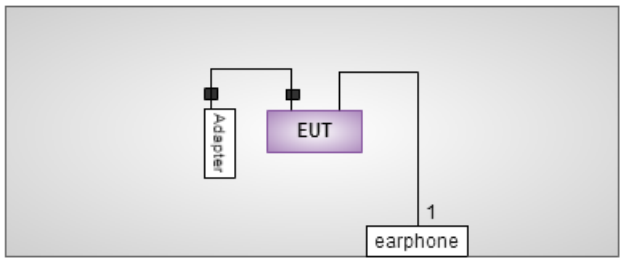
1.2 Local Support Equipment List

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**S/N**	**Signal cable / Length (m)**
1	Adapter	NTT docomo	AC Adaptor 04	---	---
2	Earphone	APPLE	MD827FE/A	6	1.2m non-shielded.

Note: Item 1 was provided by applicant.

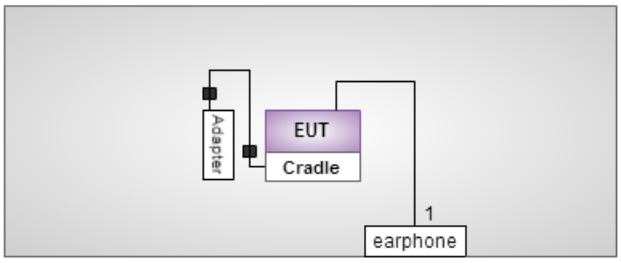
1.3 Test Setup Chart

Test Setup Diagram (Adapter mode)



1. 1.2m non-shielded

Test Setup Diagram (Cradle mode)



1. 1.2m non-shielded

1.4 Test Equipment List and Calibration Data

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
EMC Receiver	R&S	ESCS 30	100169	Oct. 17, 2014	Oct. 16, 2015
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 17, 2014	Nov. 16, 2015
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.					

Test Item	Radiated Emission				
Test Site	966 chamber 2 / (03CH02-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
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	VULB9168-524	Oct. 16, 2014	Oct. 15, 2015
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1095	Oct. 14, 2014	Oct. 13, 2015
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 10, 2014	Nov. 09, 2015
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 10, 2014	Nov. 09, 2015
Preamplifier	Burgeon	BPA-530	100218	Nov. 10, 2014	Nov. 09, 2015
Preamplifier	Agilent	83017A	MY39501309	Sep. 29, 2014	Sep. 28, 2015
Preamplifier	EMC	EMC184045B	980192	Aug. 26, 2014	Aug. 25, 2015
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	Woken	CFD400NL-LW	CFD400NL-004	Dec. 16, 2014	Dec. 15, 2015
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Feb. 03, 2015	Feb. 02, 2016
Power Meter	Anritsu	ML2495A	1241002	Sep. 29, 2014	Sep. 28, 2015
Power Sensor	Anritsu	MA2411B	1207366	Sep. 29, 2014	Sep. 28, 2015
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
ANSI C63.10-2013
FCC KDB 558074 D01 DTS Meas Guidance v03r03

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	±34.134 Hz
Conducted power	±0.808 dB
Power density	±0.463 dB
Conducted emission	±2.670 dB
AC conducted emission	±2.92 dB
Radiated emission ≤ 1GHz	±3.62 dB
Radiated emission > 1GHz	±5.60 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	21°C / 60%	Kevin Ma
Radiated Emissions	03CH02-WS	21°C / 61-64%	Anderson Hung
RF Conducted	TH01-WS	23°C / 65%	Brad Wu

- FCC site registration No.: 657002
- IC site registration No.: 10807A-2

2.2 The Worst Test Modes and Channel Details

Test item	Mode	Test Frequency (MHz)	Data Rate
AC Power Line Conducted Emissions	BT LE	2440	1Mbps
Radiated Emissions ≤ 1GHz	BT LE	2440	1Mbps
Radiated Emissions > 1GHz	BT LE	2402, 2440, 2480	1Mbps
Maximum Output Power	BT LE	2402, 2440, 2480	1Mbps
6dB bandwidth			
Power spectral density			

NOTE:

1. 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.
2. The EUT had been tested by following test configurations for spurious emission below 1GHz.
   1) Configuration 1 : Adapter mode
   2) Configuration 2 : Cradle mode

3 Transmitter Test Results

3.1 Conducted Emissions

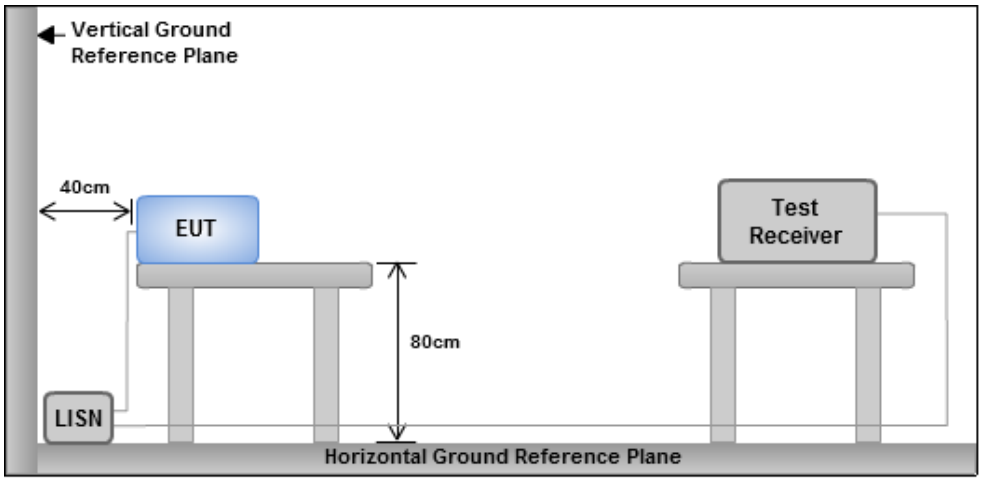
3.1.1 Limit of Conducted Emissions

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 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

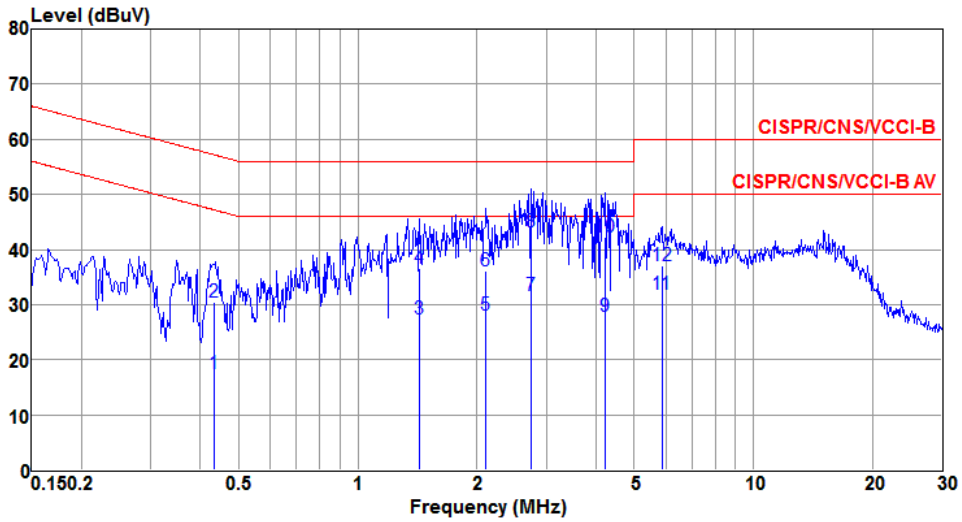
3.1.3 Test Setup



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

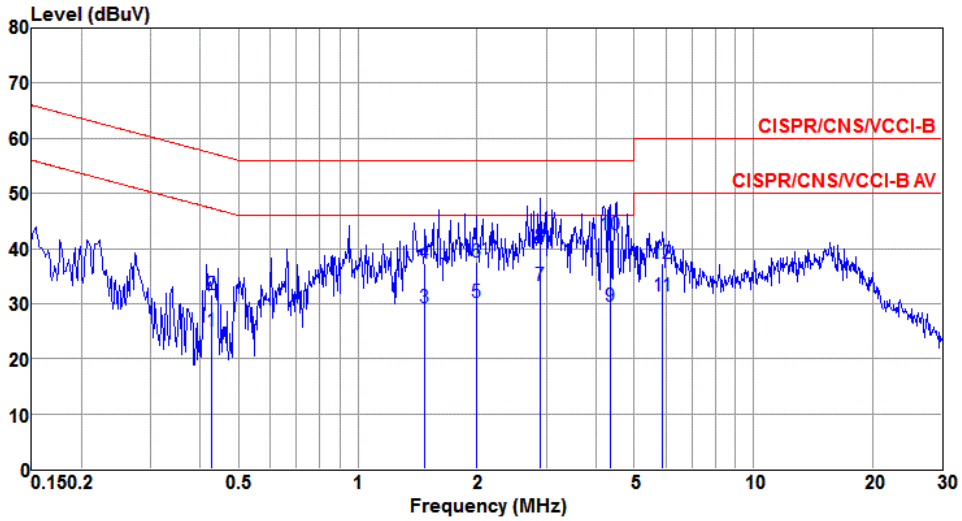
Modulation Mode	GFSK	Test Freq. (MHz)	2440
Power Phase	Line	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.435	17.55	47.16	-29.61	17.27	0.17	0.11	Average
2	0.435	30.41	57.16	-26.75	30.13	0.17	0.11	QP
3	1.433	27.49	46.00	-18.51	26.92	0.37	0.20	Average
4	1.433	36.62	56.00	-19.38	36.05	0.37	0.20	QP
5	2.110	28.07	46.00	-17.93	27.22	0.60	0.25	Average
6	2.110	36.12	56.00	-19.88	35.27	0.60	0.25	QP
7	2.750	31.74	46.00	-14.26	31.01	0.46	0.27	Average
8*	2.750	43.12	56.00	-12.88	42.39	0.46	0.27	QP
9	4.224	27.85	46.00	-18.15	27.26	0.28	0.31	Average
10	4.224	42.14	56.00	-13.86	41.55	0.28	0.31	QP
11	5.867	31.96	50.00	-18.04	31.22	0.43	0.31	Average
12	5.867	37.01	60.00	-22.99	36.27	0.43	0.31	QP

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

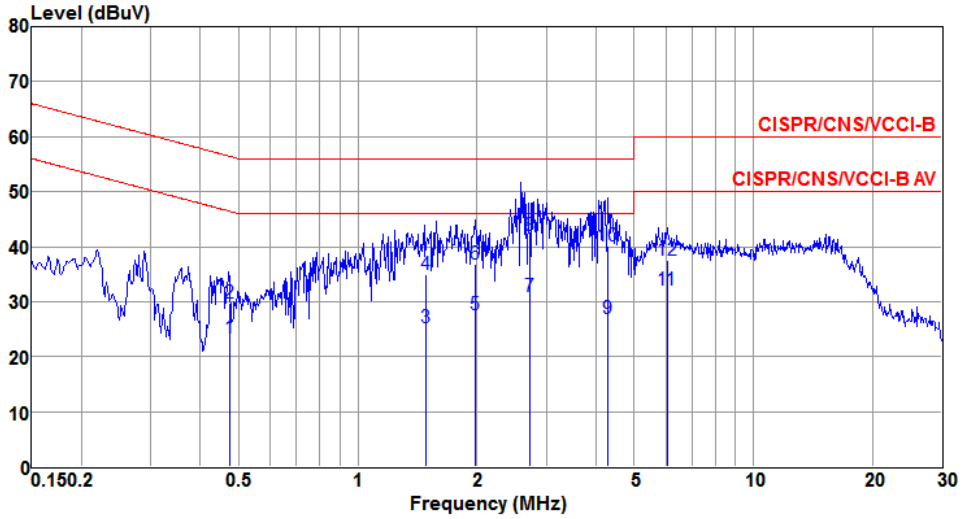
Modulation Mode	GFSK	Test Freq. (MHz)	2440
Power Phase	Neutral	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.428	25.10	47.29	-22.19	24.85	0.14	0.11	Average
2	0.428	31.69	57.29	-25.60	31.44	0.14	0.11	QP
3	1.480	29.23	46.00	-16.77	28.78	0.24	0.21	Average
4	1.480	37.22	56.00	-18.78	36.77	0.24	0.21	QP
5	1.991	30.16	46.00	-15.84	29.70	0.22	0.24	Average
6	1.991	37.52	56.00	-18.48	37.06	0.22	0.24	QP
7*	2.900	33.24	46.00	-12.76	32.46	0.50	0.28	Average
8	2.900	40.41	56.00	-15.59	39.63	0.50	0.28	QP
9	4.361	29.56	46.00	-16.44	28.53	0.72	0.31	Average
10	4.361	42.49	56.00	-13.51	41.46	0.72	0.31	QP
11	5.898	31.28	50.00	-18.72	30.32	0.65	0.31	Average
12	5.898	37.21	60.00	-22.79	36.25	0.65	0.31	QP

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

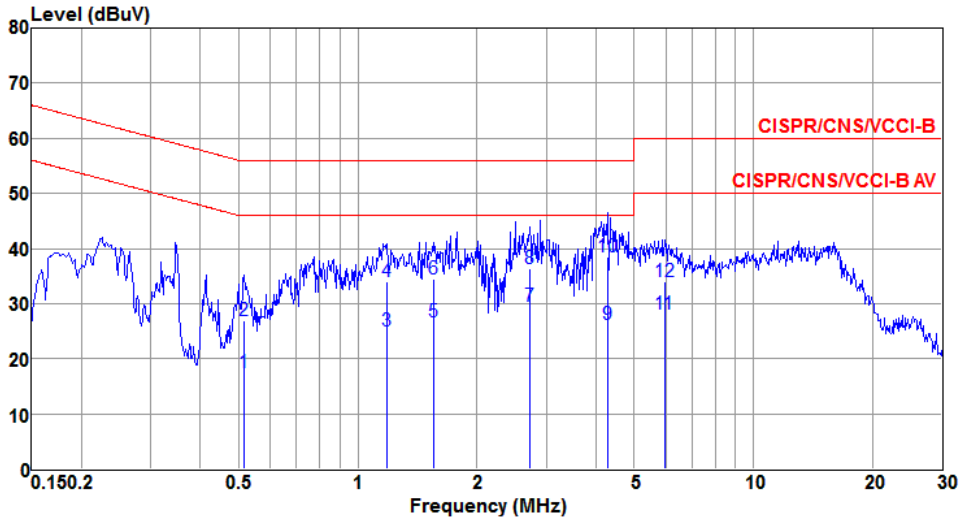
Modulation Mode	GFSK	Test Freq. (MHz)	2440
Power Phase	Line	Test Configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.474	23.45	46.44	-22.99	23.17	0.16	0.12	Average
2	0.474	29.64	56.44	-26.80	29.36	0.16	0.12	QP
3	1.487	25.24	46.00	-20.76	24.63	0.40	0.21	Average
4	1.487	34.98	56.00	-21.02	34.37	0.40	0.21	QP
5	1.980	27.54	46.00	-18.46	26.68	0.62	0.24	Average
6	1.980	36.73	56.00	-19.27	35.87	0.62	0.24	QP
7	2.721	31.04	46.00	-14.96	30.30	0.47	0.27	Average
8*	2.721	41.91	56.00	-14.09	41.17	0.47	0.27	QP
9	4.269	26.84	46.00	-19.16	26.24	0.29	0.31	Average
10	4.269	40.18	56.00	-15.82	39.58	0.29	0.31	QP
11	6.056	32.02	50.00	-17.98	31.26	0.45	0.31	Average
12	6.056	37.48	60.00	-22.52	36.72	0.45	0.31	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	GFSK	Test Freq. (MHz)	2440
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	0.516	17.36	46.00	-28.64	17.36	0.00	0.00	Average
2	0.516	26.92	56.00	-29.08	26.92	0.00	0.00	QP
3	1.184	24.95	46.00	-21.05	24.95	0.00	0.00	Average
4	1.184	34.04	56.00	-21.96	34.04	0.00	0.00	QP
5	1.552	26.74	46.00	-19.26	26.74	0.00	0.00	Average
6	1.552	34.47	56.00	-21.53	34.47	0.00	0.00	QP
7*	2.721	29.55	46.00	-16.45	29.55	0.00	0.00	Average
8	2.721	36.44	56.00	-19.56	36.44	0.00	0.00	QP
9	4.269	26.31	46.00	-19.69	26.31	0.00	0.00	Average
10	4.269	38.49	56.00	-17.51	38.49	0.00	0.00	QP
11	5.961	28.05	50.00	-21.95	28.05	0.00	0.00	Average
12	5.961	33.88	60.00	-26.12	33.88	0.00	0.00	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 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

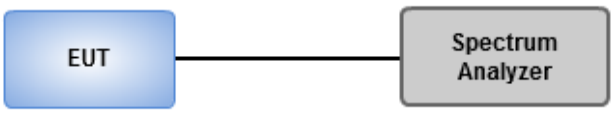
6dB Bandwidth

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.

Occupied Bandwidth

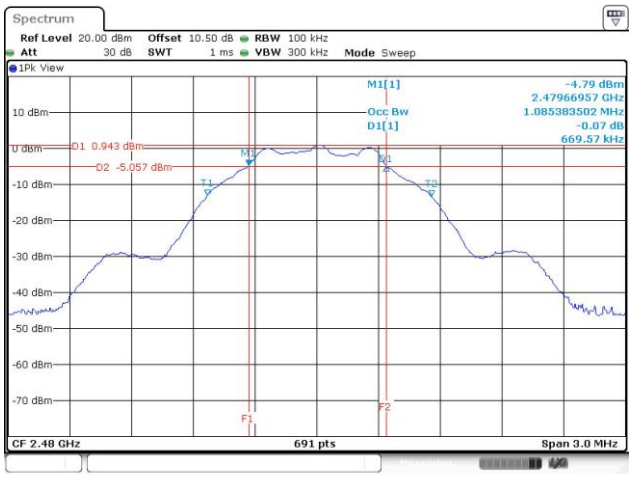
1. Set resolution bandwidth (RBW) = 30 kHz, Video bandwidth = 100 kHz.
2. Detector = Sample, Trace mode = max hold.
3 Sweep = auto couple, Allow the trace to stabilize.
4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

3.2.3 Test Setup



3.2.4 Test Result of 6dB and Occupied Bandwidth

Mode	Freq. (MHz)	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit of 6dB Bandwidth (kHz)
BT LE	2402	0.674	1.05	500
BT LE	2440	0.674	1.05	500
BT LE	2480	0.670	1.05	500

Worst Plots	
6dB Bandwidth	**99% Occupied Bandwidth**
	

3.3 RF Output Power

3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1Watt.

☒ Antenna gain <= 6dBi, no any corresponding reduction is in output power limit.

☐ Antenna 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

☒ Maximum Peak Conducted Output Power

☐ **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.

☒ **Power meter**

1. 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.

☒ Maximum Conducted Average Output Power (For reference only)

☒ **Power meter**

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

3.3.4 Test Result of Maximum Output Power

Mode	Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)
BT LE	2402	1.208	0.82	30
BT LE	2440	1.500	**1.76**	30
BT LE	2480	1.265	1.02	30

Mode	Freq. (MHz)	AV Power (mW)	AV Power (dBm)	Limit (dBm)
BT LE	2402	1.148	0.60	30
BT LE	2440	1.426	1.54	30
BT LE	2480	1.194	0.77	30

Note: Average power is for reference only

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

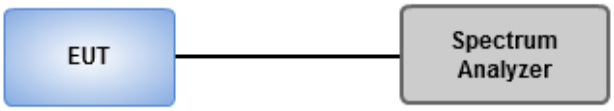
☒ Maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit.

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 peak marker function to determine the maximum amplitude level.

☐ Maximum (average) conducted output power was used to demonstrate compliance to the fundamental output power limit.

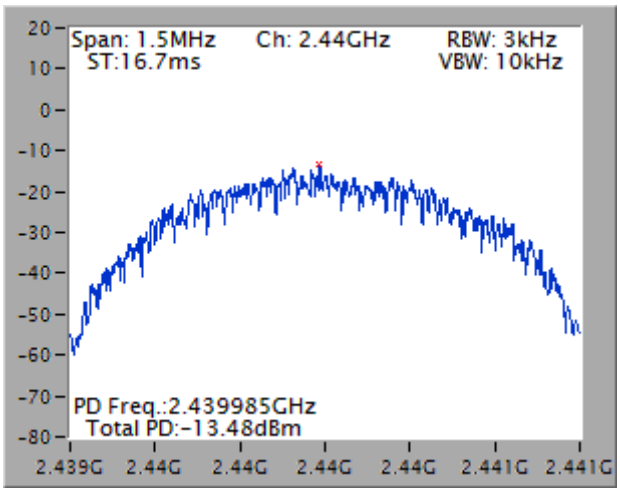
1. Set the RBW = 100kHz, VBW = 300 kHz.
2. Detector = RMS, Sweep time = auto couple.
3. Set the sweep time to: ≥ 10 x (number of measurement points in sweep) x (maximum data rate per stream).
4. Perform the measurement over a single sweep.
5. Use the peak marker function to determine the maximum amplitude level.\

3.4.3 Test Setup



3.4.4 Test Result of Power Spectral Density

Mode	Freq. (MHz)	Total Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
BT LE	2402	-14.25	8
BT LE	2440	-13.48	8
BT LE	2480	-13.90	8

Worst Plots


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
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.

3.5.2 Test Procedures

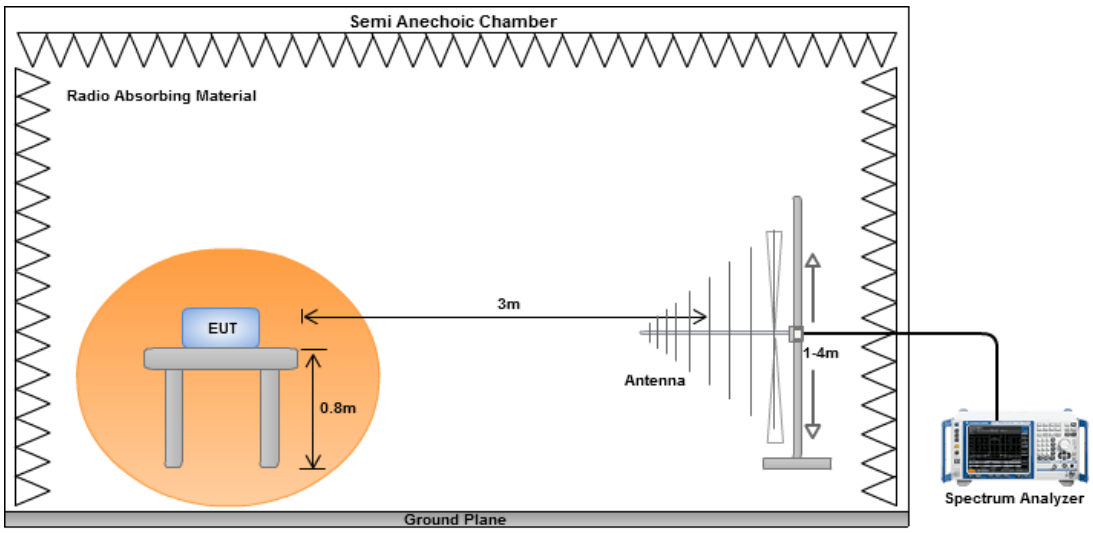
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at 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:

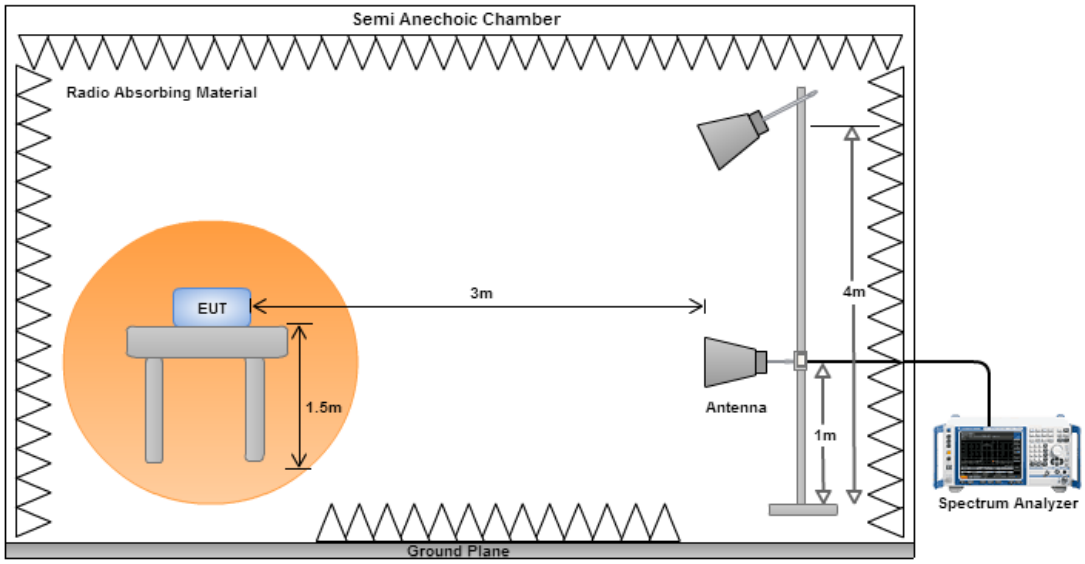
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz

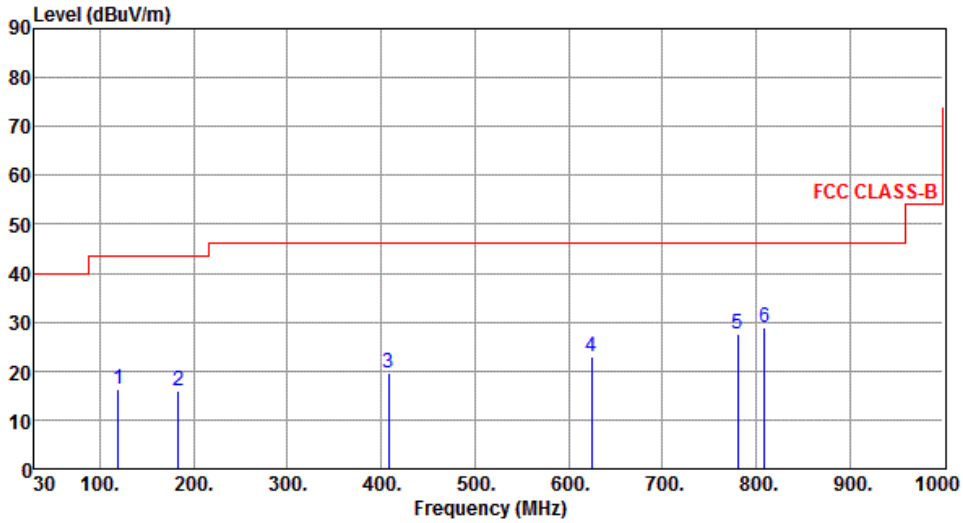


Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)_Adapter mode

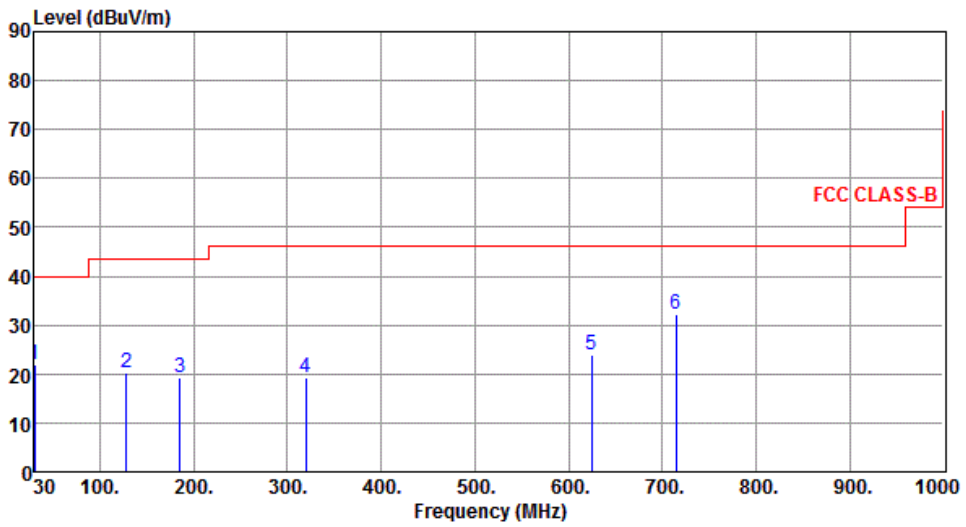
Modulation	GFSK	**Test Freq. (MHz)**	2440
Polarization	Horizontal	**Test Configuration**	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	119.24	16.32	43.50	-27.18	36.09	-19.77	Peak	---	---
2	183.26	15.88	43.50	-27.62	34.72	-18.84	Peak	---	---
3	408.30	19.48	46.00	-26.52	32.94	-13.46	Peak	---	---
4	624.61	22.99	46.00	-23.01	32.26	-9.27	Peak	---	---
5	780.78	27.60	46.00	-18.40	34.67	-7.07	Peak	---	---
6	808.91	28.86	46.00	-17.14	35.63	-6.77	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	GFSK	Test Freq. (MHz)	2440
Polarization	Vertical	Test Configuration	1

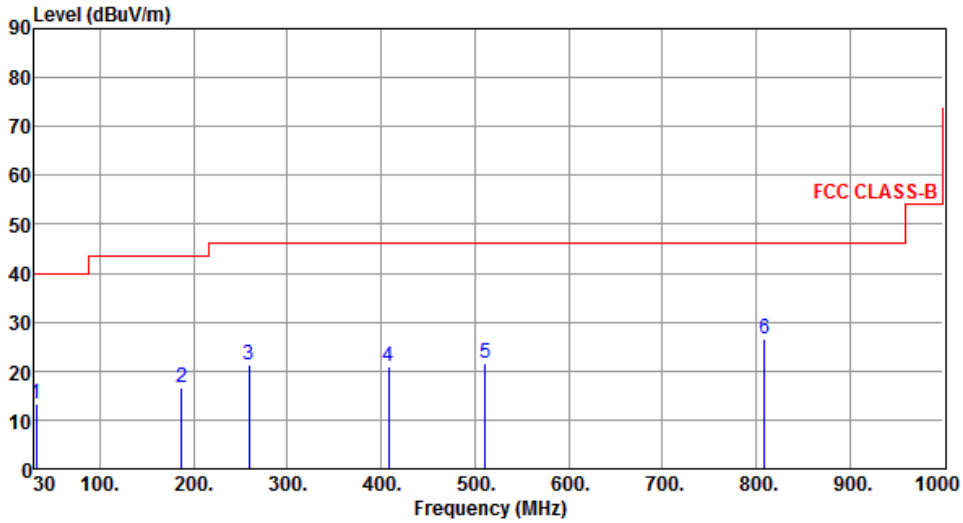


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	30.00	21.83	40.00	-18.17	39.64	-17.81	Peak	---	---
2	127.97	20.15	43.50	-23.35	38.96	-18.81	Peak	---	---
3	185.20	19.18	43.50	-24.32	38.17	-18.99	Peak	---	---
4	320.03	19.22	46.00	-26.78	34.86	-15.64	Peak	---	---
5	624.61	23.75	46.00	-22.25	33.02	-9.27	Peak	---	---
6	714.82	32.18	46.00	-13.82	40.12	-7.94	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.

3.5.5 Transmitter Radiated Unwanted Emissions (Below 1GHz)_Cradle mode

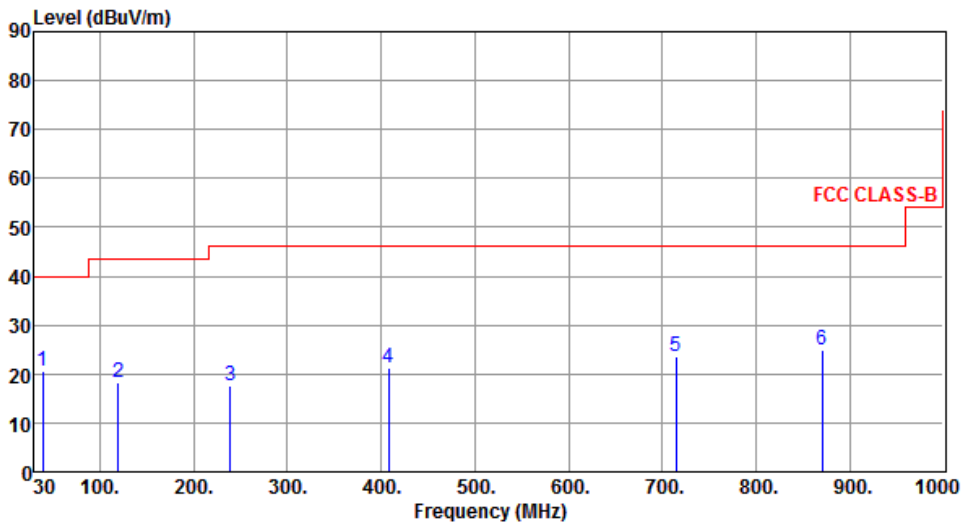
Modulation	GFSK	**Test Freq. (MHz)**	2440
Polarization	Horizontal	**Test Configuration**	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	31.94	13.45	40.00	-26.55	31.20	-17.75	Peak	---	---
2	187.14	16.57	43.50	-26.93	35.70	-19.13	Peak	---	---
3	258.92	21.12	46.00	-24.88	38.68	-17.56	Peak	---	---
4	408.30	21.00	46.00	-25.00	34.46	-13.46	Peak	---	---
5	511.12	21.52	46.00	-24.48	33.00	-11.48	Peak	---	---
6	808.91	26.47	46.00	-19.53	33.24	-6.77	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	GFSK	Test Freq. (MHz)	2440
Polarization	Vertical	Test Configuration	2

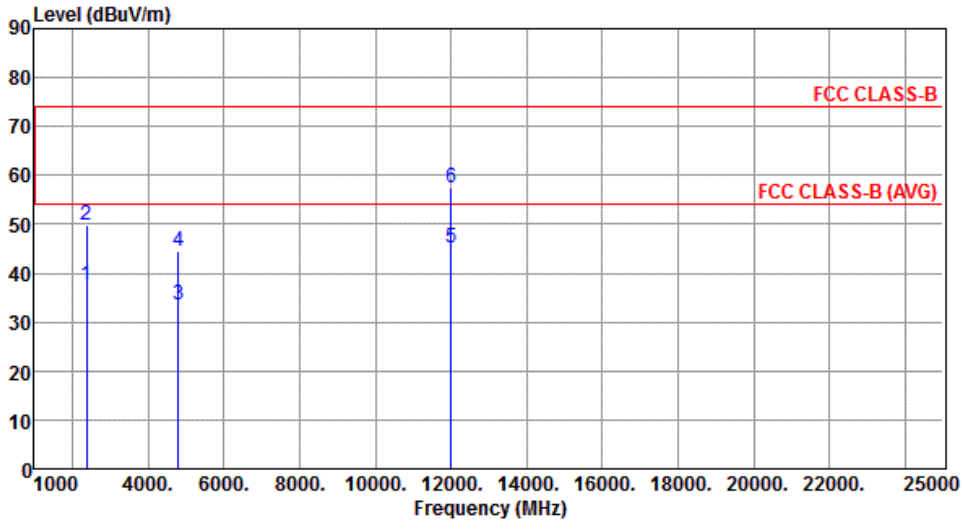


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	38.73	20.68	40.00	-19.32	38.02	-17.34	Peak	---	---
2	119.24	18.39	43.50	-25.11	38.16	-19.77	Peak	---	---
3	239.52	17.51	46.00	-28.49	35.63	-18.12	Peak	---	---
4	408.30	21.38	46.00	-24.62	34.84	-13.46	Peak	---	---
5	714.82	23.69	46.00	-22.31	31.63	-7.94	Peak	---	---
6	870.99	24.87	46.00	-21.13	30.57	-5.70	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.

3.5.6 Transmitter Radiated Unwanted Emissions (Above 1GHz)

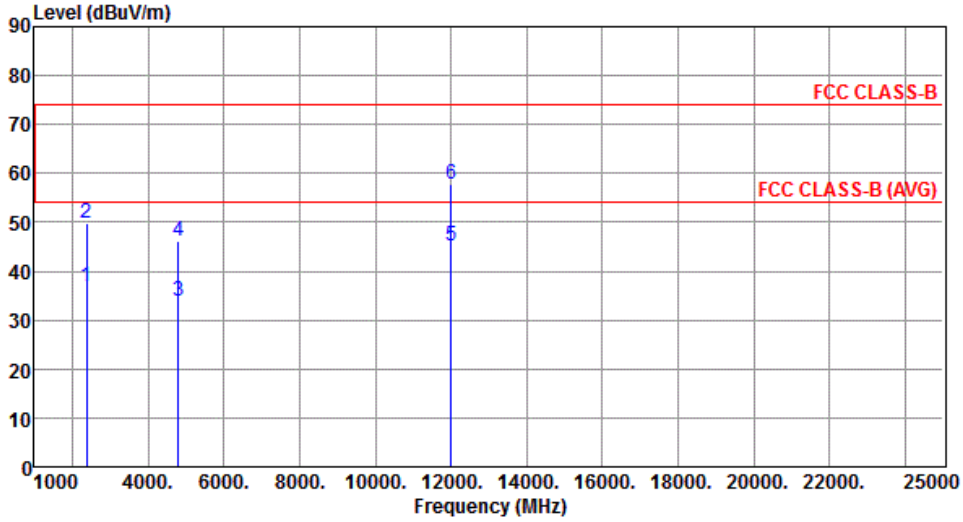
Modulation	GFSK	**Test Freq. (MHz)**	2402
Polarization	Horizontal	**Test Configuration**	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	37.61	54.00	-16.39	40.26	-2.65	Average	---	---
2	2390.00	49.96	74.00	-24.04	52.61	-2.65	Peak	---	---
3	4804.00	33.43	54.00	-20.57	28.50	4.93	Average	---	---
4	4804.00	44.52	74.00	-29.48	39.59	4.93	Peak	---	---
5	12010.00	45.07	54.00	-8.93	29.54	15.53	Average	---	---
6	12010.00	57.54	74.00	-16.46	42.01	15.53	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).

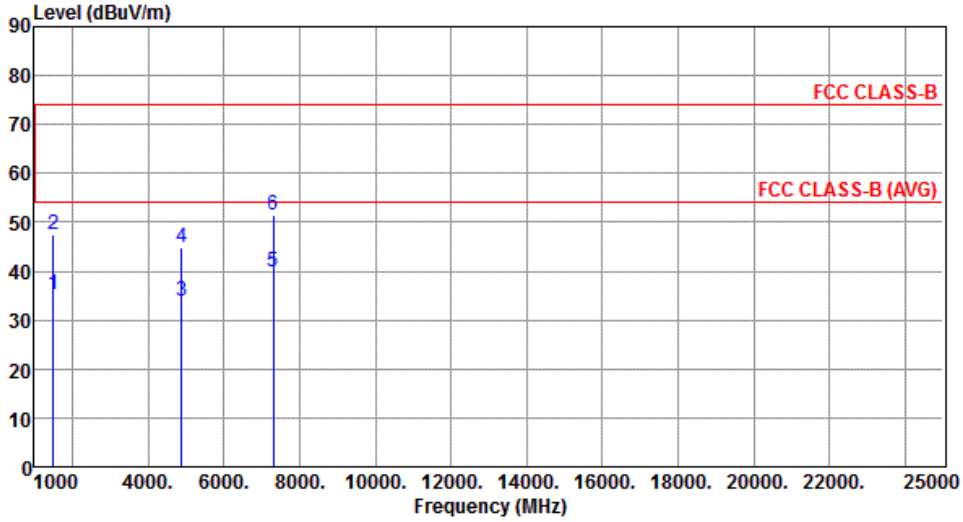
Modulation	GFSK	Test Freq. (MHz)	2402
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	36.99	54.00	-17.01	39.64	-2.65	Average	---	---
2	2390.00	49.96	74.00	-24.04	52.61	-2.65	Peak	---	---
3	4804.00	33.76	54.00	-20.24	28.83	4.93	Average	---	---
4	4804.00	46.02	74.00	-27.98	41.09	4.93	Peak	---	---
5	12010.00	45.16	54.00	-8.84	29.63	15.53	Average	---	---
6	12010.00	57.74	74.00	-16.26	42.21	15.53	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).

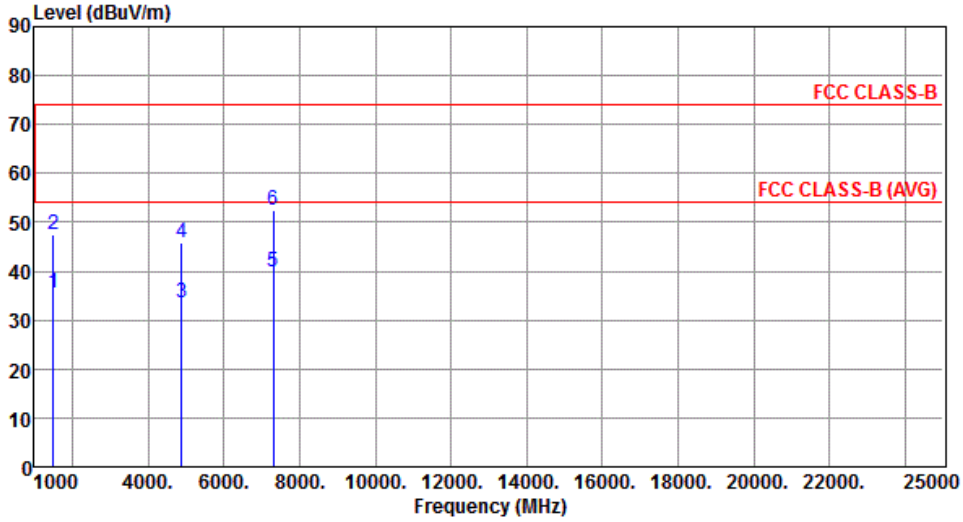
Modulation	GFSK	Test Freq. (MHz)	2440
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.33	54.00	-18.67	40.90	-5.57	Average	---	---
2	1500.00	47.59	74.00	-26.41	53.16	-5.57	Peak	---	---
3	4880.00	33.72	54.00	-20.28	28.62	5.10	Average	---	---
4	4880.00	44.91	74.00	-29.09	39.81	5.10	Peak	---	---
5	7320.00	39.73	54.00	-14.27	29.60	10.13	Average	---	---
6	7320.00	51.58	74.00	-22.42	41.45	10.13	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).

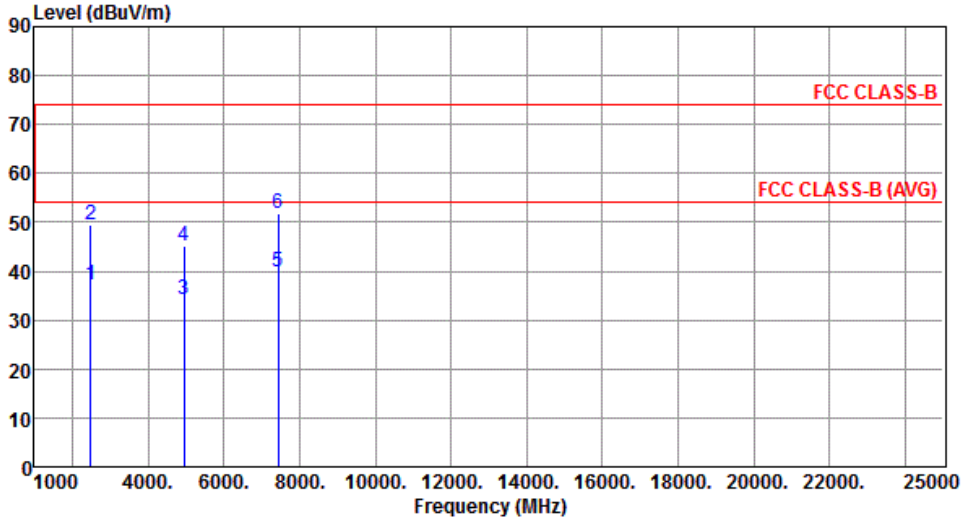
Modulation	GFSK	Test Freq. (MHz)	2440
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.46	54.00	-18.54	41.03	-5.57	Average	---	---
2	1500.00	47.39	74.00	-26.61	52.96	-5.57	Peak	---	---
3	4880.00	33.58	54.00	-20.42	28.48	5.10	Average	---	---
4	4880.00	45.88	74.00	-28.12	40.78	5.10	Peak	---	---
5	7320.00	39.96	54.00	-14.04	29.83	10.13	Average	---	---
6	7320.00	52.40	74.00	-21.60	42.27	10.13	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).

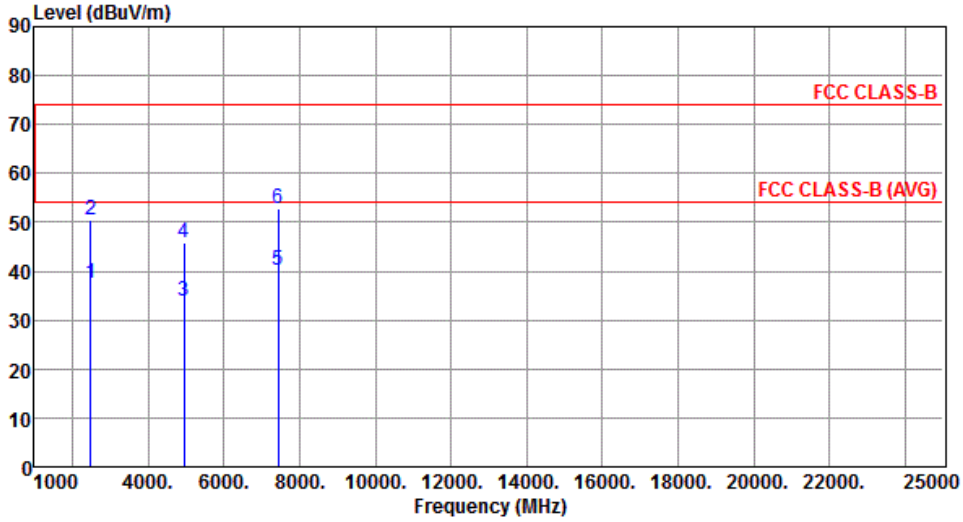
Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Horizontal	Test Configuration	1



	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	37.31	54.00	-16.69	39.65	-2.34	Average	---	---
2	2483.50	49.50	74.00	-24.50	51.84	-2.34	Peak	---	---
3	4960.00	34.07	54.00	-19.93	28.79	5.28	Average	---	---
4	4960.00	45.12	74.00	-28.88	39.84	5.28	Peak	---	---
5	7440.00	39.88	54.00	-14.12	29.47	10.41	Average	---	---
6	7440.00	51.83	74.00	-22.17	41.42	10.41	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).

Modulation	GFSK	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	37.67	54.00	-16.33	40.01	-2.34	Average	---	---
2	2483.50	50.49	74.00	-23.51	52.83	-2.34	Peak	---	---
3	4960.00	33.81	54.00	-20.19	28.53	5.28	Average	---	---
4	4960.00	45.97	74.00	-28.03	40.69	5.28	Peak	---	---
5	7440.00	40.10	54.00	-13.90	29.69	10.41	Average	---	---
6	7440.00	52.73	74.00	-21.27	42.32	10.41	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).

3.6 Emissions in non-restricted Frequency Bands

3.6.1 Emissions in non-restricted frequency bands limit

The peak output power measured 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 Test Procedures

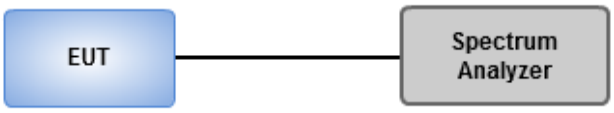
Reference Level Measurement

1. Set the RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
2. Set Sweep time = auto couple, Trace mode = max hold.
3. Allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

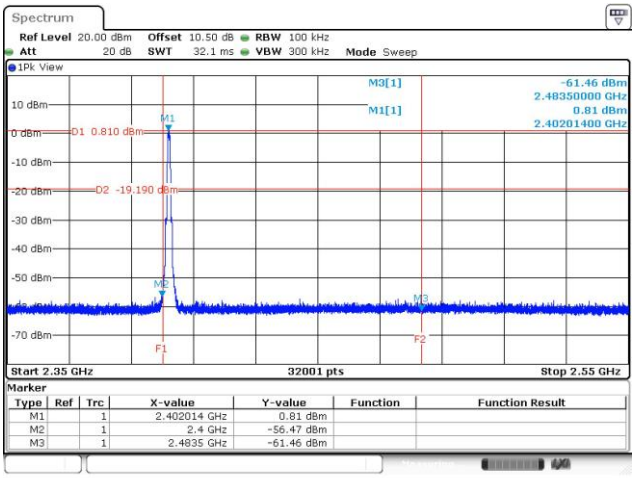
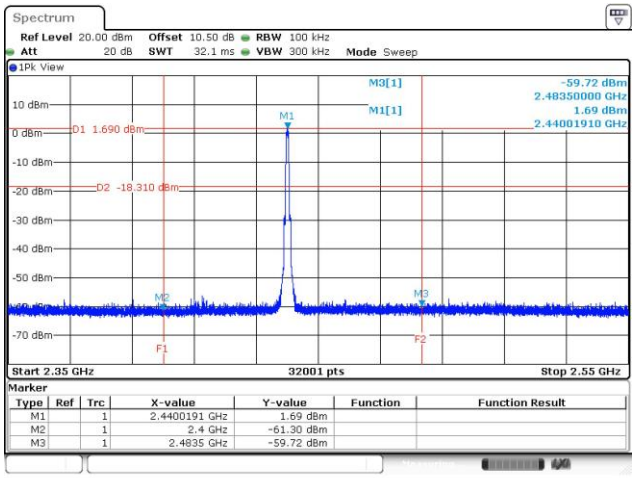
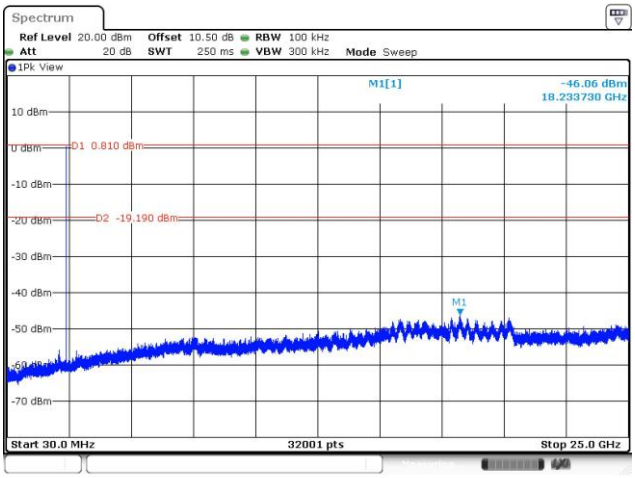
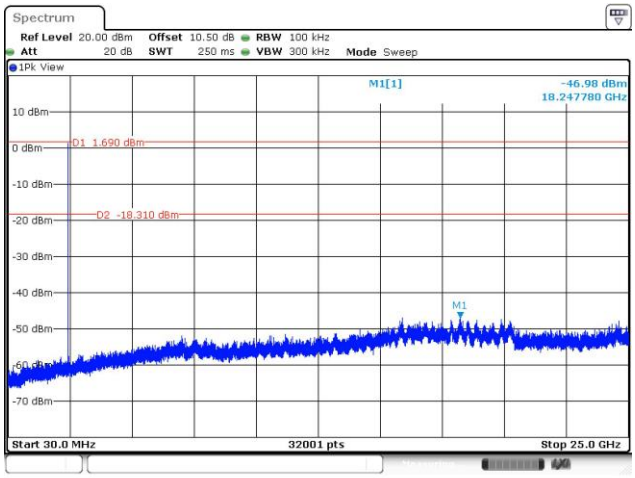
Unwanted Emissions Level Measurement

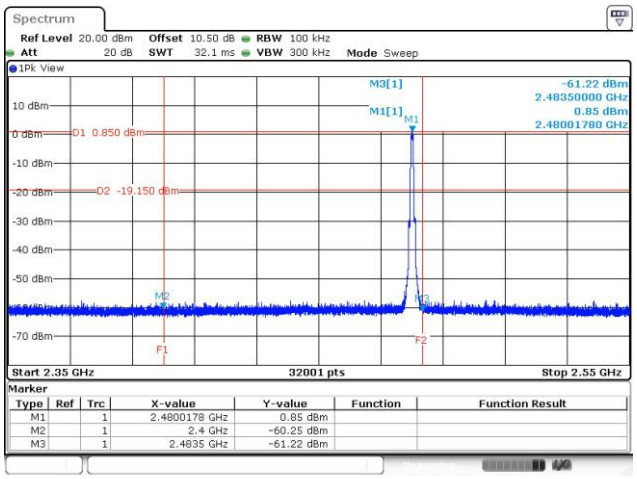
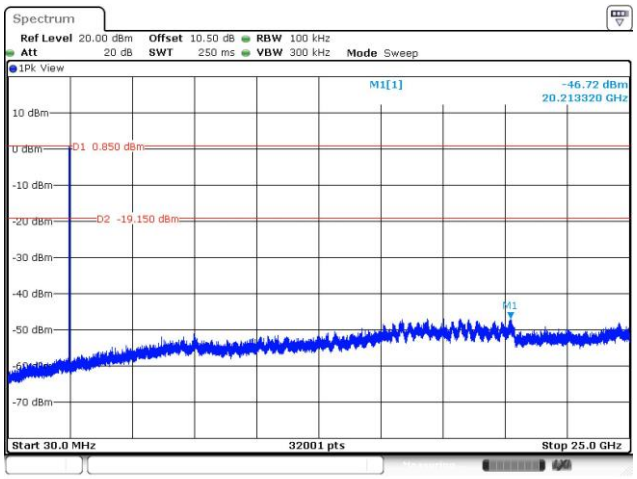
1. Set RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
2. Trace Mode = max hold, Sweep = auto couple.
3. Allow the trace to stabilize.
4. Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

3.6.3 Test Setup



3.6.4 Test Result of Emissions in non-restricted Frequency Bands

TX Freq 2402MHz / 30MHz~25GHz (down 20dBc)	TX Freq 2440MHz / 30MHz~25GHz (down 20dBc)
	
	

TX Freq 2480MHz / 30MHz~25GHz (down 20dBc)	---
	---
	---

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.

Linkou	**Kwei Shan**	**Kwei Shan Site II**
Tel: 886-2-2601-1640	Tel: 886-3-271-8666	Tel: 886-3-271-8640
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If you have any suggestion, please feel free to contact us as below information

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