IC Test Report

IC : 3147A-BT800

Equipment : BTv4.0 Dual Mode USB HCI Module

refer to item 1.1.1 for more details

Model No. : BT800 refer to item 1.1.1 for more details

Brand Name : Laird Technologies

Applicant : Laird Technologies

Address : 11160 Thompson Ave. / Lenexa, Kansas /

66219 / USA

Standard : RSS-210 Issue 8 December 2010

Received Date : Jun. 25, 2013

Tested Date : Jun. 25 ~ Jul. 08, 2013

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

lac-MRA



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Report No.: CR362601AE Report Version: Rev. 01



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

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Release Record

Report No.	Version	Description	Issued Date
CR362601AE	Rev. 01	Initial issue	Aug. 09, 2013

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Summary of Test Results

IC Rules	Test Items	Measured	Result
7.2.4 of RSS-Gen	AC Power Line Conducted Emissions	[dBuV]: 0.166MHz 53.11 (Margin -12.05dB) - QP	Pass
A8.5 of RSS-210	Radiated Emissions	[dBuV/m at 3m]: 48.43MHz 38.84 (Margin -1.16dB) - QP	Pass
A8.4 of RSS-210 Fundamental Emission Output Power		Power [dBm]: 7.90	Pass
A8.2 of RSS-210	6dB Bandwidth	Meet the requirement of limit	Pass
A8.2 of RSS-210	Power Spectral Density	Meet the requirement of limit	Pass
N/A	Antenna Requirement	Meet the requirement of limit	Pass

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1 General Description

1.1 Information

1.1.1 Product Details

The following models are provided to this EUT.

Model Name	Description	Difference					
BT800	BTv4.0 Dual Mode USB HCI Module						
BT810	BTv4.0 Dual Mode USB HCI Module (BG carrier board)	BT800 module mounted onto a PCB carrier board to change footprint – no other differences.					
BT820	BTv4.0 Dual Mode USB Dongle	BT800 module mounted onto a carrier board with USB connector.					
→ The above mo	The above models, model BT810and BT820 were selected as representative ones for the radiated						

The above models, model BT810and BT820 were selected as representative ones for the radiated final test and only its data was recorded in this report.

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 / MCS			
2400-2483.5	BR	2402-2480	0-39 [40]	1 Mbps			

Note 1: Bluetooth BR uses a GFSK (1Mbps).

Note 2: Bluetooth BR uses as a system using FHSS modulation.

1.1.3 Antenna Details

I	Ant. No.	Brand	Туре	Gain (dBi)	Connector	Model
	1	ACX	Chip	0.5	N/A	AT3216-B2R7HAA_3216

1.1.4 EUT Operational Condition

Supply Voltage	☐ AC mains	DC (5Vdc)	
Type of DC Source	☐ Internal DC supply	☐ External DC adapter	

1.1.5 Accessories

N/A

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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

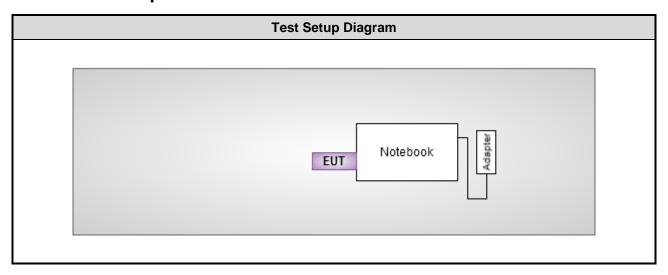
Test tool	Blue Tool, ver. 2.5
Duty cycle of test signal (%)	66.37%
Duty Factor (dB)	1.78

1.1.8 Power Setting

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

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1.2 Test Setup Chart



1.3 Local Support Equipment List

	Support Equipment List						
No.	No. Equipment Brand Model S/N FCC ID Length (m)					Length (m)	
1	Notebook	DELL	E6430				

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1.4 Test Equipment List and Calibration Data

Test Item	Conducted Emission Conduction room 1 / (CO01-WS)							
Test Site								
Instrument	Manufacturer	Model No. Serial No.		Calibration Date	Calibration Until			
EMC Receiver	R&S	ESCS 30	100169	Dec. 12, 2012	Dec. 11, 2013			
LISN	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-667	Dec. 04, 2012	Dec. 03, 2013			
LISN (Support Unit)	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-666	Dec. 04, 2012	Dec. 03, 2013			
ISN	TESEQ	ISN T800	34406	Apr. 08, 2013	Apr. 07, 2014			
ISN	TESEQ	ISN T200A	30494	Apr. 09, 2013	Apr. 08, 2014			
ISN	TESEQ	ISN T8-Cat6	27262	Sep. 17, 2012	Sep. 16, 2013			
ISN	TESEQ	ISN ST08	22589	Jan. 24, 2013	Jan. 23, 2014			
RF Current Probe	FCC	F-33-4	121630	Dec. 04, 2012	Dec. 03, 2013			
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Dec. 25, 2012	Dec. 24, 2013			
ESH3-Z6 V-Network(+)	R&S	ESH3-Z6	100920	Nov. 21, 2012	Nov. 20, 2013			
ESH3-Z6 V-Network(-)	R&S	ESH3-Z6	100951	Jan. 03, 2013	Jan. 02, 2014			
Two-Line V-Network	R&S	ENV216	101579	Jan. 07, 2013	Jan. 06, 2014			
50 ohm terminal	NA	50	01	Apr. 22, 2013	Apr. 21, 2014			
50 ohm terminal	NA	50	02	Apr. 22, 2013	Apr. 21, 2014			
50 ohm terminal	NA	50	03	Apr. 22, 2013	Apr. 21, 2014			
50 ohm terminal (Support Unit)	NA	50	04	Apr. 22, 2013	Apr. 21, 2014			

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Test Item	Radiated Emission above 1GHz				
Test Site 966 chamber1 / (03CH01-WS)					
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
3m semi-anechoic chamber	CHAMPRO	SAC-03	03CH01-WS	Jan. 04, 2013	Jan. 03, 2014
Spectrum Analyzer	R&S	FSV40	101498	Jan. 24, 2013	Jan. 23, 2014
Receiver	ROHDE&SCHWAR Z	ESR3	101658	Jan. 28, 2013	Jan. 27, 2014
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jan. 11, 2013	Jan. 10, 2014
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	Jan. 14, 2013	Jan. 13, 2014
Amplifier	Burgeon	BPA-530	100219	Nov. 28, 2012	Nov. 27, 2013
Amplifier	Agilent	83017A	MY39501308	Dec. 18, 2012	Dec. 17, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable-R03m	Woken	CFD400NL-LW	CFD400NL-001	Dec. 25, 2012	Dec. 24, 2013
RF Cable-R10m	Woken	CFD400NL-LW	CFD400NL-002	Dec. 25, 2012	Dec. 24, 2013
control	EM Electronics	EM1000	60612	N/A	N/A

Loop Antenna	R&S	HFH2-Z2	100330	Nov. 15, 2012	Nov. 14, 2014	
Amplifier	MITEQ	AMF-6F-260400	9121372	Apr. 19, 2013	Apr. 18, 2015	
Note: Calibration Interval of instruments listed above is two year.						

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Test Item	RF Conducted (TH01-WS)					
Test Site						
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Unti	
Spectrum Analyzer	R&S	FSV 40	101063	Feb. 18, 2013	Feb. 17, 2014	
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 29, 2012	Nov. 28, 2013	
Power Meter	Anritsu	ML2495A	1241002	Oct. 15, 2012	Oct. 14, 2013	
Power Sensor	Anritsu	MA2411B	1027366	Oct. 24, 2012	Oct. 23, 2013	
Signal Generator	R&S	SMB100A	175727	Jan. 14, 2013	Jan. 13, 2014	
Radio Communication Analyzer	Anritsu	MT8820C	6201240341	Mar. 13, 2013	Mar. 12, 2014	
Wideband Radio Communication Tester	R&S	CMW500	106070	Jan. 29, 2013	Jan. 28, 2014	
Bluetooth Tester	R&S	CBT	100959	Jan. 09, 2013	Jan. 08, 2014	
MXG-B RF Vector Signal Generator	Agilent	N5182B	MY53050081	Apr. 19, 2013	Apr. 18, 2014	

1.5 Test Standards

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

RSS-210 Issue 8 December 2010

RSS-Gen Issue 3 December 2010

ANSI C63.10-2009

FCC KDB 558074 D01 DTS Meas Guidance v03

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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 / 52%	Skys Huang
Radiated Emissions	03CH01-WS	25°C / 65%	Haru Yang
RF Conducted	TH01-WS	24°C / 61%	Brad Wu

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	GFSK	2402	1Mbps	1, 2
Radiated Emissions (below 1GHz)	GFSK	2402	1Mbps	1, 2
Radiated Emissions (above 1GHz)	GFSK	2402, 2440, 2480	1Mbps	1, 2
Fundamental Emission Output Power				
6dB bandwidth	GFSK	2402, 2440, 2480	1Mbps	1
Power spectral density				

NOTE:

1. 2 types EUT were selected to perform radiated emission test as below test configuration

Configuration 1 : BT810
 Configuration 2 : BT820

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3 Transmitter Test Results

3.1 AC Power Line Conducted Emissions

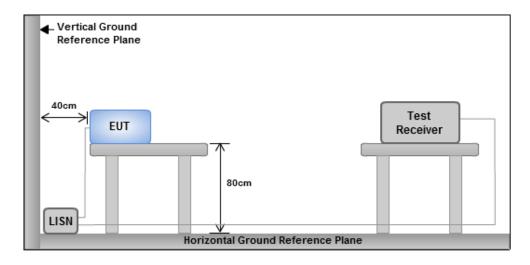
3.1.1 Limit of AC Power Line Conducted Emissions

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.
- 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



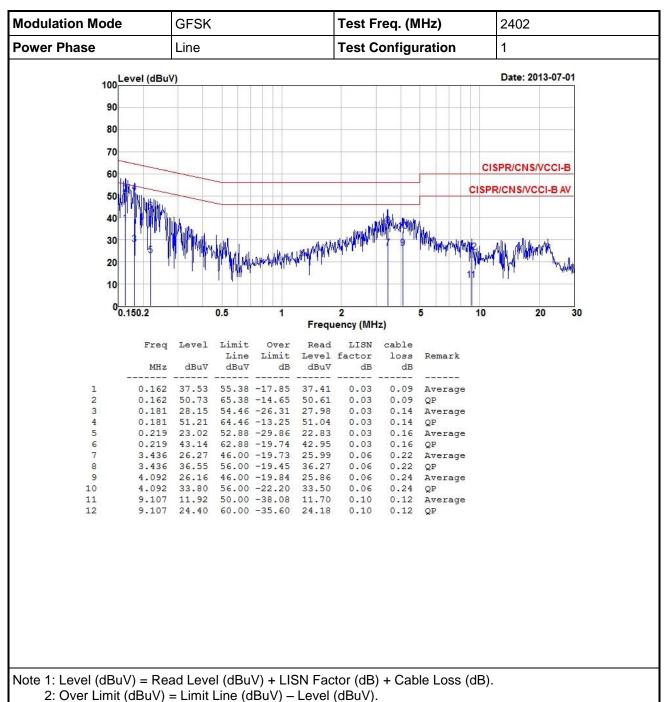
Note: 1. Support units were connected to second LISN.

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

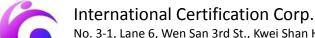
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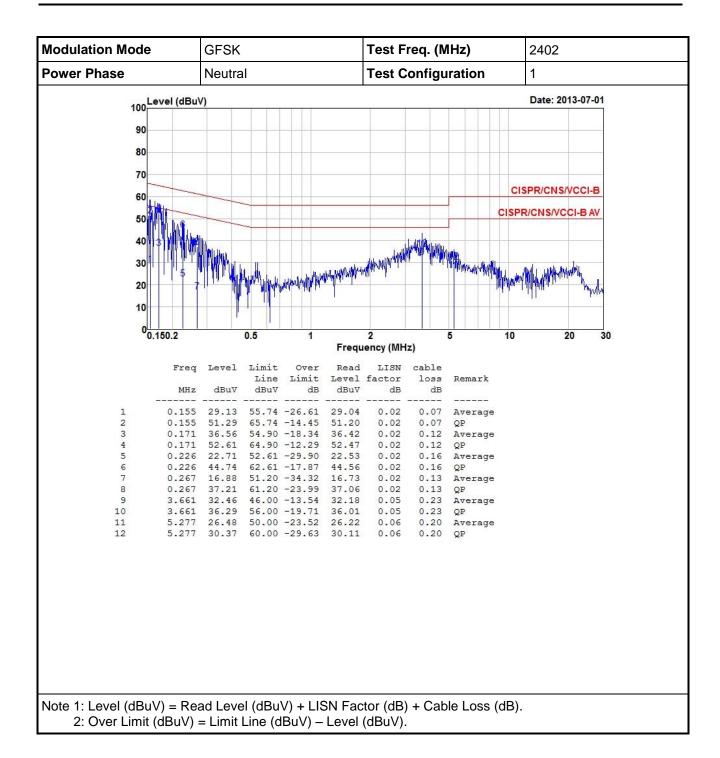
3.1.4 Test Result of Conducted Emissions



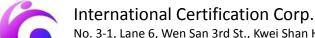
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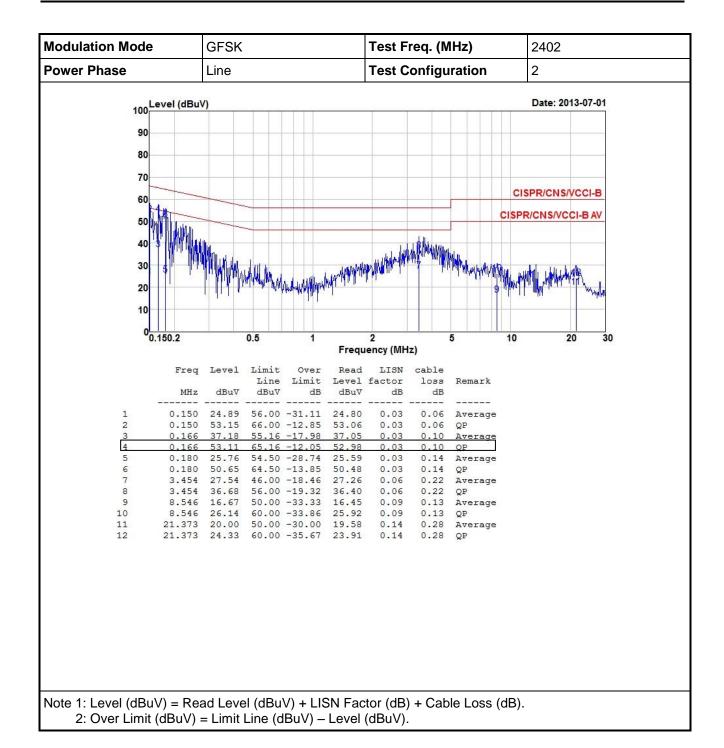
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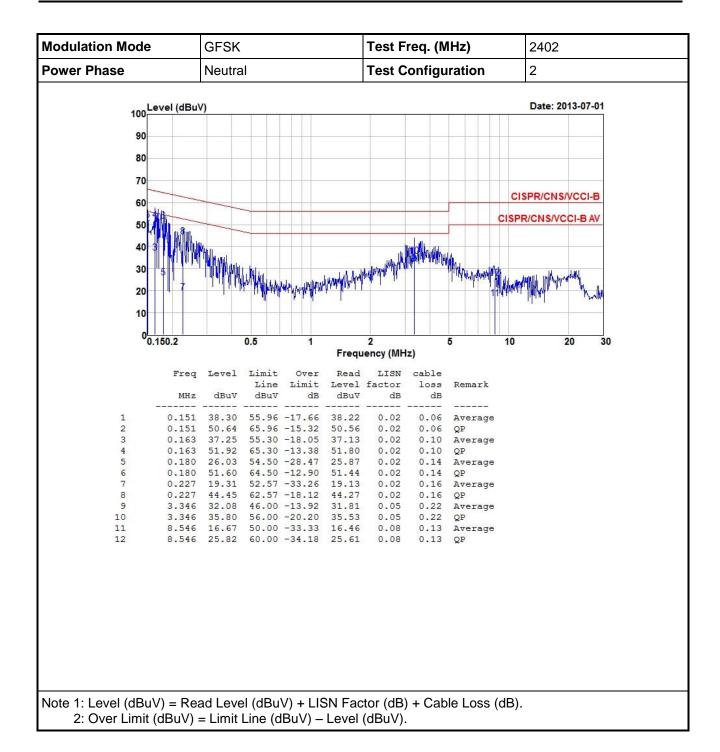
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3.2 6dB Bandwidth

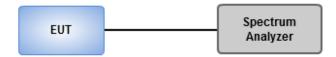
3.2.1 Limit of 6dB Bandwidth

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.

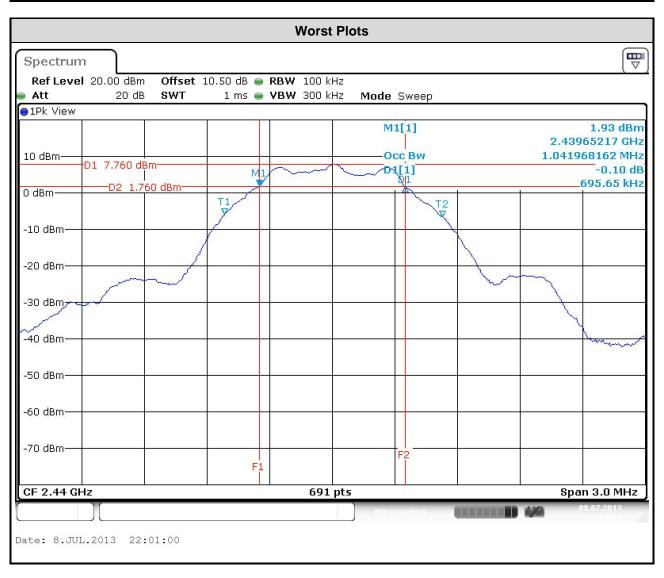
3.2.3 Test Setup



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3.2.4 Test Result of Emission Bandwidth

Freq. (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	
2402	691.30	500	
2440	695.65	500	
2480	691.30	500	

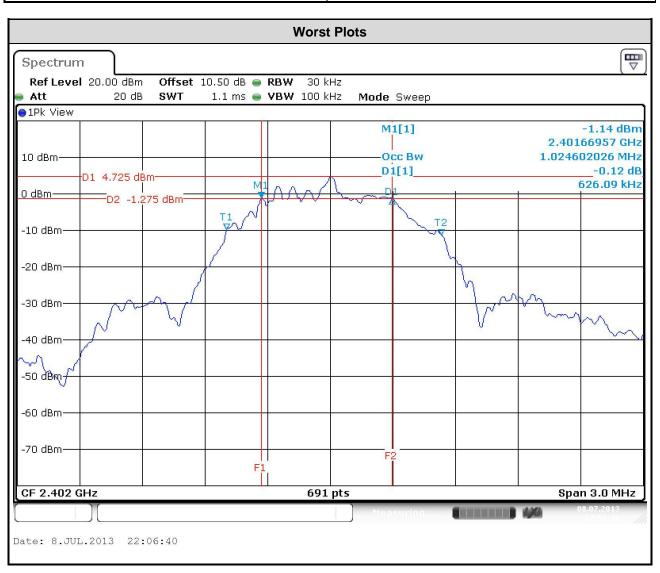


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Freq. (MHz)	99% Occupied Bandwidth (MHz)
2402	1.0246
2440	1.0203
2480	1.0203



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3.3 RF Output Power

3.3.1 Limit of RF Output Power

Cor	duct	ed po	ower shall not exceed 1Watt.
\boxtimes	Ante	enna	gain <= 6dBi, no any corresponding reduction is in output power limit.
	Ante	enna	gain > 6dBi
		The	n Fixed, point to point operations. e conducted output power from the intentional radiator shall be reduced by the amount in dB the directional gain of the antenna exceeds 6 dB
		Sys Ope	ed, point to point operations tems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point erations, maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 that the directional gain of the antenna exceeds 6 dBi.
			tems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point rations ,no any corresponding reduction is in transmitter peak output power
3.3.	2	Test	t Procedures
\boxtimes	Max	kimur	m Peak Conducted Output Power
		Spe	ectrum 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.
	\boxtimes	Pov	ver 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.
\boxtimes	Max	kimur	m Conducted Average Output Power (For reference only)
	☐ Spectrum analyzer		
		1.	Set RBW = 1MHz, VBW = 3MHz, Detector = RMS.
		2.	Set the sweep time to: $\geq 10 \text{ x}$ (number of measurement points in sweep) x (maximum data rate per stream).
		3.	Perform the measurement over a single sweep.
		4.	Use the spectrum analyzer's band power measurement function with band limits set equal to the EBW(26dBc) band edges.

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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

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⊠ Power meter

burst for measuring output power.



3.3.3 Test Setup



3.3.4 Test Result of Maximum Output Power

Freq. (MHz)	Peak Conducted Power (dBm)	Limit (dBm)
2402	6.80	30
2440	7.59	30
2480	7.90	30

Freq. (MHz)	Average Conducted Power (dBm)	Limit (dBm)
2402	6.44	30
2440	7.28	30
2480	7.61	30

Note: Average power is for reference only.

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3.4 Power Spectral Density

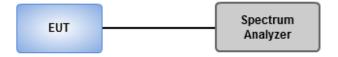
3.4.1 Limit of Power Spectral Density

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.
 - Set the RBW = 10kHz, VBW = 30kHz.
 - 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

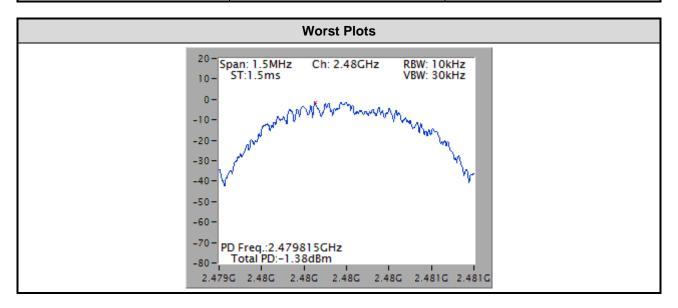


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3.4.4 Test Result of Power Spectral Density

Freq. (MHz)	Power Spectral Density (dBm / 10kHz)	Limit (dBm)		
2402	-2.57	8		
2440	-1.66	8		
2480	-1.38	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

- 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:

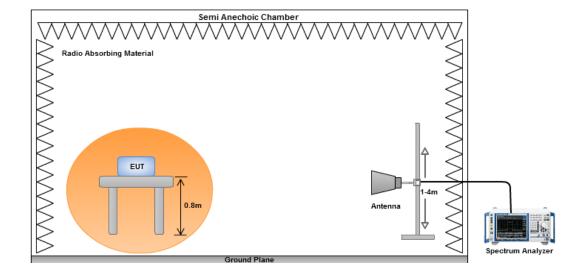
- 1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
- 2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
- 3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission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

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Test Setup 3.5.3



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3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

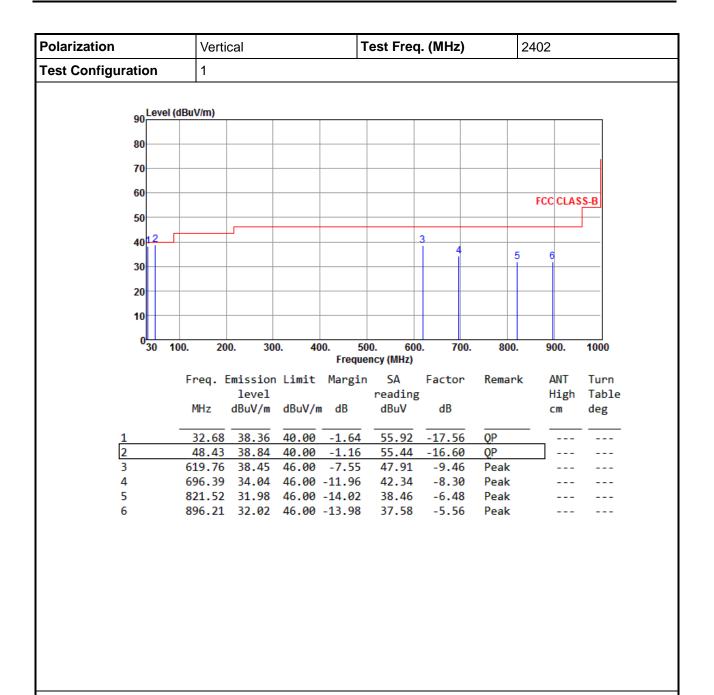


Note 1: Level (dBuV/m) = Read Level (dBuV/m) + Antenna Factor (dB) + Cable Loss (dB) - Preamp Factor (dB).

2: Over Limit (dBuV/m) = Limit Line (dBuV/m) – Level (dBuV/m).

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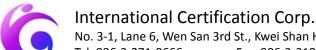


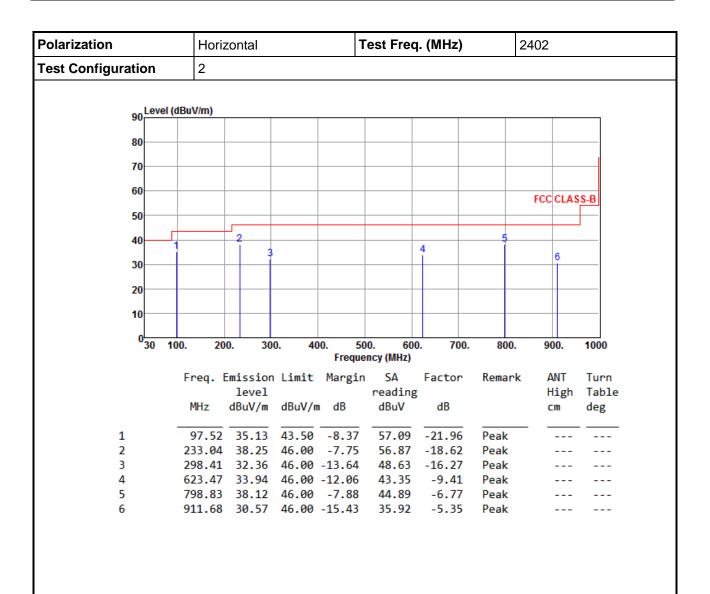


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Note 1: Level (dBuV/m) = Read Level (dBuV/m) + Antenna Factor (dB) + Cable Loss (dB) - Preamp Factor (dB).

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

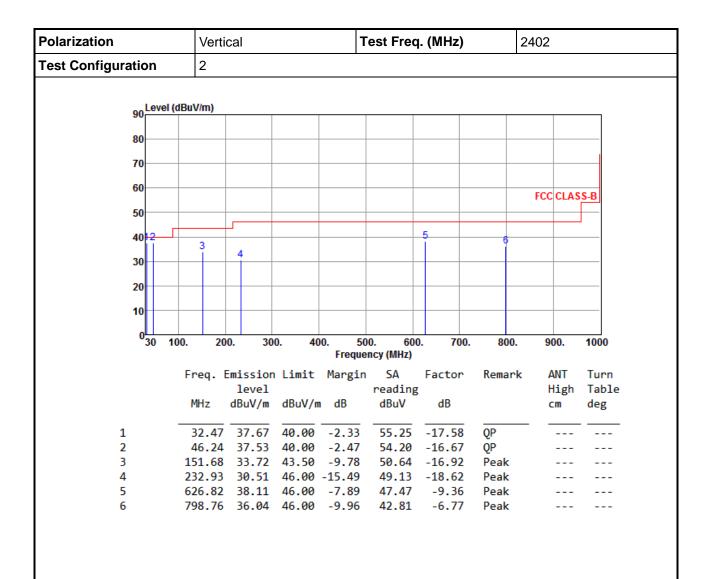




Note 1: Level (dBuV/m) = Read Level (dBuV/m) + Antenna Factor (dB) + Cable Loss (dB) - Preamp Factor (dB). 2: Over Limit (dBuV/m) = Limit Line (dBuV/m) - Level (dBuV/m).

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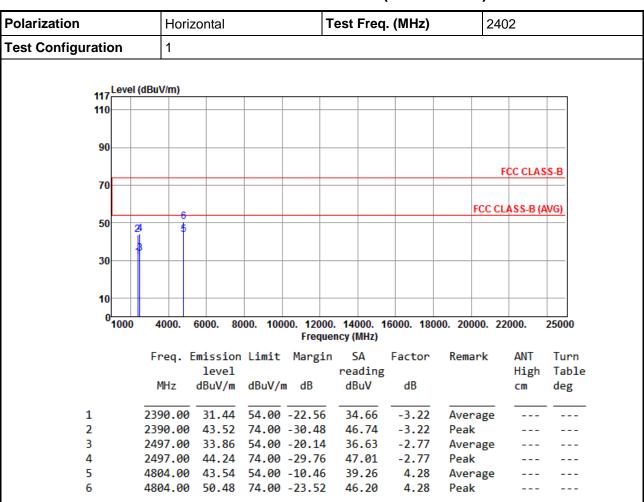


Note 1: Level (dBuV/m) = Read Level (dBuV/m) + Antenna Factor (dB) + Cable Loss (dB) - Preamp Factor (dB). 2: Over Limit (dBuV/m) = Limit Line (dBuV/m) - Level (dBuV/m).

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3.5.5 Transmitter Radiated Unwanted Emissions (Above 1GHz)



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

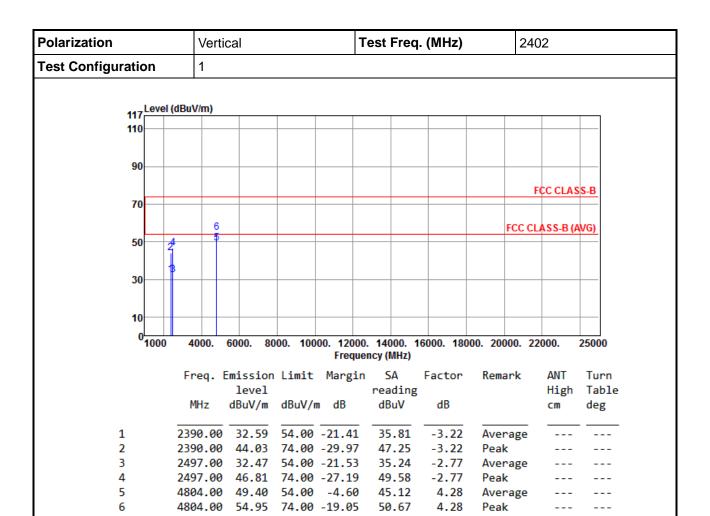
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

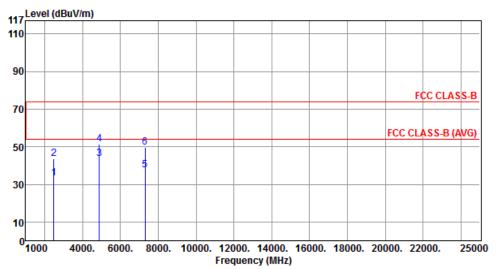
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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PolarizationHorizontalTest Freq. (MHz)2440Test Configuration1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	J	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2491.00	33.03	54.00	20 97	35.83	-2.80	Average		
2	2491.00		74.00		46.24	-2.80	Peak		
3	4880.00				38.99	4.40			
_							Average		
4	4880.00	51.36	74.00	-22.64	46.96	4.40	Peak		
5	7320.00	37.73	54.00	-16.27	28.80	8.93	Average		
6	7320.00	49.85	74.00	-24.15	40.92	8.93	Peak		

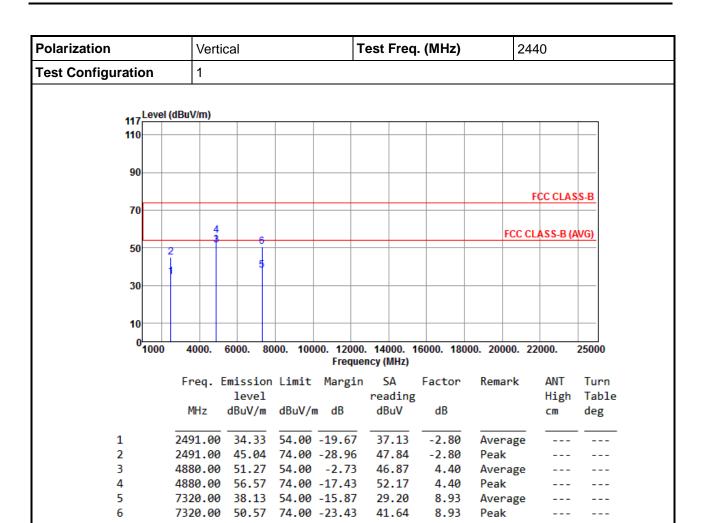
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

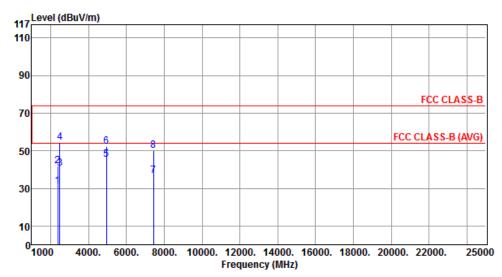
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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PolarizationHorizontalTest Freq. (MHz)2480Test Configuration1



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2375.00	30.97	54.00	-23.03	34.25	-3.28	Average		
2	2375.00	41.90	74.00	-32.10	45.18	-3.28	Peak		
3	2483.50	40.64	54.00	-13.36	43.47	-2.83	Average		
4	2483.50	54.46	74.00	-19.54	57.29	-2.83	Peak		
5	4960.00	45.35	54.00	-8.65	40.81	4.54	Average		
6	4960.00	52.05	74.00	-21.95	47.51	4.54	Peak		
7	7440.00	36.87	54.00	-17.13	27.75	9.12	Average		
8	7440.00	49.98	74.00	-24.02	40.86	9.12	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

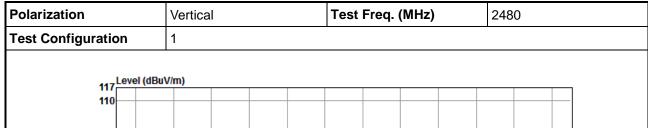
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

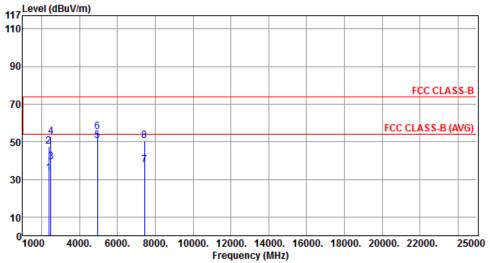
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	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2375.00	33.36	54.00	-20.64	36.64	-3.28	Average		
2	2375.00	47.59	74.00	-26.41	50.87	-3.28	Peak		
3	2483.50	39.15	54.00	-14.85	41.98	-2.83	Average		
4	2483.50	52.58	74.00	-21.42	55.41	-2.83	Peak		
5	4960.00	50.51	54.00	-3.49	45.97	4.54	Average		
6	4960.00	55.33	74.00	-18.67	50.79	4.54	Peak		
7	7440.00	37.40	54.00	-16.60	28.28	9.12	Average		
8	7440.00	50.47	74.00	-23.53	41.35	9.12	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

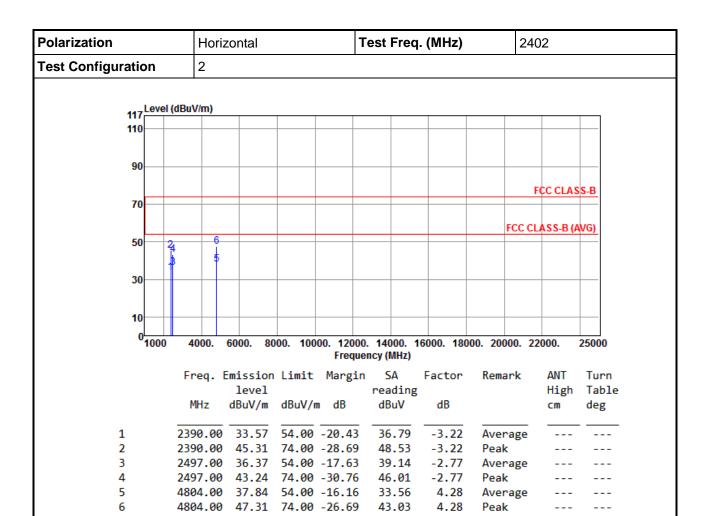
Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

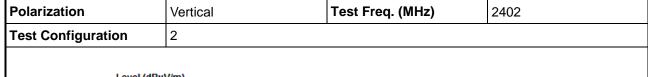
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

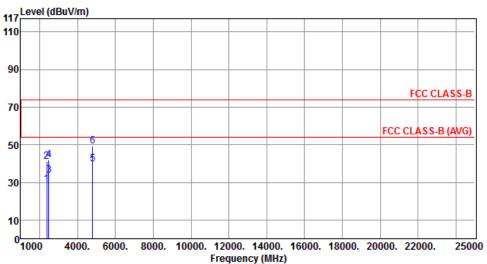
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	Freq.	Emission level dBuV/m	Limit dBuV/m	Ŭ	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	28.98	54.00	-25.02	32.20	-3.22	Average		
2	2390.00	41.08	74.00	-32.92	44.30	-3.22	Peak		
3	2497.00	33.86	54.00	-20.14	36.63	-2.77	Average		
4	2497.00	41.99	74.00	-32.01	44.76	-2.77	Peak		
5	4804.00	39.53	54.00	-14.47	35.25	4.28	Average		
6	4804.00	49.14	74.00	-24.86	44.86	4.28	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

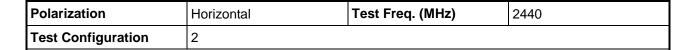
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

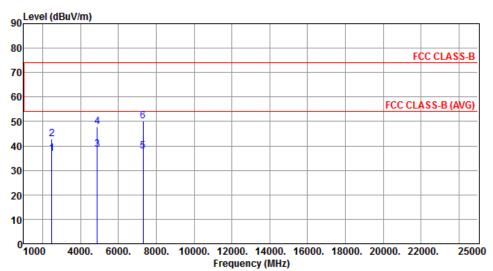
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	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
4	2404 00	26.76	<u></u>	17.24	30.56	2.00	<u> </u>		
1	2491.00	36.76	54.00	-17.24	39.56	-2.80	Average		
2	2491.00	42.91	74.00	-31.09	45.71	-2.80	Peak		
3	4880.00	38.36	54.00	-15.64	33.96	4.40	Average		
4	4880.00	47.73	74.00	-26.27	43.33	4.40	Peak		
5	7320.00	37.90	54.00	-16.10	28.97	8.93	Average		
6	7320.00	50.07	74.00	-23.93	41.14	8.93	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

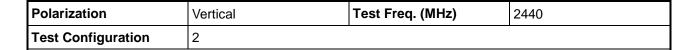
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

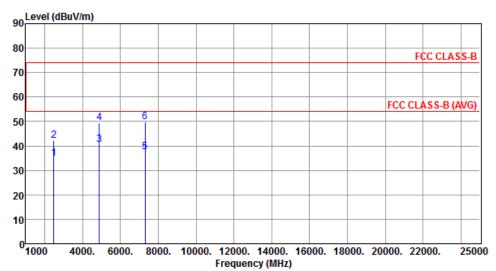
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	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2491.00	34.93	E4 00	10 07	37.73	-2.80	Avonago		
1	2491.00	34.93	34.00	-19.07	37.73	-2.00	Average		
2	2491.00	42.02	74.00	-31.98	44.82	-2.80	Peak		
3	4880.00	40.35	54.00	-13.65	35.95	4.40	Average		
4	4880.00	49.43	74.00	-24.57	45.03	4.40	Peak		
5	7320.00	37.63	54.00	-16.37	28.70	8.93	Average		
6	7320.00	49.84	74.00	-24.16	40.91	8.93	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

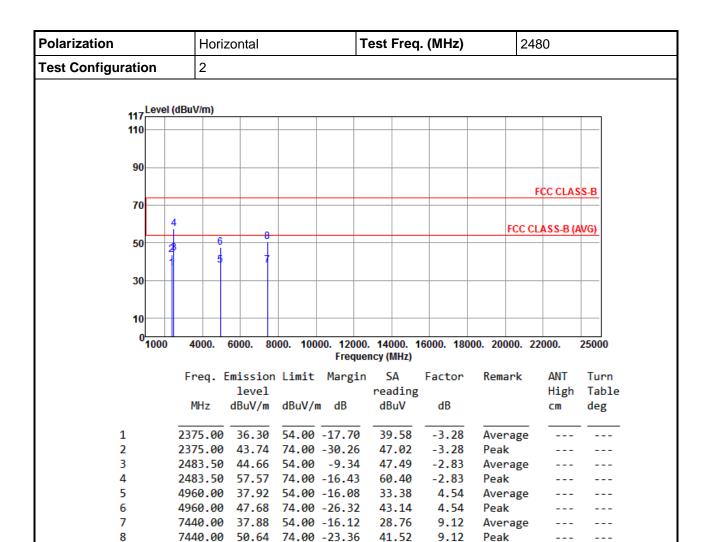
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

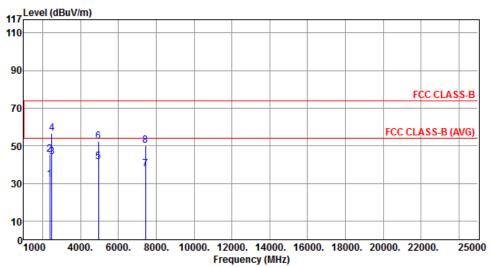
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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PolarizationVerticalTest Freq. (MHz)2480Test Configuration2



	Freq.	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2375.00	32.15	54.00	-21.85	35.43	-3.28	Average		
2	2375.00	45.16	74.00	-28.84	48.44	-3.28	Peak		
3	2483.50	43.83	54.00	-10.17	46.66	-2.83	Average		
4	2483.50	56.39	74.00	-17.61	59.22	-2.83	Peak		
5	4960.00	41.25	54.00	-12.75	36.71	4.54	Average		
6	4960.00	52.36	74.00	-21.64	47.82	4.54	Peak		
7	7440.00	37.63	54.00	-16.37	28.51	9.12	Average		
8	7440.00	49.99	74.00	-24.01	40.87	9.12	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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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

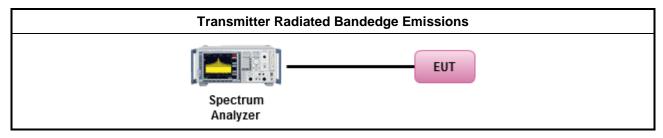
Reference level measurement

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

Emission level measurement

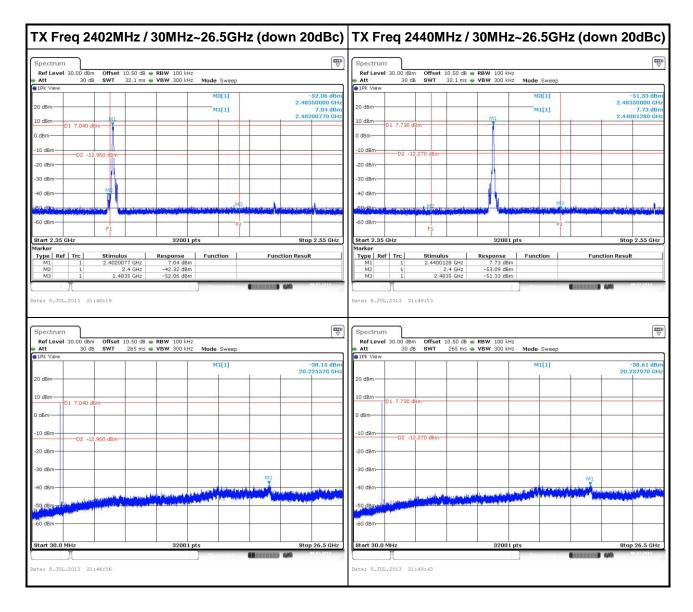
- 1. Set RBW=100kHz, VBW = 300kHz, Detector = Peak, Sweep time = Auto
- 2. Trace = max hold, Allow Trace to fully stabilize
- 3. Scan Frequency range is up to 26.5GHz
- 4. Use the peak marker function to determine the maximum amplitude level

3.6.4 Test Setup



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3.6.5 Test Result of Emissions in non-restricted Frequency Bands

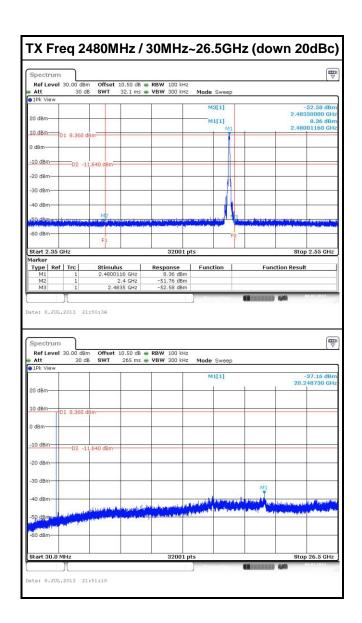


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