

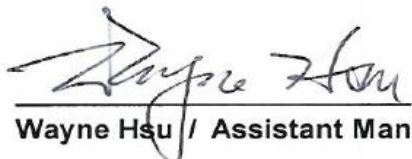
# FCC Test Report

**Equipment** : USB WLAN Module  
**Brand Name** : ASKEY  
**Model No.** : WLU5053-D4(ROHS)  
**FCC ID** : H8N-WLU5053  
**Standard** : 47 CFR FCC Part 15.247  
**Operating Band** : 2400 MHz – 2483.5 MHz  
**Equipment Class** : DTS  
**Applicant** : Askey Computer Corp.  
10F, No. 119, Chienkang Rd., Chung-Ho, Taiwan, R.O.C.  
**Manufacturer** : Askey Computer Corp.  
10F, No. 119, Chienkang Rd., Chung-Ho, Taiwan, R.O.C.  
**ASKEY TECHNOLOGY (JIANG SU) LTD.**  
No. 1388, Jiao Tong Road,  
Wujiang Economic-Technological Development Area,  
Jiangsu Province, P.R. China

The product sample received on Sep. 27, 2012 and completely tested on Dec. 05, 2012. 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:

  
Wayne Hsu / 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]: 4.550MHz 29.15 (Margin 16.85dB) - AV 35.37 (Margin 20.63dB) - QP	FCC 15.207	Complied
3.2	15.247(a)	6dB Bandwidth	6dB Bandwidth Unit [MHz] 20M: 17.54 / 40M: 36.28	≥500kHz	Complied
3.3	15.247(b)	RF Output Power (Maximum Peak Conducted Output Power)	Power [dBm]: 28.81	Power [dBm]: 30	Complied
3.4	15.247(d)	Power Spectral Density	PSD [dBm/3kHz]: -7.08	PSD [dBm/3kHz]: 8	Complied
3.5	15.247(c)	Transmitter Radiated Bandedge Emissions	Non-Restricted Bands: 2399.50MHz: 31.49dB Restricted Bands [dBuV/m at 3m]: 2375.87MHz 67.58 (Margin 6.42dB) - PK 53.00 (Margin 1.00dB) - AV	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]: 4923.93MHz 50.49 (Margin 3.51dB) - AV	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied



## Revision History

Report No.	Version	Description	Issued Date
FR292625AC	Rev. 01	Initial issue of report	Dec. 12, 2012

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

RF General Information						
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N <sub>TX</sub> )	RF Output Power (dBm)	Co-location
2400-2483.5	b	2412-2462	1-11 [11]	1	20.54	N/A
2400-2483.5	g	2412-2462	1-11 [11]	1	25.86	N/A
2400-2483.5	n (HT-20)	2412-2462	1-11 [11]	1 / 2	28.81	N/A
2400-2483.5	n (HT-40)	2422-2452	3-9 [7]	1 / 2	25.12	N/A

Note 1: RF output power specifies that Maximum Peak Conducted Output Power.  
 Note 2: 802.11b uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.  
 Note 3: 802.11g/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.  
 Note 4: 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.)

### 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"/>	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"/>	Single power level with corresponding antenna(s).
<input type="checkbox"/>	Multiple power level and corresponding antenna(s).
<input type="checkbox"/>	RF connector provided
<input type="checkbox"/>	Unique antenna connector. (e.g., MMCX, U.FL, IPX, and RP-SMA, RP-N type...)
<input type="checkbox"/>	Standard antenna connector. (e.g., SMA, N, BNC, and TNC type...)

Antenna General Information			
No.	Ant. Cat.	Ant. Type	Gain (dBi)
1	Integral	PIFA	3.19
2	Integral	PIFA	1.66



1.1.3 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input type="checkbox"/> Production ; <input type="checkbox"/> Pre-Production ; <input checked="" 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 type="checkbox"/> Operated normally 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"/> 99.13% - IEEE 802.11b	0.04
<input checked="" type="checkbox"/> 96.66% - IEEE 802.11g	0.15
<input checked="" type="checkbox"/> 97.83% - IEEE 802.11n (HT-20)	0.10
<input checked="" type="checkbox"/> 92.95% - IEEE 802.11n (HT-40)	0.32

Note 1: RF Output Power Plots w/o Duty Factor

1.1.5 EUT Operational Condition

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

## 1.2 Support Equipment

Support Equipment AC Line Conducted Emission And Radiated Below 1GHz Test				
No.	Equipment	Brand Name	Model Name	Serial No.
1	Notebook	DELL	E5500	DoC
2	iPod nano	Apple	A1199	DoC
3	Mouse	Microsoft	1004	DoC

Support Equipment Radiated Above 1GHz Test				
No.	Equipment	Brand Name	Model Name	Serial No.
1	Notebook	DELL	D420	E2KWM3945ABG

## 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
- ◆ FCC KDB 662911
- ◆ FCC KDB 412172

## 1.4 Testing Location Information

Testing Location				
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973		
<input checked="" type="checkbox"/>	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085		
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-HY	Shiming	22.1°C / 61%	03-Dec.-12 05-Dec.-12
AC Conduction	CO04-HY	Richard Lo	23.5°C / 45%	08-Nov.-12
Radiated Emission	03CH02-HY (Below 1GHz)	Hsiao	23.6°C / 55%	07-Oct.-12 25-Oct.-12
	03CH01-CB (Above 1GHz)	Satoshi Yang	26°C / 60%	15-Nov.-12 21-Oct.-12 ~ 22-Nov.-12

## 1.5 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))

<b>Measurement Uncertainty</b>			
<b>Test Item</b>		<b>Uncertainty</b>	<b>Limit</b>
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
Unwanted emissions, conducted	30 – 1000 MHz	±0.51 dB	N/A
	1 – 18 GHz	±0.67 dB	N/A
	18 – 40 GHz	±0.83 dB	N/A
	40 – 200 GHz	N/A	N/A
All emissions, radiated	30 – 1000 MHz	±2.56 dB	N/A
	1 – 18 GHz	±3.59 dB	N/A
	18 – 40 GHz	±3.82 dB	N/A
	40 – 200 GHz	N/A	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				
Modulation Mode	Transmit Chains (N <sub>TX</sub> )	Data Rate / MCS	Worst Data Rate / MCS	RF Output Power (dBm)
11b,1-11Mbps	1	1-11 Mbps	1 Mbps	20.54
11g,6-54Mbps	1	6-54 Mbps	6 Mbps	25.86
HT-20,M0-15	1 / 2	MCS 0-15	MCS 0	28.81
HT-40,M0-15	1 / 2	MCS 0-15	MCS 0	25.12

Note 1: IEEE Std. 802.11n modulation consists of HT-20 and HT-40 (HT: High Throughput). Then EUT support HT-20 and HT-40. Worst modulation mode of Guard Interval (GI) is 800ns.  
 Note 2: Modulation modes consist below configuration:  
 11b: IEEE 802.11b, 11g: IEEE 802.11g, HT-20/HT-40: IEEE 802.11n  
 Note 3: RF output power specifies that Maximum Peak Conducted Output Power.

### 2.2 Test Channel Frequencies Configuration

Test Channel Frequencies Configuration	
IEEE Std. 802.11	Test Channel Frequencies (MHz)
b, g, n (HT-20)	2412-(F1), 2437-(F2), 2462-(F3)
n (HT-40)	2422-(F4), 2437-(F5), 2452-(F6)




### 2.3 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter (2400-2483.5MHz band)							
Test Software Version	Mtool ver. 1.0.0.9						
Modulation Mode	N <sub>TX</sub>	Test Frequency (MHz)					
		NCB: 20MHz			NCB: 40MHz		
		2412	2437	2462	2422	2437	2452
11b	1	68	70	72	-	-	-
11g	1	62	76	66	-	-	-
HT-20	1	62	76	66	-	-	-
HT-20	2	48	76	62	-	-	-
HT-40	1	-	-	-	58	62	56
HT-40	2	-	-	-	44	60	56

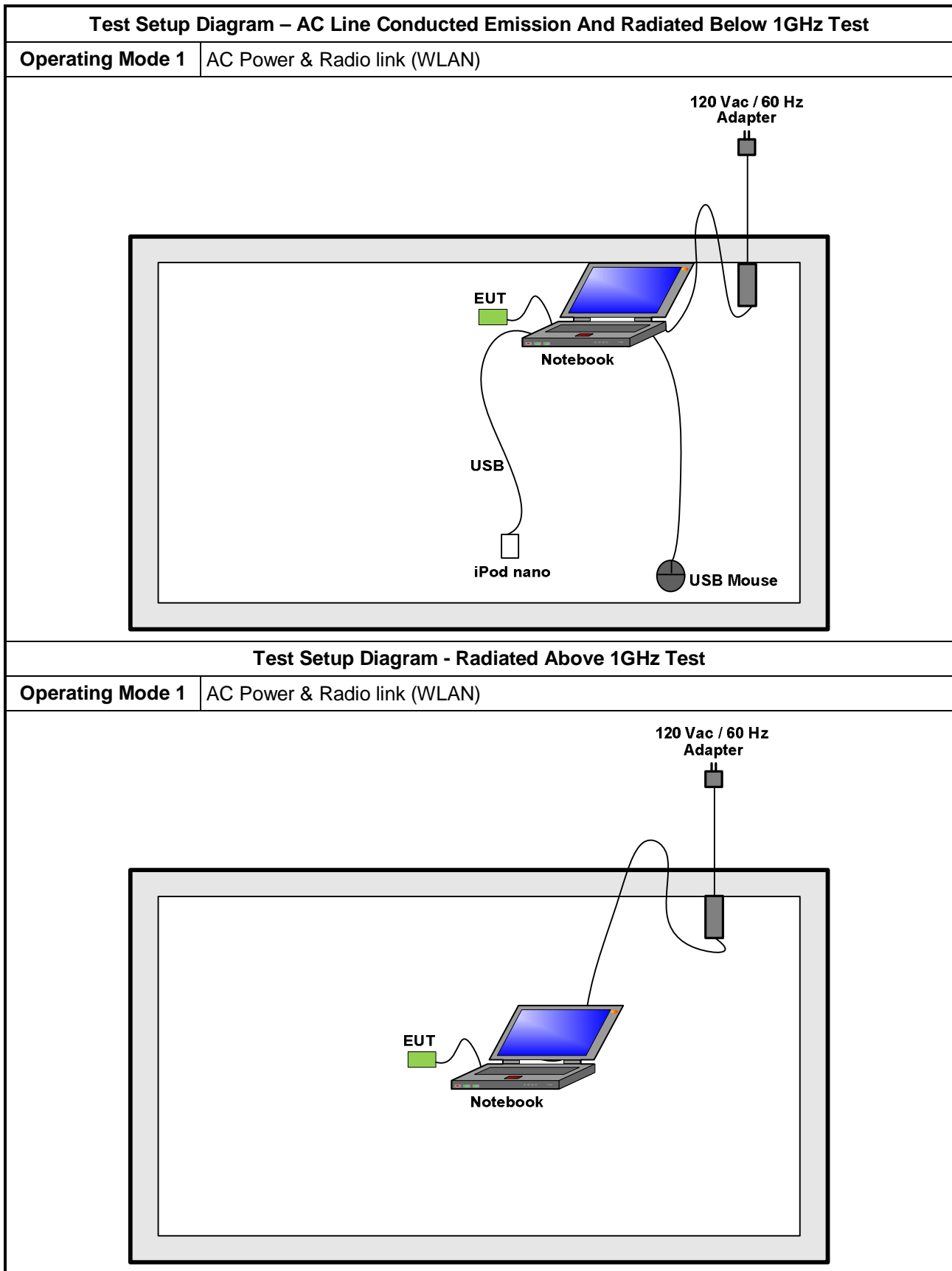
## 2.4 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	AC power-line conducted emissions
<b>Condition</b>	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
<b>Operating Mode</b>	Operating Mode Description
1	AC Power & Radio link (WLAN)

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	RF Output Power, Power Spectral Density, 6 dB Bandwidth
<b>Test Condition</b>	Conducted measurement at transmit chains
<b>Modulation Mode</b>	11b, 11g, HT-20, HT-40

The Worst Case Mode for Following Conformance Tests			
<b>Tests Item</b>	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions		
<b>Test Condition</b>	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.		
<b>User Position</b>	<input type="checkbox"/> EUT will be placed in fixed position.		
	<input checked="" 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 two or three orthogonal planes.		
<b>Operating Mode &lt; 1GHz</b>	<input checked="" type="checkbox"/> 1. AC Power & Radio link (WLAN)		
<b>Modulation Mode</b>	11b, 11g, HT-20, HT-40		
<b>Orthogonal Planes of EUT</b>	<b>X Plane</b>	<b>Y Plane</b>	<b>Z Plane</b>
			

## 2.5 Test Setup Diagram



### 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.

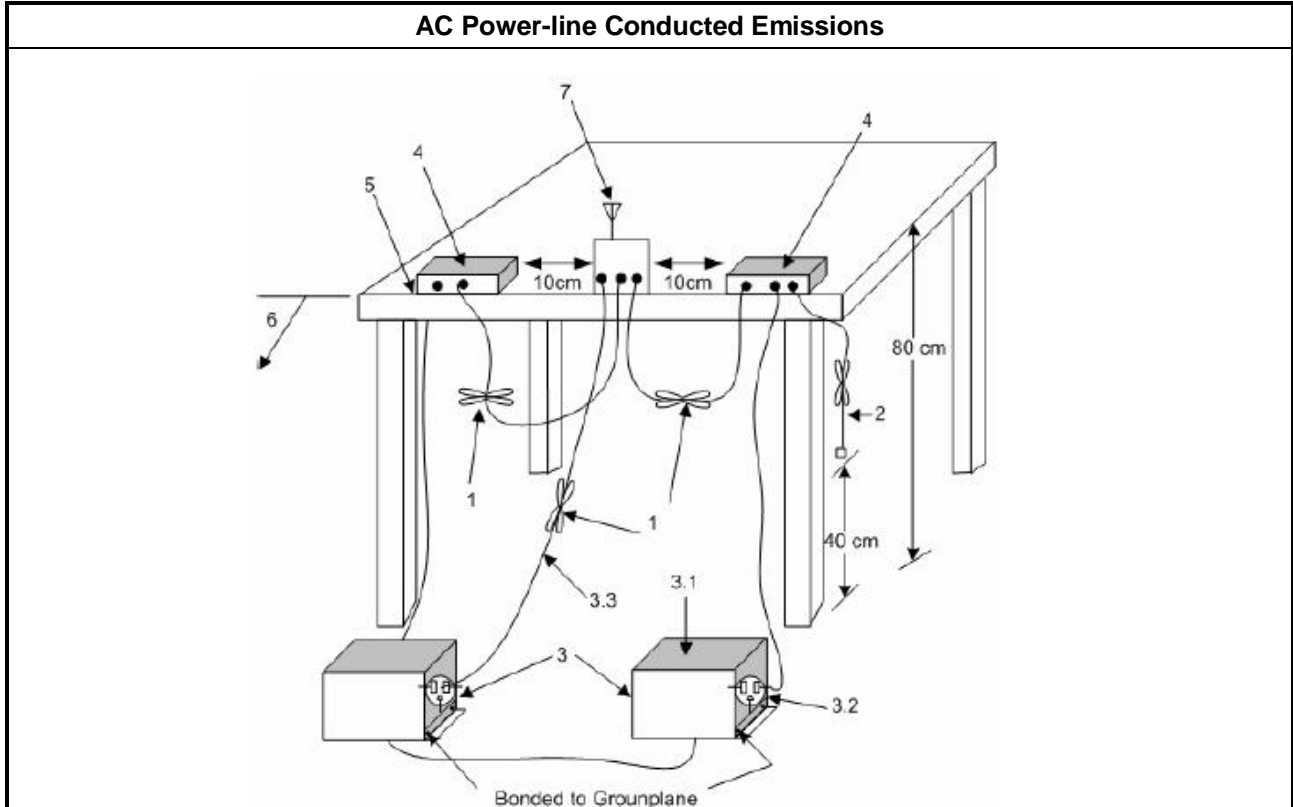
##### 3.1.2 Measuring Instruments

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

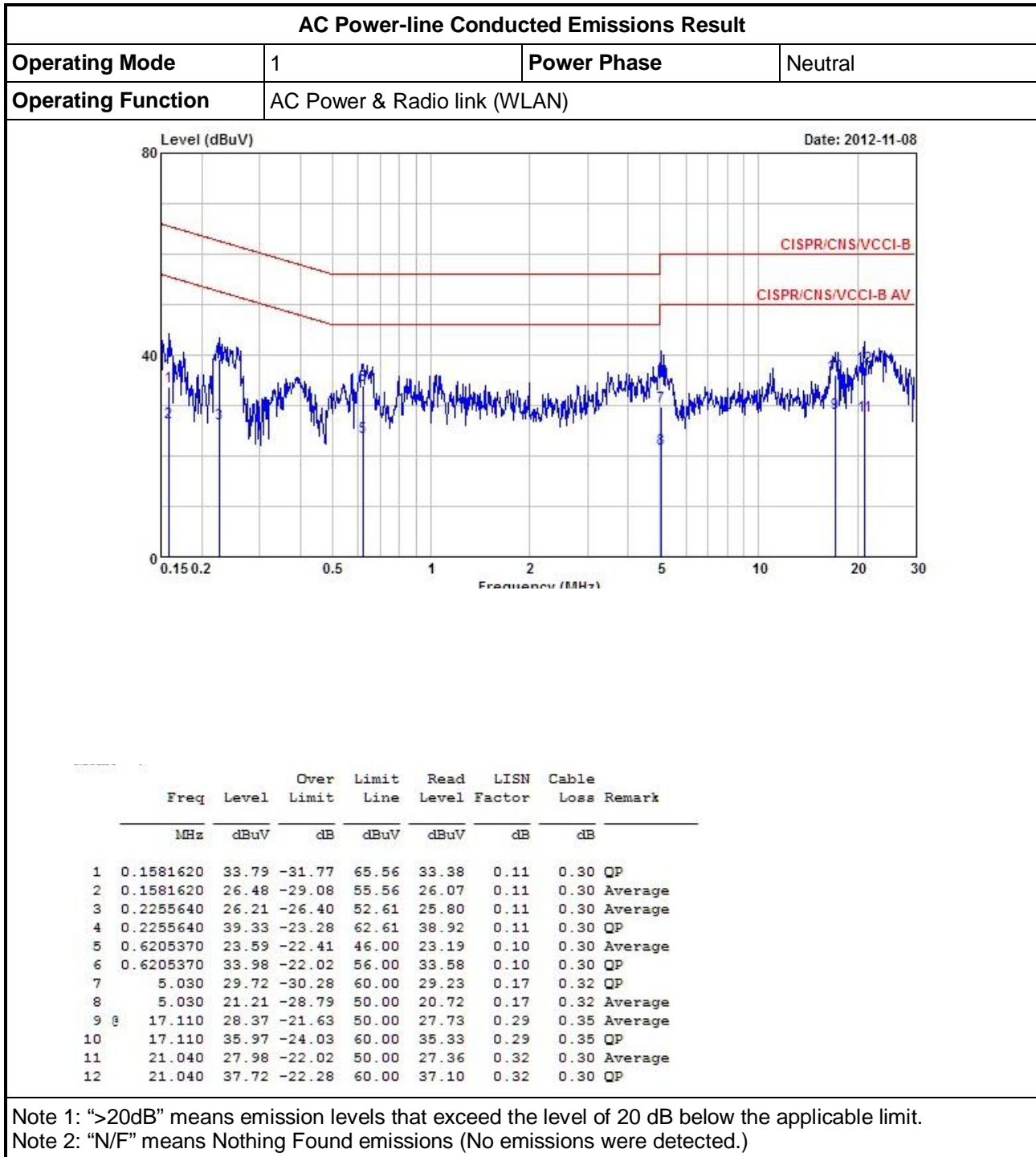
##### 3.1.3 Test Procedures

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



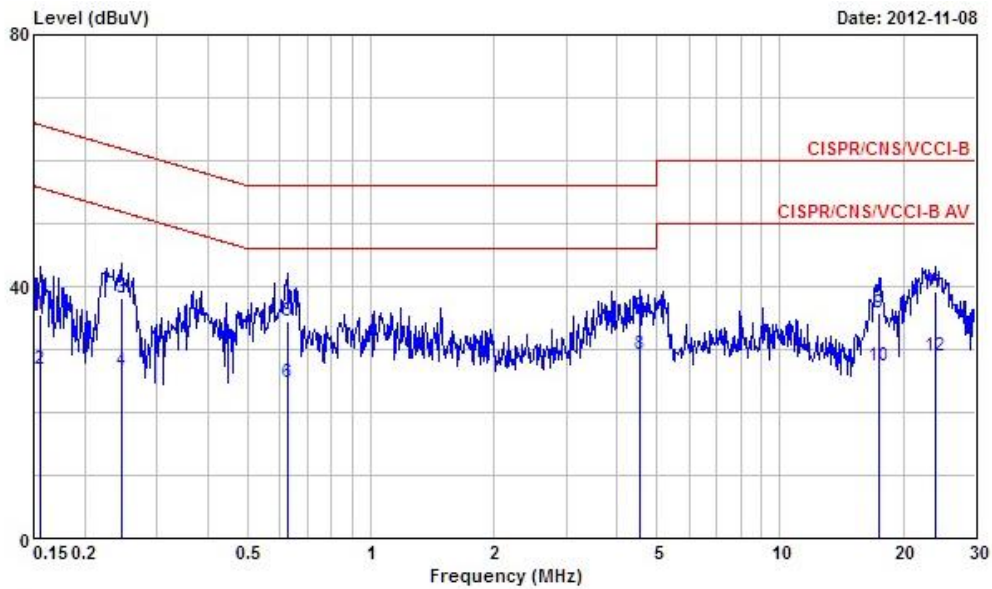
### 3.1.5 Test Result of AC Power-line Conducted Emissions





AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	AC Power & Radio link (WLAN)		



	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.1556680	35.46	-30.23	65.69	34.92	0.24	0.30	QP
2	0.1556680	26.86	-28.83	55.69	26.32	0.24	0.30	Average
3	0.2468240	38.19	-23.67	61.86	37.66	0.23	0.30	QP
4	0.2468240	26.60	-25.26	51.86	26.07	0.23	0.30	Average
5	0.6238330	34.52	-21.48	56.00	34.00	0.22	0.30	QP
6	0.6238330	24.66	-21.34	46.00	24.14	0.22	0.30	Average
7	4.550	35.37	-20.63	56.00	34.75	0.31	0.31	QP
8	4.550	29.15	-16.85	46.00	28.53	0.31	0.31	Average
9	17.380	35.90	-24.10	60.00	35.02	0.53	0.35	QP
10	17.380	27.28	-22.72	50.00	26.40	0.53	0.35	Average
11	23.890	39.09	-20.91	60.00	38.16	0.63	0.30	QP
12	23.890	28.82	-21.18	50.00	27.89	0.63	0.30	Average

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

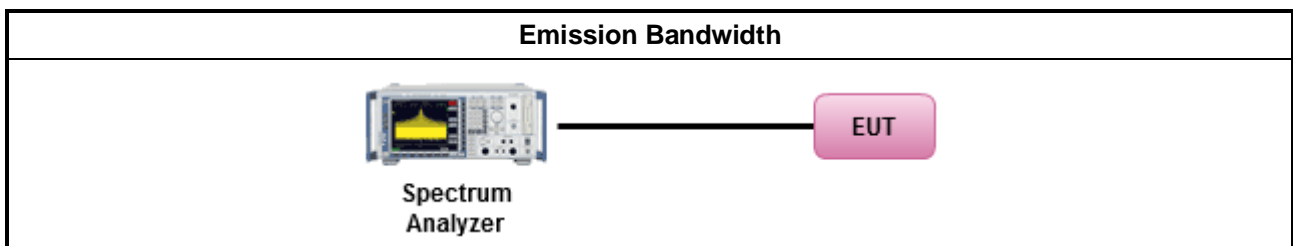
#### 3.2.2 Measuring Instruments

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, clause 7.1 Option 1 for 6 dB bandwidth measurement. <input type="checkbox"/> Refer as FCC KDB 558074, 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 checked="" type="checkbox"/> The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case. <input checked="" type="checkbox"/> The EUT supports multiple transmit chains using options given below:
<input type="checkbox"/> Option 1: Multiple transmit chains measurements need to be performed on one of the active transmit chains (antenna outputs). All measurement had be performed on transmit chains 1. <input checked="" type="checkbox"/> Option 2: Multiple transmit chains measurements need to be performed on each transmit chains individually (antenna outputs). All measurement had be performed on all transmit chains.

#### 3.2.4 Test Setup





3.2.5 Test Result of Emission Bandwidth

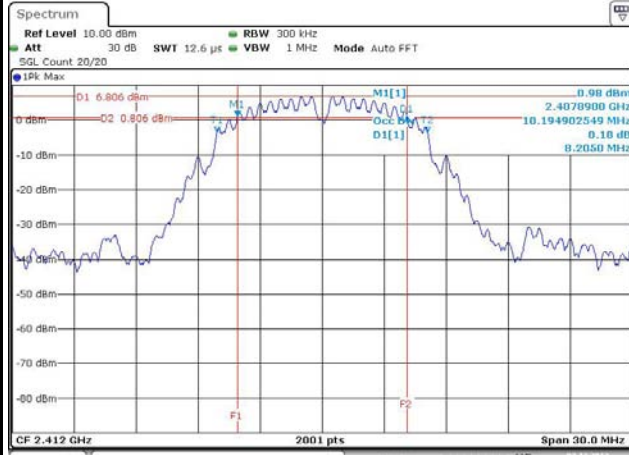
Emission Bandwidth Result										
Condition			Emission Bandwidth (MHz)							
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	99% Bandwidth				6dB Bandwidth			
			Chain-Port 1	Chain-Port 2	Chain-Port 3	Chain-Port 4	Chain-Port 1	Chain-Port 2	Chain-Port 3	Chain-Port 4
11b	1	2412	10.19	-	-	-	8.21	-	-	-
11b	1	2437	10.16	-	-	-	8.18	-	-	-
11b	1	2462	10.21	-	-	-	8.19	-	-	-
11g	1	2412	16.37	-	-	-	14.60	-	-	-
11g	1	2437	16.55	-	-	-	13.98	-	-	-
11g	1	2462	16.28	-	-	-	14.39	-	-	-
HT-20	1	2412	17.50	-	-	-	16.17	-	-	-
HT-20	1	2437	17.48	-	-	-	17.09	-	-	-
HT-20	1	2462	17.48	-	-	-	16.67	-	-	-
HT-20	2	2412	17.47	17.42	-	-	17.34	16.55	-	-
HT-20	2	2437	17.45	17.53	-	-	15.71	17.54	-	-
HT-20	2	2462	17.41	17.50	-	-	17.00	17.21	-	-
HT-40	1	2422	36.34	-	-	-	36.20	-	-	-
HT-40	1	2437	35.98	-	-	-	35.56	-	-	-
HT-40	1	2452	36.90	-	-	-	36.08	-	-	-
HT-40	2	2422	36.86	36.54	-	-	35.84	36.20	-	-
HT-40	2	2437	36.98	36.42	-	-	35.68	36.20	-	-
HT-40	2	2452	36.42	36.38	-	-	35.92	36.28	-	-
<b>Limit</b>			<b>N/A</b>				<b>≥500 kHz</b>			
<b>Result</b>			<b>Complied</b>							
Note 1: N <sub>TX</sub> = Number of Transmit Chains										





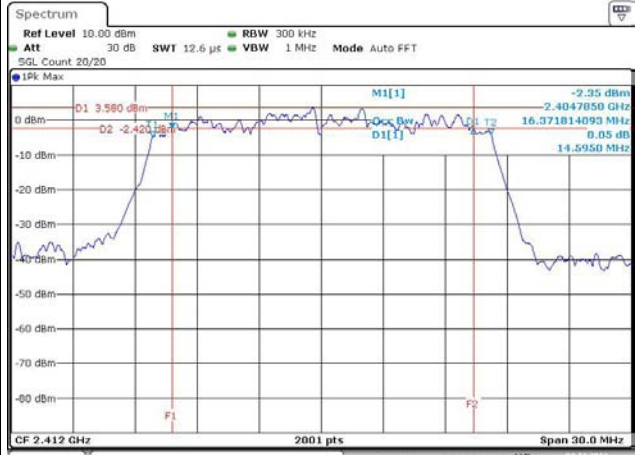
Worst Emission Bandwidth Plots

11b



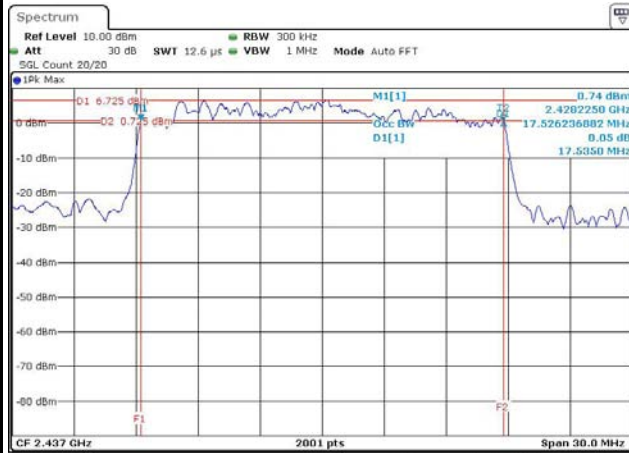
Date: 3.DEC.2012 11:42:15

11g



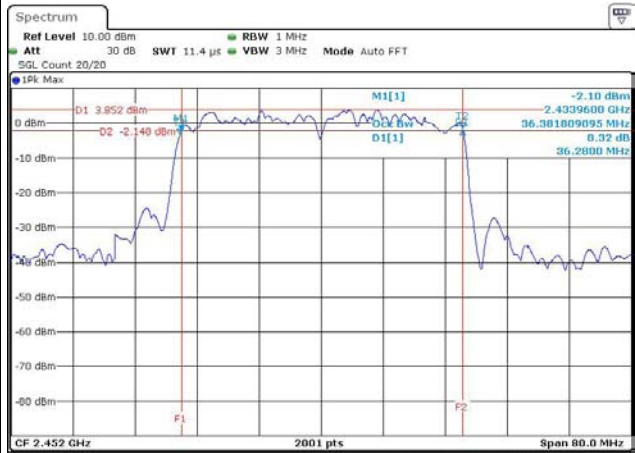
Date: 3.DEC.2012 14:10:42

HT-20



Date: 3.DEC.2012 15:43:57

HT-40



Date: 3.DEC.2012 16:12:56

### 3.3 RF Output Power

#### 3.3.1 RF Output Power Limit

RF Output Power Limit	
<b>Maximum Peak Conducted Output Power or Maximum Conducted Output Power Limit</b>	
<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 checked="" type="checkbox"/>	Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
<input type="checkbox"/>	Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
<input type="checkbox"/>	Smart antenna system (SAS):
<input type="checkbox"/>	Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
<input type="checkbox"/>	Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
<input type="checkbox"/>	Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dBm
<b>e.i.r.p. Power Limit:</b>	
<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)
<input type="checkbox"/>	Point-to-point systems (P2P): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm
<input type="checkbox"/>	Smart antenna system (SAS)
<input type="checkbox"/>	Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
<input type="checkbox"/>	Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
<input type="checkbox"/>	Aggregate power on all beams: $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])$ dBm
$P_{Out}$ = 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.	

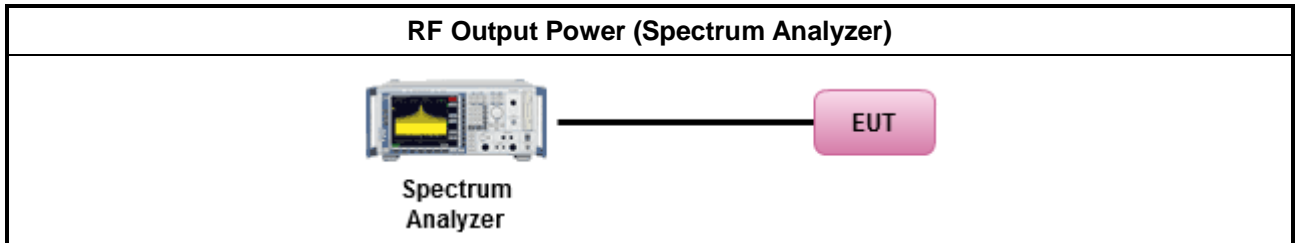
#### 3.3.2 Measuring Instruments

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 type="checkbox"/>	Refer as FCC KDB 558074, clause 8.1.1 Option 1 (RBW ≥ EBW method).
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074, clause 8.1.2 Option 2 (integrated band power method).
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 8.1.3 Option 2 (peak power meter for VBW ≥ DTS BW)
<input checked="" type="checkbox"/>	Maximum Conducted (Average) Output Power
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 8.2.1 Option 1 (spectral trace averaging).
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074, clause 8.2.2 Option 2 (slow sweep speed).
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 8.2.3 Option 3 (average power meter).
<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 checked="" type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input checked="" type="checkbox"/>	The EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
<input checked="" type="checkbox"/>	If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

### 3.3.4 Test Setup



### 3.3.5 Directional Gain for Power Measurement

Directional Gain (DG) Result					
Transmit Chains No.		1	2	-	-
Maximum G <sub>ANT</sub> (dBi)		3.19	1.66	-	-
Modulation Mode	DG (dBi)	N <sub>TX</sub>	N <sub>SS</sub>	STBC	Array Gain (dB)
11b,1-11Mbps	3.19	1	1	-	-
11g,6-54Mbps	3.19	1	1	-	-
HT-20,M0-M7	3.19	1	1	-	-
HT-20,M0-M7	2.49	2	1		
HT-20,M8-15	2.49	2	2	-	-
HT-40,M0-M7	3.19	1	1	-	-
HT-40,M0-M7	2.49	2	1	-	-
HT-40,M8-M15	2.49	2	2	-	-

Note 1: For all transmitter outputs with equal antenna gains, directional gain is to be computed as follows:  
Any transmit signals are correlated, Directional Gain = G<sub>ANT</sub> + 10 log(N<sub>TX</sub>)  
All transmit signals are completely uncorrelated, Directional Gain = G<sub>ANT</sub>

Note 2: For all transmitter outputs with unequal antenna gains, directional gain is to be computed as follows:  
Any transmit signals are correlated, Directional Gain = 10 log[(10<sup>G<sub>1</sub>/20</sup> + ... + 10<sup>G<sub>N</sub>/20</sup>)<sup>2</sup> / N<sub>TX</sub>]  
All transmit signals are completely uncorrelated, Directional Gain = 10 log[(10<sup>G<sub>1</sub>/10</sup> + ... + 10<sup>G<sub>N</sub>/10</sup>) / N<sub>TX</sub>]

Note 3: For Spatial Multiplexing, Directional Gain (DG) = G<sub>ANT</sub> + 10 log(N<sub>TX</sub>/N<sub>SS</sub>),  
where N<sub>SS</sub> = the number of independent spatial streams data.

Note 4: For CDD transmissions, directional gain is calculated as power measurements:  
Directional Gain (DG) = G<sub>ANT</sub> + Array Gain, where Array Gain is as follows:  
Array Gain = 0 dB (i.e., no array gain) for N<sub>TX</sub> ≤ 4;  
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N<sub>TX</sub>;



3.3.6 Test Result of Maximum Peak Conducted Output Power

Maximum Peak Conducted Output Power Result											
Condition			RF Output Power (dBm)								
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Chain Port 1	Chain Port 2	Chain Port 3	Chain Port 4	Sum Chain	Power Limit	DG (dBi)	EIRP Power	EIRP Limit
11b	1	2412	19.23	-	-	-	19.23	30	3.19	22.42	36
11b	1	2437	19.94	-	-	-	19.94	30	3.19	23.13	36
11b	1	2462	20.54	-	-	-	20.54	30	3.19	23.73	36
11g	1	2412	22.05	-	-	-	22.05	30	3.19	25.24	36
11g	1	2437	25.86	-	-	-	25.86	30	3.19	29.05	36
11g	1	2462	22.74	-	-	-	22.74	30	3.19	25.93	36
HT-20	1	2412	21.89	-	-	-	21.89	30	3.19	25.08	36
HT-20	1	2437	25.57	-	-	-	25.57	30	3.19	28.76	36
HT-20	1	2462	22.92	-	-	-	22.92	30	3.19	26.11	36
HT-20	2	2412	18.96	18.63	-	-	21.81	30	2.49	24.30	36
HT-20	2	2437	25.61	25.99	-	-	28.81	30	2.49	31.31	36
HT-20	2	2462	22.17	22.37	-	-	25.28	30	2.49	27.77	36
HT-40	1	2422	21.31	-	-	-	21.31	30	3.19	24.50	36
HT-40	1	2437	22.29	-	-	-	22.29	30	3.19	25.48	36
HT-40	1	2452	20.99	-	-	-	20.99	30	3.19	24.18	36
HT-40	2	2422	18.00	18.20	-	-	21.11	30	2.49	23.60	36
HT-40	2	2437	21.78	22.42	-	-	25.12	30	2.49	27.61	36
HT-40	2	2452	20.98	21.51	-	-	24.26	30	2.49	26.76	36
<b>Result</b>			<b>Complied</b>								



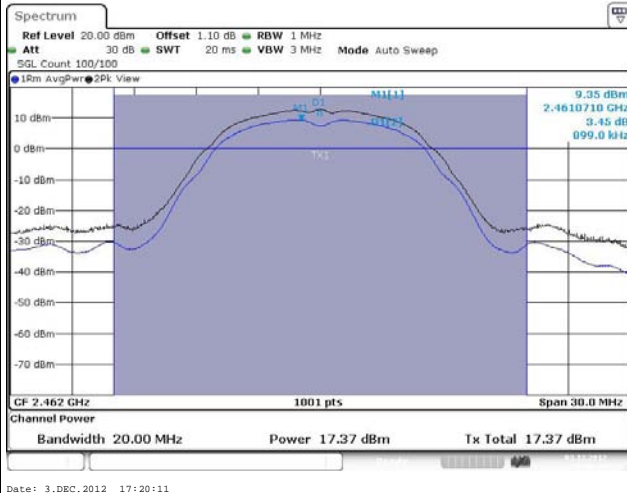
3.3.7 Test Result of Maximum Conducted Output Power

Maximum Conducted Output Power											
Condition			RF Output Power (dBm)								
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Chain Port 1	Chain Port 2	Chain Port 3	Chain Port 4	Sum Chain	Power Limit	DG (dBi)	EIRP Power	EIRP Limit
11b	1	2412	16.18	-	-	-	16.18	30	3.19	19.37	36
11b	1	2437	16.72	-	-	-	16.72	30	3.19	19.91	36
11b	1	2462	17.41	-	-	-	17.41	30	3.19	20.60	36
11g	1	2412	14.09	-	-	-	14.09	30	3.19	17.28	36
11g	1	2437	17.90	-	-	-	17.90	30	3.19	21.09	36
11g	1	2462	14.78	-	-	-	14.78	30	3.19	17.97	36
HT-20	1	2412	13.95	-	-	-	13.95	30	3.19	17.14	36
HT-20	1	2437	17.57	-	-	-	17.57	30	3.19	20.76	36
HT-20	1	2462	14.86	-	-	-	14.86	30	3.19	18.05	36
HT-20	2	2412	10.78	10.09	-	-	13.45	30	2.49	15.95	36
HT-20	2	2437	17.47	17.49	-	-	20.49	30	2.49	22.98	36
HT-20	2	2462	13.95	13.84	-	-	16.90	30	2.49	19.39	36
HT-40	1	2422	13.38	-	-	-	13.38	30	3.19	16.57	36
HT-40	1	2437	14.24	-	-	-	14.24	30	3.19	17.43	36
HT-40	1	2452	12.98	-	-	-	12.98	30	3.19	16.17	36
HT-40	2	2422	9.61	9.48	-	-	12.55	30	2.49	15.05	36
HT-40	2	2437	13.36	13.69	-	-	16.54	30	2.49	19.03	36
HT-40	2	2452	12.57	12.76	-	-	15.67	30	2.49	18.17	36
<b>Result</b>			<b>Complied</b>								



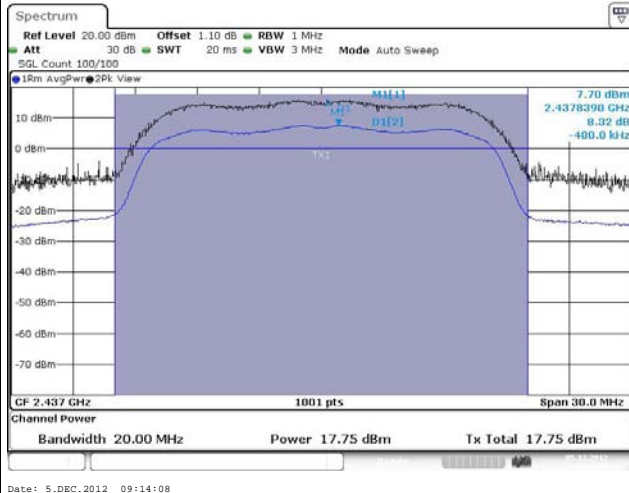
Worst RF Output Power Plots

11b [Port 1]



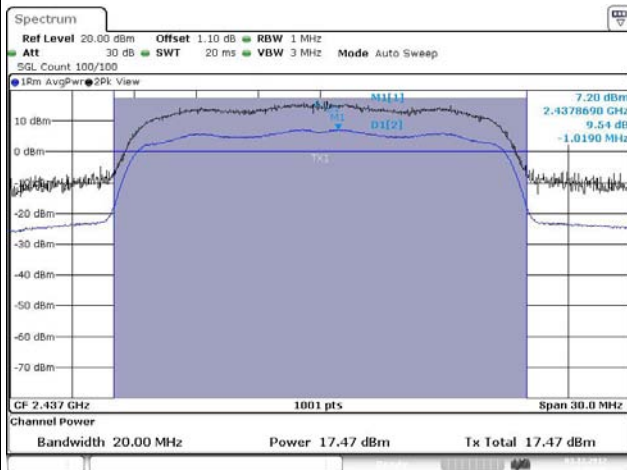
Date: 3.DEC.2012 17:20:11

11g [Port 1]



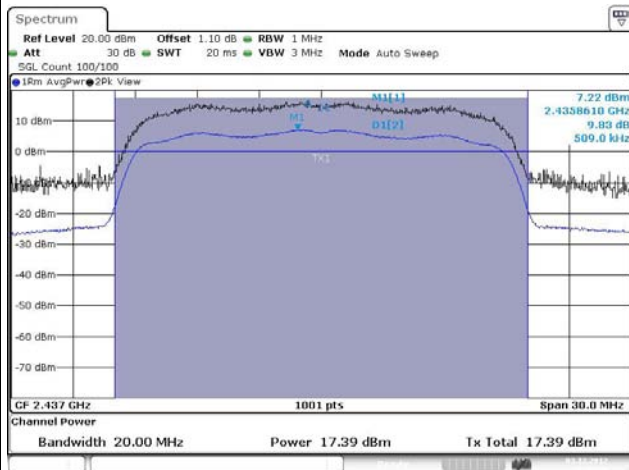
Date: 5.DEC.2012 09:14:08

HT-20 [Port 1]



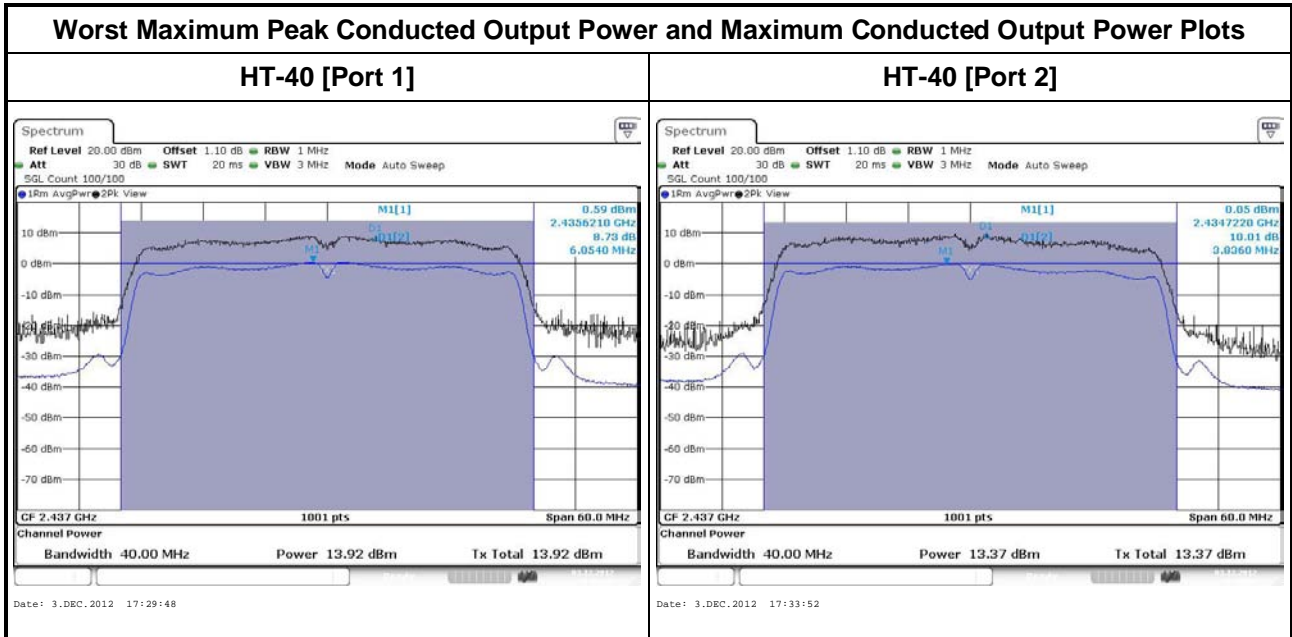
Date: 3.DEC.2012 17:25:29

HT-20 [Port 2]



Date: 3.DEC.2012 17:37:49

Note 1: RF Output Power Plots w/o Duty Factor





### 3.4 Power Spectral Density

#### 3.4.1 Power Spectral Density Limit

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

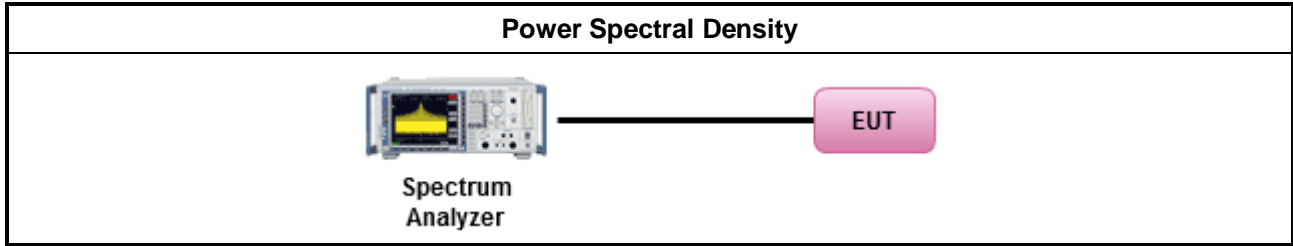
#### 3.4.2 Measuring Instruments

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, clause 9.1 Option 1 - (RBW $\geq$ 3kHz; sweep=auto, detector=peak).
<input type="checkbox"/> Refer as FCC KDB 558074, clause 9.2 Option 2 - (RBW $\geq$ 3kHz; sweep=auto, average=100).
<input type="checkbox"/> Refer as FCC KDB 558074, clause 9.3 Option 3 - (RBW $\geq$ 3kHz; slow sweep speed).
<input type="checkbox"/> Refer as FCC KDB 558074, clause 9.4 Alternative 1 (average PSD; Add 10log (1/duty cycle).
<input checked="" type="checkbox"/> RBW>3kHz, add the bandwidth correction factor (BWCF) adjusting in PSD per 3kHz.
<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 checked="" type="checkbox"/> The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input checked="" type="checkbox"/> The EUT supports multiple transmit chains using options given below:
<input checked="" type="checkbox"/> Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the N <sub>TX</sub> output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.
<input type="checkbox"/> Option 2: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.

3.4.4 Test Setup



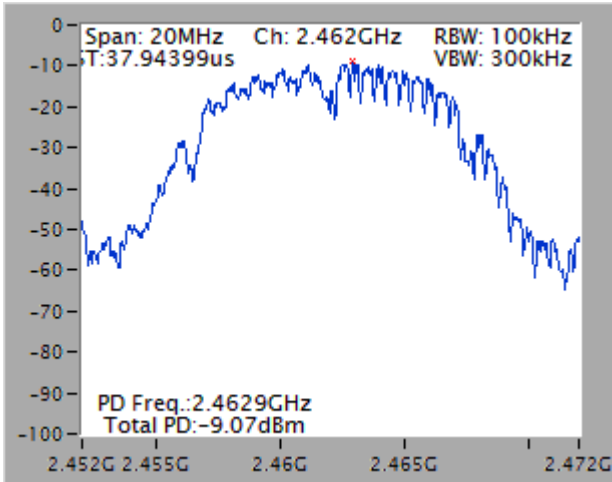
3.4.5 Test Result of Power Spectral Density

Power Spectral Density Result								
Condition			Power Spectral Density (dBm/3kHz)					
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	-	-	-	-	Sum Chain	Power Limit
11b	1	2412	-	-	-	-	-10.48	8
11b	1	2437	-	-	-	-	-9.49	8
11b	1	2462	-	-	-	-	-9.07	8
11g	1	2412	-	-	-	-	-15.39	8
11g	1	2437	-	-	-	-	-10.69	8
11g	1	2462	-	-	-	-	-14.44	8
HT-20	1	2412	-	-	-	-	-15.09	8
HT-20	1	2437	-	-	-	-	-11.99	8
HT-20	1	2462	-	-	-	-	-14.51	8
HT-20	2	2412	-	-	-	-	-16.69	8
HT-20	2	2437	-	-	-	-	-7.08	8
HT-20	2	2462	-	-	-	-	-12.83	8
HT-40	1	2422	-	-	-	-	-19.44	8
HT-40	1	2437	-	-	-	-	-14.39	8
HT-40	1	2452	-	-	-	-	-19.57	8
HT-40	2	2422	-	-	-	-	-19.80	8
HT-40	2	2437	-	-	-	-	-15.42	8
HT-40	2	2452	-	-	-	-	-16.88	8
<b>Result</b>			<b>Complied</b>					
Note 1: PSD [dBm/3kHz] = sum each transmit chains by bin-to-bin PSD [dBm/100kHz] + BWFC [-15.2 dB]								

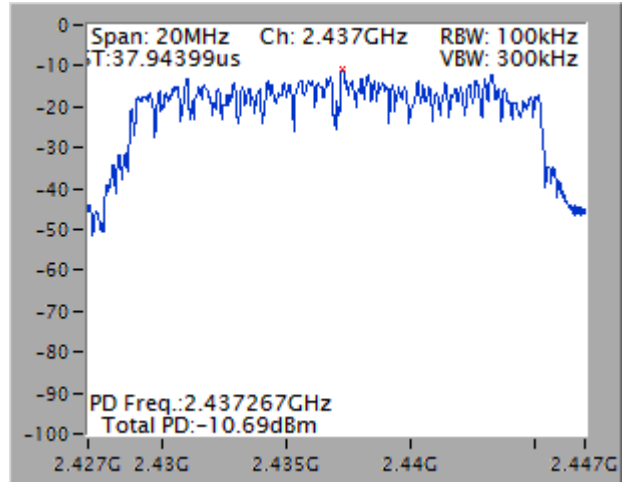


Worst Power Spectral Density Plots

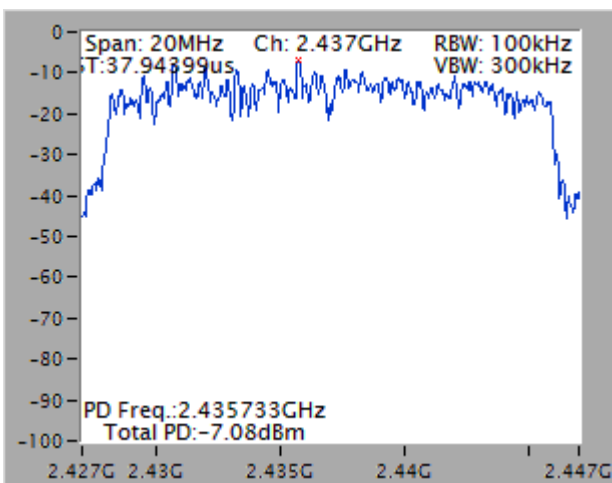
11b [Sum All Chains]



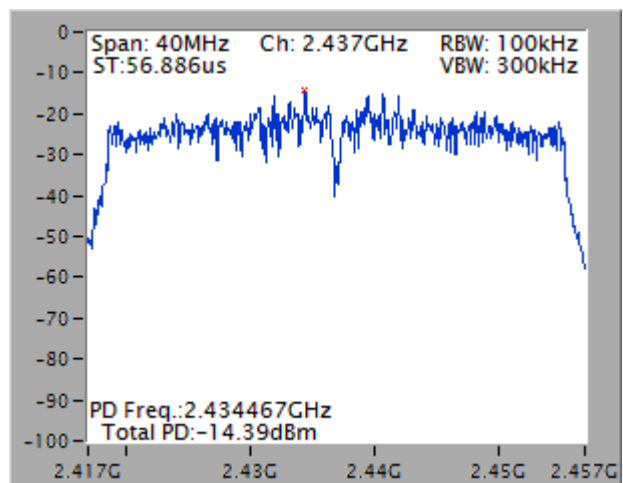
11g [Sum All Chains]



HT-20 [Sum All Chains]

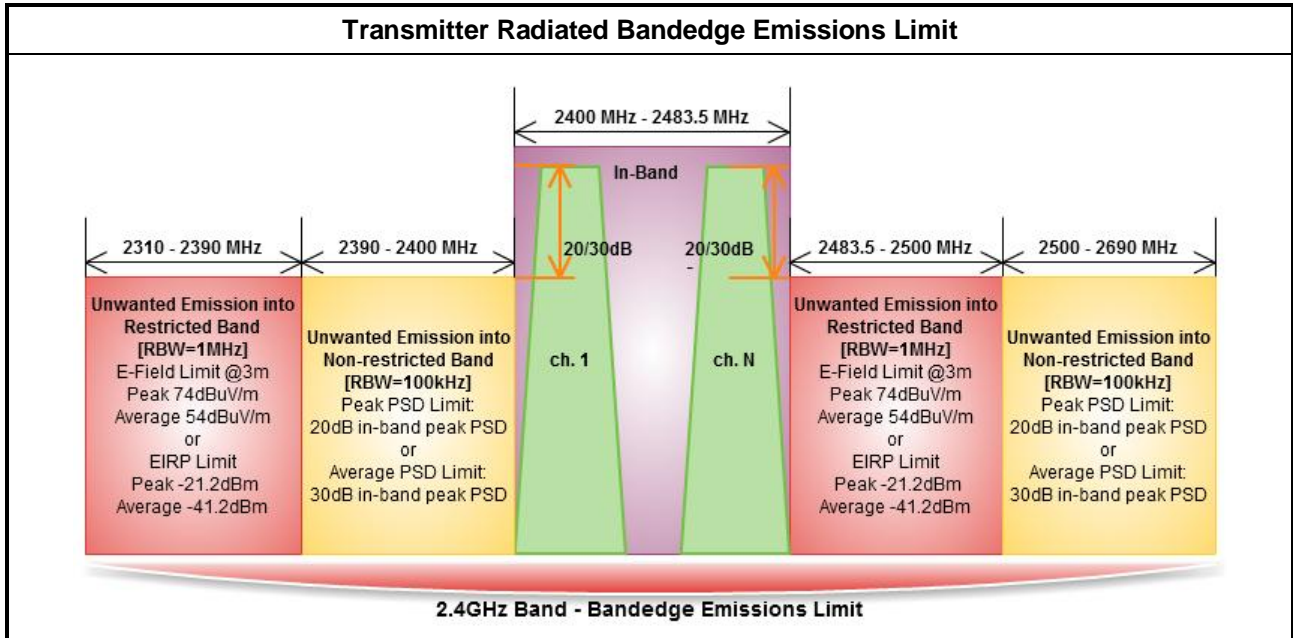


HT-40 [Sum All Chains]



### 3.5 Transmitter Radiated Bandedge Emissions

#### 3.5.1 Transmitter Radiated Bandedge Emissions Limit



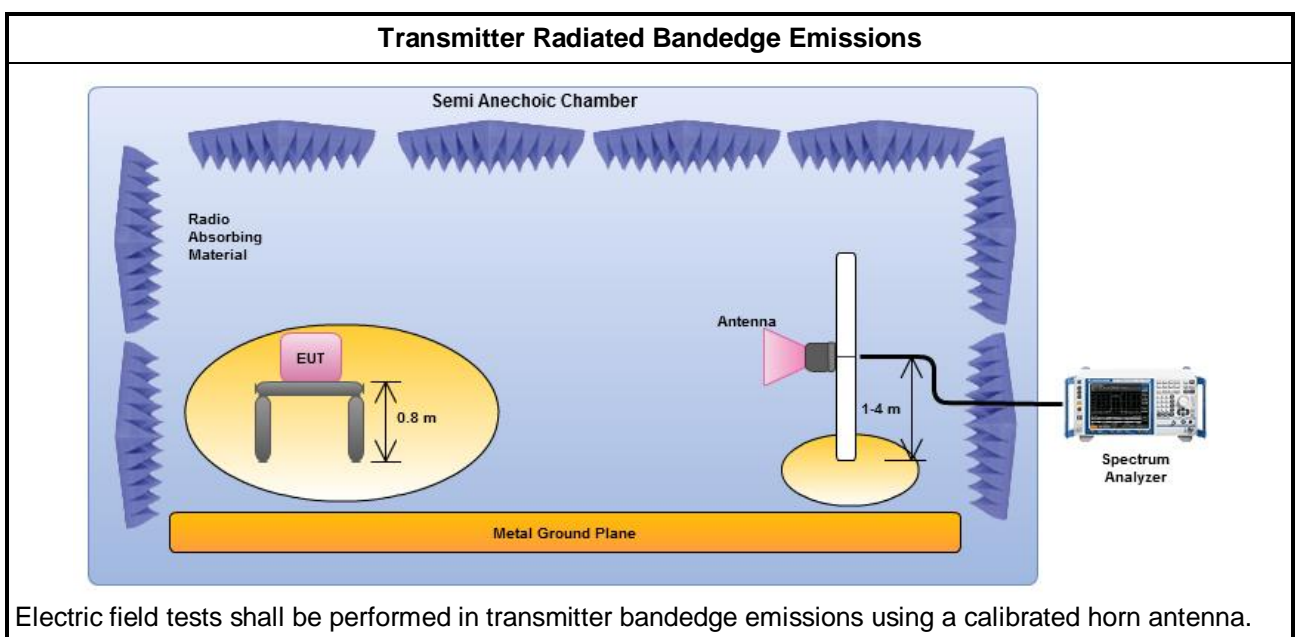
### 3.5.2 Measuring Instruments

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

### 3.5.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.2.2 bandedge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
<input checked="" type="checkbox"/>	For the transmitter unwanted emissions shall be measured using following options below:
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074, clause 10.1 for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074, clause 10.2 for unwanted emissions into restricted bands.
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074, clause 10.2.3.3 and 8.2.1 Option 1 (spectral trace averaging)
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 10.2.3.3 and 8.2.1 Option 2 (slow sweep speed).
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW).
<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 FCC KDB 558074, clause 10.2.3.2 and 8.1.1 measurement procedure peak limit.
<input checked="" type="checkbox"/>	For the transmitter bandedge emissions shall be measured using following options below:
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 10.2.5.2 for narrower resolution bandwidth using the band power and summing the spectral levels (i.e., 100 kHz or 1 MHz).
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.2 for band-edge testing.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.3 for marker-delta method for band-edge measurements.
<input checked="" type="checkbox"/>	For radiated measurement, refer as FCC KDB 558074, clause 10.2.1.
<input checked="" type="checkbox"/>	For conducted measurement, refer as FCC KDB 558074, clause 10.2.2.

### 3.5.4 Test Setup





### 3.5.5 Test Result of Transmitter Radiated Bandedge Emissions

Transmitter Radiated Bandedge Emissions Result								
Modulation	11b			N <sub>TX</sub>	1			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol. note 1
2390-2400	2412	113.01	2398.48	71.87	41.14	20	PK	H
2500-2690	2462	112.42	2550.30	63.38	49.04	20	PK	H
Low Bandedge				Up Bandedge				
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)								

Transmitter Radiated Bandedge Emissions Result								
Modulation	11b			N <sub>TX</sub>	1			
Restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/1MHz)	RBE Freq. (MHz)	Measure Distance (m)	Out-Band Level (dBuV/m)	Limit (dBuV/m)	Level Type	Pol. note 1
2310-2390	2412	119.63	2389.63	3	65.66	74	PK	H
2310-2390	2412	109.58	2390.00	3	51.71	54	AV	H
2483.5-2500	2462	118.86	2483.80	3	67.05	74	PK	H
2483.5-2500	2462	108.76	2483.50	3	52.82	54	AV	H
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical).								



Transmitter Radiated Bandedge Emissions Result								
Modulation	11g			N <sub>TX</sub>	1			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol. note 1
2390-2400	2412	102.47	2399.94	64.30	38.17	20	PK	H
2500-2690	2462	97.67	2506.20	63.67	34.00	20	PK	H
Low Bandedge				Up Bandedge				
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)								

Transmitter Radiated Bandedge Emissions Result								
Modulation	11g			N <sub>TX</sub>	1			
Restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/1MHz)	RBE Freq. (MHz)	Measure Distance (m)	Out-Band Level (dBuV/m)	Limit (dBuV/m)	Level Type	Pol. note 1
2310-2390	2412	111.72	2389.63	3	70.57	74	PK	H
2310-2390	2412	99.64	2389.07	3	52.81	54	AV	H
2483.5-2500	2462	106.90	2486.30	3	67.27	74	PK	H
2483.5-2500	2462	92.65	2489.10	3	52.95	54	AV	H
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical).								



Transmitter Radiated Bandedge Emissions Result								
Modulation	HT-20			N <sub>TX</sub>	1			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol. note 1
2390-2400	2412	102.62	2399.82	64.57	38.05	20	PK	H
2500-2690	2462	99.20	2523.40	63.62	35.58	20	PK	H
<b>Low Bandedge</b>				<b>Up Bandedge</b>				
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)								

Transmitter Radiated Bandedge Emissions Result								
Modulation	HT-20			N <sub>TX</sub>	1			
Restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/1MHz)	RBE Freq. (MHz)	Measure Distance (m)	Out-Band Level (dBuV/m)	Limit (dBuV/m)	Level Type	Pol. note 1
2310-2390	2412	110.88	2389.52	3	67.29	74	PK	H
2310-2390	2412	96.95	2390.00	3	53.00	54	AV	H
2483.5-2500	2462	107.39	2490.70	3	66.92	74	PK	H
2483.5-2500	2462	93.64	2489.10	3	52.98	54	AV	H
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical).								





Transmitter Radiated Bandedge Emissions Result								
Modulation	HT-20			N <sub>TX</sub>	2			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol. note 1
2390-2400	2412	104.83	2388.18	63.04	41.79	20	PK	H
2500-2690	2462	101.46	2538.70	63.69	37.77	20	PK	H
<b>Low Bandedge</b>				<b>Up Bandedge</b>				
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)								

Transmitter Radiated Bandedge Emissions Result								
Modulation	HT-20			N <sub>TX</sub>	2			
Restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/1MHz)	RBE Freq. (MHz)	Measure Distance (m)	Out-Band Level (dBuV/m)	Limit (dBuV/m)	Level Type	Pol. note 1
2310-2390	2412	111.42	2385.49	3	66.92	74	PK	H
2310-2390	2412	94.73	2390.00	3	52.88	54	AV	H
2483.5-2500	2462	108.44	2487.90	3	65.99	74	PK	H
2483.5-2500	2462	92.55	2489.10	3	52.29	54	AV	H
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical).								



Transmitter Radiated Bandedge Emissions Result								
Modulation	HT-40			N <sub>TX</sub>	1			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol. note 1
2390-2400	2422	98.89	2386.82	62.91	35.98	20	PK	H
2500-2690	2452	97.78	2509.52	63.78	34.00	20	PK	H
<b>Low Bandedge</b>				<b>Up Bandedge</b>				
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)								

Transmitter Radiated Bandedge Emissions Result								
Modulation	HT-40			N <sub>TX</sub>	2			
Restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/1MHz)	RBE Freq. (MHz)	Measure Distance (m)	Out-Band Level (dBuV/m)	Limit (dBuV/m)	Level Type	Pol. note 1
2310-2390	2422	106.52	2389.60	3	66.73	74	PK	H
2310-2390	2422	91.59	2390.00	3	52.92	54	AV	H
2483.5-2500	2452	105.51	2489.00	3	64.77	74	PK	H
2483.5-2500	2452	92.99	2498.48	3	52.03	54	AV	H
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical).								



Transmitter Radiated Bandedge Emissions Result								
Modulation	HT-40			N <sub>TX</sub>	2			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol. note 1
2390-2400	2422	102.12	2399.50	70.63	31.49	20	PK	H
2500-2690	2452	99.98	2503.40	64.15	35.83	20	PK	H
<b>Low Bandedge</b>				<b>Up Bandedge</b>				
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)								

Transmitter Radiated Bandedge Emissions Result								
Modulation	HT-40			N <sub>TX</sub>	2			
Restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/1MHz)	RBE Freq. (MHz)	Measure Distance (m)	Out-Band Level (dBuV/m)	Limit (dBuV/m)	Level Type	Pol. note 1
2310-2390	2422	107.34	2376.26	3	67.58	74	PK	H
2310-2390	2422	87.63	2375.87	3	53.00	54	AV	H
2483.5-2500	2452	105.38	2500.04	3	68.28	74	PK	H
2483.5-2500	2452	86.46	2499.08	3	52.58	54	AV	H
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical).								



### 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.

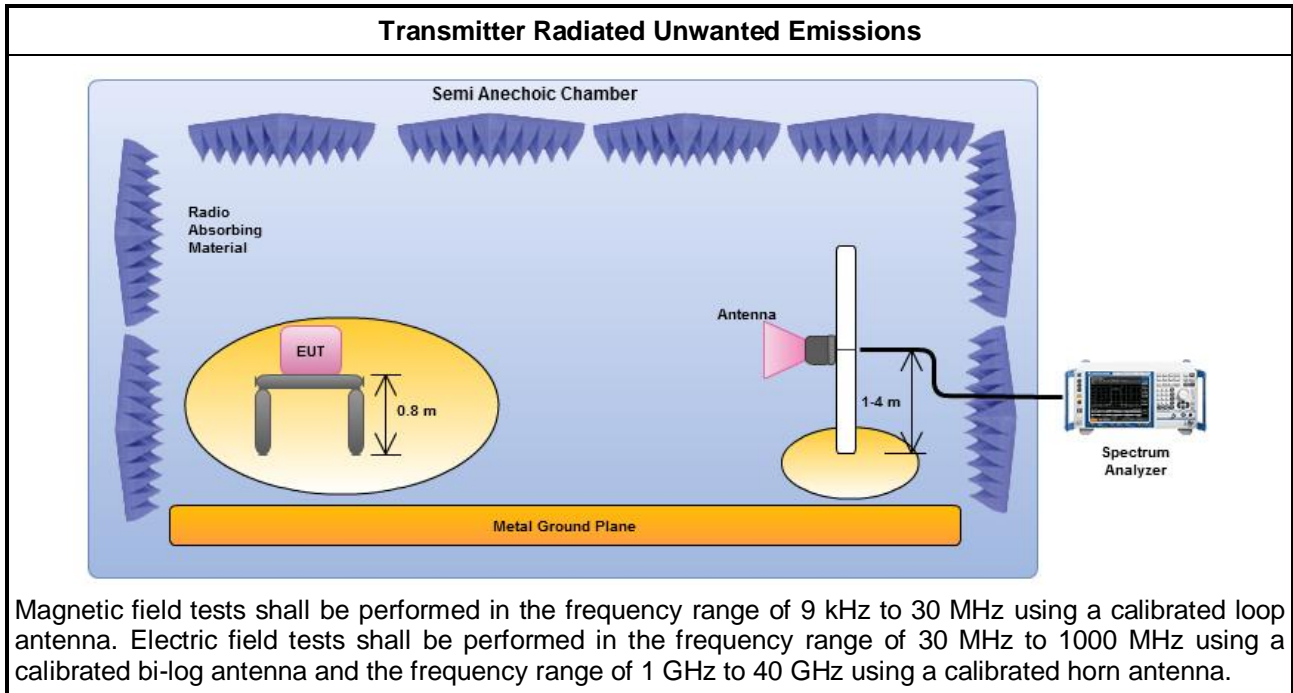
#### 3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

Test Method	
<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"/>	Measurements in the frequency range 10 GHz - 18GHz are typically made at a closer distance 1m, because the instrumentation noise floor is typically close to the radiated emission limit.
<input checked="" type="checkbox"/>	Measurements in the frequency range above 18 GHz - 25GHz are typically made at a closer distance 0.5m, because the instrumentation noise floor is typically close to the radiated emission limit.
<input checked="" type="checkbox"/>	The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].
<input checked="" type="checkbox"/>	For the transmitter unwanted emissions shall be measured using following options below:
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074, clause 10.1 for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074, clause 10.2 for unwanted emissions into restricted bands.
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074, clause 10.2.3.3 and 8.2.1 Option 1 (spectral trace averaging)
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 10.2.3.3 and 8.2.1 Option 2 (slow sweep speed).
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW) – Duty cycle $\geq$ 98%.
<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 FCC KDB 558074, clause 10.2.3.2 and 8.1.1 measurement procedure peak limit.
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 10.2.3.1 measurement procedure Quasi-Peak limit.
<input checked="" type="checkbox"/>	For radiated measurement, refer as FCC KDB 558074, clause 10.2.1.
<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.
<input checked="" type="checkbox"/>	For conducted and cabinet radiation measurement, refer as FCC KDB 558074, clause 10.2.2.
<input checked="" type="checkbox"/>	For conducted unwanted emissions into non-restricted bands (relative emission limits). Devices with multiple transmit chains: Refer as FCC KDB 662911, when testing out-of-band and spurious emissions against relative emission limits, tests may be performed on each output individually without summing or adding 10 log(N) if the measurements are made relative to the in-band emissions on the individual outputs.
<input checked="" type="checkbox"/>	For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB

### 3.6.4 Test Setup



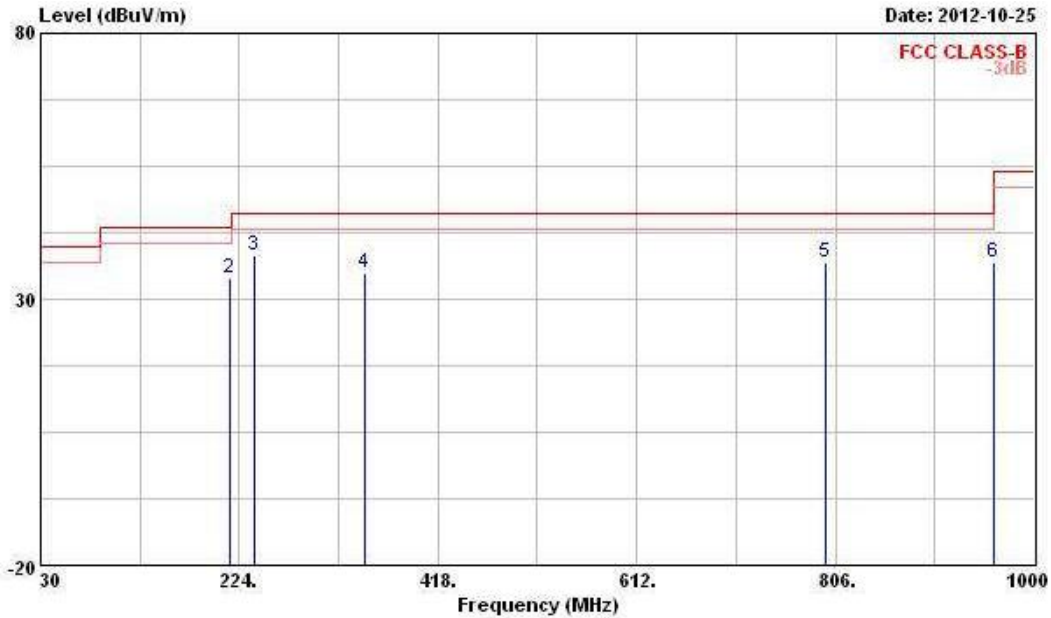
### 3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

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)			
Operating Mode	1	Polarization	V
Operating Function	AC Power & Radio link (WLAN)		



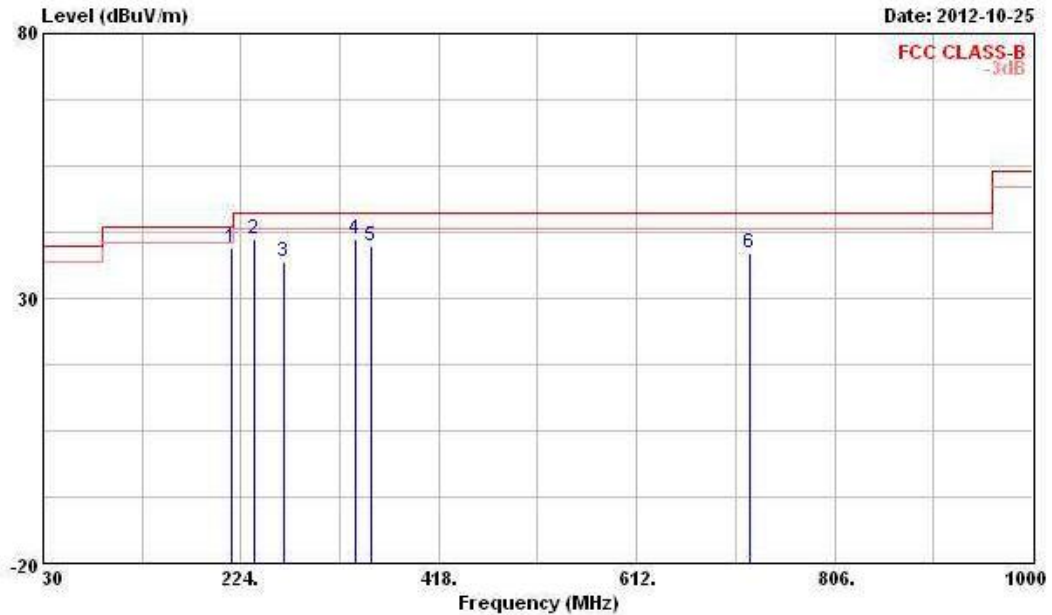
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	30.000	32.57	-7.43	40.00	43.41	16.22	0.89	27.95	QP	---	---
2	214.300	34.07	-9.43	43.50	47.08	11.83	2.53	27.37	Peak	---	---
3	238.550	38.24	-7.76	46.00	50.24	12.62	2.69	27.31	Peak	---	---
4	347.190	34.94	-11.06	46.00	44.83	14.43	3.17	27.49	Peak	---	---
5	796.300	36.81	-9.19	46.00	39.67	20.21	4.88	27.95	Peak	---	---
6	960.230	36.80	-17.20	54.00	37.09	21.52	5.56	27.37	Peak	---	---

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





Radiated Emissions (Below 1GHz)			
Operating Mode	1	Polarization	H
Operating Function	AC Power & Radio link (WLAN)		



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	@ 214.300	39.68	-3.82	43.50	52.69	11.83	2.53	27.37	Peak	---	---
2	@ 237.580	41.25	-4.75	46.00	53.29	12.59	2.69	27.32	QP	---	---
3	@ 265.710	37.04	-8.96	46.00	48.23	13.22	2.84	27.25	Peak	---	---
4	@ 335.550	41.15	-4.85	46.00	51.18	14.26	3.12	27.41	Peak	---	---
5	@ 351.070	39.71	-6.29	46.00	49.56	14.49	3.18	27.52	Peak	---	---
6	@ 722.580	38.53	-7.47	46.00	42.94	19.17	4.62	28.20	QP	---	---

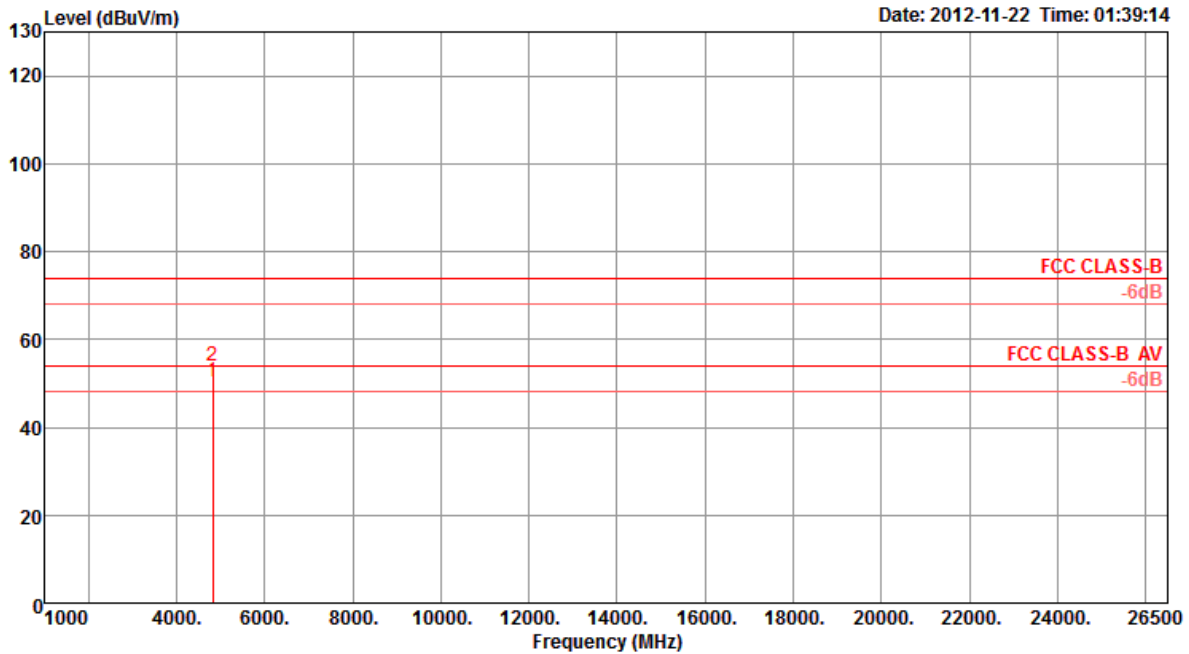
Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)





3.6.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11b

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	Test Freq. (FX)	F1
N <sub>TX</sub>	1	Polarization	V



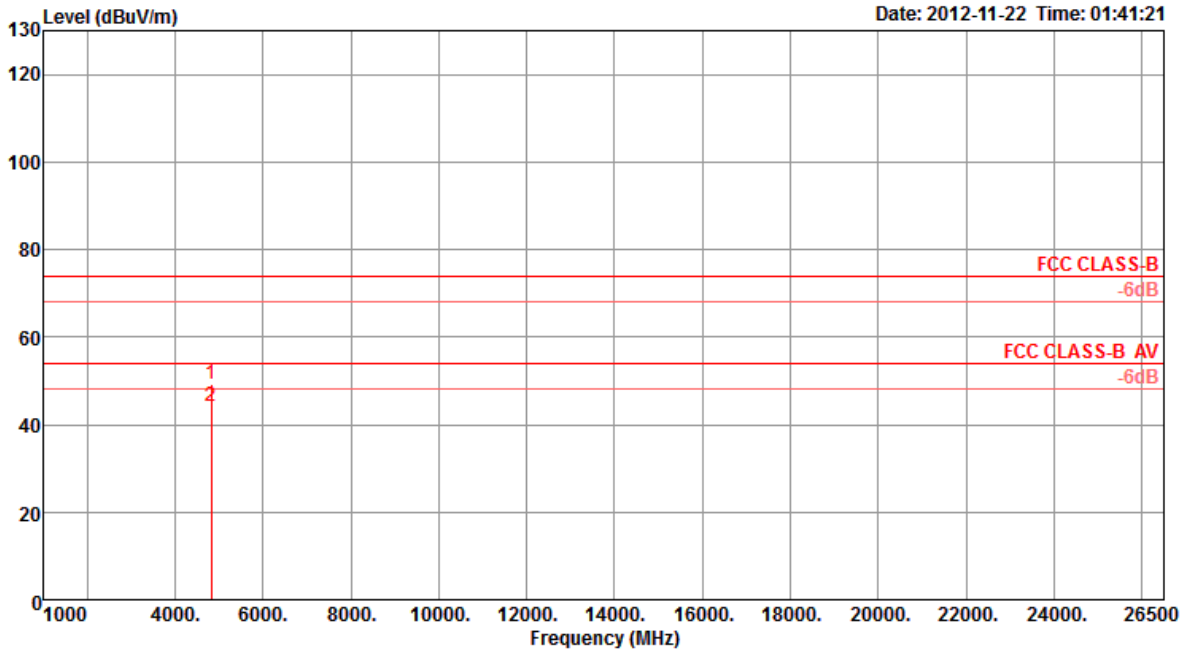
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 a	4823.96	50.35	54.00	-3.65	48.27	4.21	34.69	32.56	Average	214	100	VERTICAL
2 p	4824.01	53.81	74.00	-20.19	51.73	4.21	34.69	32.56	Peak	214	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11b	Test Freq. (FX)	F1
N <sub>TX</sub>	1	Polarization	H



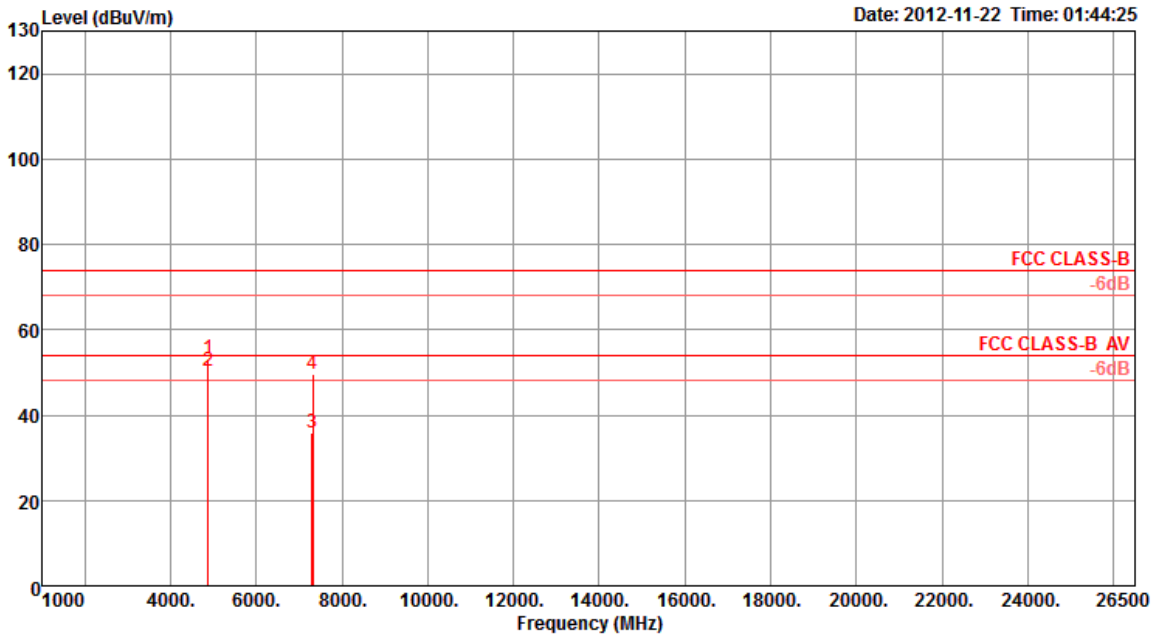
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 p	4823.96	49.30	74.00	-24.70	47.22	4.21	34.69	32.56	Peak	52	100	HORIZONTAL
2 a	4823.98	44.02	54.00	-9.98	41.94	4.21	34.69	32.56	Average	52	100	HORIZONTAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11b	Test Freq. (FX)	F2
N <sub>TX</sub>	1	Polarization	V



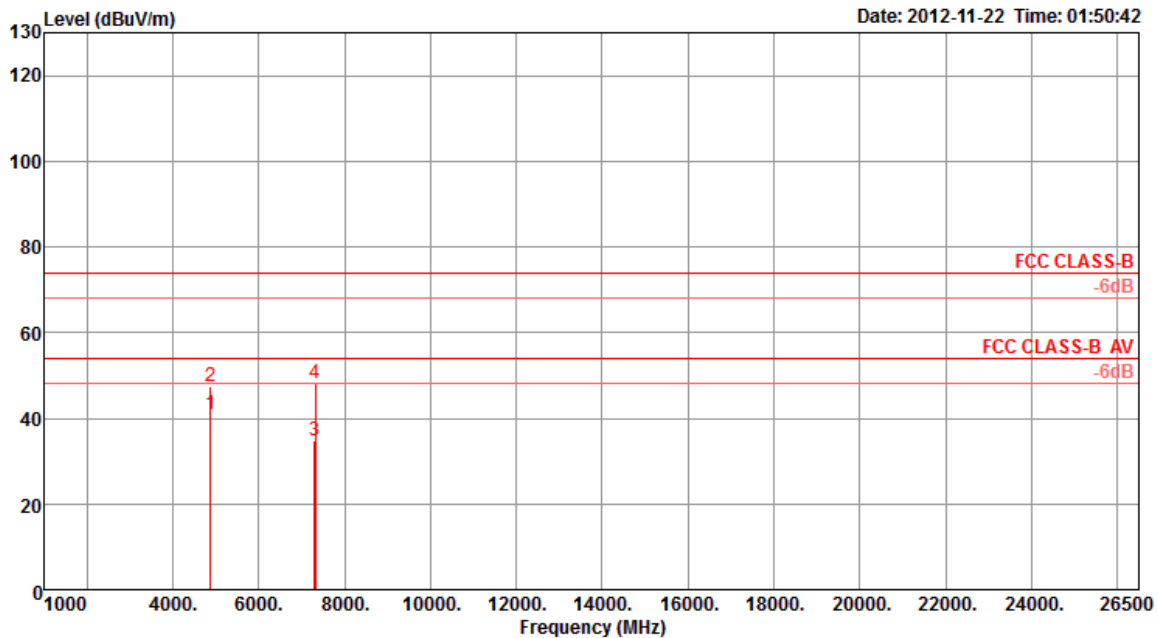
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 p	4873.98	53.30	74.00	-20.70	51.09	4.22	34.67	32.66	Peak	153	100	VERTICAL
2 a	4873.98	50.19	54.00	-3.81	47.98	4.22	34.67	32.66	Average	153	100	VERTICAL
3	7311.29	35.76	54.00	-18.24	28.39	5.34	34.94	36.97	Average	160	100	VERTICAL
4	7311.91	49.49	74.00	-24.51	42.12	5.34	34.94	36.97	Peak	160	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11b	Test Freq. (FX)	F2
N <sub>TX</sub>	1	Polarization	H



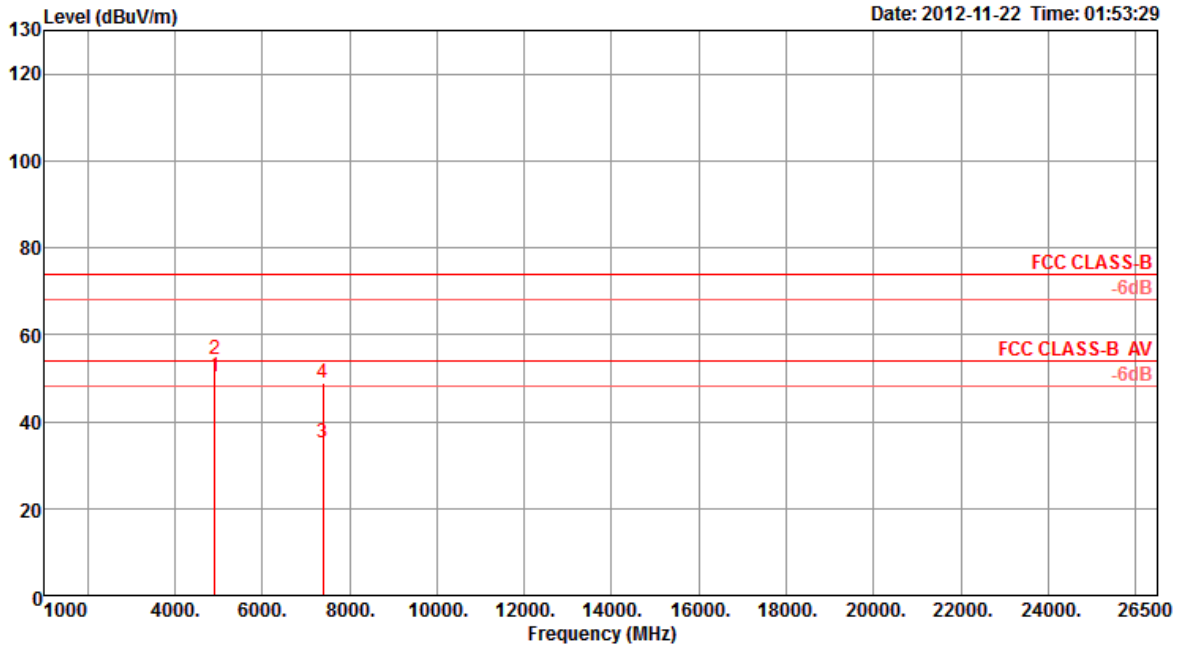
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 a	4873.96	40.84	54.00	-13.16	38.63	4.22	34.67	32.66	Average	284	100	HORIZONTAL
2	4873.98	47.49	74.00	-26.51	45.28	4.22	34.67	32.66	Peak	284	100	HORIZONTAL
3	7310.86	34.66	54.00	-19.34	27.28	5.34	34.93	36.97	Average	287	100	HORIZONTAL
4 p	7313.20	48.11	74.00	-25.89	40.74	5.34	34.94	36.97	Peak	287	100	HORIZONTAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11b	Test Freq. (FX)	F3
N <sub>TX</sub>	1	Polarization	V



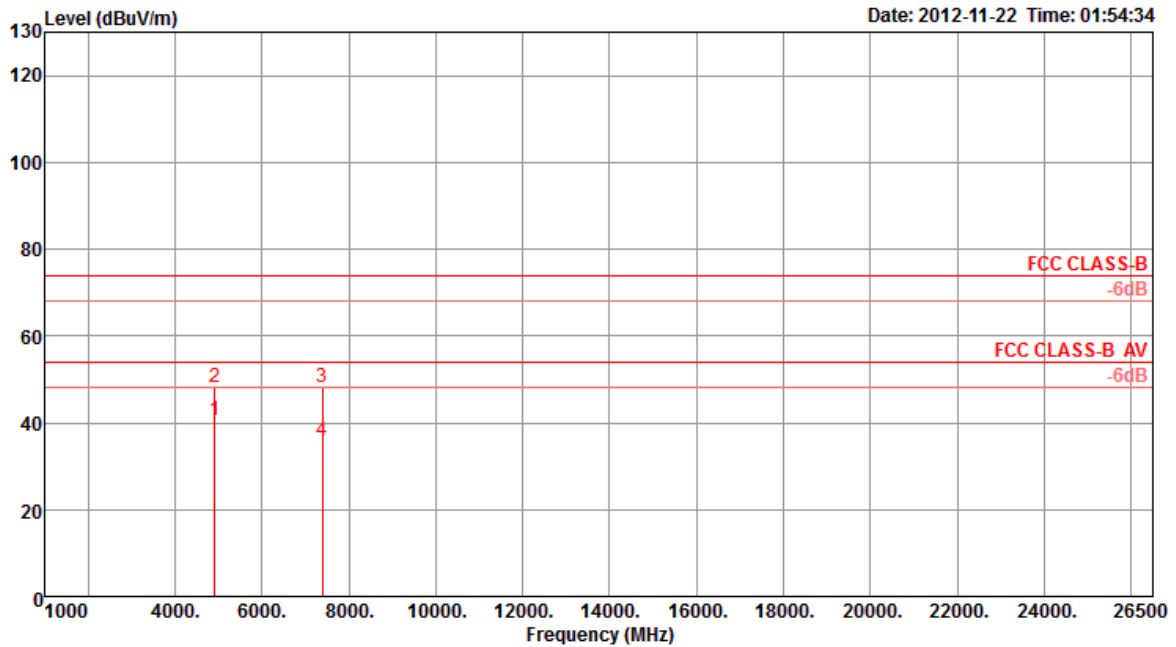
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 a	4923.93	50.49	54.00	-3.51	48.15	4.23	34.65	32.76	Average	75	102	VERTICAL
2 p	4924.04	54.19	74.00	-19.81	51.85	4.23	34.65	32.76	Peak	75	102	VERTICAL
3	7384.48	35.00	54.00	-19.00	27.52	5.36	34.96	37.08	Average	126	100	VERTICAL
4	7384.77	49.04	74.00	-24.96	41.56	5.36	34.96	37.08	Peak	126	100	VERTICAL

- 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)
- Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11b	Test Freq. (FX)	F3
N <sub>TX</sub>	1	Polarization	H



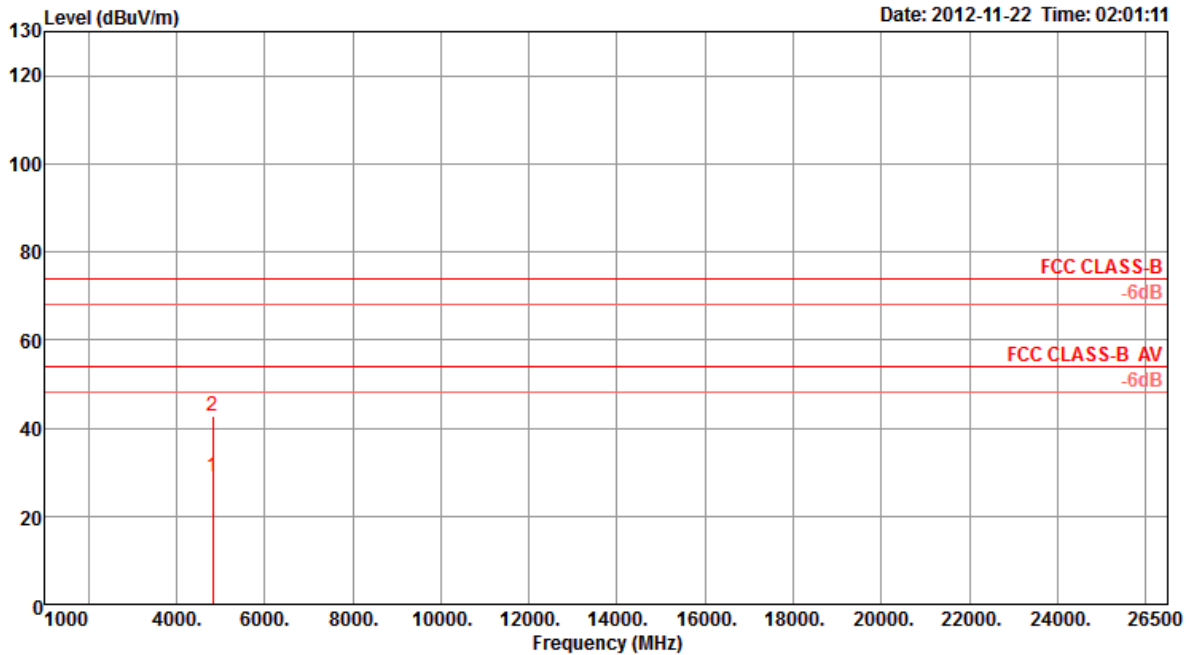
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 a	4923.96	40.70	54.00	-13.30	38.36	4.23	34.65	32.76	Average	322	100	HORIZONTAL
2	4924.00	48.13	74.00	-25.87	45.79	4.23	34.65	32.76	Peak	322	100	HORIZONTAL
3 p	7386.18	48.30	74.00	-25.70	40.82	5.36	34.96	37.08	Peak	79	100	HORIZONTAL
4	7386.73	36.00	54.00	-18.00	28.52	5.36	34.96	37.08	Average	79	100	HORIZONTAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



3.6.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11g

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	Test Freq. (FX)	F1
N <sub>TX</sub>	1	Polarization	V



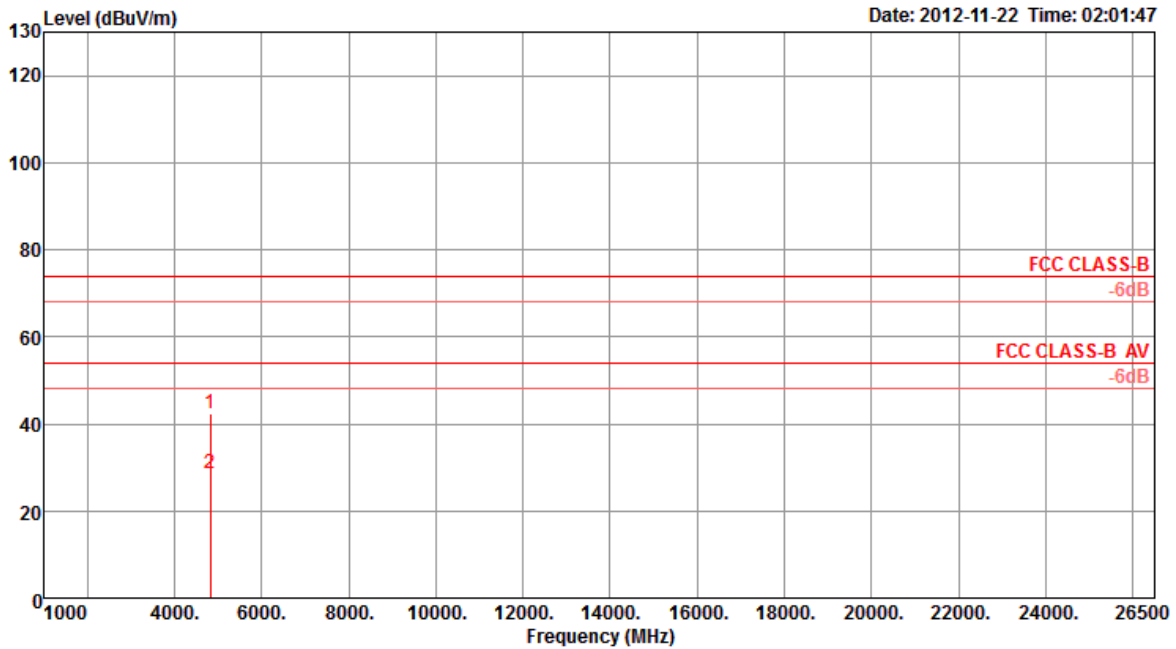
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 a	4823.87	29.01	54.00	-24.99	26.93	4.21	34.69	32.56	Average	42	100	VERTICAL
2 p	4824.93	42.62	74.00	-31.38	40.54	4.21	34.69	32.56	Peak	42	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11g	Test Freq. (FX)	F1
N <sub>TX</sub>	1	Polarization	H



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 p	4822.12	42.36	74.00	-31.64	40.28	4.21	34.69	32.56	Peak	119	100	HORIZONTAL
2 a	4826.12	28.73	54.00	-25.27	26.65	4.21	34.69	32.56	Average	119	100	HORIZONTAL

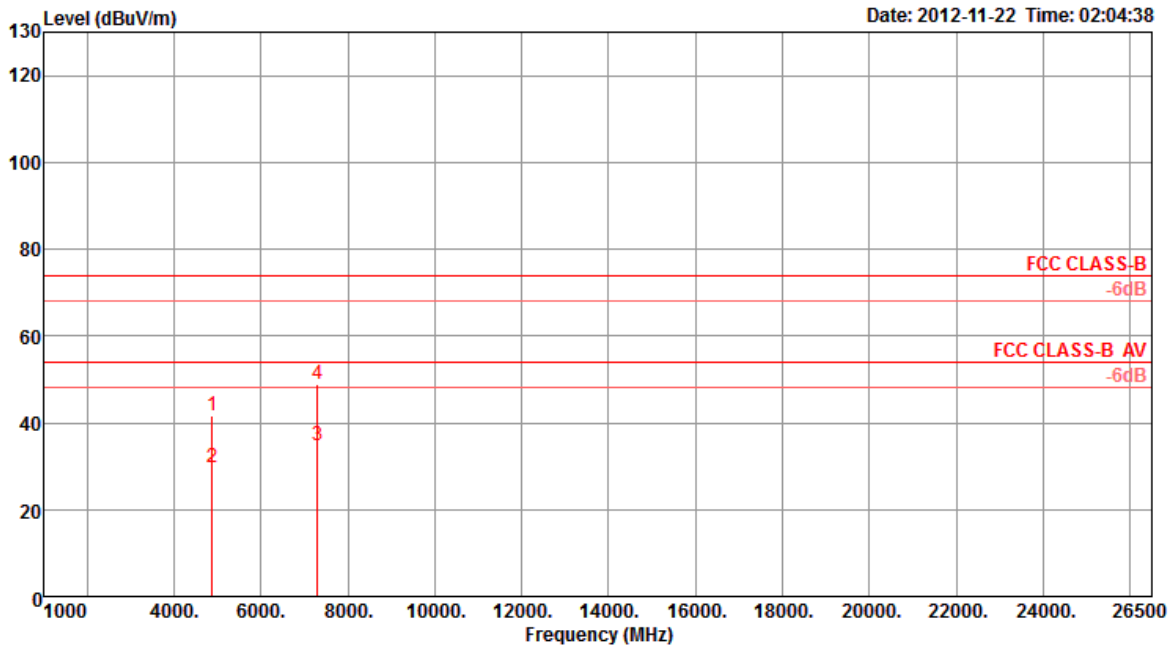
- Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
- Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
- Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
- Note 4: For restricted 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.





Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11g	Test Freq. (FX)	F2
N <sub>TX</sub>	1	Polarization	V



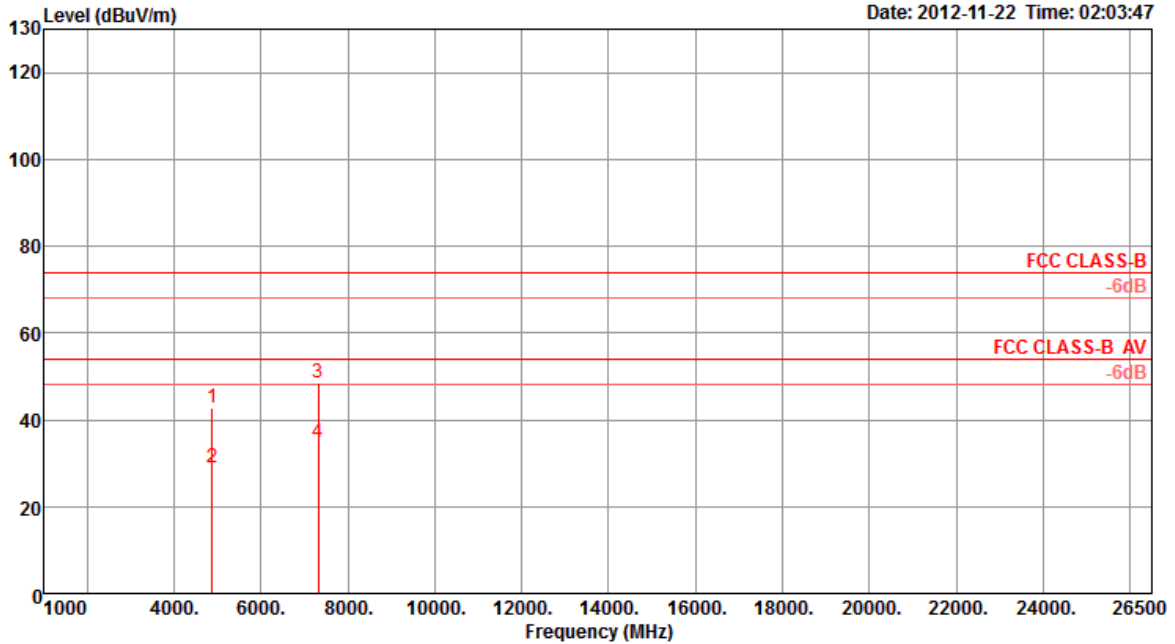
Line	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4871.82	41.64	74.00	-32.36	39.43	4.22	34.67	32.66	Peak	266	100	VERTICAL
2	4874.10	29.59	54.00	-24.41	27.38	4.22	34.67	32.66	Average	266	100	VERTICAL
3 a	7308.97	34.67	54.00	-19.33	27.29	5.34	34.93	36.97	Average	312	100	VERTICAL
4 p	7311.27	48.98	74.00	-25.02	41.61	5.34	34.94	36.97	Peak	312	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11g	Test Freq. (FX)	F2
N <sub>TX</sub>	1	Polarization	H



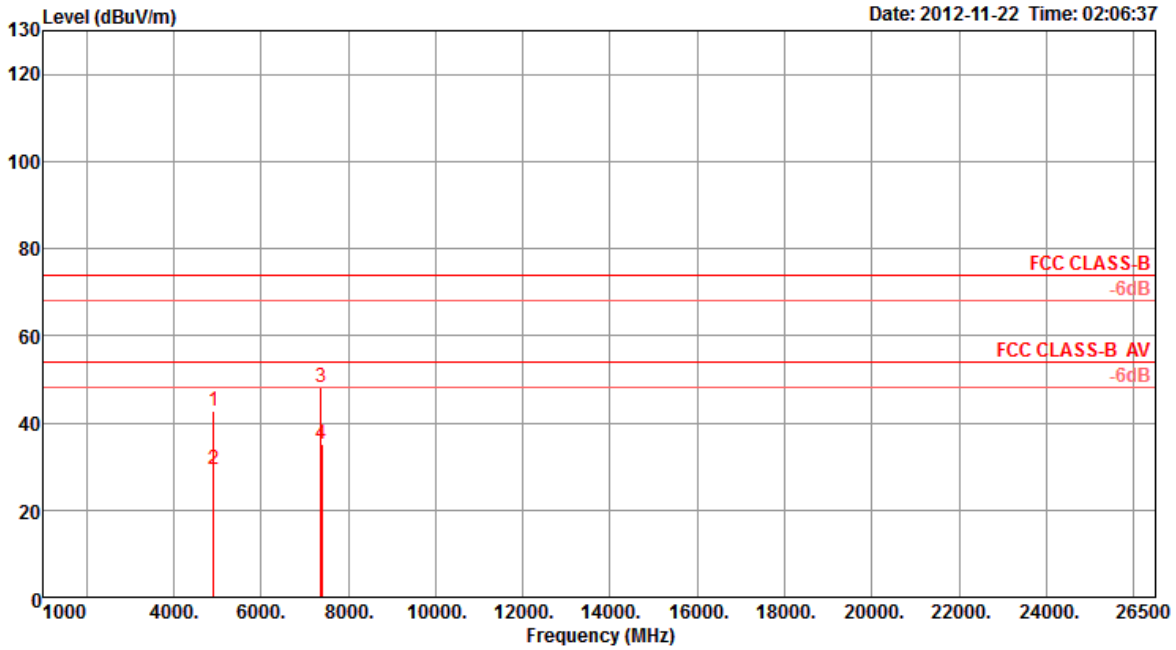
Line	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4874.12	42.73	74.00	-31.27	40.52	4.22	34.67	32.66	Peak	226	100	HORIZONTAL
2	4875.60	28.87	54.00	-25.13	26.66	4.22	34.67	32.66	Average	226	100	HORIZONTAL
3 p	7311.82	48.47	74.00	-25.53	41.10	5.34	34.94	36.97	Peak	306	100	HORIZONTAL
4 a	7313.14	34.64	54.00	-19.36	27.27	5.34	34.94	36.97	Average	306	100	HORIZONTAL

- 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)
- Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11g	Test Freq. (FX)	F3
N <sub>TX</sub>	1	Polarization	V



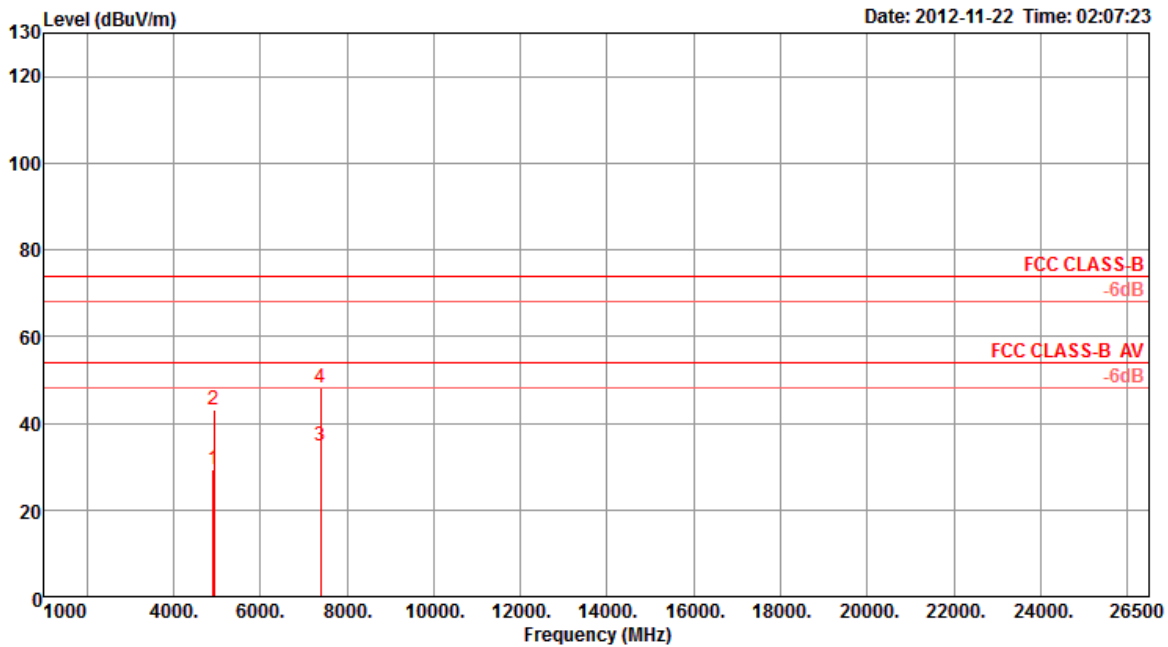
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4923.19	42.78	74.00	-31.22	40.44	4.23	34.65	32.76	Peak	108	100	VERTICAL
2	4923.79	29.32	54.00	-24.68	26.98	4.23	34.65	32.76	Average	108	100	VERTICAL
3 p	7383.79	48.30	74.00	-25.70	40.82	5.36	34.96	37.08	Peak	182	100	VERTICAL
4 a	7386.59	35.00	54.00	-19.00	27.52	5.36	34.96	37.08	Average	182	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11g	Test Freq. (FX)	F3
N <sub>TX</sub>	1	Polarization	H



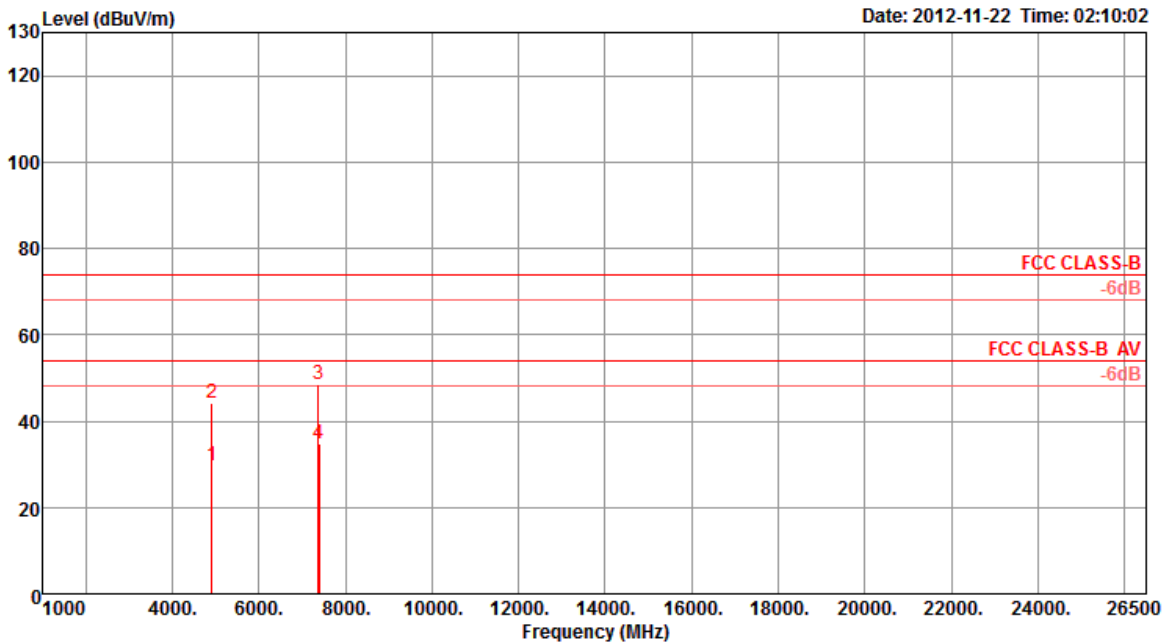
Line	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4921.89	29.46	54.00	-24.54	27.12	4.23	34.65	32.76	Average	199	100	HORIZONTAL
2	4926.44	43.20	74.00	-30.80	40.86	4.23	34.65	32.76	Peak	199	100	HORIZONTAL
3 a	7384.53	34.90	54.00	-19.10	27.42	5.36	34.96	37.08	Average	301	100	HORIZONTAL
4 p	7387.54	48.19	74.00	-25.81	40.71	5.36	34.96	37.08	Peak	301	100	HORIZONTAL

- 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)
- Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



3.6.9 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT-20

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT-20	Test Freq. (FX)	F1
N <sub>TX</sub>	1	Polarization	V



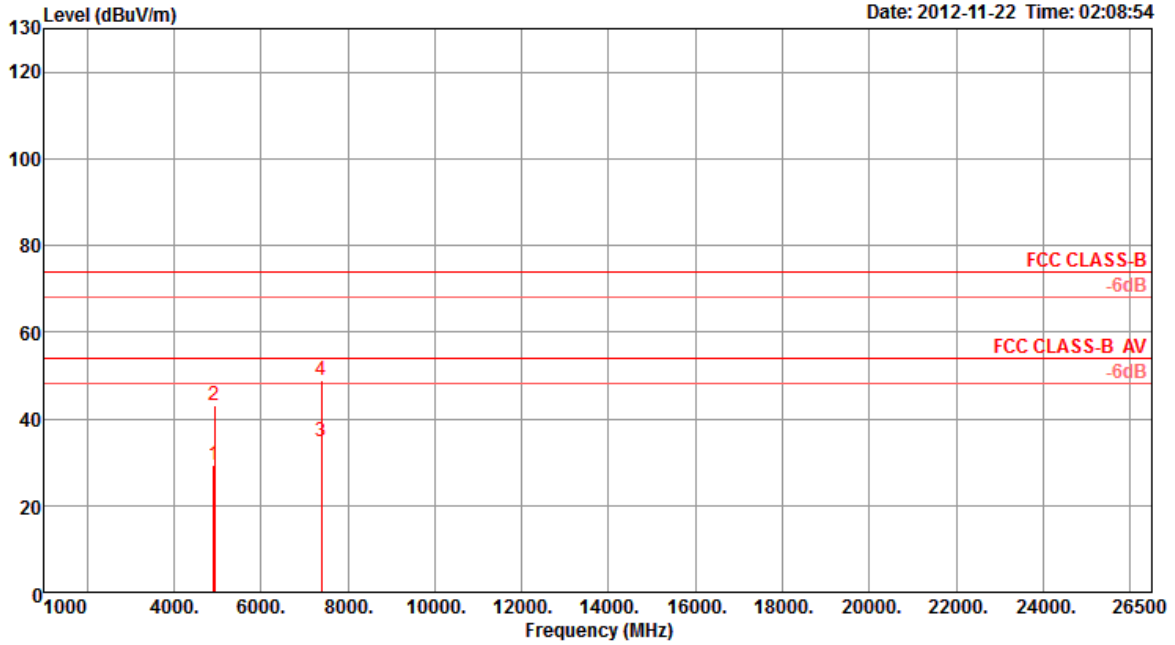
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4923.76	29.64	54.00	-24.36	27.30	4.23	34.65	32.76	Average	102	100	VERTICAL
2	4924.10	44.15	74.00	-29.85	41.81	4.23	34.65	32.76	Peak	102	100	VERTICAL
3 p	7383.55	48.47	74.00	-25.53	40.99	5.36	34.96	37.08	Peak	202	100	VERTICAL
4 a	7386.55	34.94	54.00	-19.06	27.46	5.36	34.96	37.08	Average	202	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-20	Test Freq. (FX)	F1
N <sub>TX</sub>	1	Polarization	H



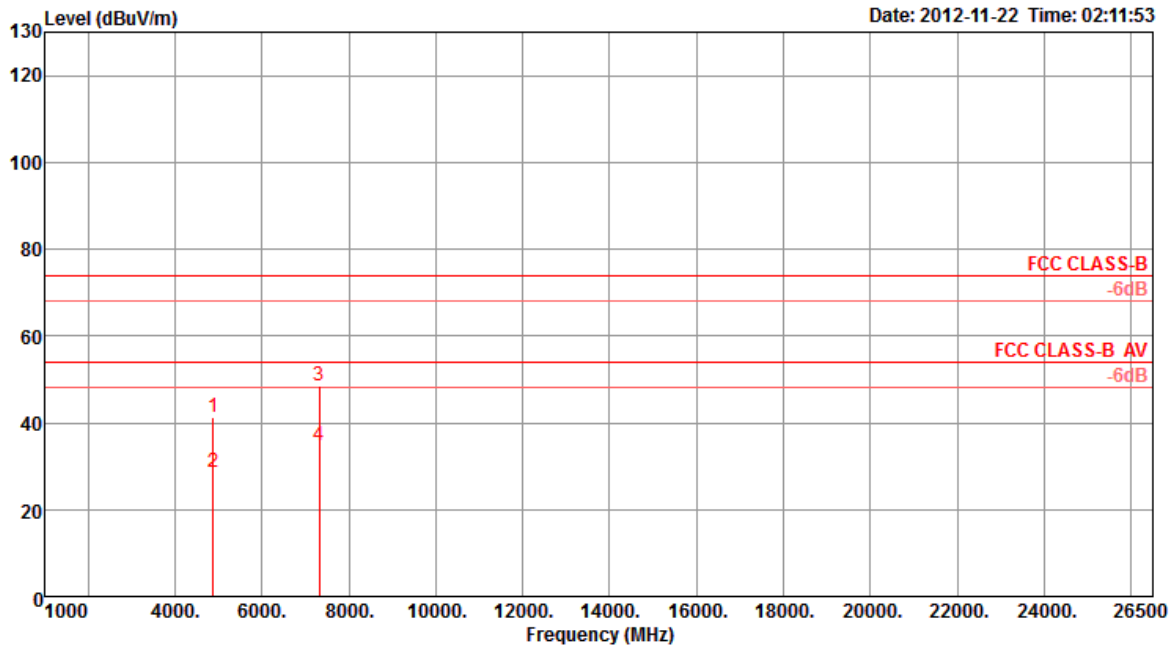
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4921.95	29.42	54.00	-24.58	27.08	4.23	34.65	32.76	Average	178	100	HORIZONTAL
2	4926.40	43.27	74.00	-30.73	40.93	4.23	34.65	32.76	Peak	178	100	HORIZONTAL
3 a	7384.49	34.91	54.00	-19.09	27.43	5.36	34.96	37.08	Average	281	100	HORIZONTAL
4 p	7385.60	48.80	74.00	-25.20	41.32	5.36	34.96	37.08	Peak	281	100	HORIZONTAL

- 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)
- Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



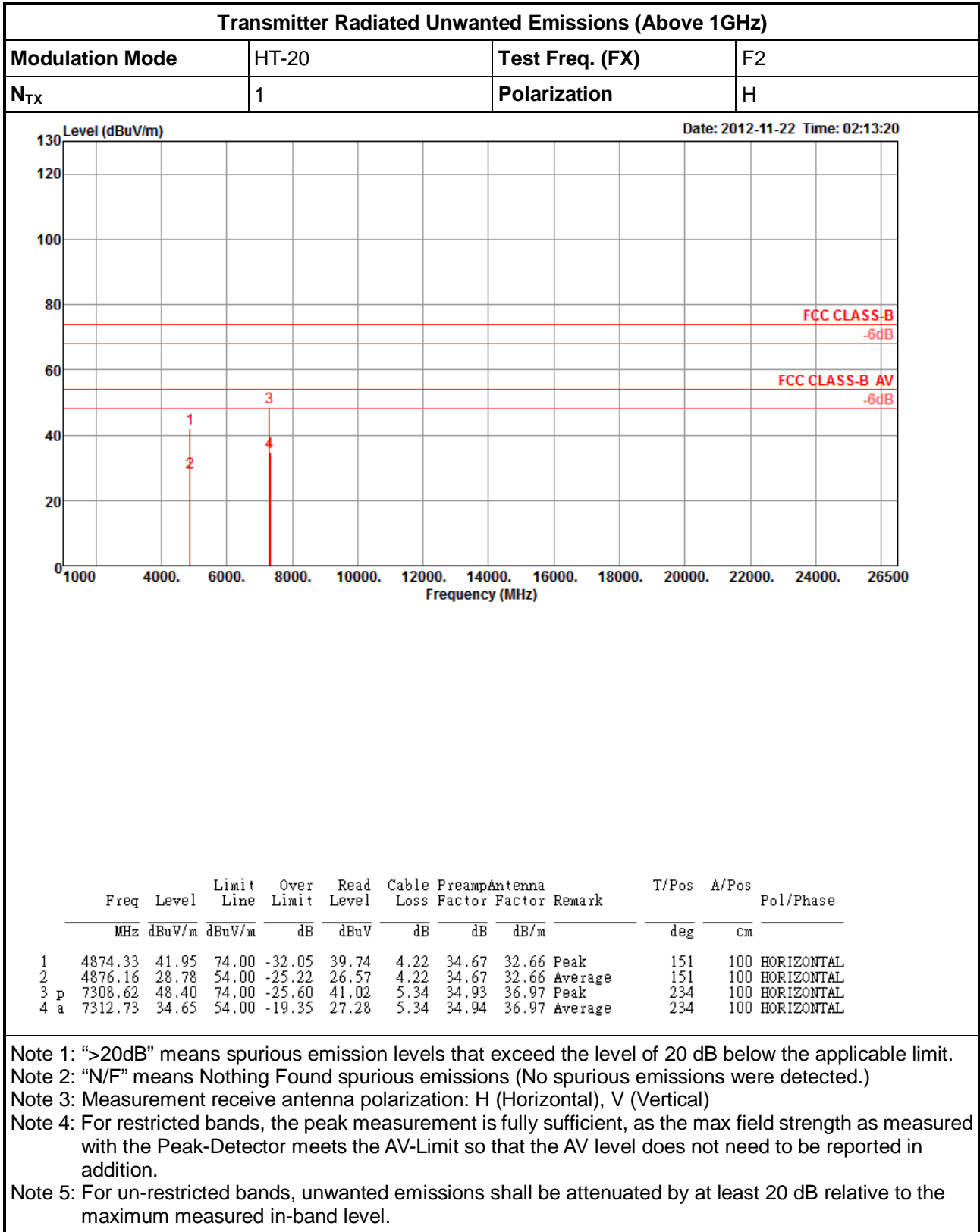
Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-20	Test Freq. (FX)	F2
N <sub>TX</sub>	1	Polarization	V



Line	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4871.56	41.39	74.00	-32.61	39.18	4.22	34.67	32.66	Peak	216	100	VERTICAL
2	4875.30	28.47	54.00	-25.53	26.26	4.22	34.67	32.66	Average	216	100	VERTICAL
3 p	7312.05	48.51	74.00	-25.49	41.14	5.34	34.94	36.97	Peak	110	100	VERTICAL
4 a	7312.61	34.68	54.00	-19.32	27.31	5.34	34.94	36.97	Average	110	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

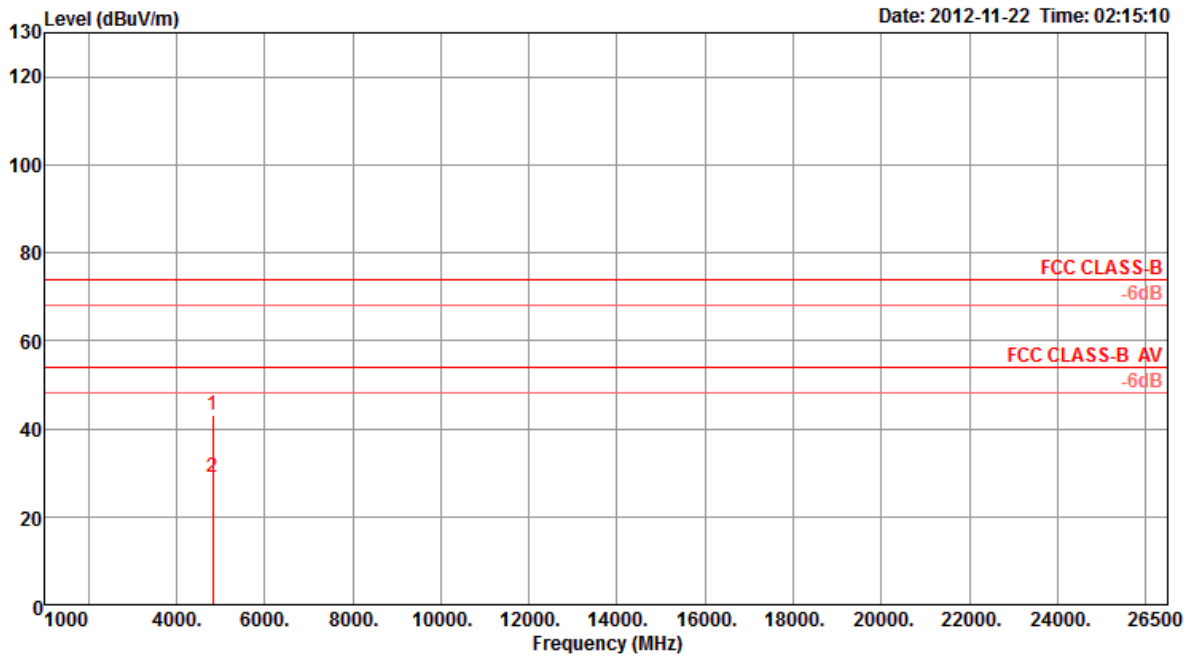






Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-20	Test Freq. (FX)	F3
N <sub>TX</sub>	1	Polarization	V



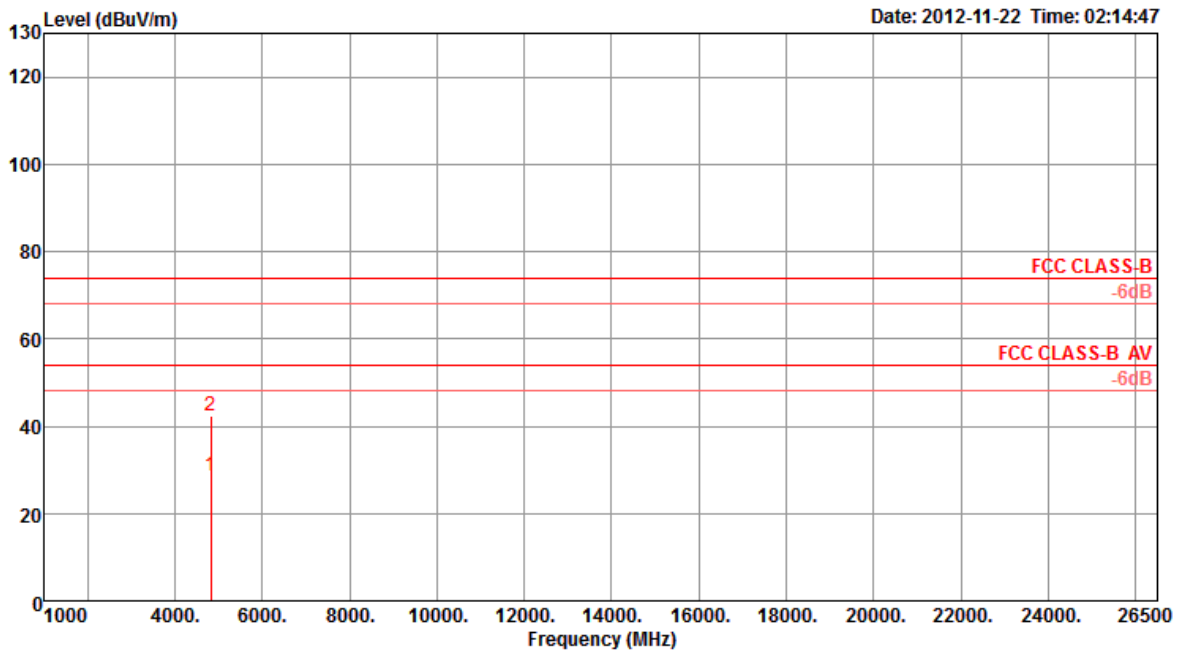
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 P	4821.95	42.96	74.00	-31.04	40.88	4.21	34.69	32.56	Peak	165	100	VERTICAL
2 a	4824.17	28.94	54.00	-25.06	26.86	4.21	34.69	32.56	Average	165	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-20	Test Freq. (FX)	F3
N <sub>TX</sub>	1	Polarization	H



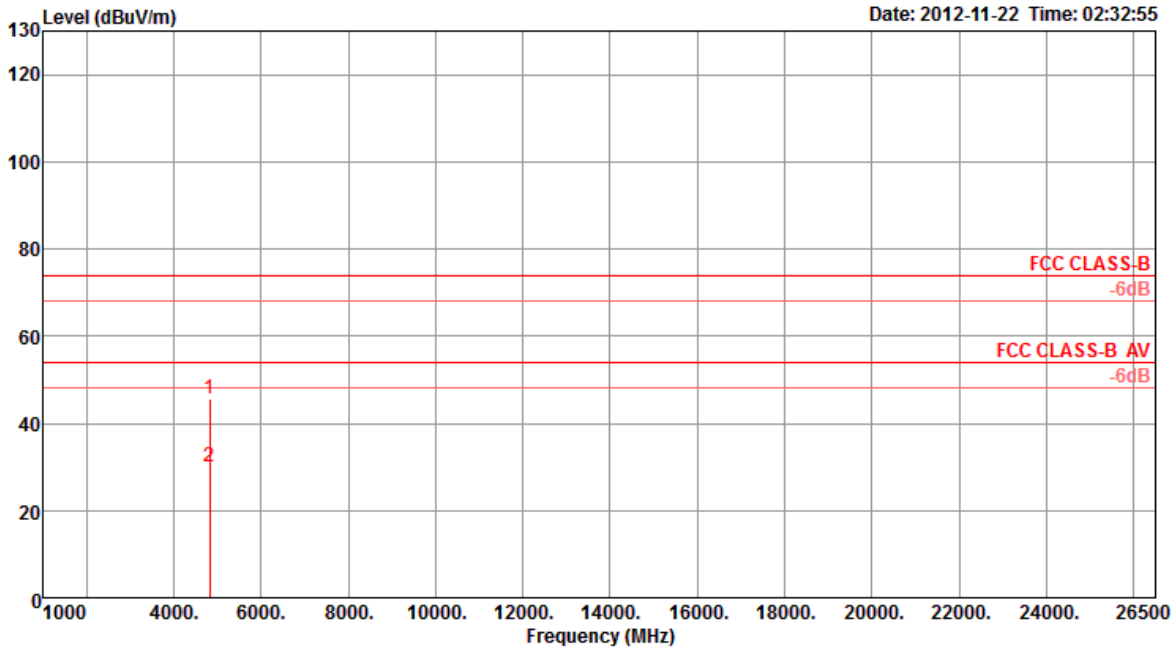
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 a	4822.17	28.70	54.00	-25.30	26.62	4.21	34.69	32.56	Average	261	100	HORIZONTAL
2 p	4823.62	42.31	74.00	-31.69	40.23	4.21	34.69	32.56	Peak	261	100	HORIZONTAL

- 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)
- Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-20	Test Freq. (FX)	F1
N <sub>TX</sub>	2	Polarization	V



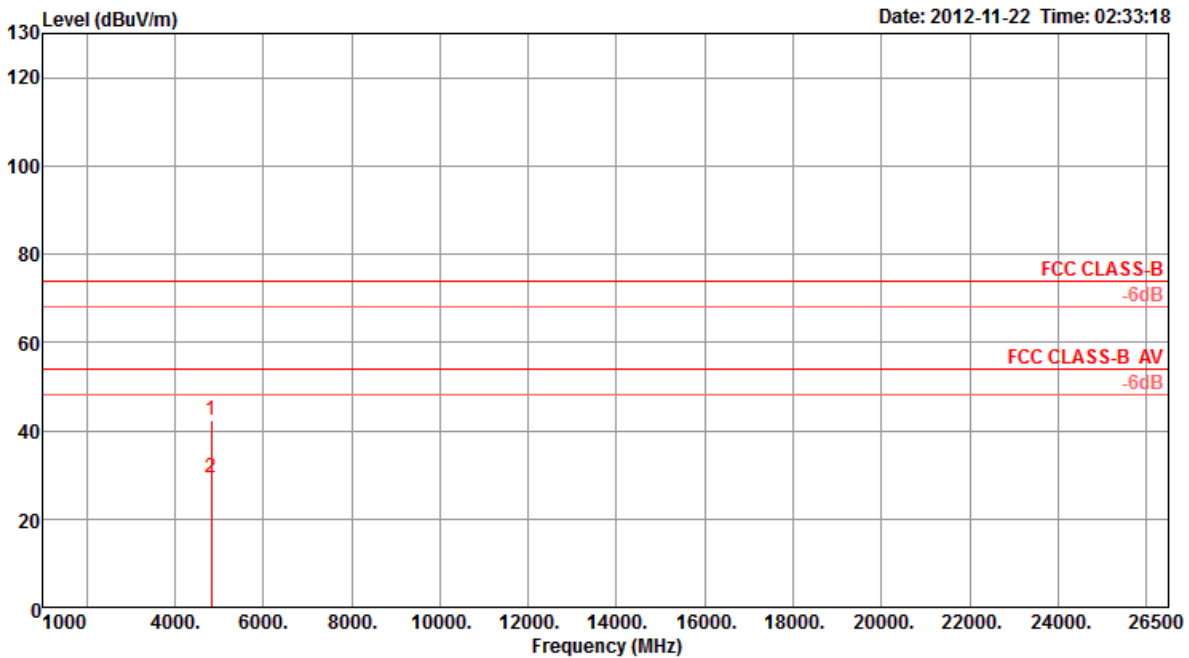
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 p	4823.52	45.53	74.00	-28.47	43.45	4.21	34.69	32.56	Peak	205	100	VERTICAL
2 a	4824.15	29.98	54.00	-24.02	27.90	4.21	34.69	32.56	Average	205	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-20	Test Freq. (FX)	F1
N <sub>TX</sub>	2	Polarization	H



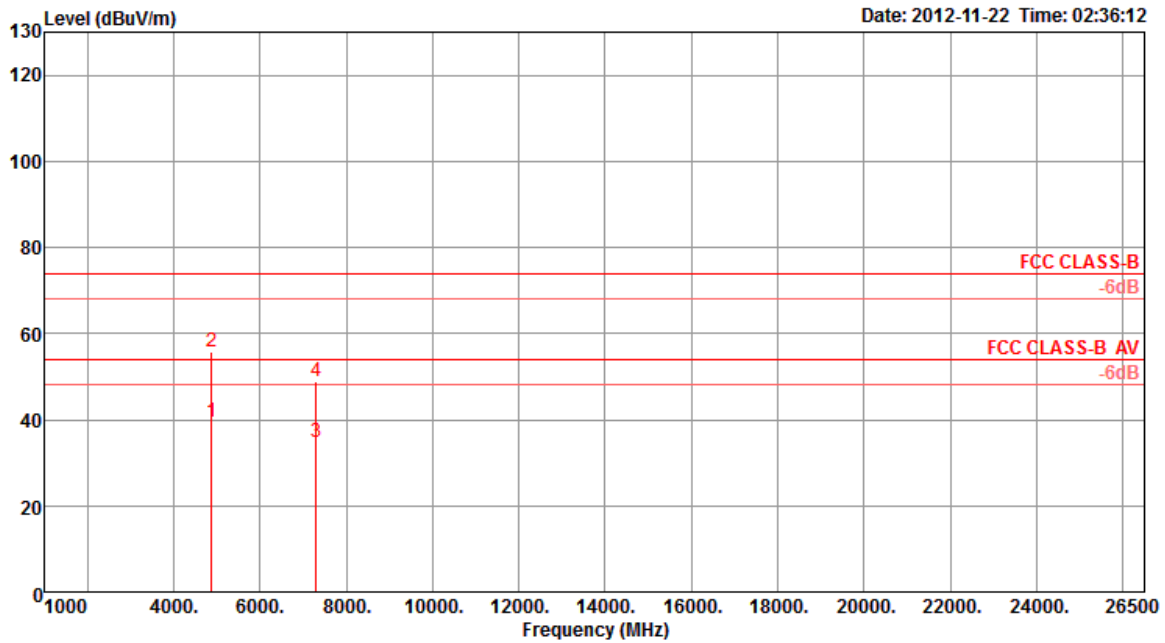
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 p	4821.54	42.44	74.00	-31.56	40.36	4.21	34.69	32.56	Peak	90	100	HORIZONTAL
2 a	4826.20	29.18	54.00	-24.82	27.10	4.21	34.69	32.56	Average	90	100	HORIZONTAL

- 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)
- Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-20	Test Freq. (FX)	F2
N <sub>TX</sub>	2	Polarization	V



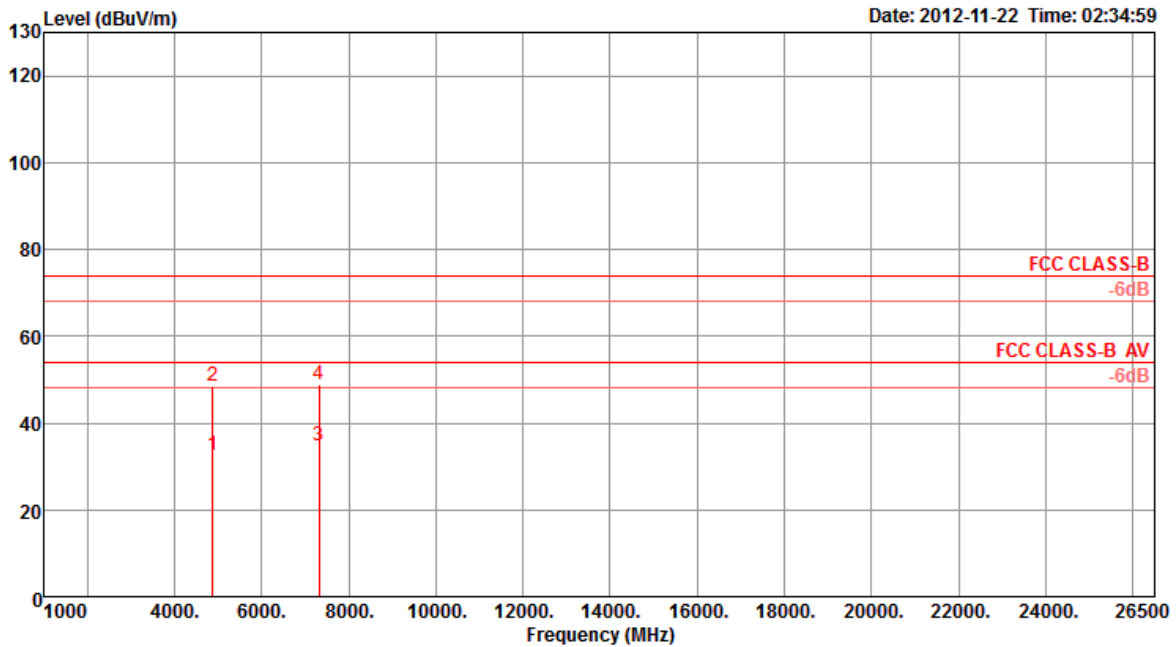
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 a	4873.82	39.30	54.00	-14.70	37.09	4.22	34.67	32.66	Average	75	100	VERTICAL
2 p	4877.30	55.92	74.00	-18.08	53.71	4.22	34.67	32.66	Peak	75	100	VERTICAL
3	7309.49	34.63	54.00	-19.37	27.25	5.34	34.93	36.97	Average	233	100	VERTICAL
4	7310.69	48.78	74.00	-25.22	41.40	5.34	34.93	36.97	Peak	233	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-20	Test Freq. (FX)	F2
N <sub>TX</sub>	2	Polarization	H



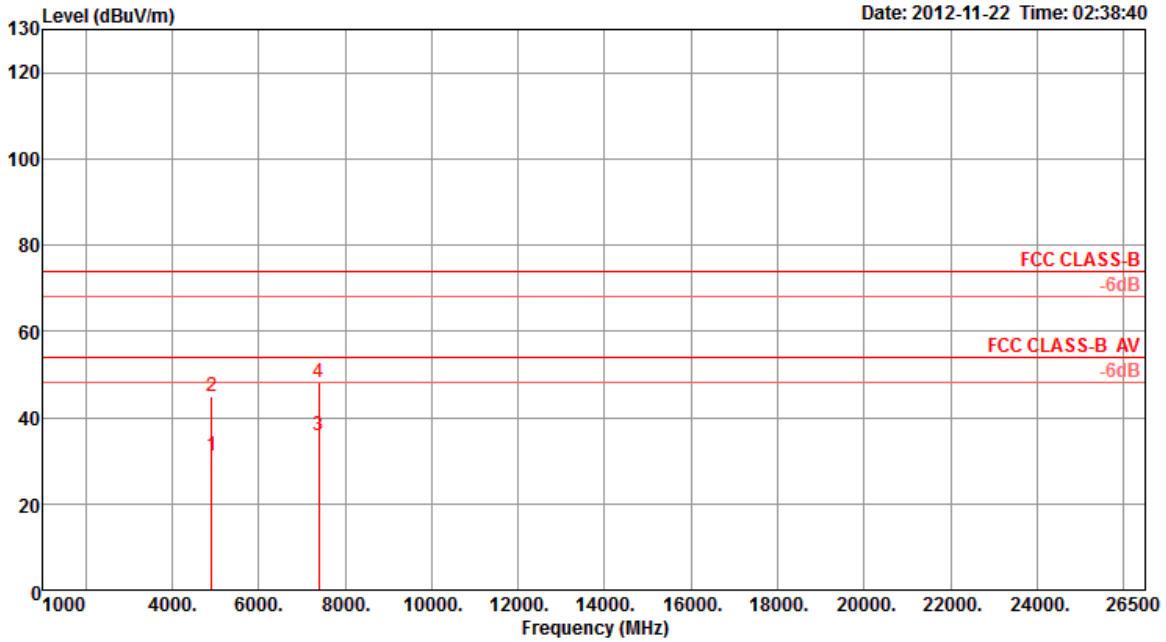
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4875.03	32.56	54.00	-21.44	30.35	4.22	34.67	32.66	Average	344	100	HORIZONTAL
2	4875.13	48.66	74.00	-25.34	46.45	4.22	34.67	32.66	Peak	344	100	HORIZONTAL
3 a	7312.19	34.67	54.00	-19.33	27.30	5.34	34.94	36.97	Average	231	100	HORIZONTAL
4 p	7313.16	48.80	74.00	-25.20	41.43	5.34	34.94	36.97	Peak	231	100	HORIZONTAL

- 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)
- Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



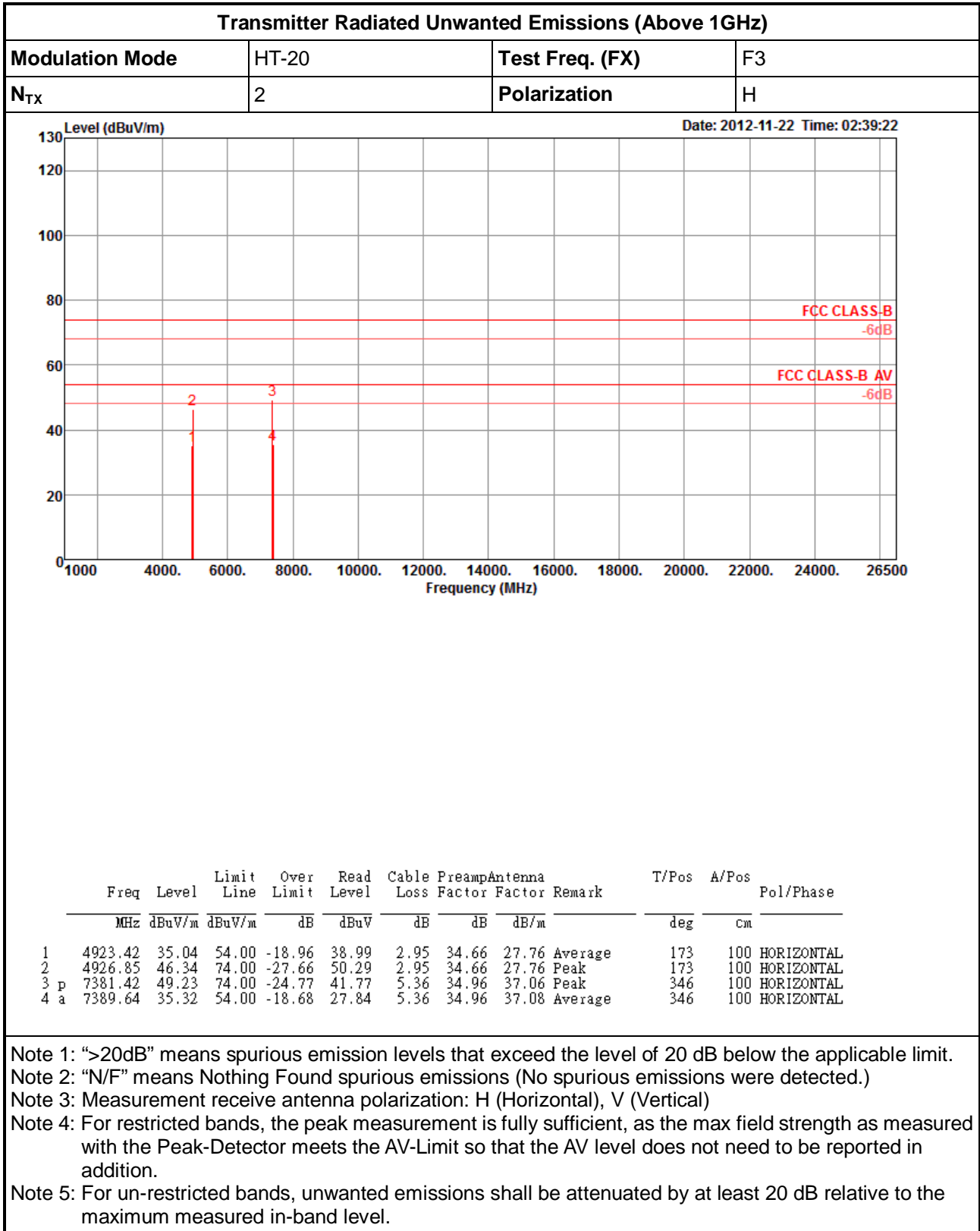
Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-20	Test Freq. (FX)	F3
N <sub>TX</sub>	2	Polarization	V



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4923.66	31.32	54.00	-22.68	28.98	4.23	34.65	32.76	Average	167	100	VERTICAL
2	4924.18	45.05	74.00	-28.95	42.71	4.23	34.65	32.76	Peak	167	100	VERTICAL
3 a	7389.73	35.72	54.00	-18.28	28.24	5.36	34.96	37.08	Average	237	100	VERTICAL
4 p	7390.44	48.20	74.00	-25.80	40.72	5.36	34.96	37.08	Peak	237	100	VERTICAL

- 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)
- Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

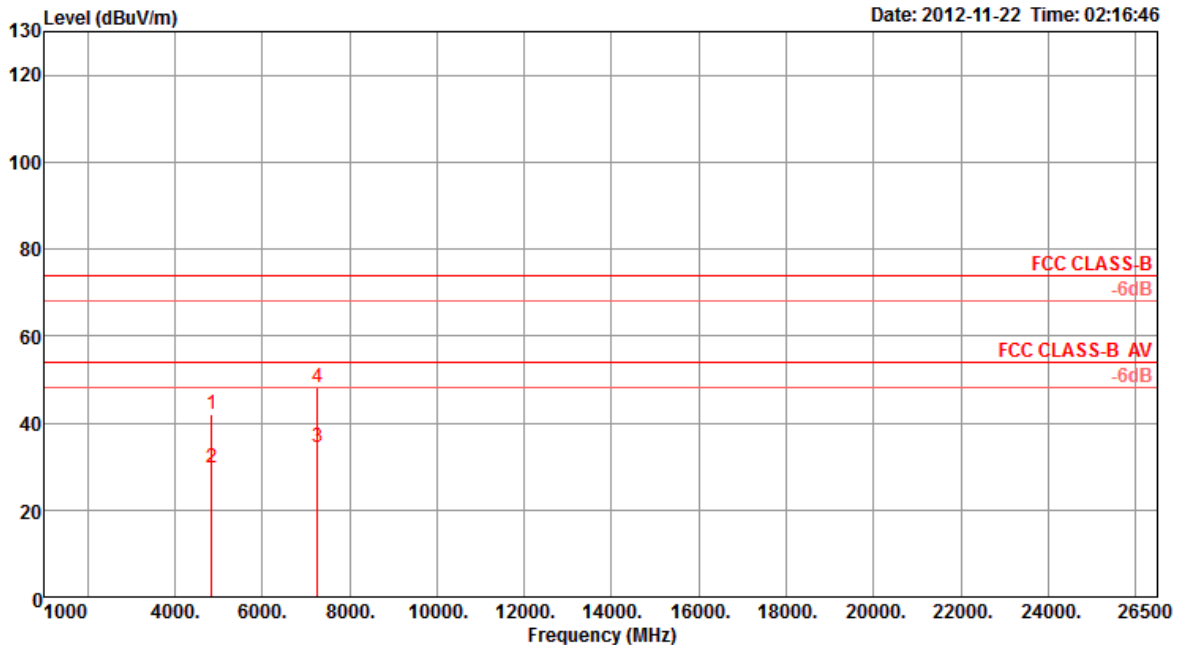






3.6.10 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT-40

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT-40	Test Freq. (FX)	F4
N <sub>TX</sub>	1	Polarization	V



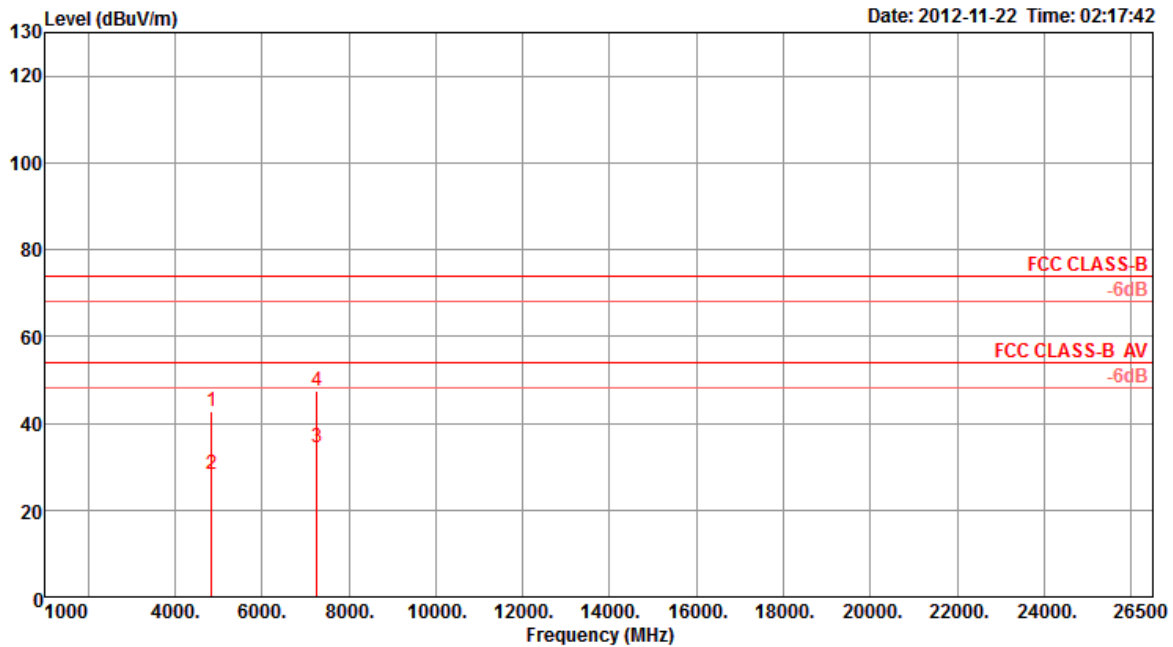
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4842.77	42.13	74.00	-31.87	40.01	4.21	34.68	32.59	Peak	211	100	VERTICAL
2	4843.92	29.52	54.00	-24.48	27.40	4.21	34.68	32.59	Average	211	100	VERTICAL
3 a	7263.91	34.53	54.00	-19.47	27.22	5.33	34.93	36.91	Average	139	100	VERTICAL
4 p	7265.40	48.16	74.00	-25.84	40.82	5.34	34.93	36.93	Peak	139	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-40	Test Freq. (FX)	F4
N <sub>TX</sub>	1	Polarization	H



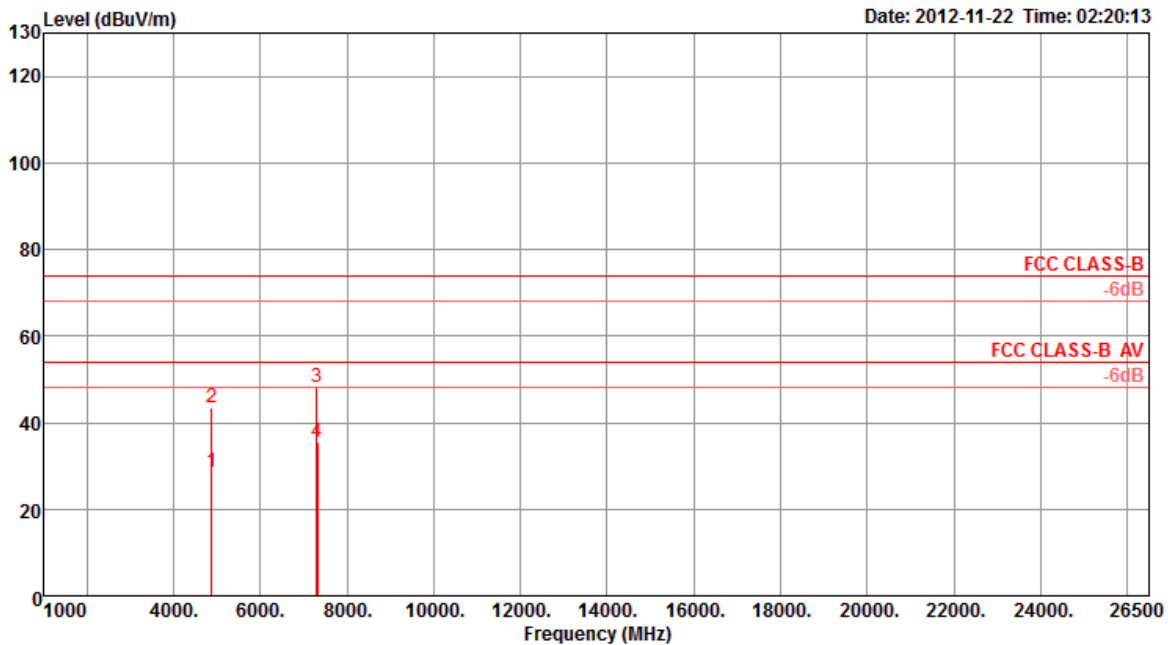
Line	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4841.92	42.68	74.00	-31.32	40.56	4.21	34.68	32.59	Peak	116	100	HORIZONTAL
2	4845.05	28.32	54.00	-25.68	26.20	4.21	34.68	32.59	Average	116	100	HORIZONTAL
3 a	7263.81	34.54	54.00	-19.46	27.23	5.33	34.93	36.91	Average	3	100	HORIZONTAL
4 p	7264.77	47.53	74.00	-26.47	40.19	5.34	34.93	36.93	Peak	3	100	HORIZONTAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-40	Test Freq. (FX)	F5
N <sub>TX</sub>	1	Polarization	V



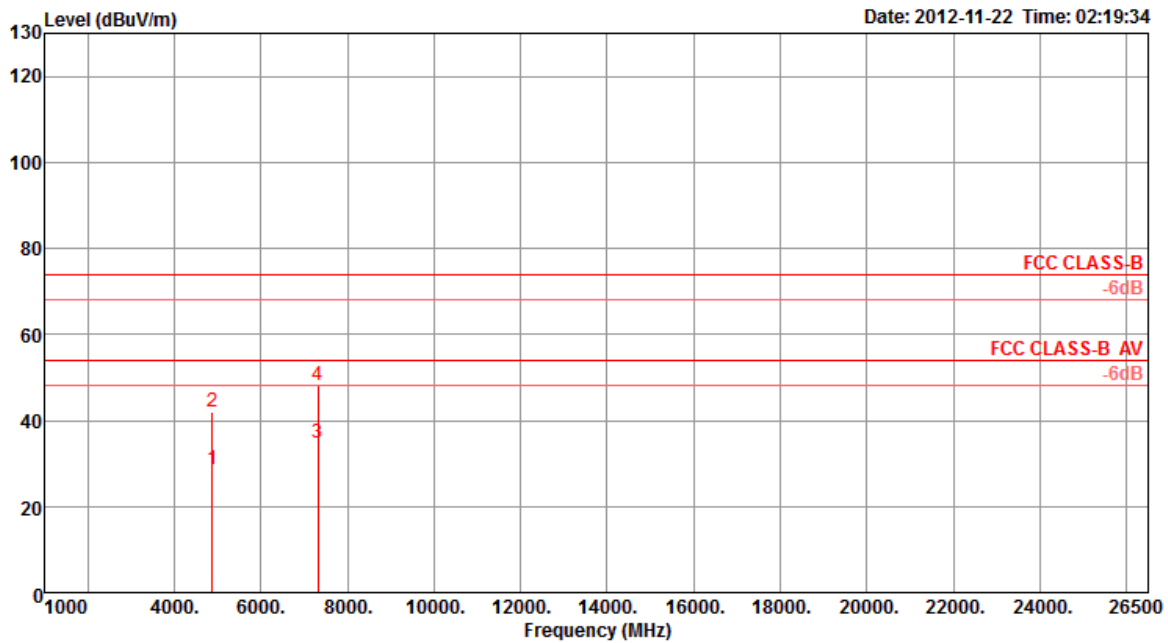
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4875.03	28.65	54.00	-25.35	26.44	4.22	34.67	32.66	Average	249	100	VERTICAL
2	4876.14	43.29	74.00	-30.71	41.08	4.22	34.67	32.66	Peak	249	100	VERTICAL
3 p	7310.41	48.21	74.00	-25.79	40.83	5.34	34.93	36.97	Peak	322	100	VERTICAL
4 a	7311.76	35.54	54.00	-18.46	28.17	5.34	34.94	36.97	Average	321	100	VERTICAL

- 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)
- Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-40	Test Freq. (FX)	F5
N <sub>TX</sub>	1	Polarization	H



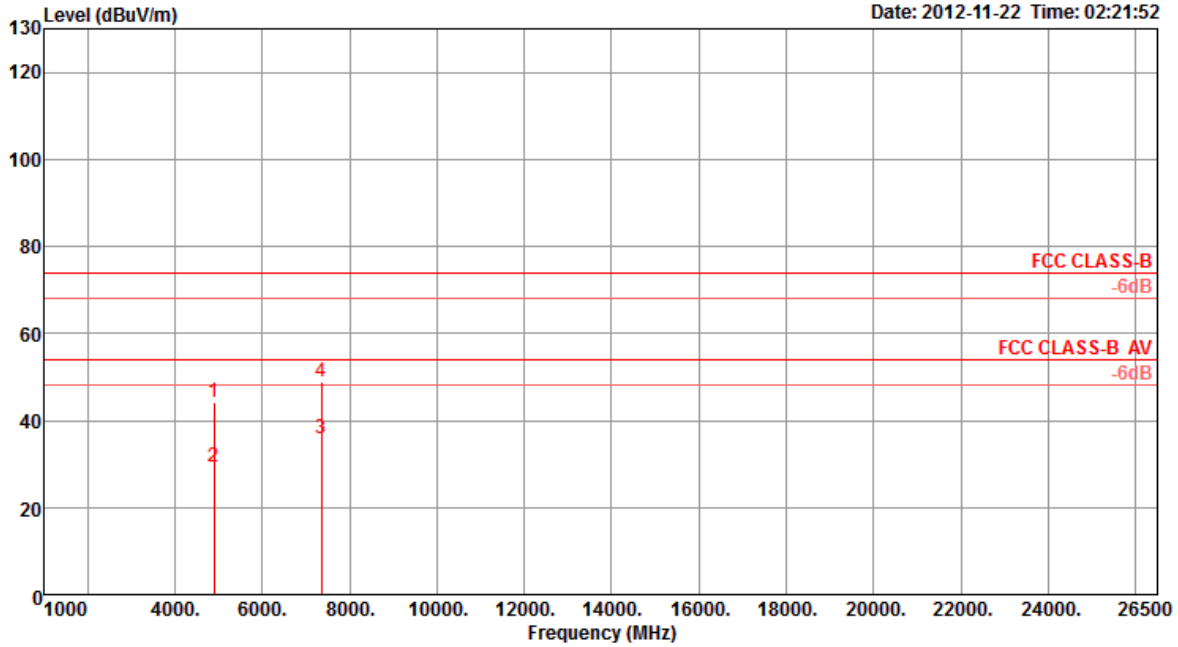
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4872.95	28.51	54.00	-25.49	26.30	4.22	34.67	32.66	Average	169	100	HORIZONTAL
2	4875.45	42.16	74.00	-31.84	39.95	4.22	34.67	32.66	Peak	169	100	HORIZONTAL
3 a	7313.03	34.65	54.00	-19.35	27.28	5.34	34.94	36.97	Average	222	100	HORIZONTAL
4 p	7313.44	48.22	74.00	-25.78	40.85	5.34	34.94	36.97	Peak	222	100	HORIZONTAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-40	Test Freq. (FX)	F6
N <sub>TX</sub>	1	Polarization	V



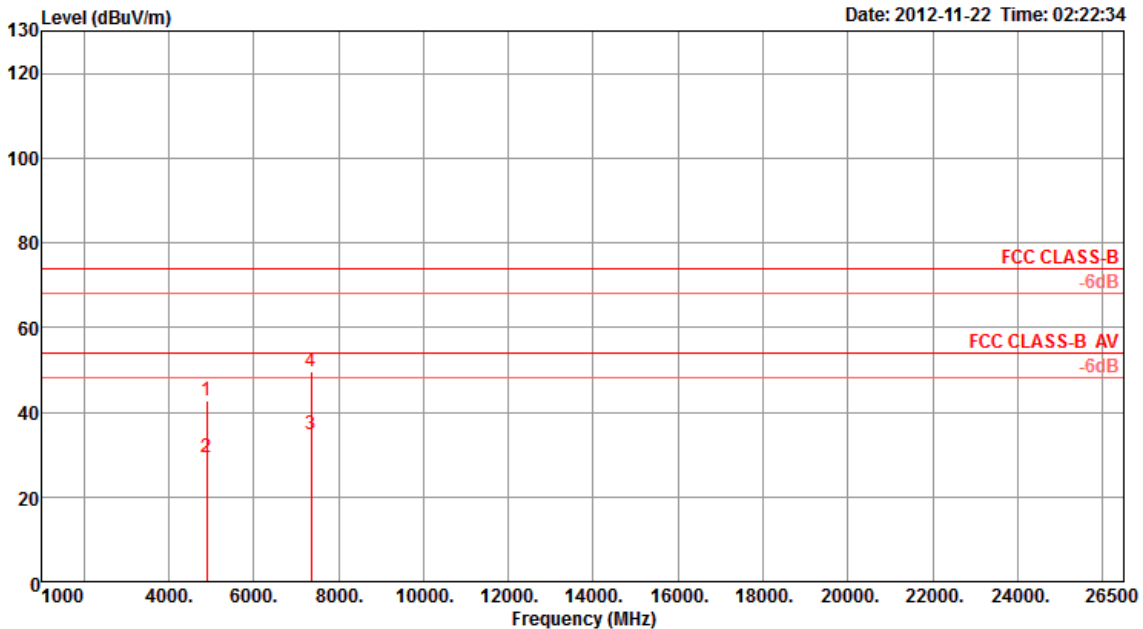
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4902.18	44.25	74.00	-29.75	41.96	4.22	34.66	32.73	Peak	219	100	VERTICAL
2	4903.10	29.20	54.00	-24.80	26.91	4.22	34.66	32.73	Average	219	100	VERTICAL
3 a	7354.14	35.76	54.00	-18.24	28.33	5.35	34.95	37.03	Average	163	100	VERTICAL
4 p	7354.19	48.97	74.00	-25.03	41.54	5.35	34.95	37.03	Peak	163	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-40	Test Freq. (FX)	F6
N <sub>TX</sub>	1	Polarization	H



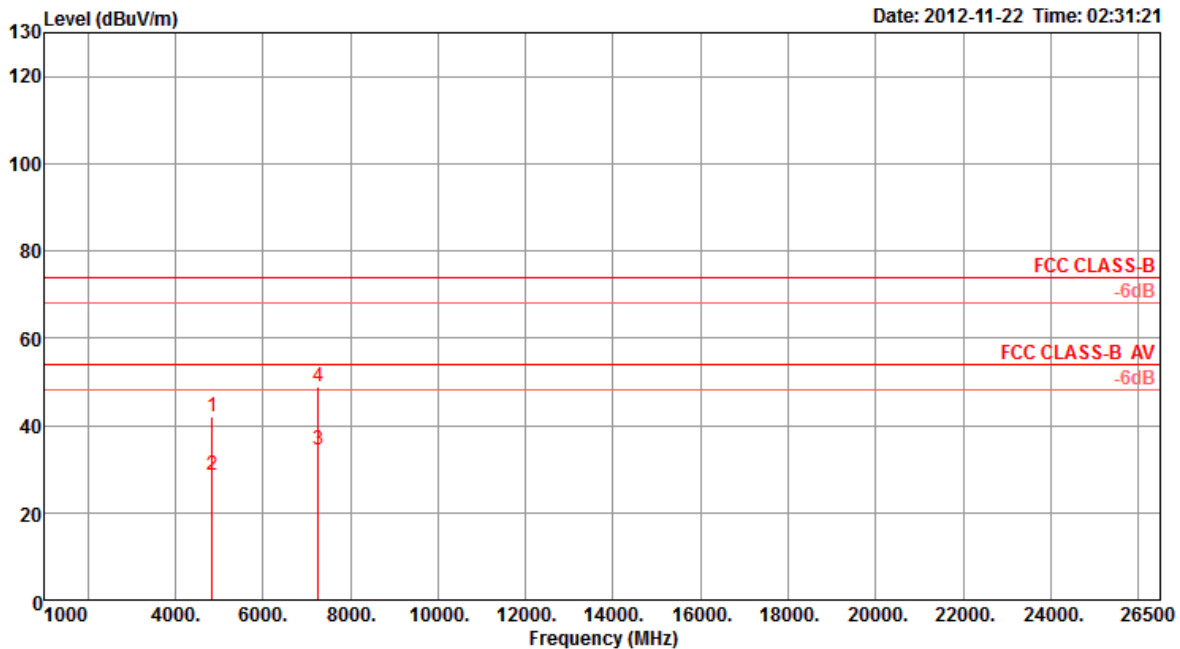
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4902.68	42.80	74.00	-31.20	40.51	4.22	34.66	32.73	Peak	125	100	HORIZONTAL
2	4904.82	29.24	54.00	-24.76	26.95	4.22	34.66	32.73	Average	125	100	HORIZONTAL
3 a	7356.61	34.80	54.00	-19.20	27.37	5.35	34.95	37.03	Average	65	100	HORIZONTAL
4 p	7357.07	49.51	74.00	-24.49	42.08	5.35	34.95	37.03	Peak	65	100	HORIZONTAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-40	Test Freq. (FX)	F4
N <sub>TX</sub>	2	Polarization	V



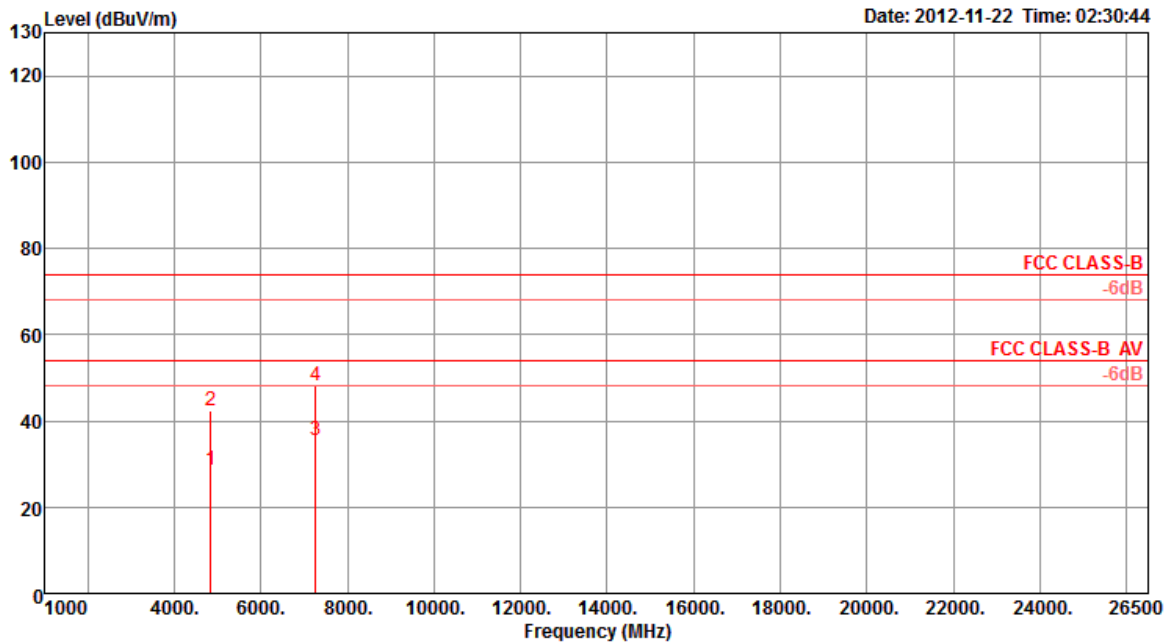
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4844.04	42.04	74.00	-31.96	39.92	4.21	34.68	32.59	Peak	272	100	VERTICAL
2	4844.83	28.46	54.00	-25.54	26.34	4.21	34.68	32.59	Average	272	100	VERTICAL
3 a	7264.29	34.52	54.00	-19.48	27.21	5.33	34.93	36.91	Average	359	100	VERTICAL
4 p	7265.46	48.85	74.00	-25.15	41.51	5.34	34.93	36.93	Peak	359	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-40	Test Freq. (FX)	F4
N <sub>TX</sub>	2	Polarization	H



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4842.91	28.46	54.00	-25.54	26.34	4.21	34.68	32.59	Average	246	100	HORIZONTAL
2	4845.71	42.24	74.00	-31.76	40.12	4.21	34.68	32.59	Peak	246	100	HORIZONTAL
3 a	7264.99	35.46	54.00	-18.54	28.12	5.34	34.93	36.93	Average	285	100	HORIZONTAL
4 p	7267.77	48.29	74.00	-25.71	40.95	5.34	34.93	36.93	Peak	285	100	HORIZONTAL

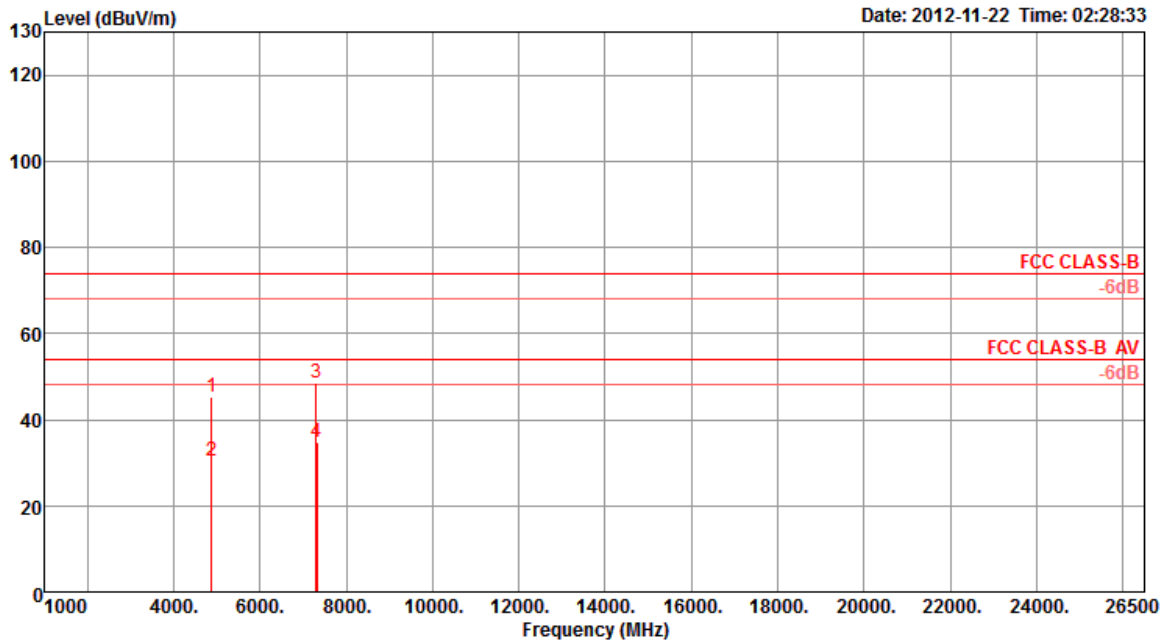
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)  
 Note 4: For restricted 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.





Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-40	Test Freq. (FX)	F5
N <sub>TX</sub>	2	Polarization	V



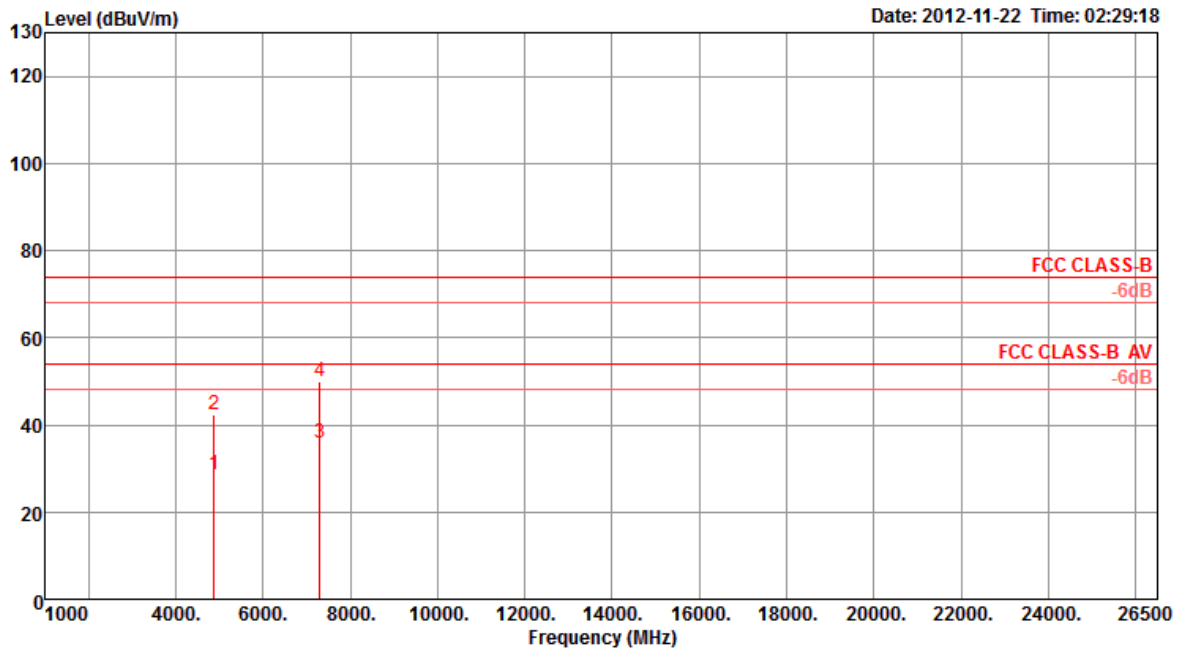
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4873.39	45.25	74.00	-28.75	43.04	4.22	34.67	32.66	Peak	169	100	VERTICAL
2	4875.05	30.26	54.00	-23.74	28.05	4.22	34.67	32.66	Average	169	100	VERTICAL
3 p	7309.55	48.53	74.00	-25.47	41.15	5.34	34.93	36.97	Peak	263	100	VERTICAL
4 a	7312.20	34.62	54.00	-19.38	27.25	5.34	34.94	36.97	Average	263	100	VERTICAL

- 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)
- Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-40	Test Freq. (FX)	F5
N <sub>TX</sub>	2	Polarization	H



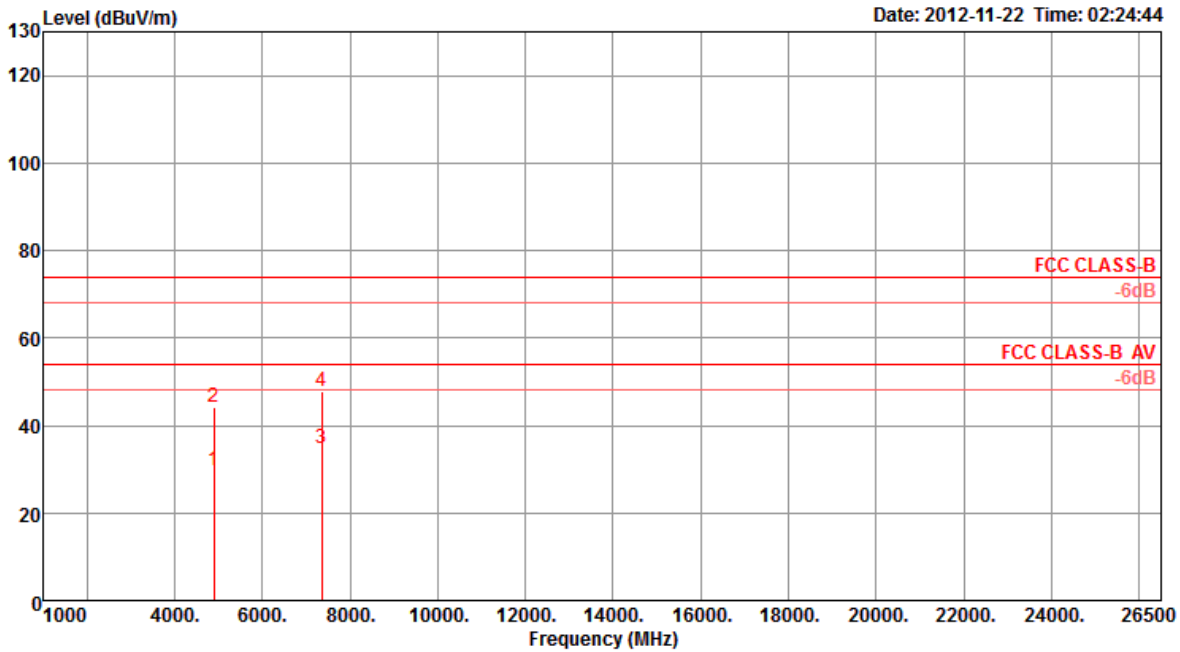
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4871.54	28.66	54.00	-25.34	26.45	4.22	34.67	32.66	Average	250	100	HORIZONTAL
2	4874.71	42.52	74.00	-31.48	40.31	4.22	34.67	32.66	Peak	250	100	HORIZONTAL
3 a	7309.04	35.76	54.00	-18.24	28.38	5.34	34.93	36.97	Average	332	100	HORIZONTAL
4 p	7311.22	49.86	74.00	-24.14	42.48	5.34	34.93	36.97	Peak	332	100	HORIZONTAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-40	Test Freq. (FX)	F6
N <sub>TX</sub>	2	Polarization	V



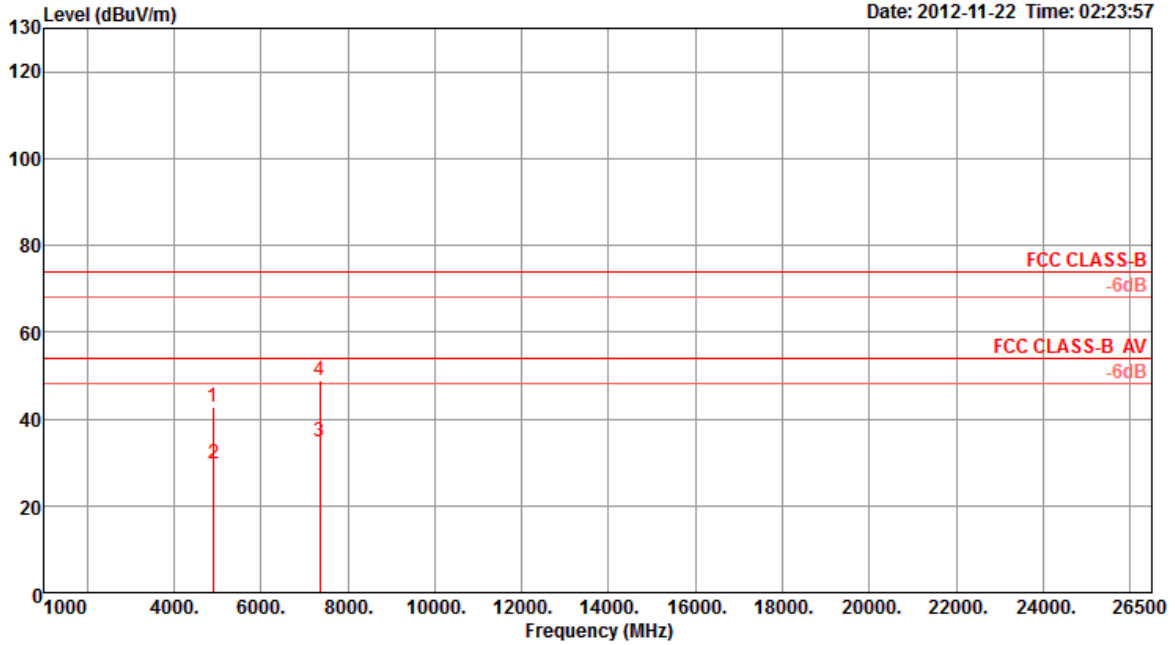
	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4903.87	29.52	54.00	-24.48	27.23	4.22	34.66	32.73	Average	189	100	VERTICAL
2	4904.96	44.02	74.00	-29.98	41.73	4.22	34.66	32.73	Peak	189	100	VERTICAL
3 a	7351.13	34.84	54.00	-19.16	27.41	5.35	34.95	37.03	Average	287	100	VERTICAL
4 p	7354.93	47.72	74.00	-26.28	40.29	5.35	34.95	37.03	Peak	287	100	VERTICAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT-40	Test Freq. (FX)	F6
N <sub>TX</sub>	2	Polarization	H



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4905.81	42.61	74.00	-31.39	40.32	4.22	34.66	32.73	Peak	115	100	HORIZONTAL
2	4908.63	29.77	54.00	-24.23	27.48	4.22	34.66	32.73	Average	115	100	HORIZONTAL
3 a	7352.43	34.88	54.00	-19.12	27.45	5.35	34.95	37.03	Average	171	100	HORIZONTAL
4 p	7353.04	48.83	74.00	-25.17	41.40	5.35	34.95	37.03	Peak	171	100	HORIZONTAL

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)  
 Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



## 4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz ~ 2.75GHz	Mar. 23, 2012	Conduction (CO04-HY)
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Feb. 08, 2012	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9kHz ~ 30MHz	Apr. 20, 2012	Conduction (CO04-HY)
RF Cable-CON	HUBER+SUHNER	RG213/U	CB049	9kHz ~ 30MHz	Apr. 25, 2012	Conduction (CO04-HY)
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP 40	100305	9KHz ~ 40GHz	Feb. 21, 2012	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Jun. 19, 2012	Conducted (TH01-HY)
AC Power Source	G.W	APS-9102	EL920581	AC 0V ~ 300V	Jul. 02, 2012	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20 ~ 100°C	Nov. 21, 2012	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jun. 26, 2012	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	Jan. 12, 2012	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	Jan. 12, 2012	Conducted (TH01-HY)
RF Cable-2m	HUBER+SUHNER	SUCOFLEX_104	SN 345675/4	1GHz ~ 26.5GHz	NA	Conducted (TH01-HY)
RF Cable-3m	HUBER+SUHNER	SUCOFLEX_104	SN 345669/4	1GHz ~ 26.5GHz	NA	Conducted (TH01-HY)

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



**<Radiated Emission Below 1GHz>**

<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Characteristics</b>	<b>Calibration Date</b>	<b>Remark</b>
Spectrum Analyzer	R&S	FSP40	100593	9kHz ~ 40GHz	Sep. 14, 2012	Radiation (03CH02-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	May 10, 2012	Radiation (03CH02-HY)
Amplifier	Agilent	8447D	2944A11146	100kHz ~ 1.3GHz	Jul. 23, 2012	Radiation (03CH02-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz ~ 1GHz	Nov. 11, 2011	Radiation (03CH02-HY)
RF Cable-high	SUHNER	SUCOFLEX106	03CH02-HY	1 ~ 40GHz	Mar. 06, 2012	Radiation (03CH02-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30MHz ~ 1GHz	Sep. 22, 2012	Radiation (03CH02-HY)
Turn Table	HD	DS 420	420/649/00	0 ~ 360 degree	N/A	Radiation (03CH02-HY)
Antenna Mast	HD	MA 240	240/559/00	1 ~ 4 m	N/A	Radiation (03CH02-HY)

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

<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Characteristics</b>	<b>Calibration Date</b>	<b>Remark</b>
Loop Antenna	R&S	HFH2-Z2	860004/0001	9 kHz ~ 30 MHz	Jul. 03, 2012	Radiation (03CH02-HY)

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



<Radiated Emission Above 1GHz>

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Bilog Antenna	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Jan. 11, 2012	Radiation (03CH01-CB)
Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 25, 2011	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEAK	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Nov. 23, 2012	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 23, 2012	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26.5GHz ~ 40GHz	Jul. 31, 2012	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100056	9KHz~40GHz	Nov. 16, 2012	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS 30	100355	9KHz ~ 2.75GHz	Mar. 20, 2012	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N.C.R	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 18, 2012	Radiation (03CH01-CB)

Note: Calibration Interval of instruments listed above is one year.  
 \*\*N.C.R. means Non-Calibration required.

## 5 Certification of TAF Accreditation



Certificate No. : L1190-120405

財團法人全國認證基金會  
Taiwan Accreditation Foundation

### Certificate of Accreditation

This is to certify that

**Sporton International Inc.**  
**EMC & Wireless Communications Laboratory**  
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien,  
Taiwan, R.O.C.

**is accredited in respect of laboratory**

**Accreditation Criteria** : ISO/IEC 17025:2005  
**Accreditation Number** : 1190  
**Originally Accredited** : December 15, 2003  
**Effective Period** : January 10, 2010 to January 09, 2013  
**Accredited Scope** : Testing Field, see described in the Appendix  
**Specific Accreditation Program** : Accreditation Program for Designated Testing Laboratory for Commodities Inspection  
Accreditation Program for Telecommunication Equipment Testing Laboratory  
Accreditation Program for BSMI Mutual Recognition Arrangement with Foreign Authorities

  
Jay-San Chen  
President, Taiwan Accreditation Foundation  
Date: April 05, 2012

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