

FCC Test Report

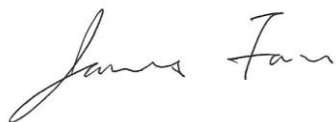
Equipment : Android All-in-One
Brand Name : acer, Gateway, packard bell
Model No. : DA223HQL, N5-2202, M5-2202
FCC ID : HLZDA223HQL
Standard : 47 CFR FCC Part 15.247
Operating Band : 2400 MHz – 2483.5 MHz
FCC Classification : DTS
Applicant : Acer Incorporated
8F, No.88, Sec. 1, Xsintai 5th Rd., Xizhi, New
Taipei City, Taiwan 221
Manufacturer : Qisda Optronics (Suzhou) Co., Ltd.
169, Zhujiang Road, New District, Suzhou,
Jiangsu Province, P.R. China
Qisda Corporation
157 & 159, Shan-Ying Road, Gueishan,
Taoyuan 333, Taiwan
Qisda (Suzhou) Co., Ltd.
169, Zhujiang Road, New District, Suzhou,
Jiangsu 215129, P.R. China
Qisda Mexicana S.A. De C.V.
Calzada Venustiano Carranza, No. 88 Col.
Plutarco Elias Calles 21376 Mexocali, B.C.
Mexico C.P Mexico

This report only contains LE mode test result.

The product sample received on Sep. 18, 2013 and completely tested on Oct. 21, 2013. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:



James Fan / Assistant Manager



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Summary of Test Result

Conformance Test Specifications					
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result
1.1.2	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	[dBuV]:0.187MHz 44.14 (Margin 10.01dB) - AV 51.12 (Margin 13.03dB) - QP	FCC 15.207	Complied
3.2	15.247(a)	6dB Bandwidth	673.91 kHz	≥500kHz	Complied
3.3	15.247(b)	RF Output Power (Maximum Peak Conducted Output Power)	Power [dBm] 2.1	Power [dBm]: 30	Complied
3.4	15.247(d)	Power Spectral Density	PSD [dBm/3kHz] -13.2	PSD [dBm/3kHz]: 8	Complied
3.5	15.247(c)	Emissions in Non-Restricted Frequency Bands	Meet the requirement of limit	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied
3.6	15.247(c)	Transmitter Radiated Unwanted Emissions	Restricted Bands [dBuV/m at 3m]:44.19MHz 35.84 (Margin 4.16dB) – QP	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied

Revision History

[illegible]

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information				
Frequency Range (MHz)	Bluetooth Version	Ch. Frequency (MHz)	Channel Number	Co-location
2400-2483.5	v4.0 LE	2402-2480	0-39 [40]	N/A
<p>Note 1: Bluetooth LE (Low Energy) using GFSK modulation for DTS digital modulation.</p> <p>Note 2: RF output power specifies that Maximum Peak Conducted Output Power.</p> <p>Note 3: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other. (i.e., EUT has simultaneously co-transmitting that operating 2.4GHz and 5GHz.)</p>				

1.1.2 Antenna Information

Antenna Category	
<input type="checkbox"/>	Equipment placed on the market without antennas
<input checked="" type="checkbox"/>	Integral antenna (antenna permanently attached)
<input checked="" type="checkbox"/>	Temporary RF connector provided
<input type="checkbox"/>	<input type="checkbox"/> No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path.
<input type="checkbox"/>	External antenna (dedicated antennas)
<input type="checkbox"/>	RF connector provided
<input type="checkbox"/>	<input type="checkbox"/> Unique antenna connector. (e.g., MMCX, U.FL, IPX, and RP-SMA, RP-N type...)
<input type="checkbox"/>	<input type="checkbox"/> Standard antenna connector. (e.g., SMA, N, BNC, and TNC type...)

Antenna General Information				
No.	Ant. Cat.	Ant. Type	Gain (dBi)	Connector
1	Integral	Inverted-F	5.1	U.FL

1.1.3 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input type="checkbox"/> Production ; <input checked="" type="checkbox"/> Pre-Production ; <input type="checkbox"/> Prototype
Type of EUT	
<input checked="" type="checkbox"/>	Stand-alone
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.: ...
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.: ...
<input type="checkbox"/>	Other:

1.1.4 Test Signal Duty Cycle

Operated Mode for Worst Duty Cycle	
<input checked="" type="checkbox"/> Operated test mode for worst duty cycle	
Test Signal Duty Cycle (x)	Power Duty Factor [dB] – (10 log 1/x)
<input checked="" type="checkbox"/> 65.09% - test mode single channel - LE	1.86

1.1.5 EUT Operational Condition

Supply Voltage	<input checked="" type="checkbox"/> AC mains	<input checked="" type="checkbox"/> DC	
Type of DC Source	<input type="checkbox"/> Internal DC supply	<input type="checkbox"/> External DC adapter	<input checked="" type="checkbox"/> Battery

1.2 Accessories and Support Equipment

Accessories				
No.	Equipment	Brand Name	Model Name	Remarks
1	AC Adapter 1	LITEON	PA-1650-10	I/P: 100-240Vac, 1.6A, 50/60Hz O/P: 19Vdc, 3.42A 1.5m non-shielded cable w/o core
2	AC Adapter 2	DELTA	ADP-65JH DB	I/P: 100-240Vac, 1.5A, 50/60Hz O/P: 19Vdc, 3.42A 1.5m non-shielded cable w/o core
3	Battery	Acer	AL10B31	11.1Vdc, 4400mAh, 49Wh
4	HDMI cable	---	---	1.5m non-shielded cable w/o core
5	MHL cable	---	---	1.0m non-shielded cable w/o core
6	USB cable	---	---	1.5m shielded cable w/o core

Support Equipment				
No.	Equipment	Brand Name	Model Name	Remarks
1	---	---	---	---

1.3 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2009
- ♦ FCC KDB 558074 v03r01
- ♦ FCC KDB 412172 v01

Testing Location					
<input checked="" type="checkbox"/>	Sporton Lab	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-318-0055			
<input checked="" type="checkbox"/>	ICC Lab	ADD : No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsein 333, Taiwan (R.O.C.) TEL : 886-3-271-8666 FAX : 886-3-318-0155			
Test Condition		Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted		TH01-HY	Ian Du	23°C / 62%	Oct. 09, 2013
*AC Conduction		CO01-WS	Skys Huang	24°C / 55%	Oct. 21, 2013
*Radiated Emission		03CH01-WS	Skys Huang	24°C / 66%	Sep. 18 ~ Oct. 08, 2013
Test site registered number [657002] with FCC. Test site registered number [10807A-1] with IC.					

Note: * Sporton Lab subcontracts this test item to ICC lab (TAF: 2732).

ICC lab is a TAF accreditation test firm and also is an approved provider of Sporton lab.

1.4 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			
Test Item		Uncertainty	Limit
AC power-line conducted emissions		±2.26 dB	N/A
Emission bandwidth, 6dB bandwidth		±1.42 %	N/A
RF output power, conducted		±0.63 dB	N/A
Power density, conducted		±0.81 dB	N/A
All emissions, radiated	30 – 1000 MHz	±3.9 dB	N/A
	Above 1GHz	±4.2 dB	N/A
Temperature		±0.8 °C	N/A
Humidity		±3 %	N/A
DC and low frequency voltages		±3 %	N/A
Time		±1.42 %	N/A
Duty Cycle		±1.42 %	N/A

2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration

Worst Modulation Used for Conformance Testing				
Bluetooth Version	Transmit Chains (N _{TX})	Data Rate	Modulation Mode	RF Output Power (dBm)
v4.0 LE	1	1 Mbps	LE-1Mbps	2.1

2.2 Test Channel Frequencies Configuration

Test Channel Frequencies Configuration	
Bluetooth Mode	Test Channel Frequencies (MHz)
LE	2402-(F1), 2440-(F2), 2480-(F3)




2.3 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter			
Test Software Version	adb command , Ver. 2.0.29		
Modulation Mode	2402 MHz	2440 MHz	2480 MHz
LE,1Mbps	DEFAULT	DEFAULT	DEFAULT

2.4 The Worst Case Measurement Configuration

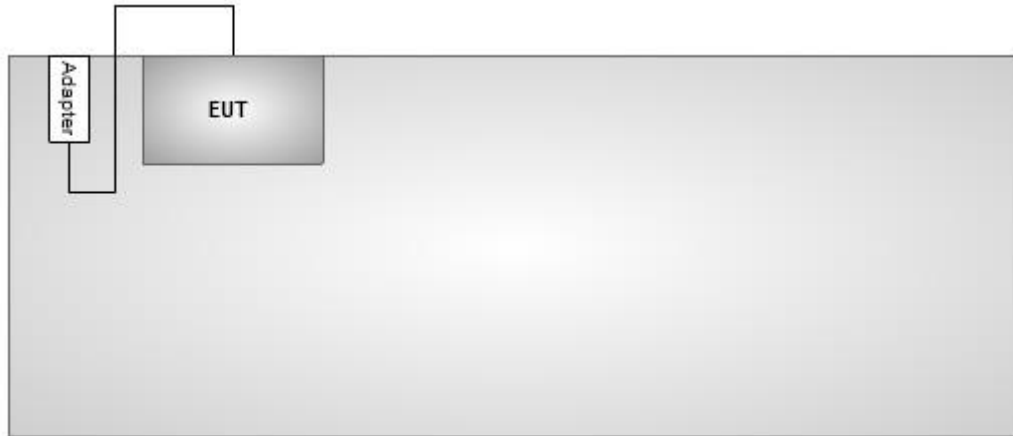
The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	AC Power & Radio link (BT), adapter 1
Note: Adapter 1, adapter 2 had been pretested and found that the adapter 1 was the worst case and was selected for final test.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	RF Output Power, Power Spectral Density, 6 dB Bandwidth
Test Condition	Conducted measurement at transmit chains
Modulation Mode	LE-1Mbps

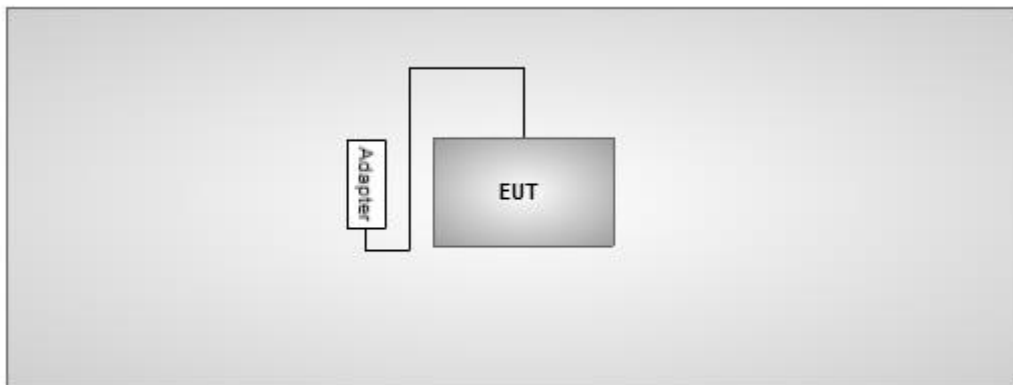
The Worst Case Mode for Following Conformance Tests			
Tests Item	Transmitter Radiated Unwanted Emissions Emissions in Non-Restricted Frequency Bands		
Test Condition	Radiated measurement		
User Position	<input checked="" type="checkbox"/> EUT will be placed in fixed position.		
	<input type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes. The worst planes is X.		
	<input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed three orthogonal planes. The worst planes is Z.		
Operating Mode	<input checked="" type="checkbox"/> 1. AC Power & Radio link (BT), adapter 1		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Note: Adapter 1, adapter 2 had been pretested and found that the adapter 1 was the worst case and was selected for final test.			

2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Test Setup Diagram – Radiated Emission Test



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line 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.

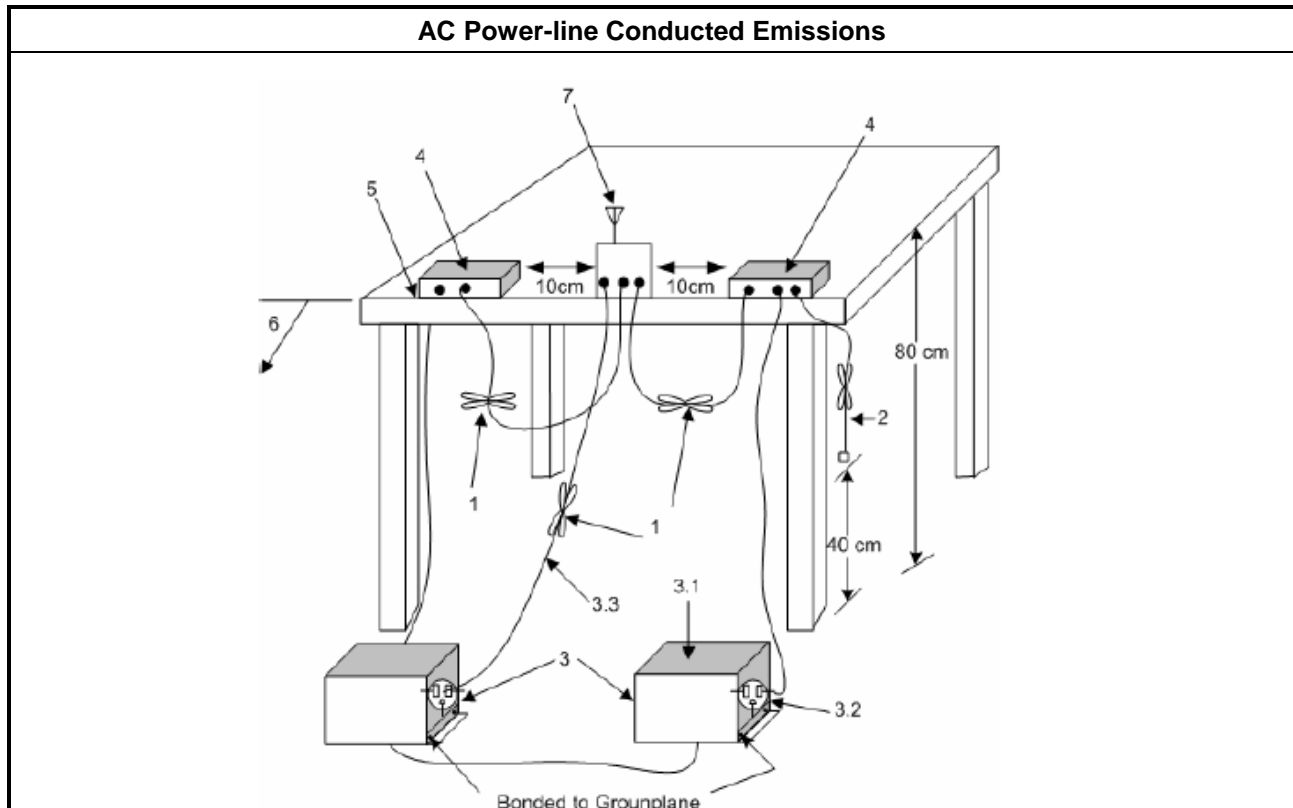
3.1.2 Measuring Instruments

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

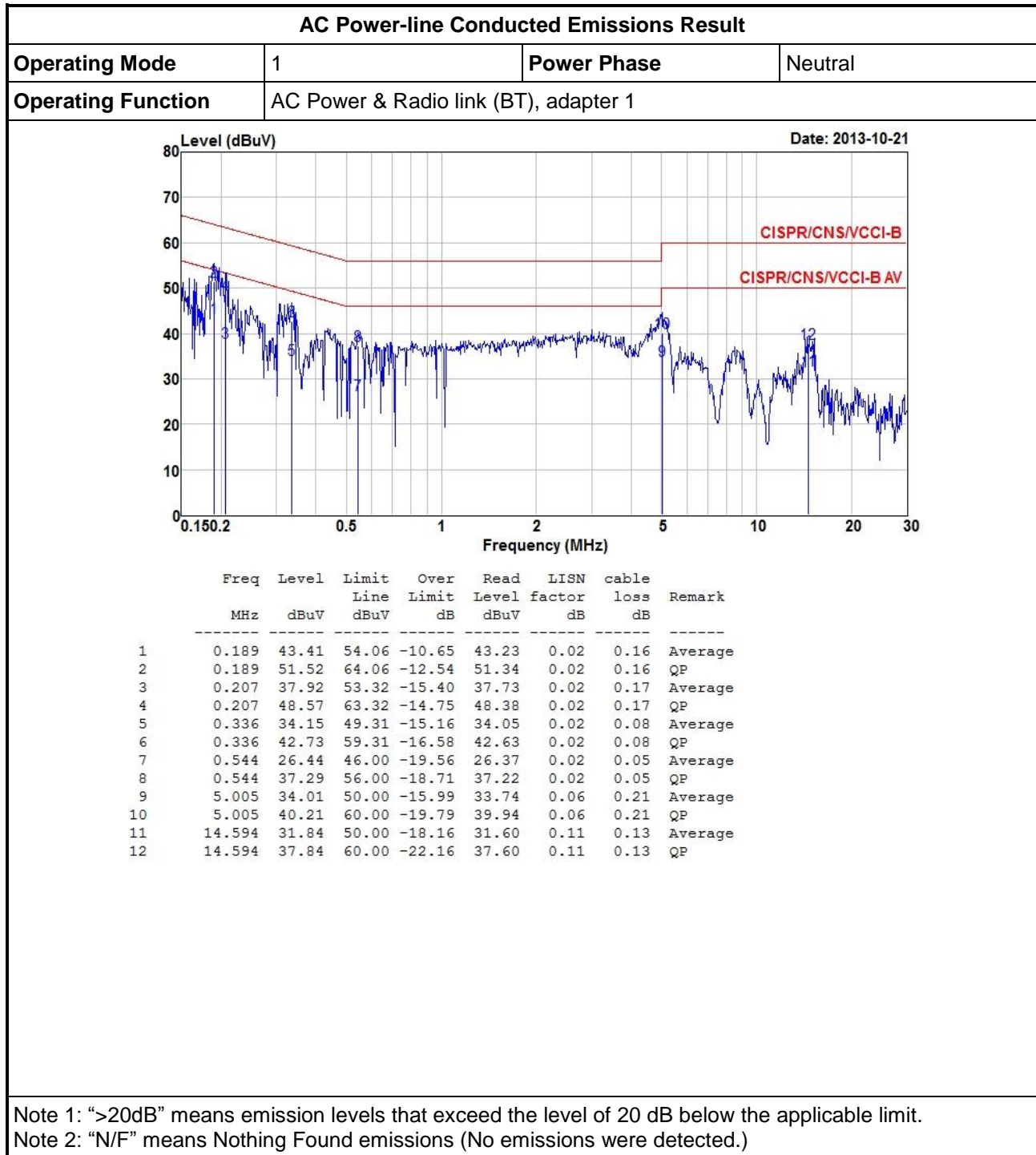
3.1.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10-2009, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup

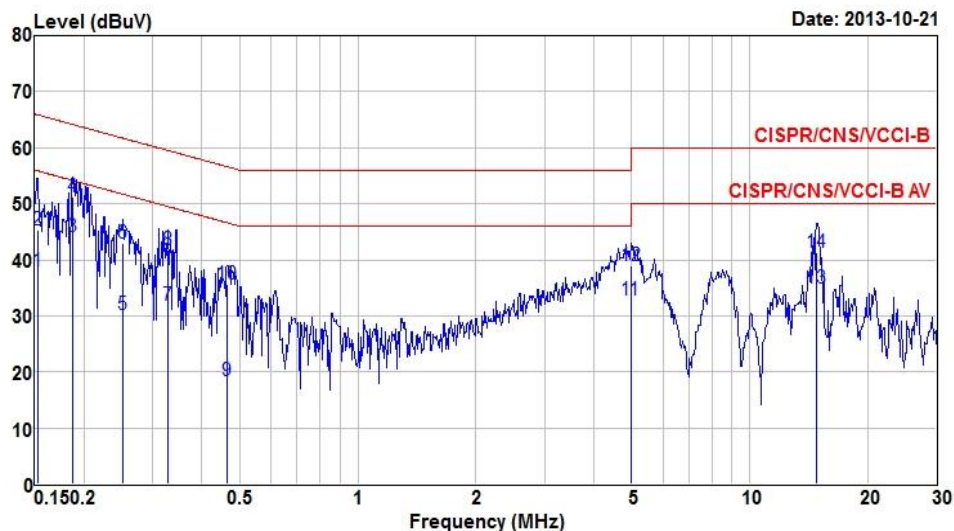


3.1.5 Test Result of AC Power-line Conducted Emissions



AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	AC Power & Radio link (BT), adapter 1		



	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark
			dBuV	dB	dBuV	dB	dB	
1	0.152	38.07	55.87	-17.80	37.97	0.03	0.07	Average
2	0.152	45.28	65.87	-20.59	45.18	0.03	0.07	QP
3	0.187	44.14	54.15	-10.01	43.96	0.03	0.15	Average
4	0.187	51.12	64.15	-13.03	50.94	0.03	0.15	QP
5	0.251	30.16	51.73	-21.57	29.99	0.03	0.14	Average
6	0.251	43.00	61.73	-18.73	42.83	0.03	0.14	QP
7	0.327	31.97	49.53	-17.56	31.85	0.03	0.09	Average
8	0.327	41.67	59.53	-17.86	41.55	0.03	0.09	QP
9	0.464	18.50	46.63	-28.13	18.42	0.03	0.05	Average
10	0.464	35.64	56.63	-20.99	35.56	0.03	0.05	QP
11	4.978	32.91	46.00	-13.09	32.63	0.07	0.21	Average
12	4.978	38.92	56.00	-17.08	38.64	0.07	0.21	QP
13	14.828	35.03	50.00	-14.97	34.78	0.12	0.13	Average
14	14.828	41.38	60.00	-18.62	41.13	0.12	0.13	QP

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

Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

3.2 6dB Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit	
Systems using digital modulation techniques:	
<input checked="" type="checkbox"/>	6 dB bandwidth \geq 500 kHz.

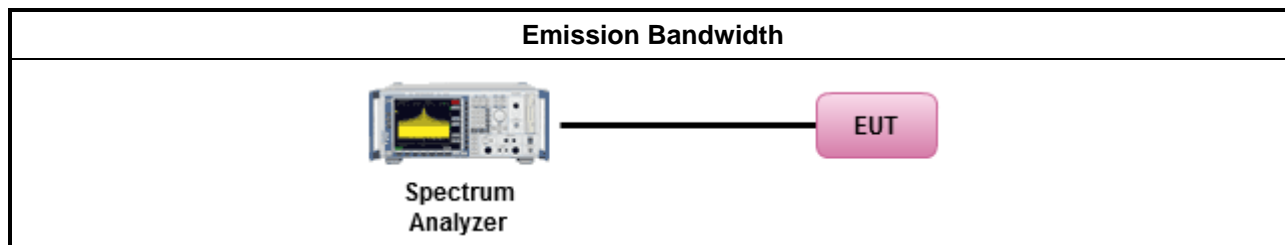
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	For the emission bandwidth shall be measured using one of the options below:
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 7.1 Option 1 for 6 dB bandwidth measurement.
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 7.2 Option 2 for 6 dB bandwidth measurement.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.
<input checked="" type="checkbox"/>	For conducted measurement.
<input checked="" type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.

3.2.4 Test Setup

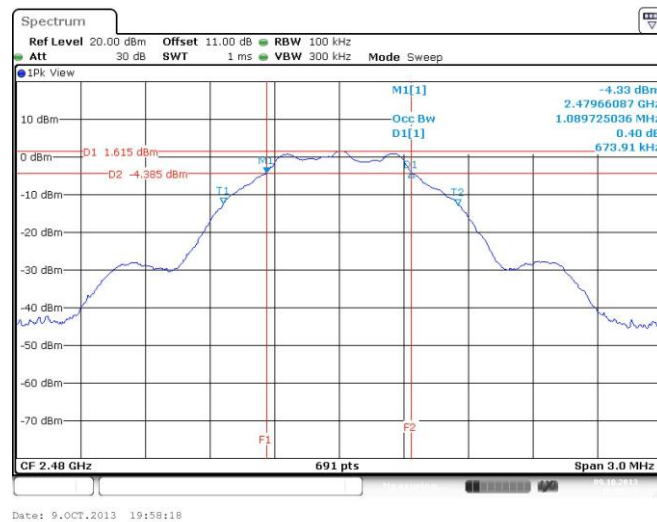


3.2.5 Test Result of Emission Bandwidth

Emission Bandwidth Result			
Modulation Mode	Freq. (MHz)	99% Bandwidth (kHz)	6dB Bandwidth (kHz)
LE-1Mbps	2402	1054.99	678.26
LE-1Mbps	2440	1054.99	678.26
LE-1Mbps	2480	1054.99	673.91
Limit		N/A	≥500 kHz
Result		Complied	

Worst Emission Bandwidth Plots

LE-1Mbps



Worst Emission Bandwidth Plots

LE-1Mbps



3.3 RF Output Power

3.3.1 RF Output Power Limit

RF Output Power Limit for Digital Modulation Systems	
Maximum Peak Conducted Output Power or Maximum Conducted Output Power Limit	
<input checked="" type="checkbox"/>	2400-2483.5 MHz Band:
<input checked="" type="checkbox"/>	If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
<input type="checkbox"/>	Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
e.i.r.p. Power Limit:	
<input checked="" type="checkbox"/>	2400-2483.5 MHz Band
<input checked="" type="checkbox"/>	Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi. P_{eirp} = e.i.r.p. Power in dBm.	

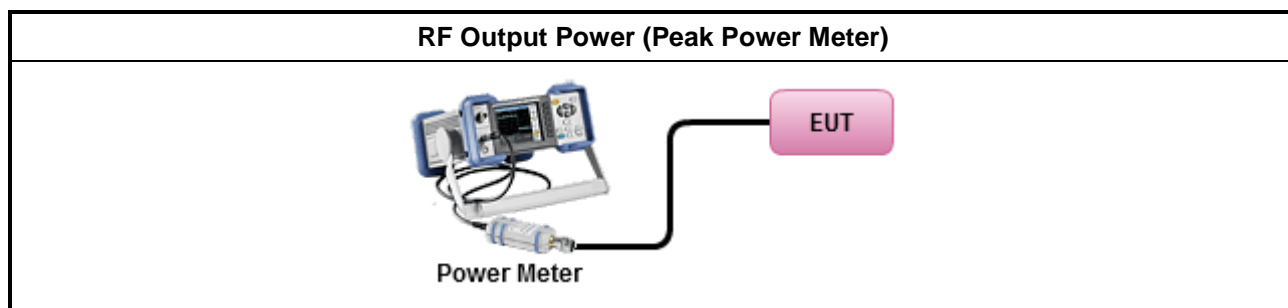
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Maximum Peak Conducted Output Power
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.10.2.1 a) for peak power meter.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.10.2.1 a) for spectrum analyzer - (RBW \geq EBW).
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 2 for conducted measurement.
<input checked="" type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.

3.3.4 Test Setup



3.3.5 Test Result of Maximum Peak Conducted Output Power

Maximum Peak Conducted Output Power Result						
Condition		RF Output Power (dBm)				
Modulation Mode	Freq. (MHz)	RF Output Power	Power Limit	Antenna Gain (dBi)	EIRP Power	EIRP Limit
LE-1Mbps	2402	1.45	30	5.10	6.55	36
LE-1Mbps	2440	1.96	30	5.10	7.06	36
LE-1Mbps	2480	2.1	30	5.10	7.20	36
Result		Complied				

Maximum Average Conducted Output Power Result						
Condition		RF Output Power (dBm)				
Modulation Mode	Freq. (MHz)	RF Output Power	Power Limit	Antenna Gain (dBi)	EIRP Power	EIRP Limit
LE-1Mbps	2402	1.24	30	5.10	6.34	36
LE-1Mbps	2440	1.77	30	5.10	6.87	36
LE-1Mbps	2480	1.94	30	5.10	7.04	36
Result		Complied				

Note: Average power is for reference only.

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit	
<input checked="" type="checkbox"/>	Power Spectral Density (PSD) ≤ 8 dBm/3kHz

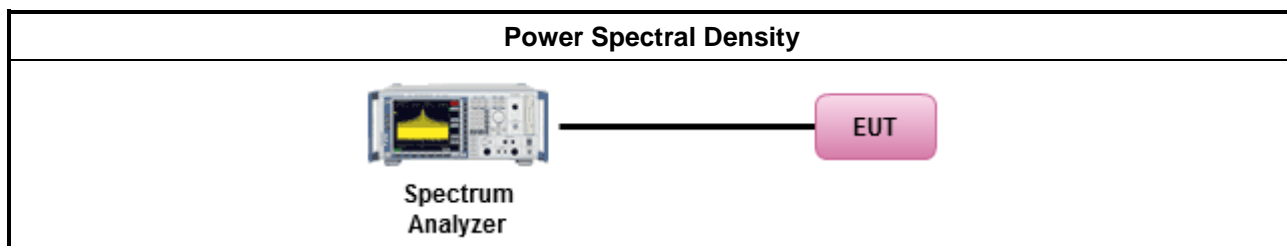
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

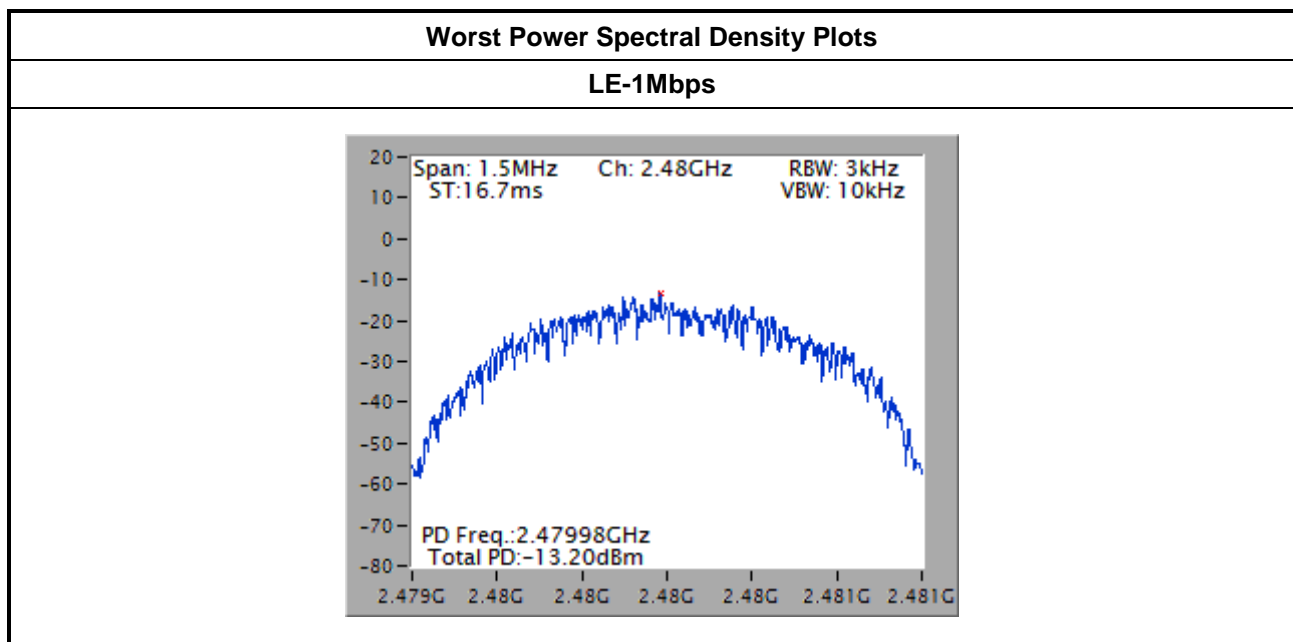
Test Method	
<input checked="" type="checkbox"/>	Power spectral density procedures that the same method as used to determine the conducted output power shall be used to determine the power spectral density. In addition, the use of a peak PSD procedure will always result in a "worst-case" measured level for comparison to the limit. Therefore, whenever the DTS bandwidth exceeds 500 kHz, it is acceptable to utilize the peak PSD procedure to demonstrate compliance to the PSD limit, regardless of how the fundamental output power was measured. For the power spectral density shall be measured using below options:
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 9.1 Option 1 - (RBW \geq 3kHz; sweep=auto, detector=peak).
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 9.2 Option 2 - (RBW \geq 3kHz; sweep=auto, average=100).
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 9.3 Option 3 - (RBW \geq 3kHz; slow sweep speed).
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 9.4 Alternative 1 (average PSD; Add 10log (1/duty cycle).
<input type="checkbox"/>	RBW>3kHz, add the bandwidth correction factor (BWCF) adjusting in PSD per 3kHz.
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 2 for conducted measurement.
<input checked="" type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.

3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Power Spectral Density Result (dBm/3kHz)			
Modulation Mode	Freq. (MHz)	PSD	PSD Limit
LE-1Mbps	2402	-13.92	8
LE-1Mbps	2440	-13.43	8
LE-1Mbps	2480	-13.2	8
Result		Complied	



3.5 Emissions in Non-Restricted Frequency Bands

3.5.1 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

3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

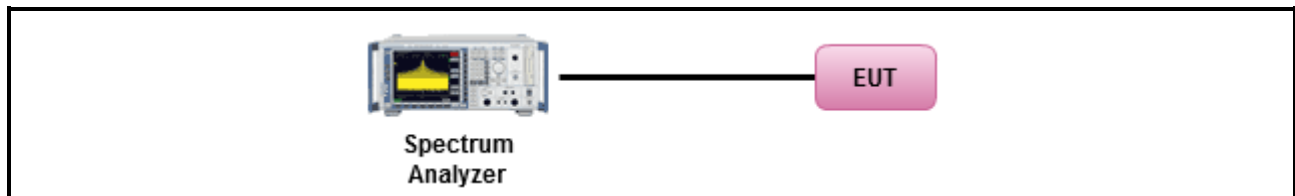
Reference level measurement

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

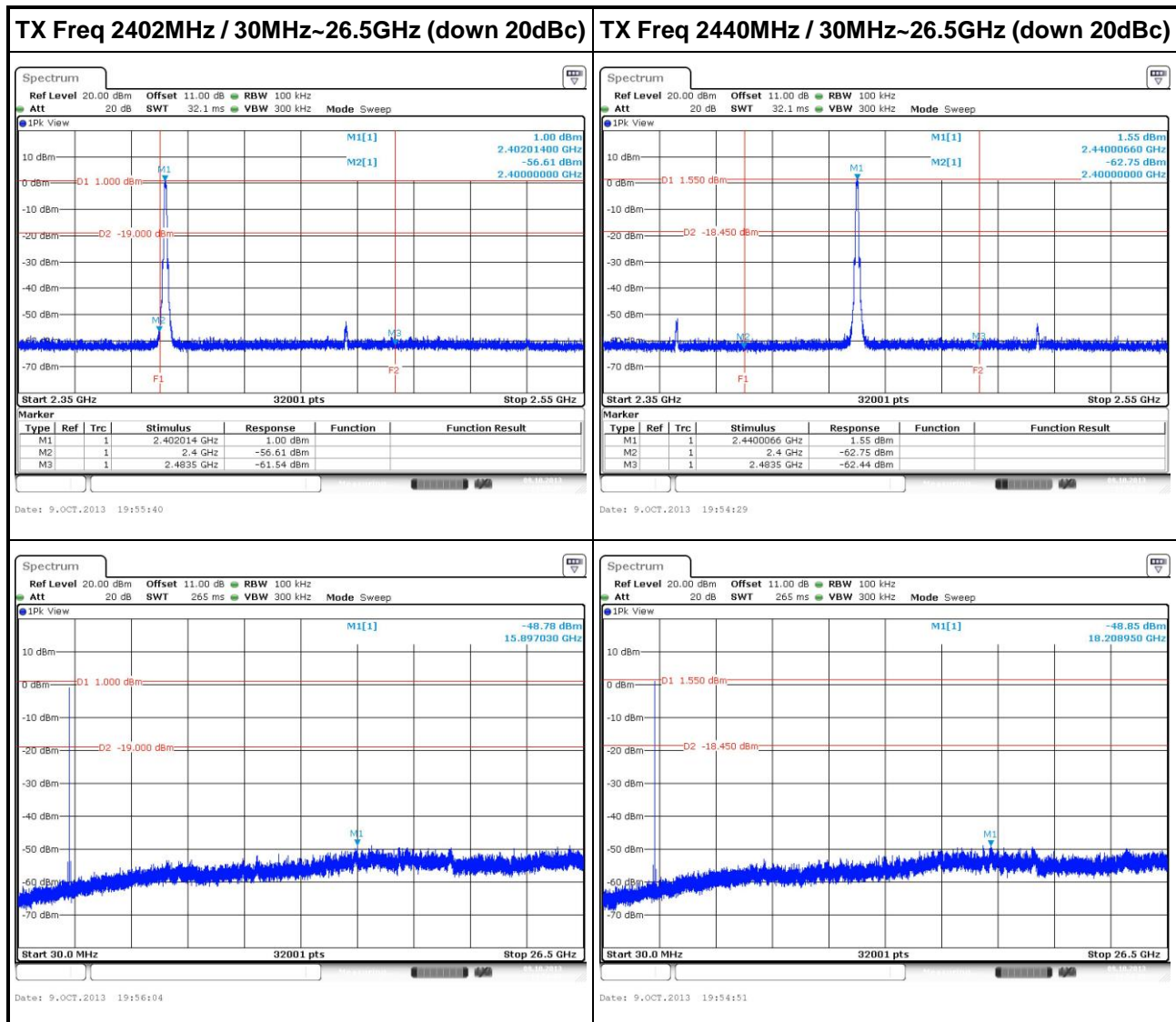
Emission level measurement

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

3.5.4 Test Setup

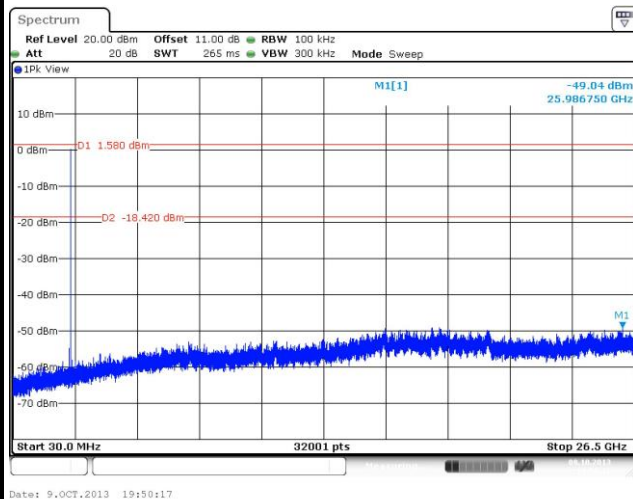
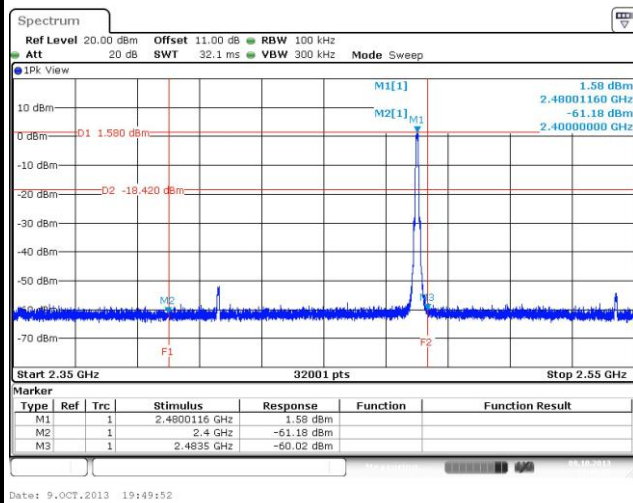


3.5.5 Test Result of Emissions in Non-Restricted Frequency Bands





TX Freq 2480MHz / 30MHz~26.5GHz (down 20dBc)



3.6 Transmitter Radiated Unwanted Emissions

3.6.1 Transmitter Radiated Unwanted Emissions Limit

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: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Average output power procedure	30

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

3.6.2 Measuring Instruments

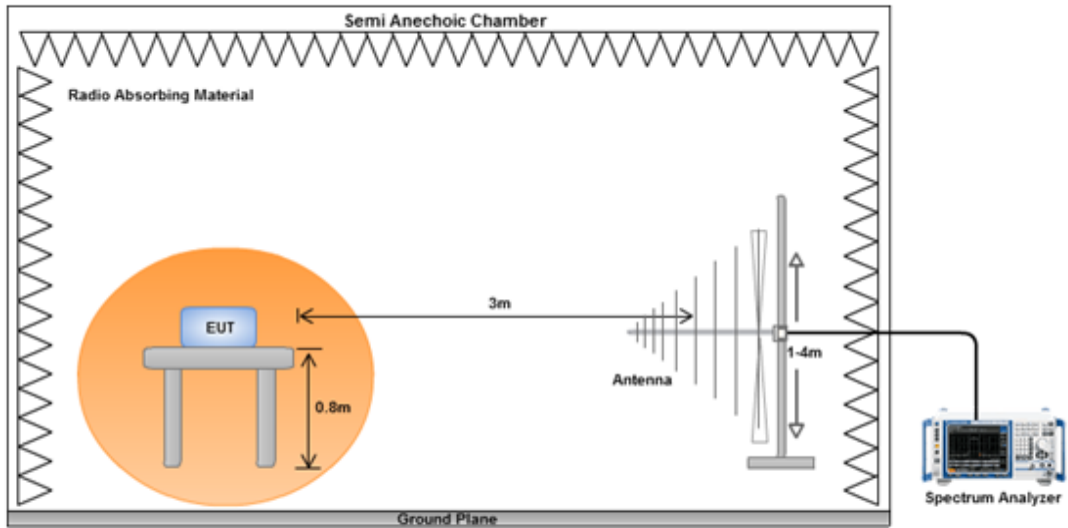
Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

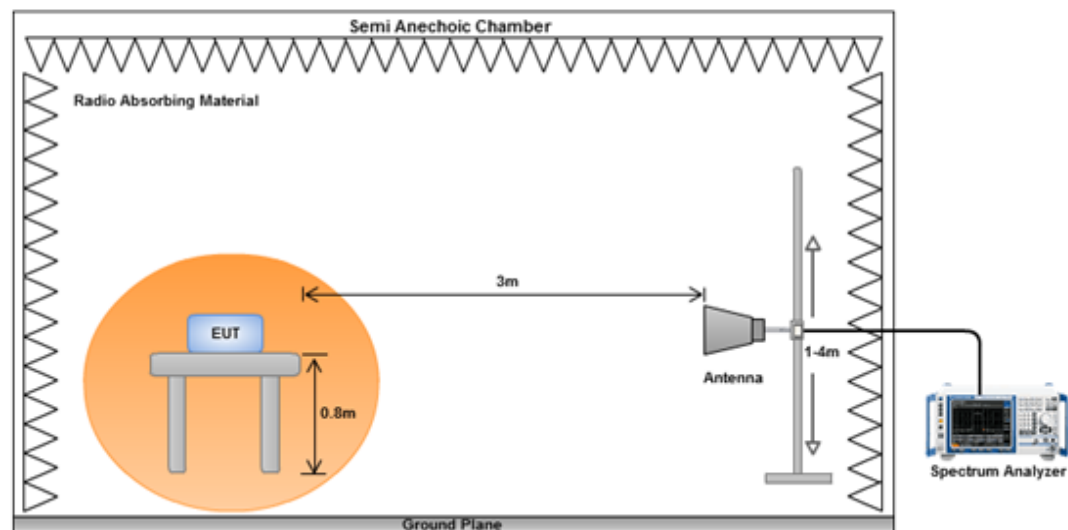
Test Method – General Information	
<input checked="" type="checkbox"/>	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
<input checked="" type="checkbox"/>	For the transmitter unwanted emissions shall be measured using following options below:
<input checked="" type="checkbox"/>	For unwanted emissions into non-restricted bands. Peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.
<input checked="" type="checkbox"/>	For unwanted emissions into restricted bands.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). $VBW \geq 1/T$, where T is pulse time.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
<input checked="" type="checkbox"/>	For radiated measurement.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.6 for radiated emissions from above 1 GHz.

3.6.4 Test Setup

Radiated Emissions below 1 GHz

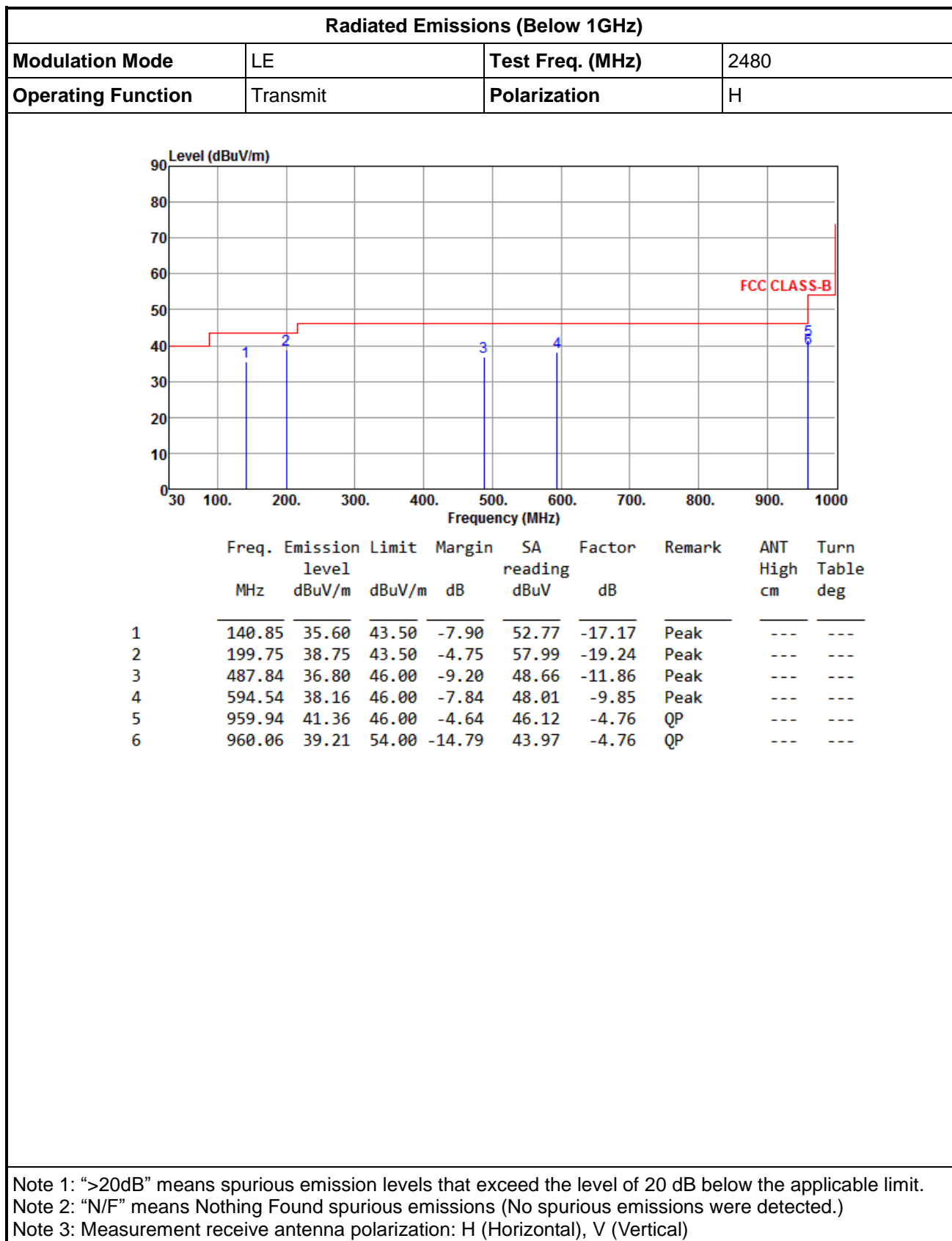


Radiated Emissions above 1 GHz



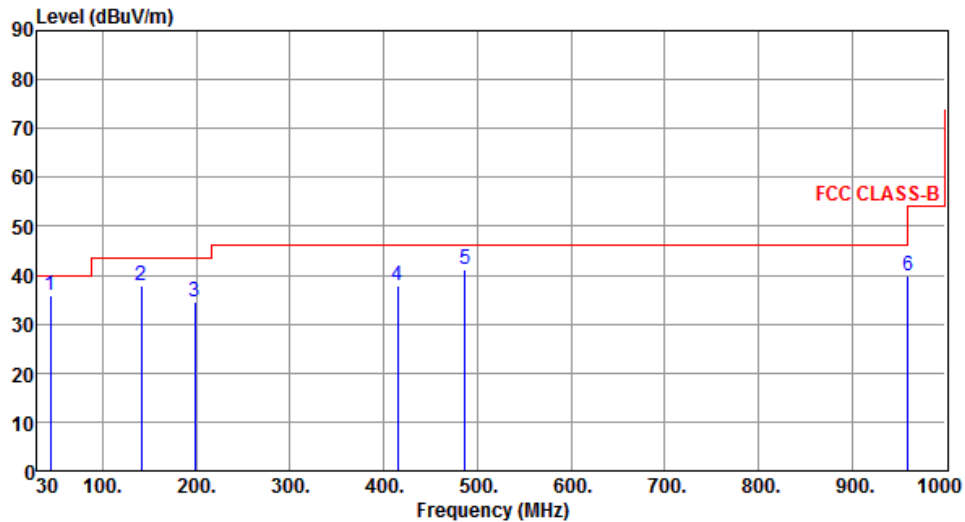
3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

3.6.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)


Radiated Emissions (Below 1GHz)

Modulation Mode	LE	Test Freq. (MHz)	2480
Operating Function	Transmit	Polarization	V



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	44.19	35.84	40.00	-4.16	52.59	-16.75	QP	---	---
2	141.55	37.86	43.50	-5.64	55.02	-17.16	Peak	---	---
3	198.78	34.65	43.50	-8.85	53.88	-19.23	Peak	---	---
4	415.09	37.94	46.00	-8.06	51.23	-13.29	Peak	---	---
5	486.87	41.32	46.00	-4.68	53.20	-11.88	Peak	---	---
6	960.23	39.85	54.00	-14.15	44.61	-4.76	Peak	---	---

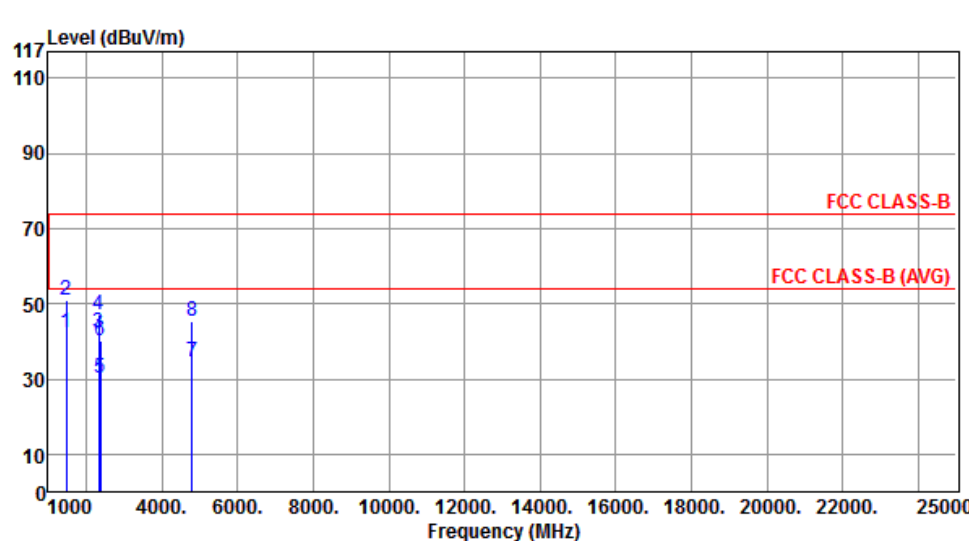
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

3.6.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)

Transmitter Radiated Unwanted Emissions (Above 1GHz)									
Modulation Mode	LE-1Mbps				Test Freq. (FX)	2402			
Operating Mode	1				Polarization	H			



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1485.00	42.35	54.00	-11.65	48.99	-6.64	Average	---	---
2	1485.00	51.09	74.00	-22.91	57.73	-6.64	Peak	---	---
3	2337.00	42.13	54.00	-11.87	45.55	-3.42	Average	---	---
4	2337.00	47.12	74.00	-26.88	50.54	-3.42	Peak	---	---
5	2390.00	30.40	54.00	-23.60	33.62	-3.22	Average	---	---
6	2390.00	40.24	74.00	-33.76	43.46	-3.22	Peak	---	---
7	4804.00	34.60	54.00	-19.40	30.32	4.28	Average	---	---
8	4804.00	45.52	74.00	-28.48	41.24	4.28	Peak	---	---

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

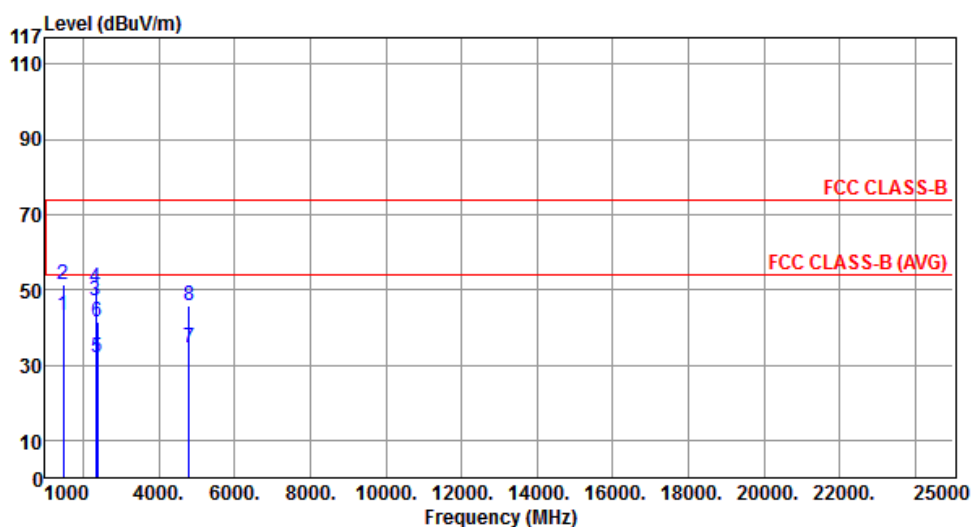
Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., LE VBW≥1/625us, VBW=3kHz.

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (FX)	2402
Operating Mode	1	Polarization	V



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1485.00	43.03	54.00	-10.97	49.67	-6.64	Average	---	---
2	1485.00	51.30	74.00	-22.70	57.94	-6.64	Peak	---	---
3	2337.00	47.26	54.00	-6.74	50.68	-3.42	Average	---	---
4	2337.00	50.51	74.00	-23.49	53.93	-3.42	Peak	---	---
5	2390.00	31.91	54.00	-22.09	35.13	-3.22	Average	---	---
6	2390.00	41.64	74.00	-32.36	44.86	-3.22	Peak	---	---
7	4804.00	34.54	54.00	-19.46	30.26	4.28	Average	---	---
8	4804.00	45.84	74.00	-28.16	41.56	4.28	Peak	---	---

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

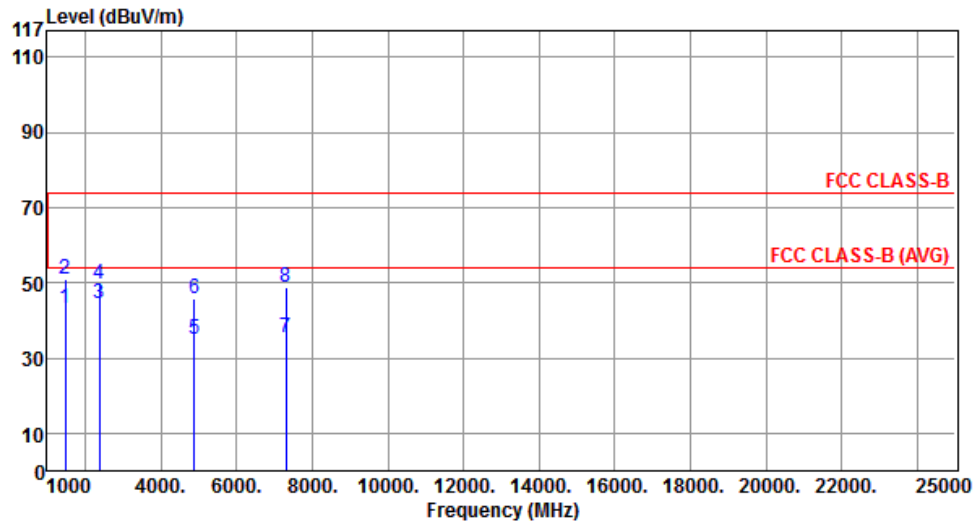
Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission setting: RBW=1MHz; VBW $\geq 1/T$, where T is "Pulse On Time", e.g., LE VBW $\geq 1/625\mu s$, VBW=3kHz.

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (FX)	2440
Operating Mode	1	Polarization	H



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1485.00	43.14	54.00	-10.86	49.78	-6.64	Average	---	---
2	1485.00	51.00	74.00	-23.00	57.64	-6.64	Peak	---	---
3	2375.00	44.30	54.00	-9.70	47.58	-3.28	Average	---	---
4	2375.00	49.57	74.00	-24.43	52.85	-3.28	Peak	---	---
5	4880.00	34.76	54.00	-19.24	30.36	4.40	Average	---	---
6	4880.00	45.69	74.00	-28.31	41.29	4.40	Peak	---	---
7	7320.00	35.57	54.00	-18.43	26.64	8.93	Average	---	---
8	7320.00	48.81	74.00	-25.19	39.88	8.93	Peak	---	---

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

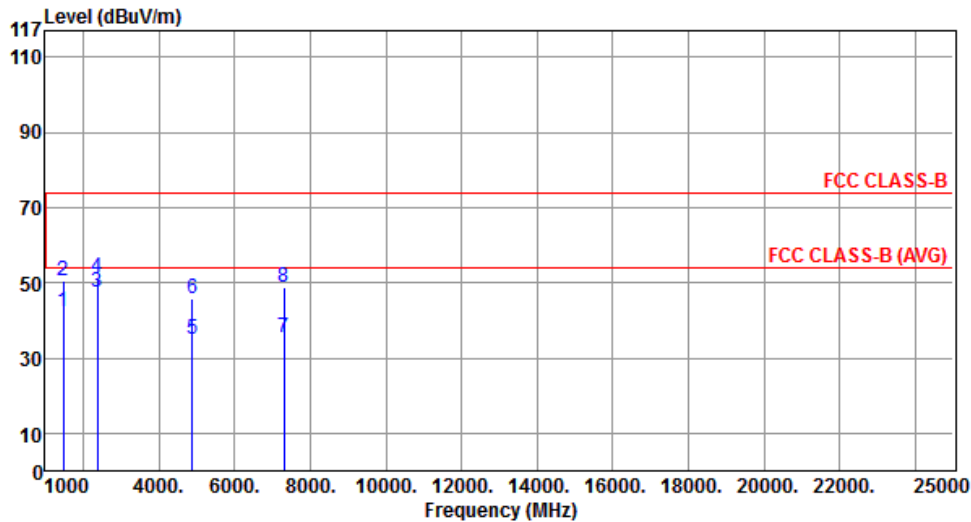
Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission setting: RBW=1MHz; VBW $\geq 1/T$, where T is "Pulse On Time", e.g., LE VBW $\geq 1/625\mu s$, VBW=3kHz.

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (FX)	2440
Operating Mode	1	Polarization	V



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1485.00	42.25	54.00	-11.75	48.89	-6.64	Average	---	---
2	1485.00	50.55	74.00	-23.45	57.19	-6.64	Peak	---	---
3	2375.00	47.57	54.00	-6.43	50.85	-3.28	Average	---	---
4	2375.00	51.35	74.00	-22.65	54.63	-3.28	Peak	---	---
5	4880.00	34.98	54.00	-19.02	30.58	4.40	Average	---	---
6	4880.00	45.67	74.00	-28.33	41.27	4.40	Peak	---	---
7	7320.00	35.58	54.00	-18.42	26.65	8.93	Average	---	---
8	7320.00	48.92	74.00	-25.08	39.99	8.93	Peak	---	---

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

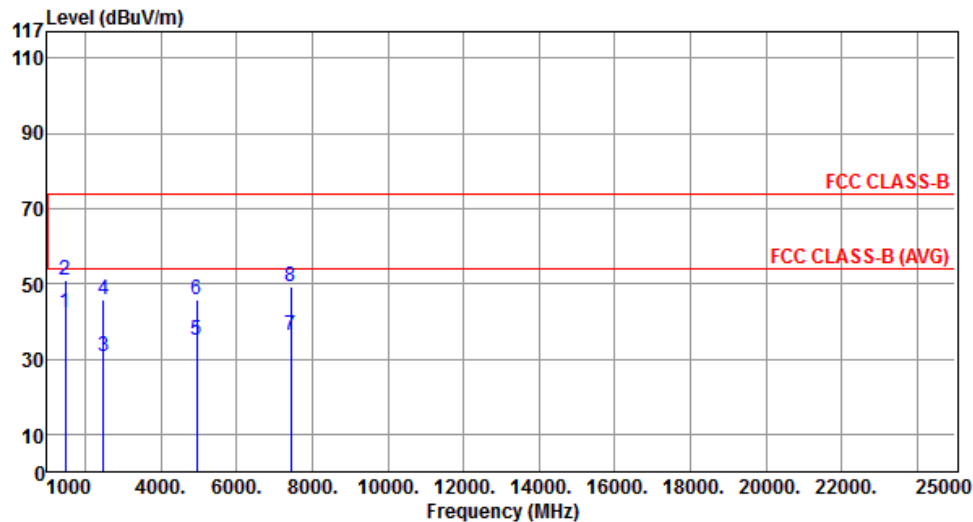
Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission setting: RBW=1MHz; VBW $\geq 1/T$, where T is "Pulse On Time", e.g., LE VBW $\geq 1/625\mu s$, VBW=3kHz.

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (FX)	2480
Operating Mode	1	Polarization	H



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1485.00	42.33	54.00	-11.67	48.97	-6.64	Average	---	---
2	1485.00	51.08	74.00	-22.92	57.72	-6.64	Peak	---	---
3	2483.50	30.70	54.00	-23.30	33.53	-2.83	Average	---	---
4	2483.50	45.91	74.00	-28.09	48.74	-2.83	Peak	---	---
5	4960.00	35.01	54.00	-18.99	30.47	4.54	Average	---	---
6	4960.00	45.78	74.00	-28.22	41.24	4.54	Peak	---	---
7	7440.00	36.36	54.00	-17.64	27.24	9.12	Average	---	---
8	7440.00	49.22	74.00	-24.78	40.10	9.12	Peak	---	---

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

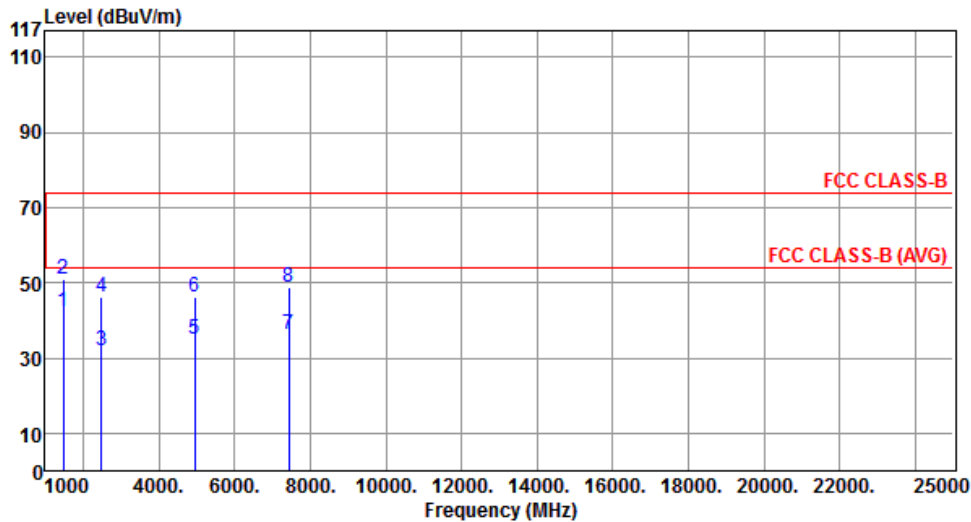
Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission setting: RBW=1MHz; VBW $\geq 1/T$, where T is "Pulse On Time", e.g., LE VBW $\geq 1/625\mu s$, VBW=3kHz.

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (FX)	2480
Operating Mode	1	Polarization	V



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1485.00	42.25	54.00	-11.75	48.89	-6.64	Average	---	---
2	1485.00	51.00	74.00	-23.00	57.64	-6.64	Peak	---	---
3	2483.50	32.13	54.00	-21.87	34.96	-2.83	Average	---	---
4	2483.50	46.09	74.00	-27.91	48.92	-2.83	Peak	---	---
5	4960.00	34.95	54.00	-19.05	30.41	4.54	Average	---	---
6	4960.00	46.08	74.00	-27.92	41.54	4.54	Peak	---	---
7	7440.00	36.23	54.00	-17.77	27.11	9.12	Average	---	---
8	7440.00	48.98	74.00	-25.02	39.86	9.12	Peak	---	---

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 3: 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 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission setting: RBW=1MHz; VBW $\geq 1/T$, where T is "Pulse On Time", e.g., LE VBW $\geq 1/625\mu s$, VBW=3kHz.

4 Test Equipment 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. 15, 2013	Oct. 14, 2014
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
RF Current Probe	FCC	F-33-4	121630	Dec. 04, 2012	Dec. 03, 2013
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
Note: Calibration Interval of instruments listed above is one year.					

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&SCHWARZ	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
Note: Calibration Interval of instruments listed above is one year.					

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.					

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV 40	101063	9KHz~40GHz	Feb. 18, 2013	Conducted (TH01-HY)
Spectrum Analyzer	R&S	FSP 40	100305	9KHz~40GHz	Mar. 20, 2013	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20 ~ 100℃	Nov. 21, 2012	Conducted (TH01-HY)
Signal Generator	R&S	SMB100A	175727	10MHz ~ 40GHz	Jan. 14, 2013	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	Feb. 02, 2013	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	Feb. 02, 2013	Conducted (TH01-HY)

Note: Calibration Interval of instruments listed above is one year.