

Produkte
Products

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<i>Test Report No.:</i>					
Auftraggeber: <i>Client:</i>		Nokia Corporation Joensuukatu 7, Salo, 24100, Finland			
Gegenstand der Prüfung: <i>Test item:</i>		Nokia Bluetooth Stereo Headset			
Bezeichnung: <i>Identification:</i>		Serien-Nr.: <i>Serial No.:</i>		Engineering Sample	
BH-905					
Wareneingangs-Nr.: <i>Receipt No.:</i>		Eingangsdatum: <i>Date of receipt:</i>		2009-04-24	
213089839-3-1, 213089839-4-1 213089839-5-1					
Prüfart: <i>Testing location:</i>		4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan			
Prüfgrundlage: <i>Test specification:</i>		47 CFR Part 15.247 (Subpart: C), October, 2008 ANSI C63.4-2003 FCC Public Notice DA 00-705, Released March 30, 2000 RSS-210 (Issue 7): 2007 RSS-Gen (Issue 2): 2007			
Prüfresultat: <i>Test Result:</i>		Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). The test item passed the test specification(s).			
Prüflaboratorium: <i>Testing Laboratory:</i>		TÜV Rheinland Japan Ltd. - Global Technology Assessment Center 4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan			
geprüft/ tested by:			kontrolliert/ reviewed by:		
2009-06-17 T. Cheung / Inspector			2009-06-17 R. Sehb / Reviewer		
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>
Sonstiges / Other Aspects:					
Details refer to Section 1: "General Remarks"					
Abkürzungen:			Abbreviations:		
P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet			P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested		
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i>					

TEST SUMMARY

3.2.1 VOLTAGE REQUIREMENTS, FCC 15.31(E)

RESULT: PASS

3.2.2 ANTENNA REQUIREMENTS, FCC 15.203, FCC 15.204 AND RSS-GEN 7.1.4

RESULT: PASS

5.1.1 CONDUCTED OUTPUT POWER AT ANTENNA TERMINALS, FCC 15.247(B)(1) AND RSS-210 A8.1(B)

RESULT: PASS

5.1.2 CARRIER FREQUENCY SEPARATION, FCC 15.247(A)(1) AND RSS-210 A8.1(B)

RESULT: PASS

5.1.3 20dB BANDWIDTH, FCC 15.247(A)(1)(II) AND RSS-210 A8.1(A)

RESULT: PASS

5.1.4 HOPPING CHARACTERISTICS NUMBER OF HOPPING FREQUENCIES, FCC 15.247(A)(1)(III) AND RSS-210 A8.1(D)

RESULT: PASS

5.1.5 HOPPING CHARACTERISTICS AVERAGE TIME OF OCCUPANCY, FCC 15.247(A)(1)(III) AND RSS-210 A8.1(D)

RESULT: PASS

5.1.6 CONDUCTED SPURIOUS EMISSION, FCC 15.247(D) AND RSS-210 A8.5

RESULT: PASS

6.1.1 MAINS TERMINAL CONTINUOUS DISTURBANCE VOLTAGE OF TRANSMITTER, FCC 15.207 AND RSS-GEN 7.2.2

RESULT: PASS

7.1.1 BAND EDGE RADIATED EMISSION, FCC 15.247(D) AND RSS- 210 2.2

RESULT: PASS

7.1.2 RADIATED EMISSION, OUT-OF-BAND AND SPURIOUS EMISSION, FCC 15.247(D), FCC 15.205, FCC 15.209, RSS-210 2.2, RSS-210 A8.5 AND RSS-GEN 7.2.1

RESULT: PASS

7.2.1 RADIATED EMISSION OF RECEIVER, FCC 15.109, RSS-210 2.2, RSS-210 2.6, RSS-210 A8.5, RSS-GEN 7.2.3.2

RESULT: PASS

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1. General Remarks

There are 3 different types of AC-DC adaptors and single type of DC-DC adaptor for the Bluetooth Stereo Headset.

Model name of the AC-DC adaptors: AC-3, AC-4 and AC-5

Model name of the DC-DC adaptor: DC-4

The AC-DC adaptors: AC-3, AC-4 and AC-5 and DC-DC adaptor: DC-4 were pre-tested before the representative adaptors were selected to conduct the full test with the Wireless Stereo Headset. All the adaptors were scanned with spectrums, Adaptor AC-5 was found that it causes the worst measurement. AC-5 was selected as representative adaptor for all testing.

Test report number	Content
12307931 003	Exposure letter
12307931 004	Intentional radiator
12307931 005	Unintentional radiator

1.1 Complementary Materials

All attachments are integral parts of this test report.

2. Test Sites

2.1 Test Facilities

TÜV Rheinland Japan Ltd. - Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan

The used test equipment is in accordance with CISPR 16 for measurement of radio interference.

The Federal Communication Commission has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance with the requirements of section 2.948 of the FCC rules.

The description of the test facility is listed under FCC registration number 299054.

The Industry Canada has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance. The description of the test facility is listed under O.A.T.S filing number 3466B.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Model Name	Serial Number	Equipment ID	Calibrated until
For Antenna Port Conducted Emission					
Receiver	Rohde & Schwarz	ESU 8	100025	RF-0020	2010-02
Receiver	Rohde & Schwarz	ESU 40	100029	RF-0021	2010-01
Spectrum Analyzer	Rohde & Schwarz	FSP30	10006/030	BT-8017	2009-08
RF Power Meter	Agilent	N1911A	MY451017 37	BT-8226	2009-10
RF Peak Power Sensor	Agilent	N1921A	MY452422 28	BT-8227	2009-10
DC Power Supply	Hewlett Packard	6653A	-	RF-0003	N/A
For AC Mains Conducted Emission					
Receiver	Rohde & Schwarz	ESU 40	100029	RF-0021	2010-01
LISN	Rohde & Schwarz	ENV216	100276	RF-0016	2009-05
For Radiated Emission					
Receiver	Rohde & Schwarz	ESU 40	100029	RF-0021	2010-01

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Kind of Equipment	Manufacturer	Model Name	Serial Number	Equipment ID	Calibrated until
RF Selector (10m)	Toyo Corporation	NS4900	0703-182	RF-0029	2010-05
3dB Attenuator 50Ohm	Tamagawa Electronics Co., Ltd.	CFA-01	-	RF-0265	2010-05
Low Noise Pre-Amplifier	TSJ	MLA-10K01-B01-35	1370750	RF-0253	2010-05
Microwave Pre-Amplifier, 1-8GHz	Toyo Corporation	TPA0108-40	0634	RF-0052	2009-12
Band Reject Filter	Nitsuki	NF-49BT	027	RF-0131	2009-12
Biconical Antenna, 30-300MHz	EMCO	3110B	9603-2379	RF-0207	2010-03
Log-periodic Antenna, 250-1000MHz	Schwarzbeck	UHALP 9108 A1	UHALP 9108-A 0845	RF-0287	2010-05
Horn Antenna, 1-10GHz	Schwarzbeck	BBHA9120B	419	RF-0050	2010-05
Horn Antenna with Pre-Amplifier, 2-18GHz	Toyo Corporation	HAP06-18W	00000025	RF-0065	2010-05
Horn Antenna with Pre-Amplifier, 18-26.5GHz	Toyo Corporation	HAP18-26N	00000010	RF-0070	2010-05
Constant Voltage Constant Frequency Stabilizers					
CVCF (Shielded Room)	NF Corporation	ESU2000S	9075612	RF-0210	N/A
CVCF Booster (Shielded Room)	NF Corporation	ESU2000B	9074403	RF-0211	N/A
CVCF (10m chamber)	NF Corporation	ESU2000S	9067307	RF-0212	N/A
CVCF Booster (10m chamber)	NF Corporation	ESU2000B	9074408	RF-0213	N/A

2.3 Measurement Uncertainty

Table 2: Emission Measurement Uncertainty

Measurement Type	Frequency	Uncertainty
Conducted Emission	150kHz - 30MHz	±1.4dB
Antenna Port Conducted Emissions	< 1GHz	±0.39dB
	> 1GHz	±0.68dB
Radiated Emission (Horizontal Orientation)	30MHz - 1GHz	±4.8dB
	> 1GHz	±5.2dB
Radiated Emission (Vertical Orientation)	30MHz - 1GHz	±4.2dB
	> 1GHz	±5.2dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT (Equipment Under Test) Nokia Wireless Stereo Headset is intended to operate with audio peripherals included cellular phone and music player as hands free wireless or wired headset. BH-905 has external audio input interface of $\phi 2.5\text{mm}$, 4-pole jack. It is possible to connect it with the other device by cable through audio Jack of BH-905.

There are 4 different adaptors of audio jack.

1. AD-70: 3 pole f3.5mm(female) – 3 pole f6.2mm(male) (Residential stereo use)
2. AD-71: 3 pole f3.5mm(female) – 3 pole f3.5mm(male) (Airplane earphone use)
3. AD-52: 4 pole f3.5mm(female) – 4 pole f2.5mm(male)
4. AD-63: 4 pole f3.5mm(female) – 3 pole f3.5mm(male)

There are 2 different cables

1. CA-143U: 4 pole f2.5mm(female) – 4 pole f3.5mm(male) Connect with mobile phone(Cable length: 120cm)
2. CA-144U: 3 pole f3.5mm(female) – 3 pole f3.5mm(male) Extension cable(Cable length: 170cm)

There are 9 possible combination of the connection:

1. BH-905 <--(BT connection)--> Mobile phone
2. BH-905 <-- CA-143U --> Mobile phone
3. BH-905 <-- CA-143U + AD-52 --> Mobile phone
4. BH-905 <-- CA-143U + AD-63 --> Music player
5. BH-905 <-- CA-143U + AD-63 + AD-70 --> Music player
6. BH-905 <-- CA-143U + AD-63 + AD-71 --> Airplane
7. BH-905 <-- CA-143U + AD-63 + CA-144U --> Music player
8. BH-905 <-- CA-143U + AD-63 + CA-144U + AD-70 --> Music player
9. BH-905 <-- CA-143U + AD-63 + CA-144U + AD-71 --> Airplane

Remark: Details of representative test setup and testing on wired cable connection, please refer to test report 12307931 002.

3.2 System Details

Bluetooth core spec.:	Version 2.1 + EDR
Power output:	7.94dBm
Antenna gain:	-1.0dBi
Antenna type:	Inverted-F antenna
Mounting type:	Printed on PCB
Frequency range:	2402 – 2480 MHz
Number of channel:	79
Channel spacing:	1 MHz
Modulation type:	FHSS
FCC Classification:	DSS
Classification:	F1D
HW version:	0.41
Mech version:	0.4
SW version:	0.6
System Input Voltage:	DC 3.7V, Battery operated AC 110-240V, 50/60Hz, AC-DC adaptor DC 12/24V, DC-DC adaptor
Protection Class:	II & III

3.2.1 Voltage Requirements, FCC 15.31(e)

RESULT:

PASS

The EUT has an internal voltage regulator to supply the RF circuit. Hence it complies with the power supply requirements.

3.2.2 Antenna Requirements, FCC 15.203, FCC 15.204 and RSS-Gen 7.1.4

RESULT:

PASS

The EUT has an inverted-F antenna printed on the PCB, details refer to the internal photos.

3.3 Clock Frequencies

The EUT generates internally the following clock frequency:

Frequency	Source
26 MHz	Crystal of IC Bluetooth Module

3.4 Independent Operation Modes

The system was configured for testing in a typical fashion (as a customer would normally use it).

The justification and manipulation of cables and equipment in order to simulate a worst-case behavior of the test setup has been carried out as prescribed in ANSI C63.4:2003. Testing was performed at the lowest operating frequency (2402 MHz), the operating frequency in the middle of the specified frequency band (2441 MHz) and the highest operating frequency (2480 MHz).

The basic operation modes are:

- A. EUT transmits at lowest Channel (2402 MHz)
- B. EUT transmits at middle Channel (2441 MHz)
- C. EUT transmits at highest Channel (2480 MHz)
- D. EUT transmits on pseudo -random sequence on the 79 channels
- E. EUT receives packets
- F. Normal Operation mode – to simulate the data processing on EUT in below sequences
 - Data transfer through signal cable (EUT <-> Music player)*

Remark: Pre-check was performed with Music player and cellular phone in mode F, music player shows worst test result. Representative test setup was selected as mention above, details refer to test report 12307931 002.

4. Test Set-up and Operation Modes

4.1 Test Methodology

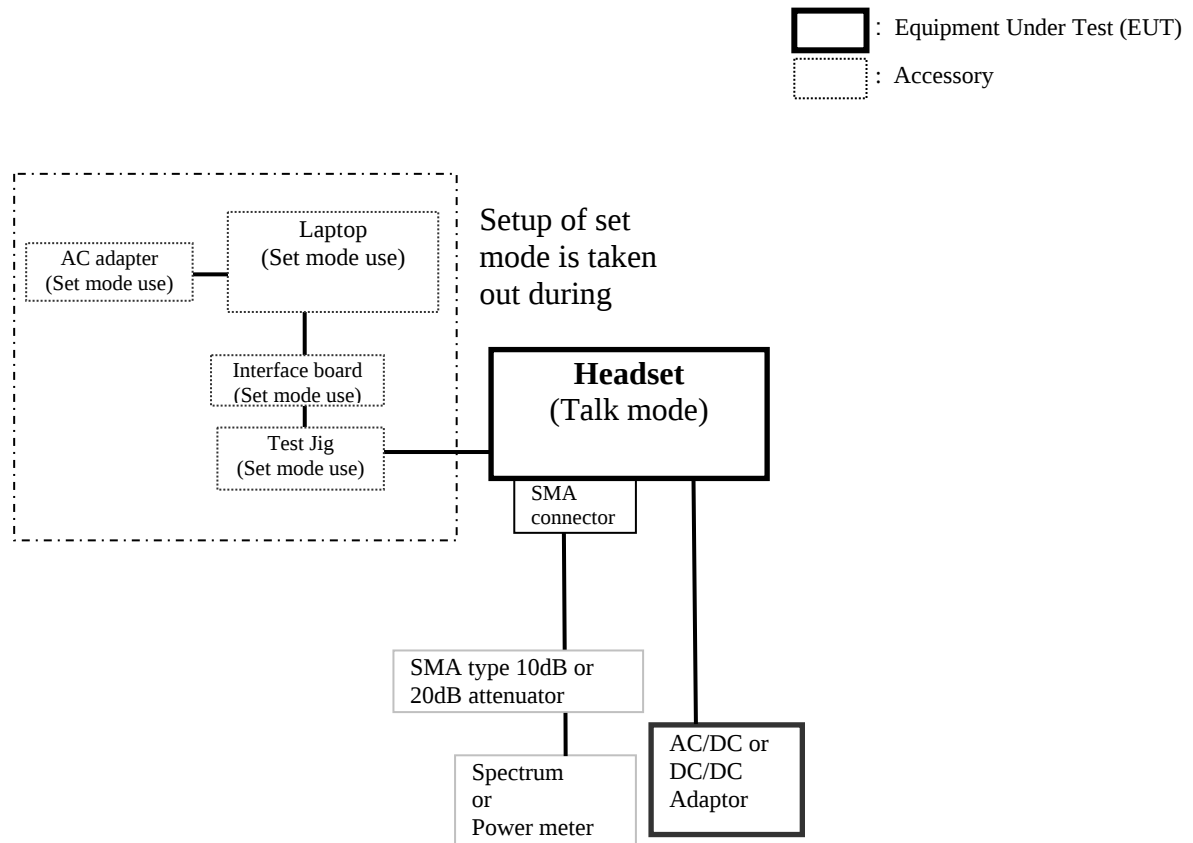
The test methodology used is based on the requirements of 47 CFR Part 15, sections 15.31, 15.33, 15.35, 15.205, 15.209, FCC Public Notice DA 00-705. Released March 30, 2000

The test methods, which have been used, are based on ANSI C63.4:2003 and RSS-Gen.

For details, see under each test item.

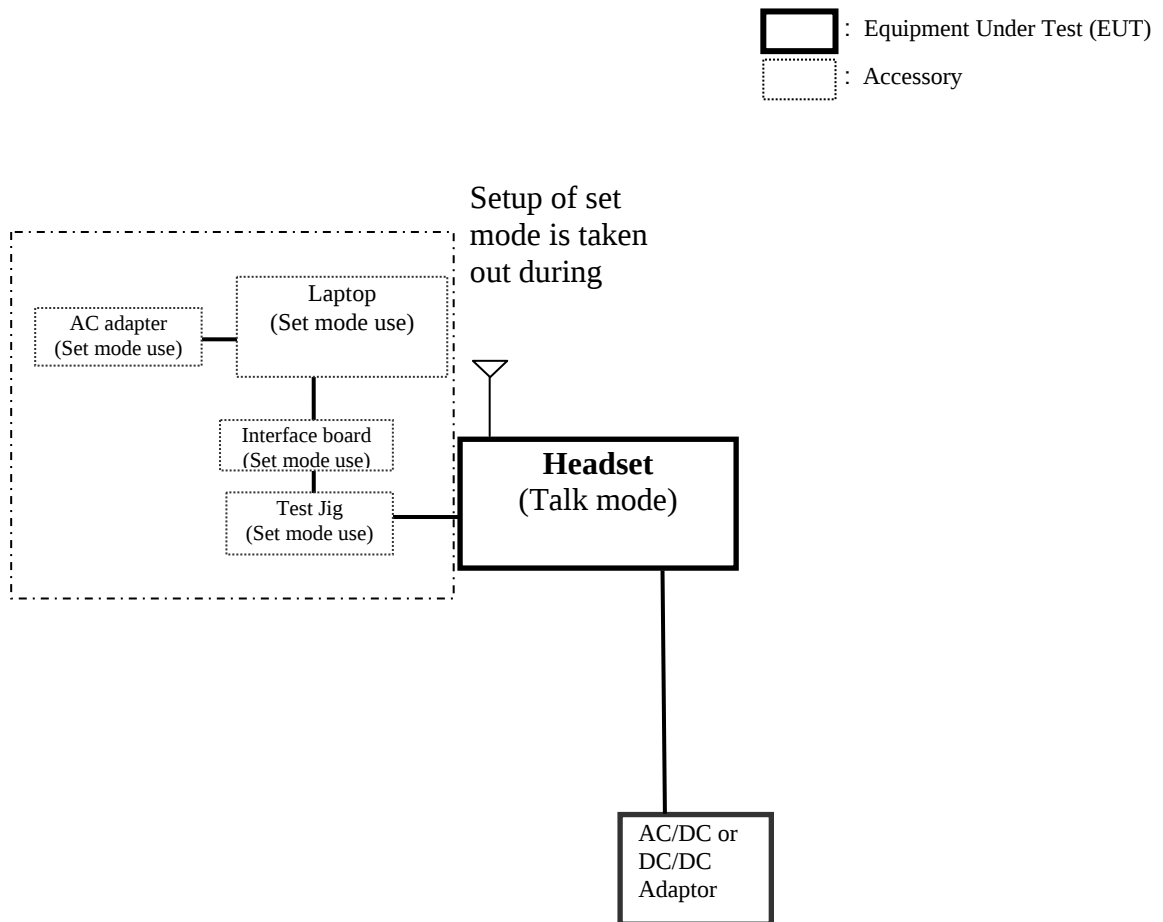
4.2 Physical Configuration for Testing

Figure 1: Test setup of Conducted radio testing



In the sample for conducted tests, the antenna was replaced by a 50Ω antenna connector.

Figure 2: Test setup of Radiated testing



The power line of the adaptor is not mention in the figure.

For more details, refer to section: Photographs of the Test Set-Up.

4.3 Test Operation and Test Software

A software Bluetest3, SW version: 2.0 was used for testing.

The software was running on the external PC performing continuous radio communication of the EUT with selected operation mode, frequency channel, packet type, packet size. It was used to enable on the EUT the test operation mode specified in section 3.4.

4.4 Special Accessories and Auxiliary Equipment

The product has been set up or tested with the following additional accessories:

1. Product: Personal Computer
Manufacturer: IBM
Model: 2684-KAU
Rated voltage: AC120V
Input current: 1.5A
Frequency: 60Hz
Serial number: 99-DAY98
2. Product: AC Adapter
Manufacturer: IBM
Model: 08K5204
Rated voltage: AC120V
Frequency: 60Hz
Serial number: 11S08K824Z1Z6LV45B51U
3. Product: Interface board
Manufacturer: Hosiden
Model: Interface board
Rated voltage: 5.0V
Input current: 500mA max.
Frequency: -
Serial number: N/A
4. Product: Test jig
Manufacturer: Hosiden
Model: Test jig
Rated voltage: 3.3V max.
Input current: 500mA max.
Frequency: -
Serial number: N/A
5. Product: AC inlet converter
Manufacturer: ELECOM
Model: T-TA
Rated voltage: AC 120V
Rated power: 600W max.
Frequency: -
Serial number: N/A

6. Product: Cigarette socket
Manufacturer: un-specified
Model: un-specified
Rated voltage: 24V
Input current: -
Frequency: -
Serial number: N/A

4.5 Countermeasures to achieve EMC Compliance

No Countermeasures used to achieve compliance.

5. Test Results Conducted Testing at Antenna Port

For conducted tests, the antenna was replaced by a 50 Ω antenna connector.

5.1.1 Conducted Output Power at Antenna Terminals, FCC 15.247(b)(1) and RSS-210 A8.1(b)

RESULT:

PASS

Date of testing: 2009-05-01

Ambient temperature: 27 °C

Relative humidity: 30%

Atmospheric pressure: 1020hPa

Requirements:

For systems using frequency hopping systems in the 2400-2483.5MHz band, the maximum peak output power is 0.125W (20.97dBm).

Test procedure:

ANSI C63.4-2003, RSS-Gen 4.8 and FCC Public Notice DA 00-705, Released March 30, 2000.

The maximum peak output power (conducted) was measured directly at the antenna connector with the power meter. The final measurement takes into account the loss generated by the short cable provided by the EUT manufacturer to support the antenna connector.

The highest emission amplitudes relative to the appropriate limit were recorded in this report.

Table 3: Conducted Output Power, Packet type DH1

Power (dBm), DH1, Peak				Limit (dBm)
	1Mbps	2Mbps	3Mbps	
Lo (2402MHz)	7.45	6.20	6.40	20.97
Mid (2441MHz)	7.93	6.72	6.93	20.97
Hi (2480MHz)	7.91	6.44	6.70	20.97

Table 4: Conducted Output Power, Packet type DH3

Power (dBm), DH3, Peak				Limit (dBm)
	1Mbps	2Mbps	3Mbps	
Lo (2402MHz)	7.42	6.20	6.38	20.97
Mid (2441MHz)	7.93	6.67	6.85	20.97
Hi (2480MHz)	7.90	6.48	6.64	20.97

Table 5: Conducted Output Power, Packet type DH5

Power (dBm), DH5, Peak				Limit (dBm)
	1Mbps	2Mbps	3Mbps	
Lo (2402MHz)	7.41	6.16	6.33	20.97
Mid (2441MHz)	7.94	6.65	6.91	20.97
Hi (2480MHz)	7.87	6.44	6.66	20.97

The worst case configuration was found for the power output of the Packet type DH5 (EDR) at 1Mbps between DH1, DH3 and DH5. This was used for the rest of evaluation of the product.

5.1.2 Carrier Frequency Separation, FCC 15.247(a)(1) and RSS-210 A8.1(b)

RESULT:

PASS

Date of testing: 2009-05-14

Ambient temperature: 24 °C

Relative humidity: 34 %

Atmospheric pressure: 1004hPa

Requirements:

For systems using frequency hopping systems in the 2400-2483.5MHz band, the hopping channel carrier frequencies separated by minimum of 25kHz or the 20dB bandwidth of the hopping channel.

Test procedure:

ANSI C63.4-2003, RSS-Gen 4.8 and FCC Public Notice DA 00-705, Released March 30, 2000.

The carrier frequencies separation was measured at the antenna connector with the spectrum analyzer. Allowing the trace to stabilize and using the marker-delta function to determine the separation between the peaks of the adjacent channels.

Table 6: Carrier Frequency Separation, DH5

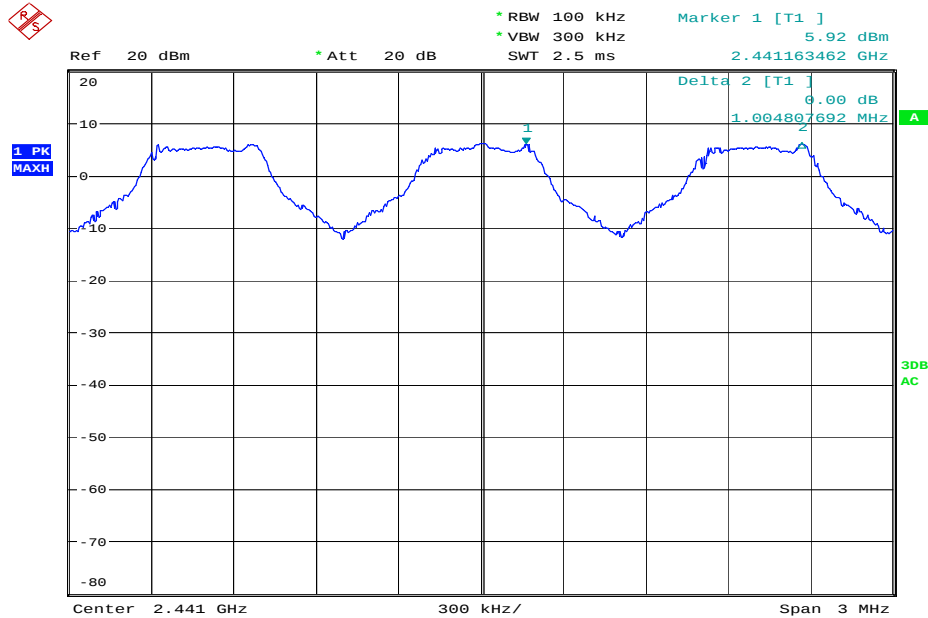
Channel Separation [kHz]	Limit
1004.81	25kHz or the 20dB bandwidth of the hopping channel.

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Figure 3: Carrier Frequency Separation, DH5



Mode D
Date: 14.MAY.2009 15:28:26

5.1.3 20dB Bandwidth, FCC 15.247(a)(1)(ii) and RSS-210 A8.1(a)

RESULT:

PASS

Date of testing: 2009-05-14

Ambient temperature: 24 °C

Relative humidity: 34 %

Atmospheric pressure: 1004hPa

Requirements:

For systems using frequency hopping systems in the 2400-2483.5MHz band, the limit is not specified. The test data was taken as reference.

Test procedure:

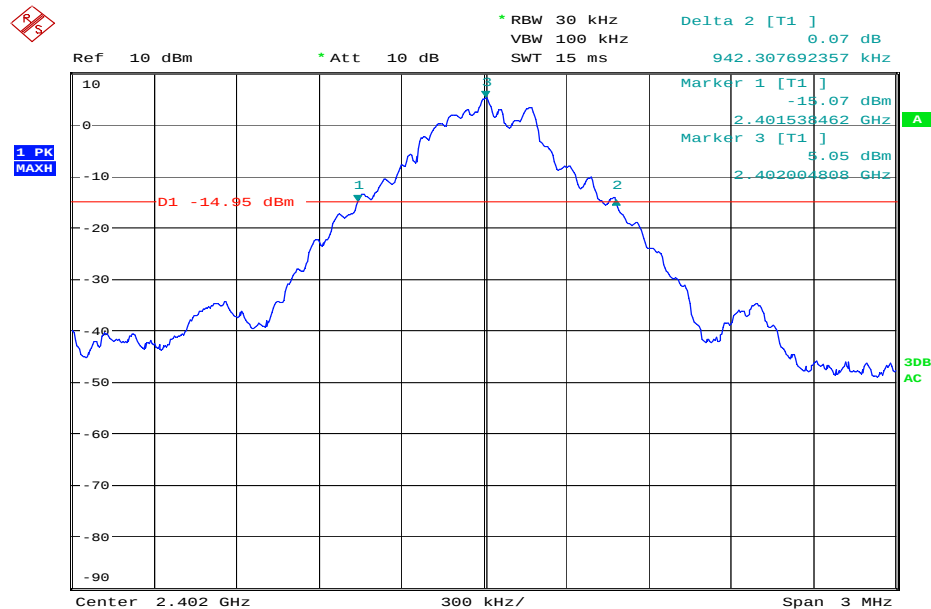
ANSI C63.4-2003, RSS-Gen 4.6.2 and FCC Public Notice DA 00-705, Released March 30, 2000.

The antenna connector was connected to a spectrum analyzer. The spectrum analyzer resolution bandwidth was set to 1% of the SPAN (10MHz). The 20dB Bandwidth was measured by using the DELTA MARKER function of the analyzer.

Table 7: 20dB Bandwidth, DH5

Frequency [MHz]	20dB Bandwidth [MHz]	Minimum Limit [kHz]
2402	0.9423	N/A
2441	0.8798	N/A
2480	0.8798	N/A

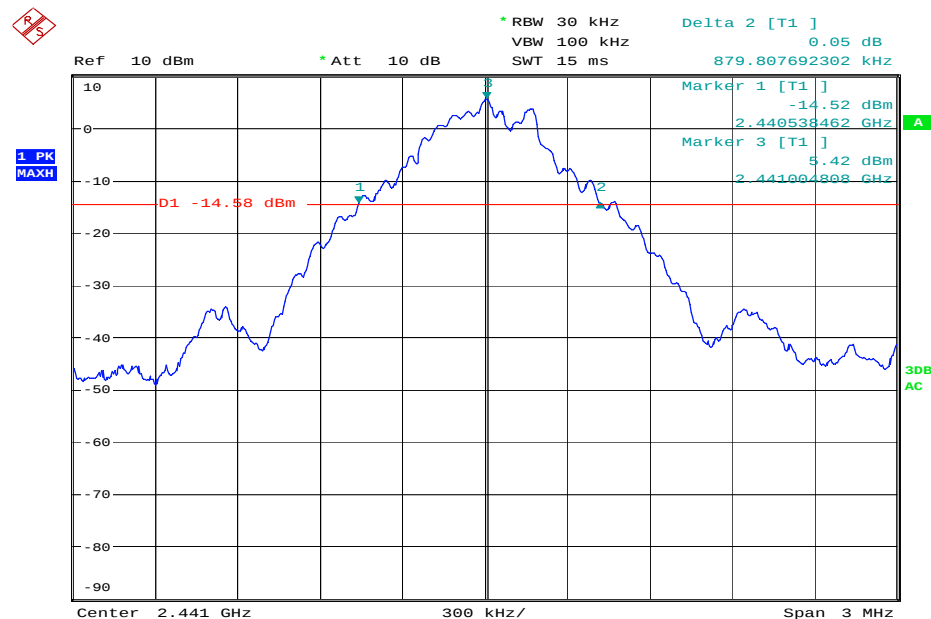
Figure 4: 20dB Bandwidth, Mode A (2402MHz)



Mode A

Date: 14.MAY.2009 17:07:17

Figure 5: 20dB Bandwidth, Mode B (2441MHz)



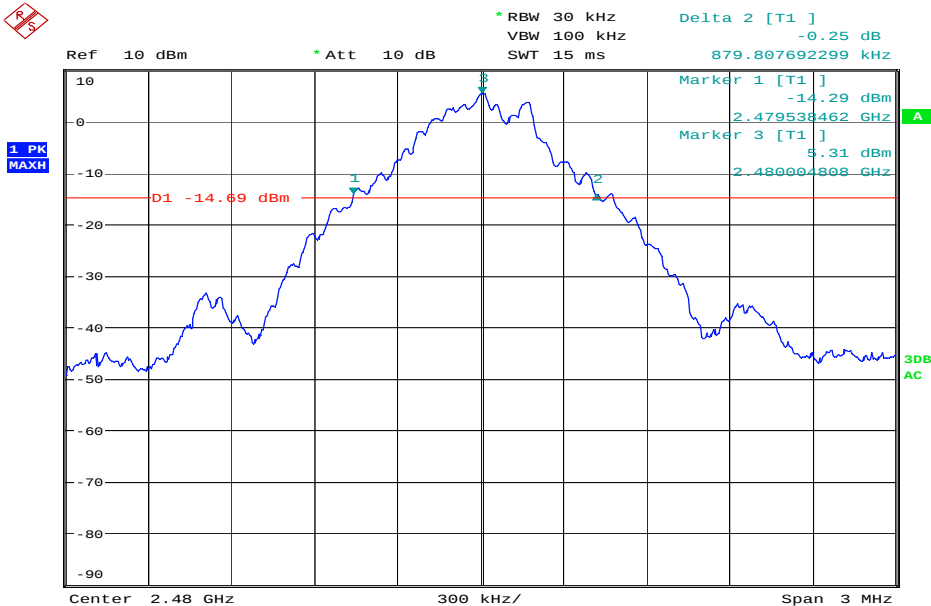
Mode B
Date: 14.MAY.2009 17:16:20

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Figure 6: 20dB Bandwidth, Mode C (2480MHz)



Mode C
Date: 14.MAY.2009 17:25:09

5.1.4 Hopping Characteristics Number of Hopping Frequencies, FCC 15.247(a)(1)(iii) and RSS-210 A8.1(d)

RESULT:

PASS

Date of testing: 2009-05-14

Ambient temperature: 24 °C

Relative humidity: 34 %

Atmospheric pressure: 1004hPa

Requirements:

For systems using frequency hopping systems in the 2400-2483.5MHz band, the number of hopping frequency is at least 15 channels.

Test procedure:

ANSI C63.4-2003, RSS-Gen 4.8 and FCC Public Notice DA 00-705, Released March 30, 2000.

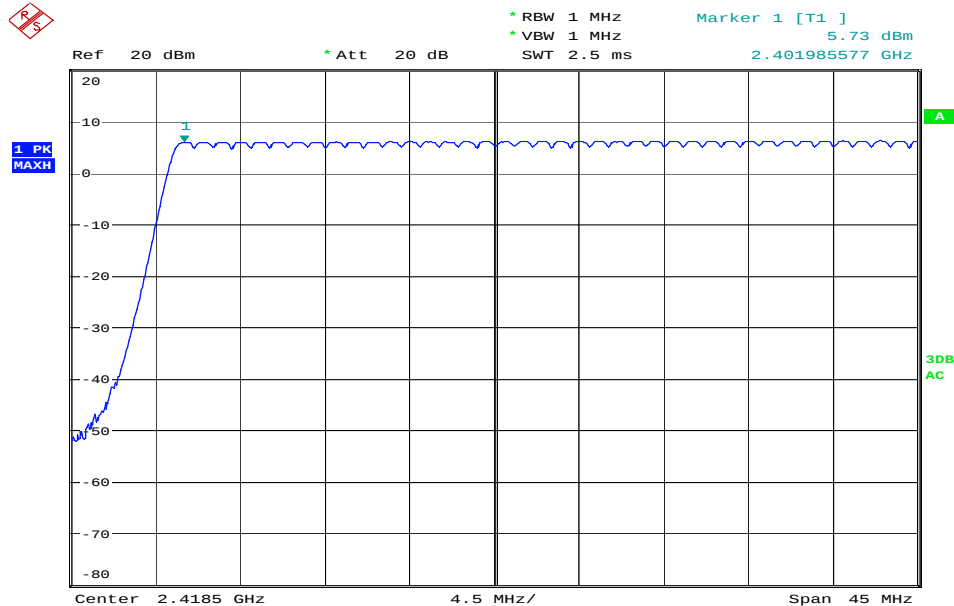
The antenna connector was connected to a spectrum analyzer. Allowing the trace to stabilize and breaking into 2 plots which clearly show all the hopping frequencies.

Table 8: Carrier Frequency Separation, DH5

Hopping Channel	Limit
79	15

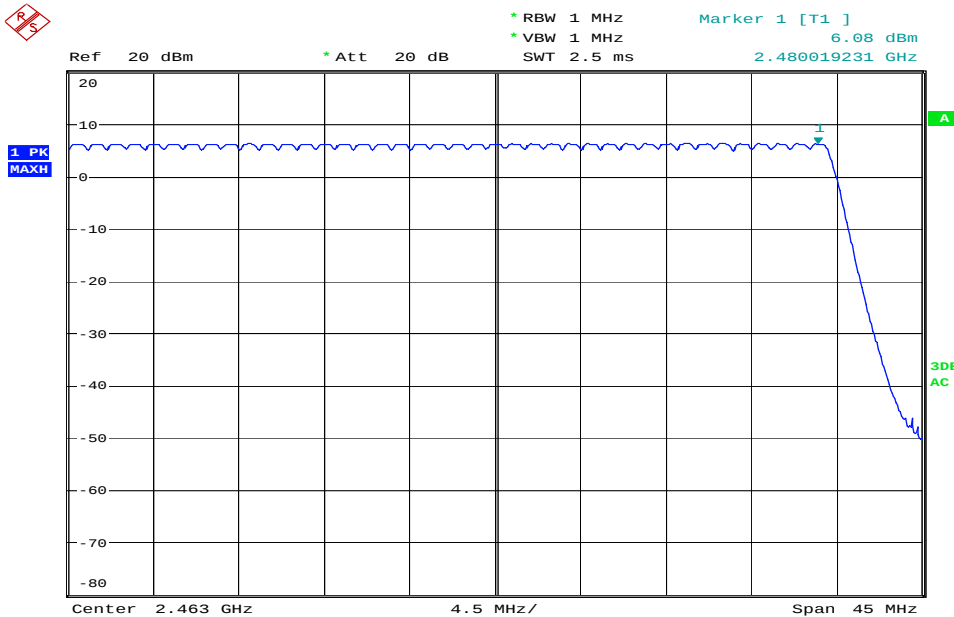
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Figure 7: Number of hopping frequencies, Mode D



Mode D
Date: 14.MAY.2009 15:32:23

Figure 8: 20dB Bandwidth, Mode D



Mode D
Date: 14.MAY.2009 15:38:03

**5.1.5 Hopping Characteristics Average time of Occupancy, FCC
15.247(a)(1)(iii) and RSS-210 A8.1(d)**

RESULT:

PASS

Date of testing: 2009-05-14

Ambient temperature: 24 °C

Relative humidity: 34 %

Atmospheric pressure: 1004hPa

Requirements:

For systems using frequency hopping systems in the 2400-2483.5MHz band, the average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

Test procedure:

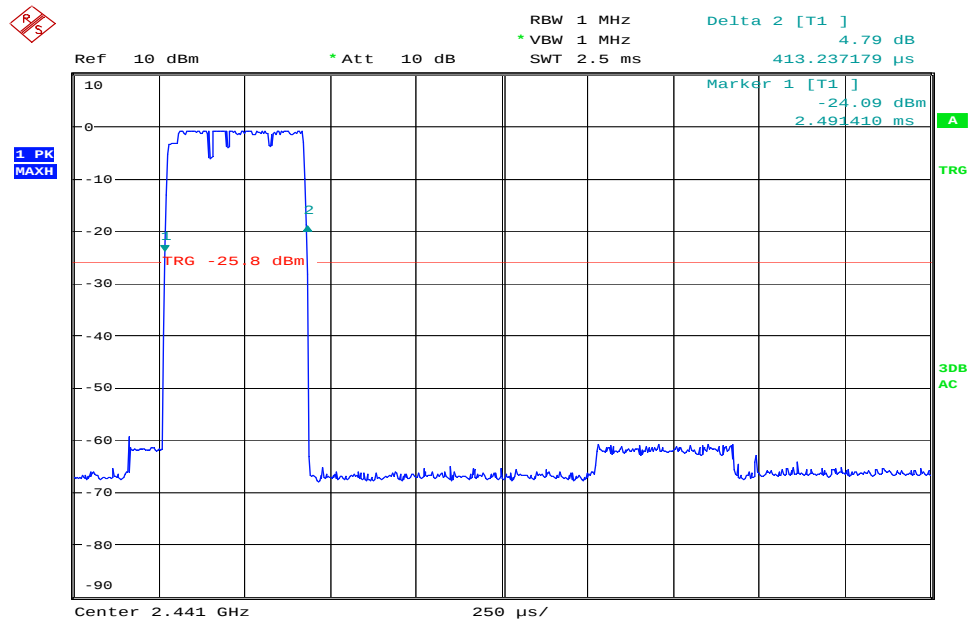
ANSI C63.4-2003, RSS-Gen 4.8 and FCC Public Notice DA 00-705, Released March 30, 2000.

The antenna connector was connected to a spectrum analyzer. The dwell time was measured by using the DELTA MARKER function of the analyzer.

Table 9: Average time of Occupancy

Packet type	Dwell time [ms]	Limit
DH1	130.1	400ms per 31.6 second
DH5	314.7	

Figure 9: Average time of occupancy, Mode D, DH1



Mode D, DH-1
Date: 14.MAY.2009 16:37:44

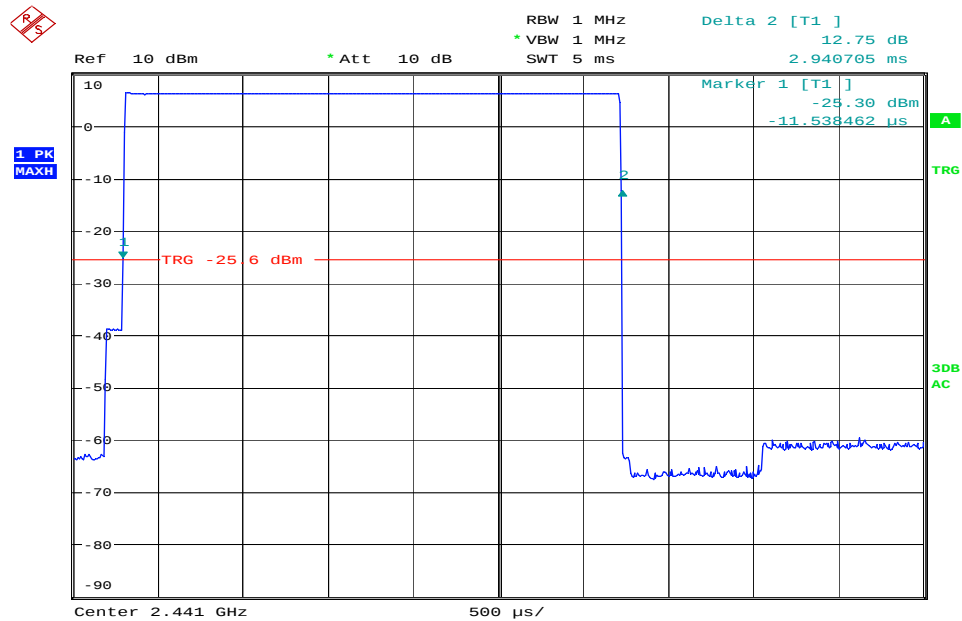
DH1 packet:

Each tx-time per appearance is 0.413ms

Dwell time= 315* 0.413= 130.1ms

Remark: 315 peaks was counted within 31.6s

Figure 10: Average time of occupancy, Mode D, DH5



Mode D, DH-5
Date: 14.MAY.2009 16:18:39

DH5 packet:

Each tx-time per appearance is 2.9407ms

Dwell time= 107* 2.9407= 314.7ms

Remark: 107 peaks was counted within 31.6s

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5.1.6 Conducted Spurious Emission, FCC 15.247(d) and RSS-210 A8.5

RESULT:

PASS

Date of testing: 2009-05-14

Ambient temperature: 24 °C

Relative humidity: 34 %

Atmospheric pressure: 1004hPa

Requirements:

In any 100 kHz bandwidth outside the frequency band, the RF power shall be at least 20 dBc below that of the maximum in-band 100 kHz emission.

Test procedure:

ANSI C63.4-2003, RSS-Gen 4.9 and FCC Public Notice DA 00-705, Released March 30, 2000.

A spectrum analyzer was connected to the antenna port of the transmitter. Analyzer Resolution Bandwidth was set to 100 kHz. For each channel investigated, the in-band and out-of-band emission measurements were performed. The out-of-band emissions were measured from 30 MHz to 25 GHz (10th harmonics).

The final measurement takes into account the loss generated by all the involved cables.

Table 10: Conducted Spurious Emission, Mode A (2402MHz), DH5

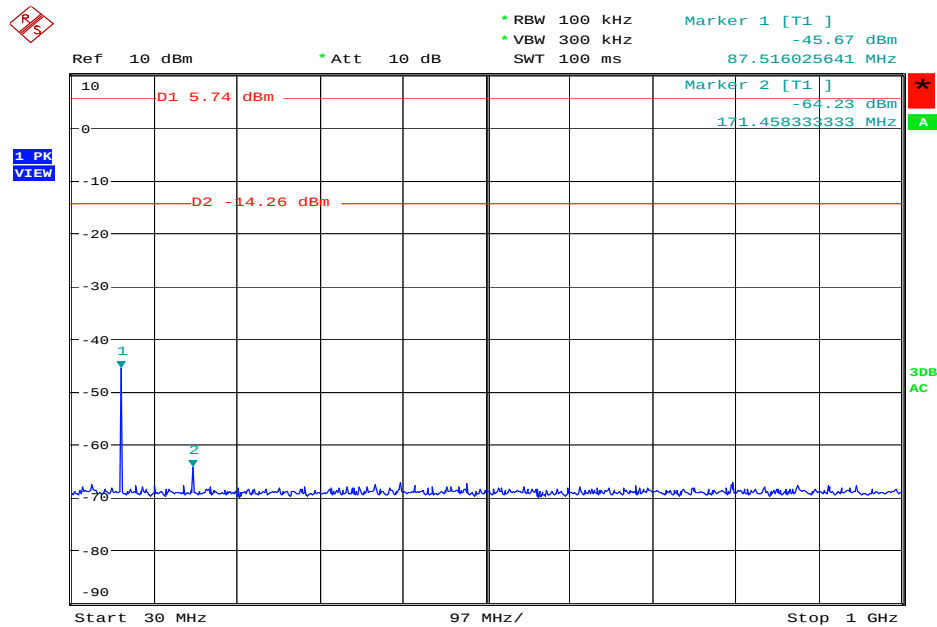
Frequency [MHz]	Reading [dBm]	Correction Factor [dB]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
87.52	-45.67	0.61	-45.06	-13.23	31.83
171.46	-64.23	0.60	-63.63	-13.23	50.39
1602	-63.21	0.92	-62.29	-13.23	49.06
2352	-61.86	0.99	-60.87	-13.23	47.64
2378	-56.56	0.97	-55.59	-13.23	42.36
2404	5.74	1.03	6.77	N/A	N/A
2429	-55.06	1.03	-54.03	-13.23	40.79
2455	-59.32	1.02	-58.30	-13.23	45.07
3205	-59.79	1.10	-58.69	-13.23	45.46
4006	-63.21	1.03	-62.18	-13.23	48.95
4808	-46.54	1.27	-45.27	-13.23	32.04
6410	-66.75	1.39	-65.36	-13.23	52.12
7204	-47.26	1.31	-45.95	-13.23	32.71
9607	-55.79	1.59	-54.20	-13.23	40.97
12196	-67.70	1.62	-66.08	-13.23	52.85
22292	-68.12	2.08	-66.04	-13.23	52.80

Notes: Limit = Reading of fundamental + Correction factor – 20dB

Emission level = Reading + Correction factor

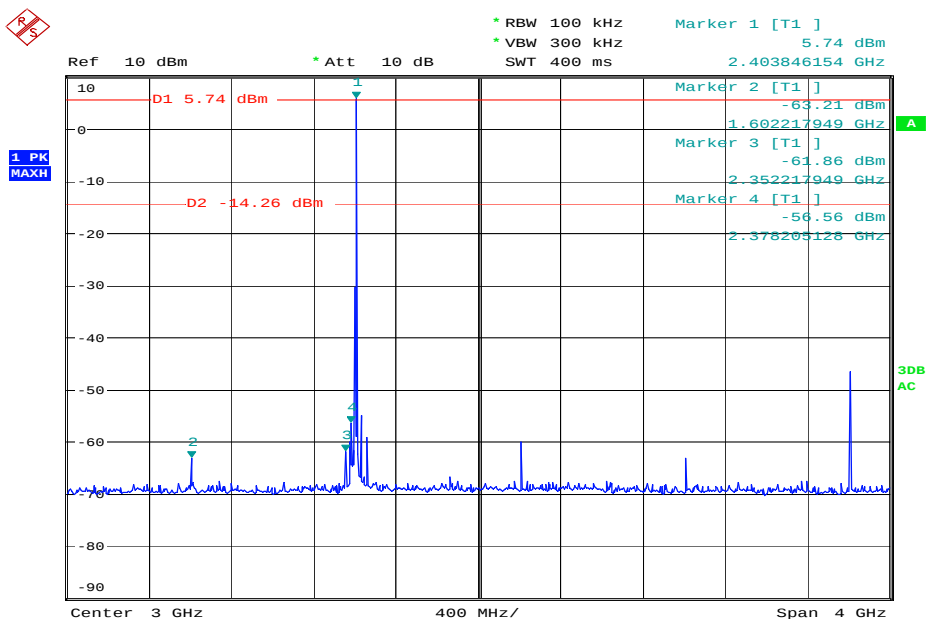
Correction factor = Total cable loss

Figure 11: Spurious Emission from 30MHz to 1GHz, Mode A (2402MHz), DH5



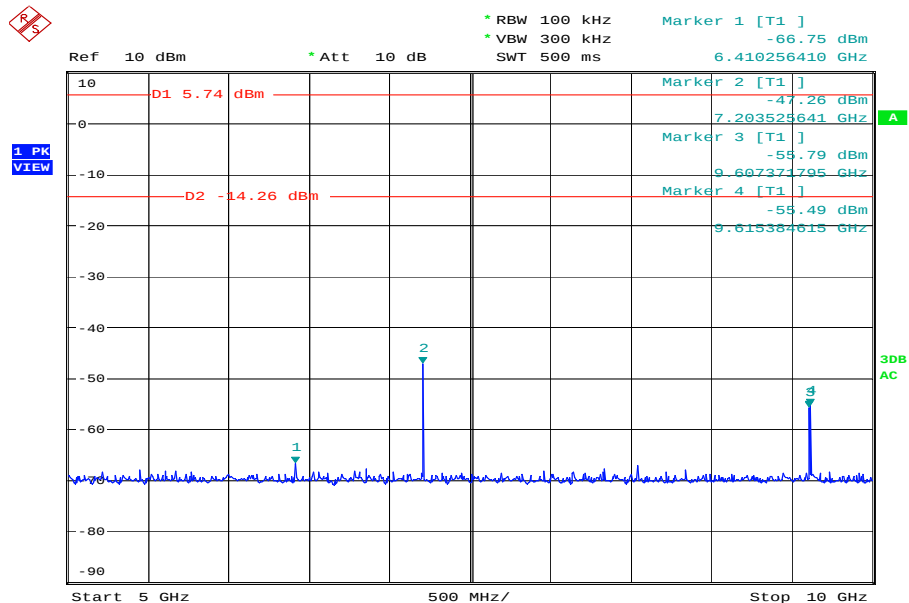
Mode A
Date: 14.MAY.2009 17:58:37

Figure 12: Spurious Emission from 1 to 5GHz, Mode A (2402MHz), DH5



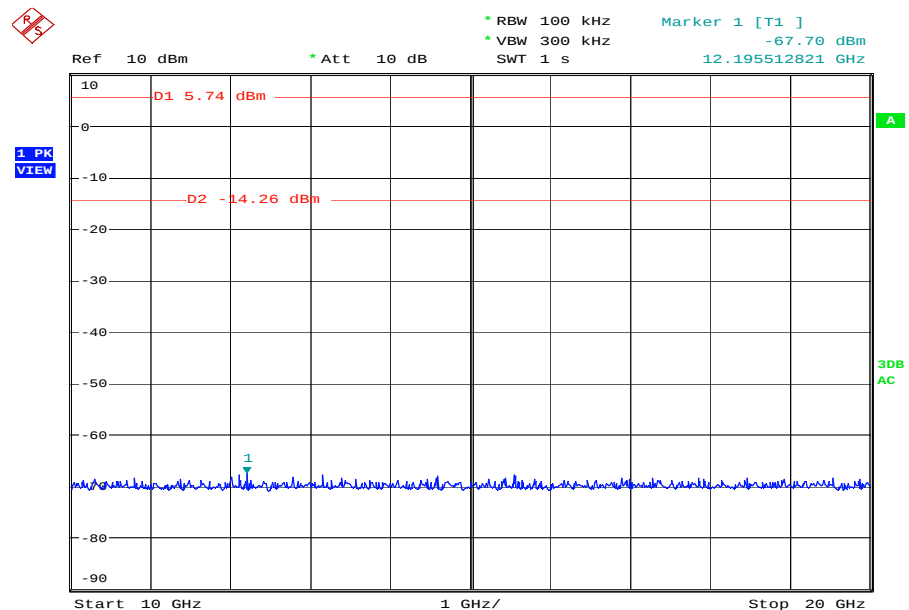
Mode A
Date: 14.MAY.2009 17:47:18

Figure 13: Spurious Emission from 5 to 10GHz, Mode A (2402MHz), DH5



Mode A
Date: 14.MAY.2009 18:00:50

Figure 14: Spurious Emission from 10 to 20GHz, Mode A (2402MHz), DH5



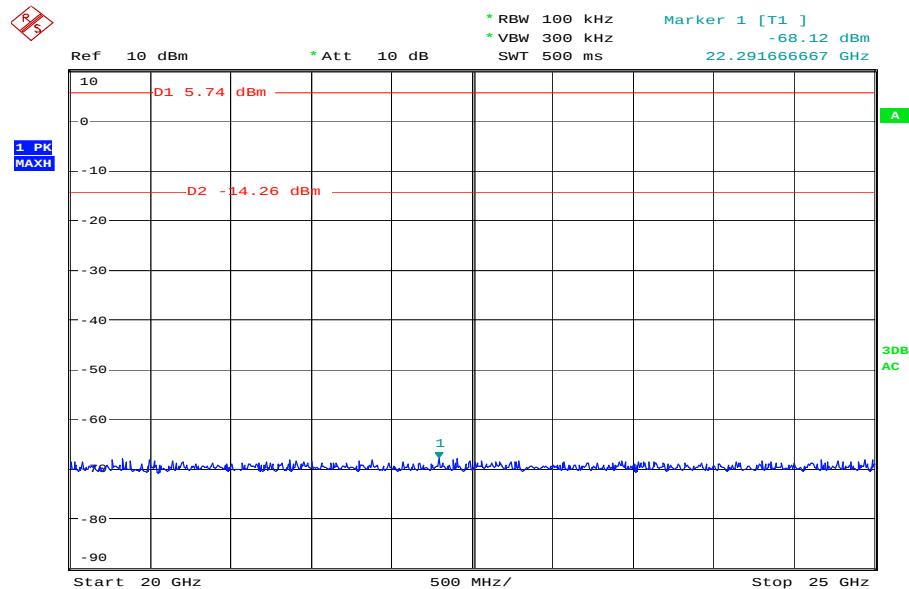
Mode A
Date: 14.MAY.2009 18:02:10

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Figure 15: Spurious Emission from 20 to 25GHz, Mode A (2402MHz), DH5



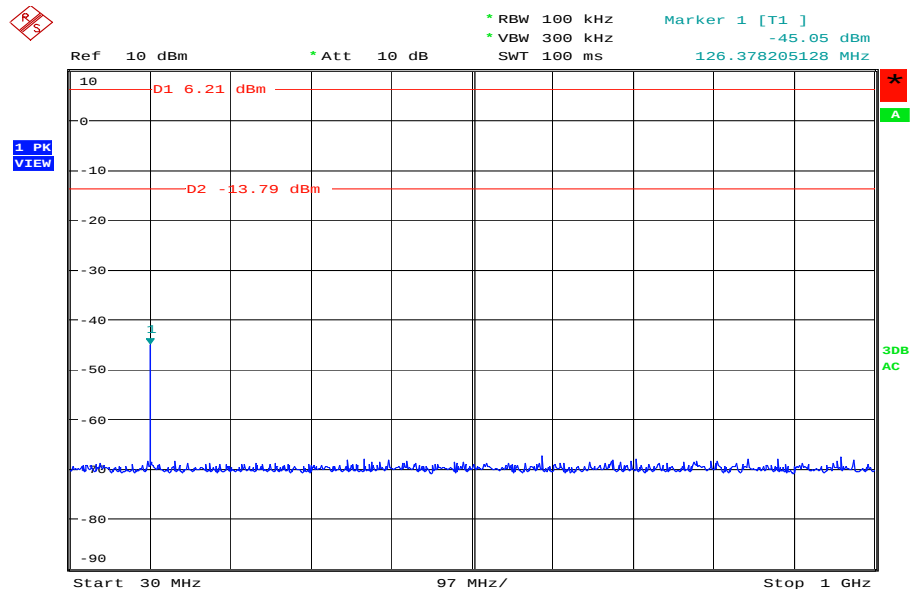
Mode A
Date: 14.MAY.2009 18:03:07

Table 11: Conducted Spurious Emission, Mode B (2441MHz), DH5

Frequency [MHz]	Reading [dBm]	Correction Factor [dB]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
126.38	-45.05	0.62	-44.43	-12.77	31.66
1622	-63.78	0.89	-62.89	-12.77	50.13
2391	-60.60	1.03	-59.57	-12.77	46.81
2417	-56.33	1.01	-55.32	-12.77	42.56
2442	6.21	1.02	7.23	N/A	N/A
2468	-55.44	1.03	-54.41	-12.77	41.65
2494	-59.78	1.05	-58.73	-12.77	45.97
3256	-60.79	1.11	-59.68	-12.77	46.92
4071	-64.61	1.14	-63.47	-12.77	50.70
4885	-45.36	1.20	-44.16	-12.77	31.39
7324	-53.89	1.36	-52.53	-12.77	39.77
16506	-68.34	1.92	-66.42	-12.77	53.66
23205	-68.01	2.12	-65.89	-12.77	53.12

Notes: Limit = Reading of fundamental + Correction factor – 20dB
Emission level = Reading + Correction factor
Correction factor = Total cable loss

Figure 16: Spurious Emission from 30MHz to 1GHz, Mode B (2441MHz), DH5



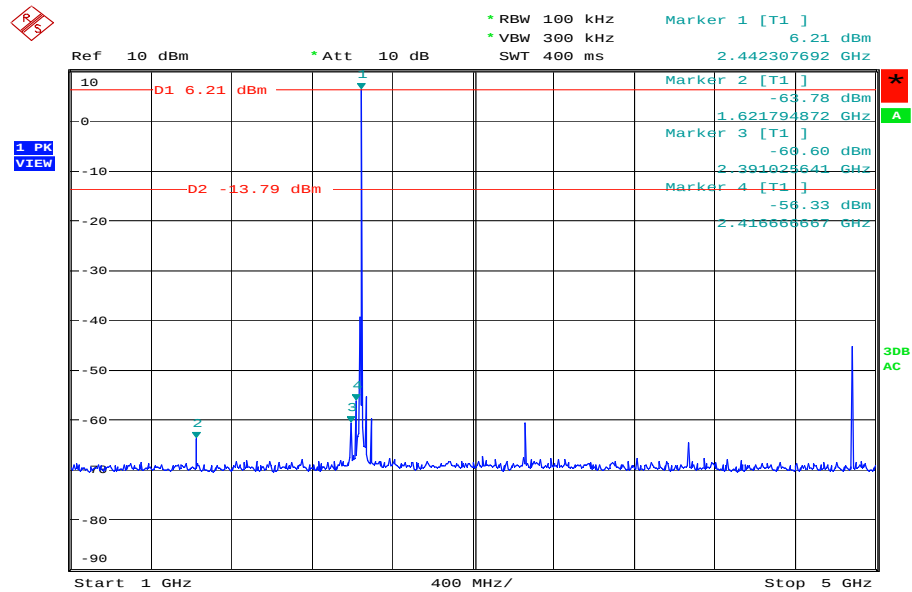
Mode B
Date: 14.MAY.2009 18:24:22

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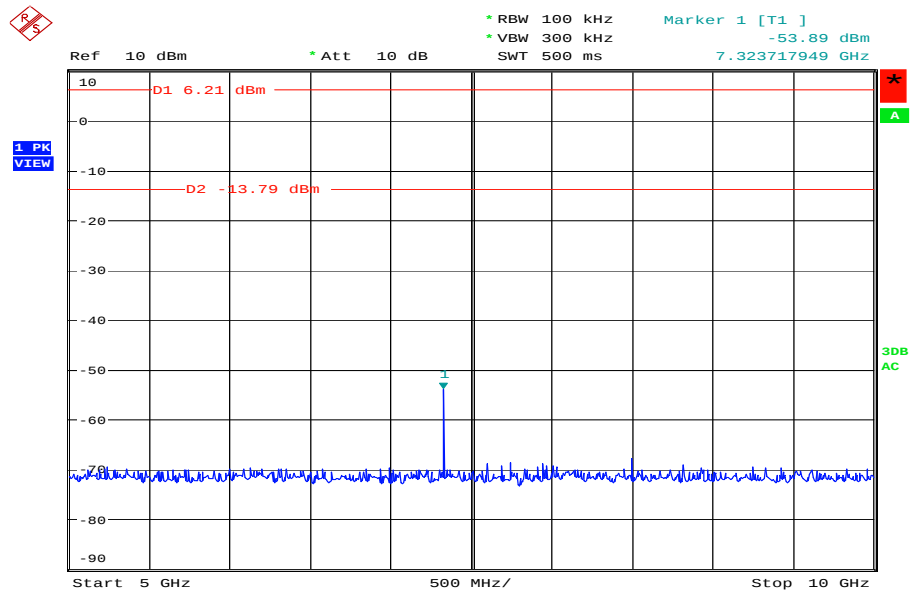
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Figure 17: Spurious Emission from 1 to 5GHz, Mode B (2441MHz), DH5



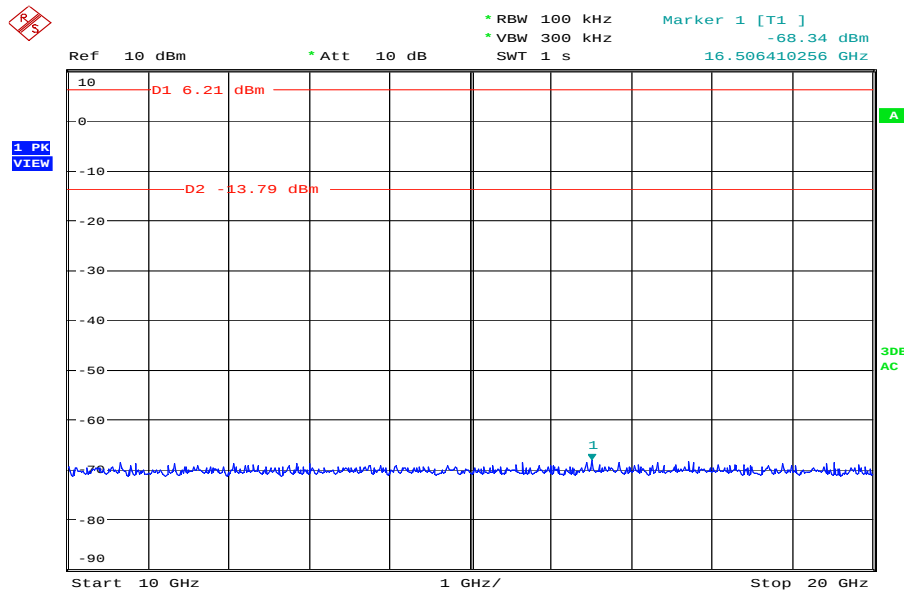
Mode B
Date: 14.MAY.2009 18:21:56

Figure 18: Spurious Emission from 5 to 10GHz, Mode B (2441MHz), DH5



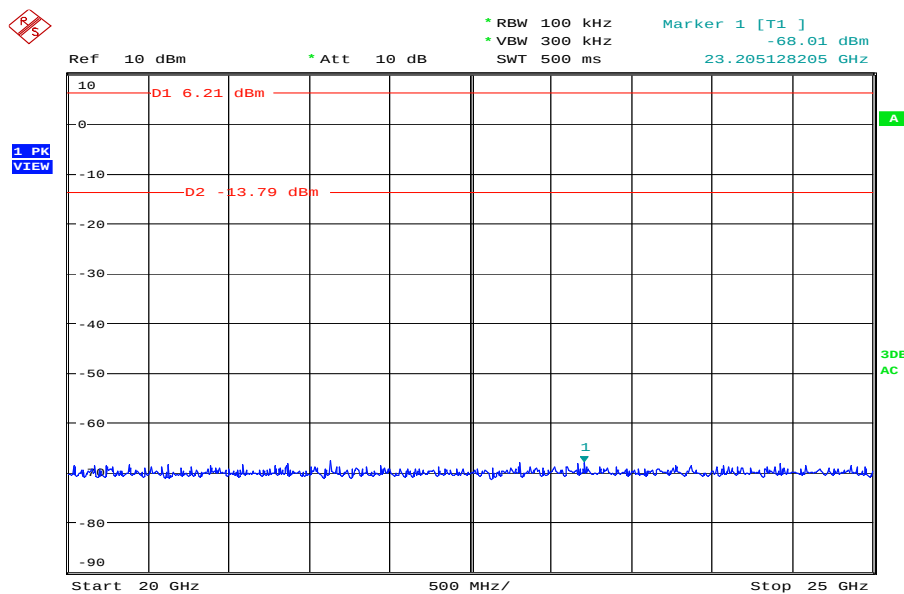
Mode B
Date: 14.MAY.2009 18:25:49

Figure 19: Spurious Emission from 10 to 20GHz, Mode B (2441MHz), DH5



Mode B
Date: 14.MAY.2009 18:28:12

Figure 20: Spurious Emission from 20 to 25GHz, Mode B (2441MHz), DH5



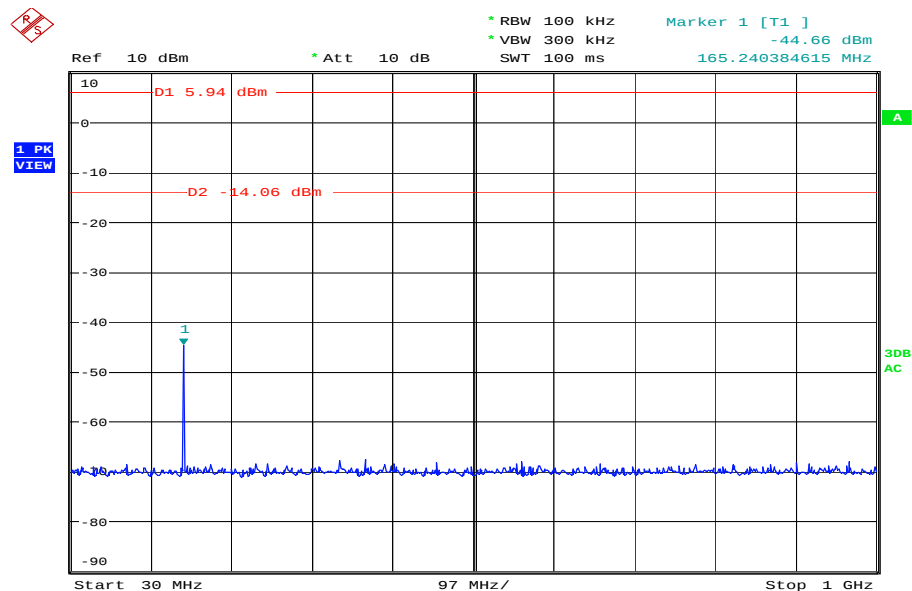
Mode B
Date: 14.MAY.2009 18:28:59

Table 12: Conducted Spurious Emission, Mode C (2480MHz), DH5

Frequency [MHz]	Reading [dBm]	Correction Factor [dB]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
165.24	-44.66	0.60	-44.06	-13.05	31.00
1654	-65.51	0.97	-64.54	-13.05	51.48
2429	-59.99	1.03	-58.96	-13.05	45.90
2455	-56.62	1.02	-55.60	-13.05	42.55
2481	5.94	1.01	6.95	N/A	N/A
2506	-55.50	1.02	-54.48	-13.05	41.42
2532	-60.76	1.05	-59.71	-13.05	46.65
3308	-60.77	1.11	-59.66	-13.05	46.60
4135	-65.68	1.15	-64.53	-13.05	51.48
4962	-44.71	1.29	-43.42	-13.05	30.36
7444	-57.30	1.45	-55.85	-13.05	42.79
10385	-68.37	1.64	-66.73	-13.05	53.67
20353	-67.42	2.02	-65.40	-13.05	52.35

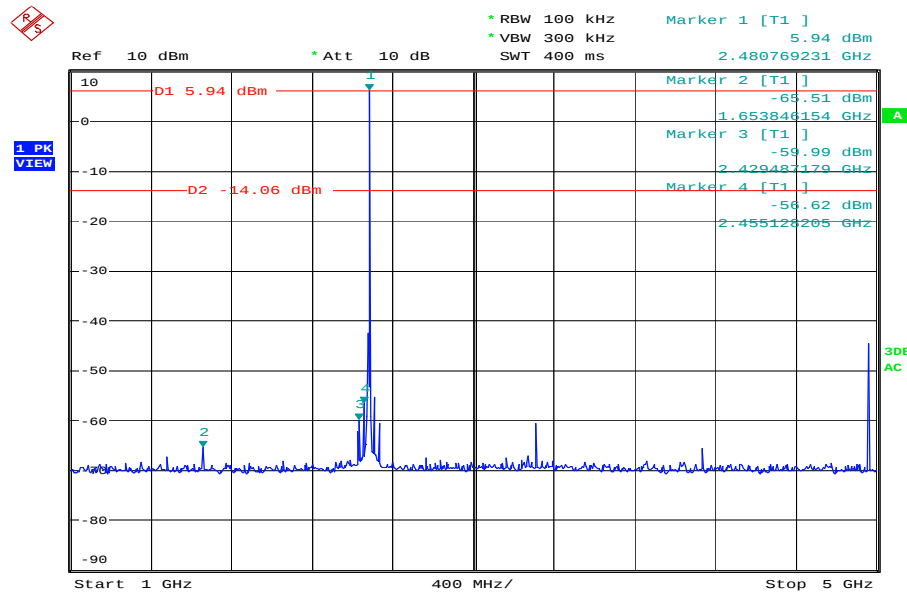
Notes: Limit = Reading of fundamental + Correction factor – 20dB
Emission level = Reading + Correction factor
Correction factor = Total cable loss

Figure 21: Spurious Emission from 30MHz to 1GHz, Mode C (2480MHz), DH5



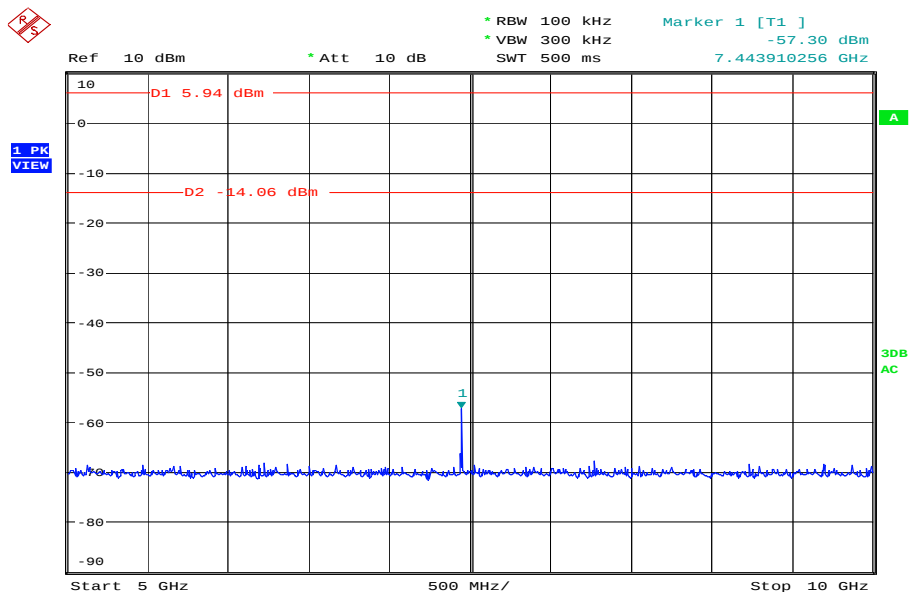
Mode C
Date: 14.MAY.2009 18:36:35

Figure 22: Spurious Emission from 1 to 5GHz, Mode C (2480MHz), DH5



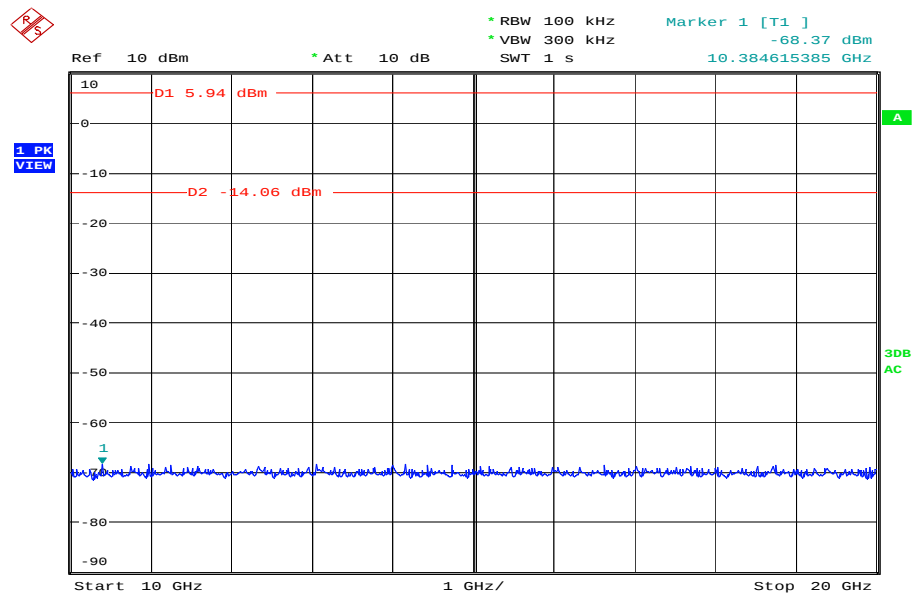
Mode C
Date: 14.MAY.2009 18:34:22

Figure 23: Spurious Emission from 5 to 10GHz, Mode C (2480MHz), DH5



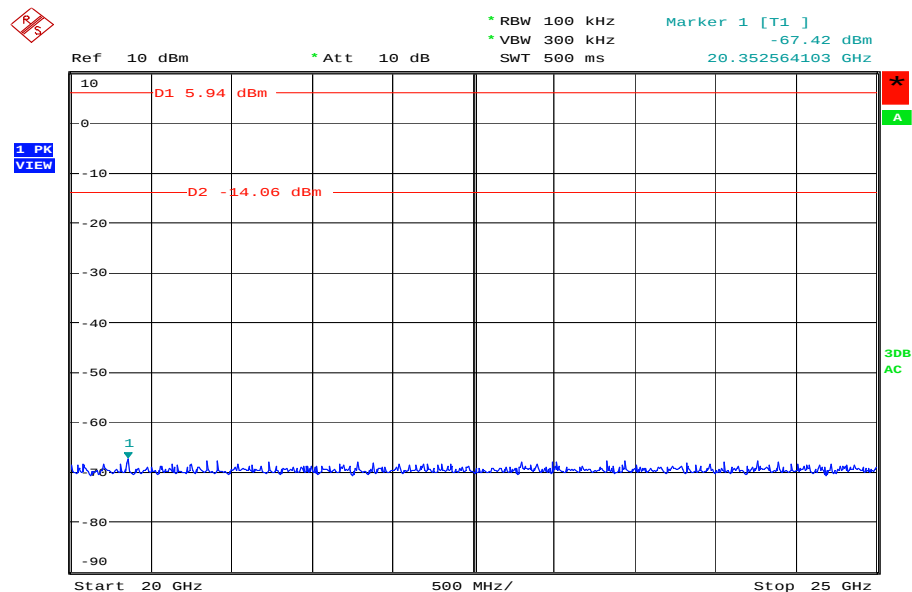
Mode C
Date: 14.MAY.2009 18:38:12

Figure 24: Spurious Emission from 10 to 20GHz, Mode C (2480MHz), DH5



Mode C
Date: 14.MAY.2009 18:38:51

Figure 25: Spurious Emission from 20 to 25GHz, Mode C (2480MHz), DH5



Mode C
Date: 14.MAY.2009 18:40:11

6. Test Results AC Mains Conducted Emission

6.1 AC Mains Conducted Emission of Transmitter

6.1.1 Mains Terminal Continuous Disturbance Voltage of Transmitter, FCC 15.207 and RSS-Gen 7.2.2

RESULT:

PASS

Date of testing: 2009-05-07

Ambient temperature: 23°C

Relative humidity: 46%

Atmospheric pressure: 1006hPa

Frequency range: 0.15 – 30MHz

Kind of test site: Shielded Room

Requirements:

The AC power line on any frequency within the band 150 kHz to 30MHz shall not exceed the limits specified in FCC 15.207 and RSS-Gen 7.2.2.

Test procedure:

ANSI C63.4-2003 and RSS-Gen 7.2.2

The EUT was placed on a wooden table raised 80cm above the reference ground plane. A vertical conducting plane of the screened room was located 40cm to the rear of the EUT. The AC adapter of the laptop computer was connected to a Line Impedance Stabilization Network (LISN) / Artificial Mains Network (AMN).

The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude and frequency in order to ensure that maximum emission amplitudes were attained.

The measurements were performed using a CISPR quasi-peak detector and average detector.

Disturbances other than those mentioned are small or not detectable.

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Table 13: Conducted Emission, 150kHz – 30MHz, Quasi Peak and Average Data, Phase N (N) and L1 (L), Mode A, DH5

Freq. [MHz]	Phase	Reading QP [dB(μV)]	Reading AV [dB(μV)]	Factor [dB]	Level QP [dB(μV)]	Level AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
0.166	N	18.7	9.7	9.7	28.4	19.4	65.2	55.2	36.8	35.8
0.248	L1	14.8	7.5	9.7	24.5	17.2	61.8	51.8	37.3	34.6
0.555	N	10.0	4.3	9.7	19.7	14.0	56.0	46.0	36.3	32.0
0.777	L1	9.0	3.3	9.7	18.7	13.0	56.0	46.0	37.3	33.0
3.675	L1	10.7	4.5	9.8	20.5	14.3	56.0	46.0	35.5	31.7
4.698	N	12.7	6.2	9.8	22.5	16.0	56.0	46.0	33.5	30.0
6.381	L1	10.9	4.1	10.0	20.9	14.1	60.0	50.0	39.1	35.9
8.730	N	10.2	3.6	10.0	20.2	13.6	60.0	50.0	39.8	36.4

Notes: Level QP = Reading QP + Factor
Level AV = Reading AV + Factor

Table 14: Conducted Emission, 150kHz – 30MHz, Quasi Peak and Average Data, Phase N (N) and L1 (L), Mode C, DH5

Freq. [MHz]	Phase	Reading QP [dB(μV)]	Reading AV [dB(μV)]	Factor [dB]	Level QP [dB(μV)]	Level AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
0.196	L1	17.3	8.7	9.7	27.0	18.4	63.8	53.8	36.8	35.4
0.329	N	14.8	7.7	9.7	24.5	17.4	59.5	49.5	35.0	32.1
0.628	N	9.5	3.7	9.7	19.2	13.4	56.0	46.0	36.8	32.6
0.947	L1	8.9	3.4	9.7	18.6	13.1	56.0	46.0	37.4	32.9
1.774	L1	9.0	3.4	9.7	18.7	13.1	56.0	46.0	37.3	32.9
3.465	N	12.6	6.1	9.8	22.4	15.9	56.0	46.0	33.6	30.1
4.442	L1	11.5	4.9	9.8	21.3	14.7	56.0	46.0	34.7	31.3
7.133	N	12.1	5.2	10.0	22.1	15.2	60.0	50.0	37.9	34.8

Notes: Level QP = Reading QP + Factor
Level AV = Reading AV + Factor

Table 15: Conducted Emission, 150kHz – 30MHz, Quasi Peak and Average Data, Phase N (N) and L1 (L), Mode E, DH5

Freq. [MHz]	Phase	Reading QP [dB(μV)]	Reading AV [dB(μV)]	Factor [dB]	Level QP [dB(μV)]	Level AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
0.196	N	16.9	8.7	9.7	26.6	18.4	63.8	53.8	37.2	35.4
0.270	L1	12.2	6.6	9.7	21.9	16.3	61.1	51.1	39.2	34.8
0.538	L1	9.9	4.3	9.7	19.6	14.0	56.0	46.0	36.4	32.0
0.650	N	9.3	3.7	9.7	19.0	13.4	56.0	46.0	37.0	32.6
2.498	N	7.9	0.2	9.8	17.7	10.0	56.0	46.0	38.3	36.0
2.715	L1	8.1	-0.1	9.8	17.9	9.7	56.0	46.0	38.1	36.3
4.683	L1	8.8	-0.7	9.8	18.6	9.1	56.0	46.0	37.4	36.9
4.953	N	10.5	0.3	9.9	20.4	10.2	56.0	46.0	35.6	35.8

Notes: Level QP = Reading QP + Factor
Level AV = Reading AV + Factor

7. Test Results Radiated Emission

7.1 Radiated Emission of Transmitter

7.1.1 Band Edge Radiated Emission, FCC 15.247(d) and RSS- 210 2.2

RESULT: **Pass**

Date of testing: 2009-05-01

Ambient temperature: 24°C

Relative humidity: 32%

Atmospheric pressure: 1008hPa

Measurement distance: 3m

Kind of test site: Semi Anechoic Chamber

Requirements:

Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a) and RSS-210 2.7 (Table 1), must comply with the radiated emission limits specified in FCC 15.209(a) and RSS-210 2.7 (Table 2 and 3).

Test procedure:

ANSI C63.4-2003, RSS-Gen 4.9, 4.10 and FCC Public Notice DA 00-705, Released March 30, 2000

Measurements were made in a Semi Anechoic Chamber at a measurement distance of 3m. The EUT was placed on a nonconductive turntable 0.8m above the ground plane. The EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level.

Measurements were taken using both horizontal and vertical antenna polarizations for 3 orientations (X and Z) of the EUT.

Peak (1 MHz RBW/VBW) and average (1 MHz RBW/10 Hz VBW) radiated measurements were taken with a suitable span to encompass the peak of the fundamental.

The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Table 16: Band Edge Radiated Emission

Operating Frequency [MHz]	EUT / Antenna Orient.	Peak Value [dBuV/m]	Average Value [dBuV/m]	Peak Limit [dBuV/m]	Average Limit [dBuV/m]	Peak Margin [dB]	Average Margin [dB]
2402	Z / H	47.89	38.15	74.00	54.00	26.11	15.85
2480	Z / H	63.45	53.79	74.00	54.00	10.55	0.21*

Notes: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.

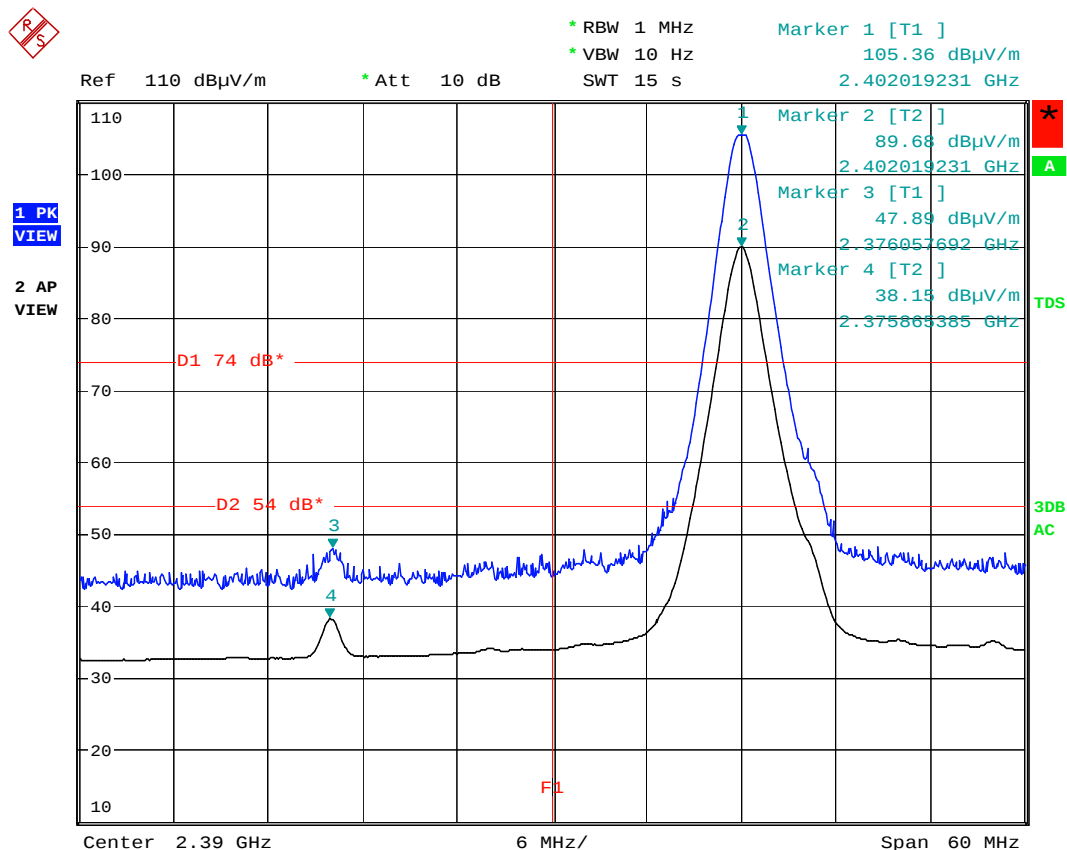
Average limit in dBuV/m is calculated as follows: Average limit = $20 \times \log(500 \mu\text{V/m})$.

Peak limit in dBuV/m is calculated as follows: Peak limit = Average limit + 20dB.

Uncertainty

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is not therefore possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a higher probability that the product tested complies with the specification limit.

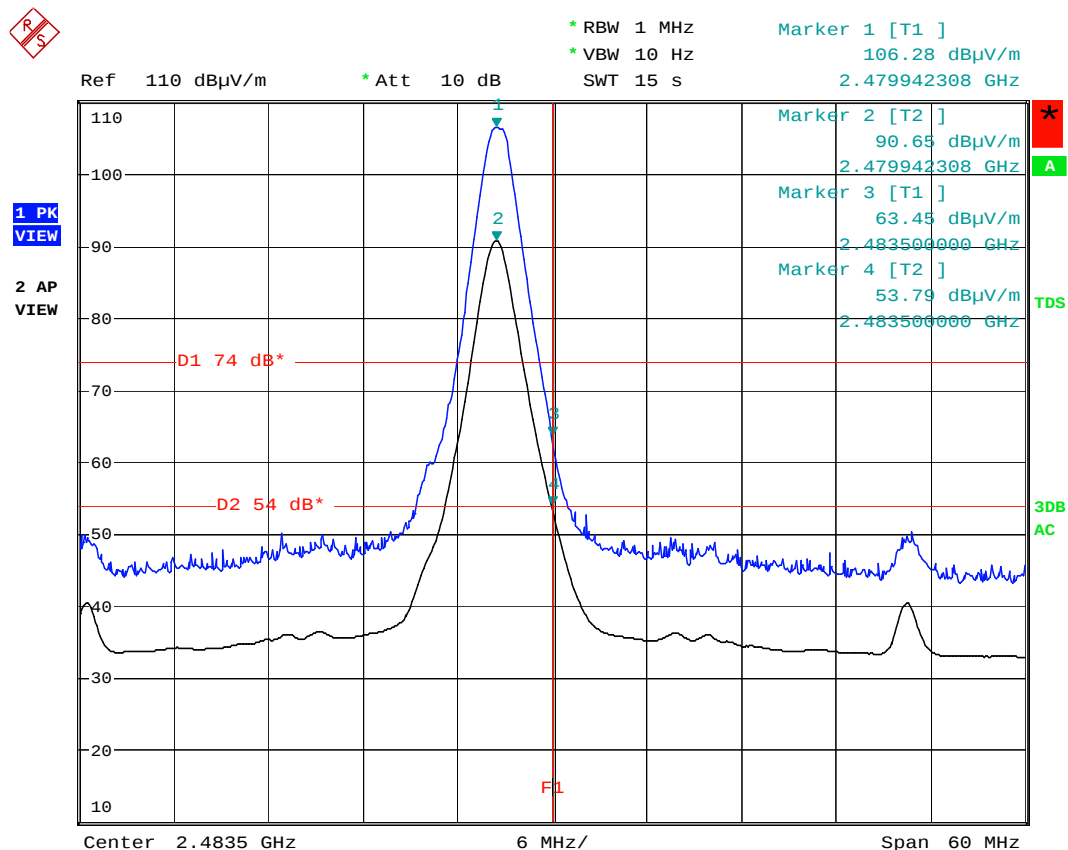
Figure 26: Band Edge Radiated Emission, Mode A (2402MHz), Peak and Average



Band Edge (Lo), Hor, Mode C, Position Z
Direct/Fundamental
Date: 1.MAY.2009 18:10:15

Note: The upper trace shows the peak value and the lower trace shows the average value.

Figure 27: Band Edge Radiated Emission, Mode C (2480MHz), Peak and Average



Band Edge (Hi), Hor, Mode C, Position Z
Direct/Fundamental
Date: 1.MAY.2009 18:01:11

Note: The upper trace shows the peak value and the lower trace shows the average value.

7.1.2 Radiated Emission, Out-of-Band and Spurious Emission, FCC 15.247(d), FCC 15.205, FCC 15.209, RSS-210 2.2, RSS-210 A8.5 and RSS-Gen 7.2.1

RESULT:

PASS

Date of testing: 2009-05-18

Ambient temperature: 22°C

Relative humidity: 44%

Atmospheric pressure: 1000hPa

Frequency range: 9kHz – 25GHz

Measurement distance: 3m

Kind of test site: Semi Anechoic Chamber

Requirements:

The emissions from the intentional radiator shall not exceed the field strength specified in FCC 15.209(a) and RSS-210 2.7.

Test procedure:

ANSI C63.4-2003, RSS-Gen 4.9, 4.10 and FCC Public Notice DA 00-705, Released March 30, 2000

Before final measurements of radiated emissions were made in Semi Anechoic Chamber, the EUT was scanned to determine its emission spectrum profile. The physical arrangement of the test system, the associated cabling and the orientation (X and Z) of the EUT were varied in order to ensure that maximum emission amplitudes were attained.

The EUT was placed on a nonconductive turntable 0.8m above the ground plane. Final radiated emission measurements were made at 3m. The spectrum was examined from 30 MHz to the 10th harmonic of the highest fundamental transmitter frequency (25 GHz).

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations.

For frequencies between 30MHz and 1GHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1GHz, emissions were measured using following settings: Peak: RBW=1MHz, VBW=1MHz, Average: RBW=1MHz, VBW=10Hz.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Emissions other than those mentioned are small or not detectable.

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Table 17: Radiated Emission 30MHz – 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, Mode A

Freq. [MHz]	EUT / Antenna Orientation	Reading QP [dB(μV)]	Factor [dB(1/m)]	Level QP [dB(μV/m)]	Limit [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
30.62	Z / V	41.1	-23.4	17.7	40.0	22.3	101	30
47.80	Z / V	55.8	-26.8	29.0	40.0	11.0	102	174
67.47	Z / H	49.6	-27.5	22.1	40.0	17.9	284	79
89.97	Z / V	46.3	-26.5	19.8	43.5	23.7	125	242
116.97	Z / H	49.1	-24.8	24.3	43.5	19.2	171	311
932.67	Z / V	32.6	-10.5	22.1	46.0	23.9	103	218

Note: Level QP = Reading QP + Factor

Table 18: Radiated Emission 30MHz – 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, Mode B

Freq. [MHz]	EUT / Antenna Orientation	Reading QP [dB(μV)]	Factor [dB(1/m)]	Level QP [dB(μV/m)]	Limit [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
30.60	X / V	42.3	-23.4	18.9	40.0	21.1	102	109
44.18	X / V	52.8	-26.2	26.6	40.0	13.4	101	181
48.32	X / V	55.9	-26.9	29.0	40.0	11.0	102	203
67.46	X / V	48.5	-27.5	21.0	40.0	19.0	100	182
89.96	X / V	45.5	-26.5	19.0	43.5	24.5	109	125
116.96	X / H	47.3	-24.8	22.5	43.5	21.0	312	300
124.83	X / V	46.6	-24.6	22.0	43.5	21.5	102	183
304.76	X / H	39.1	-20.7	18.4	46.0	27.6	104	225
330.69	X / H	39.0	-20.3	18.7	46.0	27.3	103	99

Note: Level QP = Reading QP + Factor

Table 19: Radiated Emission 30MHz – 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, Mode C

Freq. [MHz]	EUT / Antenna Orientation	Reading QP [dB(μV)]	Factor [dB(1/m)]	Level QP [dB(μV/m)]	Limit [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
43.66	Z / V	51.9	-26.1	25.8	40.0	14.2	104	207
46.99	Z / V	55.8	-26.7	29.1	40.0	10.9	115	184
67.49	Z / V	49.3	-27.5	21.8	40.0	18.2	101	149
89.97	Z / V	47.7	-26.5	21.2	43.5	22.3	102	131
115.83	Z / H	50.9	-24.9	26.0	43.5	17.5	189	121
313.83	X / H	38.2	-20.6	17.6	46.0	28.4	106	210

Note: Level QP = Reading QP + Factor

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Table 20: Radiated Emission 1GHz – 25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, Mode A

Freq. [MHz]	EUT / Antenna P	Reading AV [dB(μV)]	Reading PK [dB(μV)]	Factor [dB(1/m)]	Level AV [dB(μV/m)]	Level PK [dB(μV/m)]	Limit AV / PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [°]
1601.96	Z / V	57.3	59.9	-14.4	42.9	45.5	54.0 / 74.0	11.1	28.5	110	353
4803.96	Z / V	58.2	67.0	-9.7	48.5	57.3	54.0 / 74.0	5.5	17.3	100	22
7205.98	Z / V	52.4	61.6	-4.9	47.5	56.7	54.0 / 74.0	6.5	18.7	103	204
9607.97	Z / H	51.0	60.7	-10.4	40.6	50.3	54.0 / 74.0	13.4	23.7	139	247
12009.99	Z / H	44.9	56.2	-7.2	37.7	49.0	54.0 / 74.0	16.3	25.0	123	244

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.

Table 21: Radiated Emission 1GHz – 25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, Mode B

Freq. [MHz]	EUT / Antenna P	Reading AV [dB(μV)]	Reading PK [dB(μV)]	Factor [dB(1/m)]	Level AV [dB(μV/m)]	Level PK [dB(μV/m)]	Limit AV / PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [°]
1626.63	Z / V	57.6	60.4	-14.2	43.4	46.2	54.0 / 74.0	10.6	27.8	110	352
4881.96	Z / V	52.0	66.2	-9.3	42.7	56.9	54.0 / 74.0	11.3	18.9	100	188
7322.94	Z / V	47.0	56.7	-5.0	42.0	51.7	54.0 / 74.0	12.0	22.3	100	270
14088.70	Z / V	37.7	51.5	-8.1	29.6	43.4	54.0 / 74.0	24.4	30.6	139	254

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.

Table 22: Radiated Emission 1GHz – 25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, Mode C

Freq. [MHz]	EUT / Antenna P	Reading AV [dB(μV)]	Reading PK [dB(μV)]	Factor [dB(1/m)]	Level AV [dB(μV/m)]	Level PK [dB(μV/m)]	Limit AV / PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [°]
1652.62	Z / V	58.4	61.0	-14.1	44.3	46.9	54.0 / 74.0	9.7	27.1	101	186
4959.97	Z / V	49.7	65.7	-9.1	40.6	56.6	54.0 / 74.0	13.4	18.6	101	180
7678.69	Z / H	37.0	51.1	-4.3	32.7	46.8	54.0 / 74.0	21.3	27.2	181	88
14447.70	Z / H	36.7	50.6	-7.3	29.4	43.3	54.0 / 74.0	24.6	30.7	157	289

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.

7.2 Radiated Emission of Receiver

7.2.1 Radiated Emission of Receiver, FCC 15.109, RSS-210 2.2, RSS-210 2.6, RSS-210 A8.5, RSS-Gen 7.2.3.2

RESULT:

PASS

Date of testing:	2009-05-18
Ambient temperature:	22°C
Relative humidity:	44%
Atmospheric pressure:	1000hPa
Frequency range:	30MHz – 25GHz
Equipment classification:	Class B
Measurement distance:	3m
Kind of test site:	Semi Anechoic Chamber

Requirements:

The emissions from the unintentional radiator shall not exceed the field strength specified in 15.109(a) and RSS-210 Table 2 (and RSS-Gen Table 1).

Test procedure:

ANSI C63.4-2003 and RSS-Gen 4.9, 4.10

Before final measurements of radiated emissions were made in Semi Anechoic Chamber, the EUT was scanned to determine its emission spectrum profile. The physical arrangement of the test system, the associated cabling and the orientation (X and Z) of the EUT were varied in order to ensure that maximum emission amplitudes were attained.

The EUT was placed on a nonconductive turntable 0.8m above the ground plane. Final radiated emission measurements were made at 3m. The spectrum was examined from 30 MHz to the 10th harmonic of the highest fundamental transmitter frequency (25 GHz).

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations.

For frequencies between 30MHz and 1GHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1GHz, emissions were measured using following settings: Peak: RBW=1MHz, VBW=1MHz, Average: RBW=1MHz, VBW=10Hz.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Emissions other than those mentioned are small or not detectable.

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Table 23: Radiated Emission 30MHz – 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, Mode E

Freq. [MHz]	EUT / Antenna Orientation	Reading QP [dB(μV)]	Factor [dB(1/m)]	Level QP [dB(μV/m)]	Limit [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
30.60	Z / H	42.4	-22.7	19.7	40.0	20.3	142	24
49.04	Z / V	53.8	-27.0	26.8	40.0	13.2	105	209
65.19	Z / V	44.7	-27.6	17.1	40.0	22.9	127	129
503.07	Z / V	34.3	-15.9	18.4	46.0	27.6	101	184
941.35	Z / V	32.6	-10.3	22.3	46.0	23.7	129	213

Note: Level QP = Reading QP + Factor

Table 24: Radiated Emission 1GHz – 25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, Mode E

Freq. [MHz]	EUT / Antenna P	Reading AV [dB(μV)]	Reading PK [dB(μV)]	Factor [dB(1/m)]	Level AV [dB(μV/m)]	Level PK [dB(μV/m)]	Limit AV / PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [°]
1628.31	X / H	52.3	56.6	-14.2	38.1	42.4	54.0 / 74.0	15.9	31.6	154	276
7706.80	X / H	36.9	50.8	-4.1	32.8	46.6	54.0 / 74.0	21.2	27.4	189	147
14486.56	X / H	36.7	50.8	-7.1	29.6	43.7	54.0 / 74.0	24.4	30.3	194	183

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.

8. Photographs of test setup

Photograph 1: Set-up for Conducted Emissions at Antenna Port



Photograph 2: Set-up for Radiated Emission, EUT Configuration X-Axis



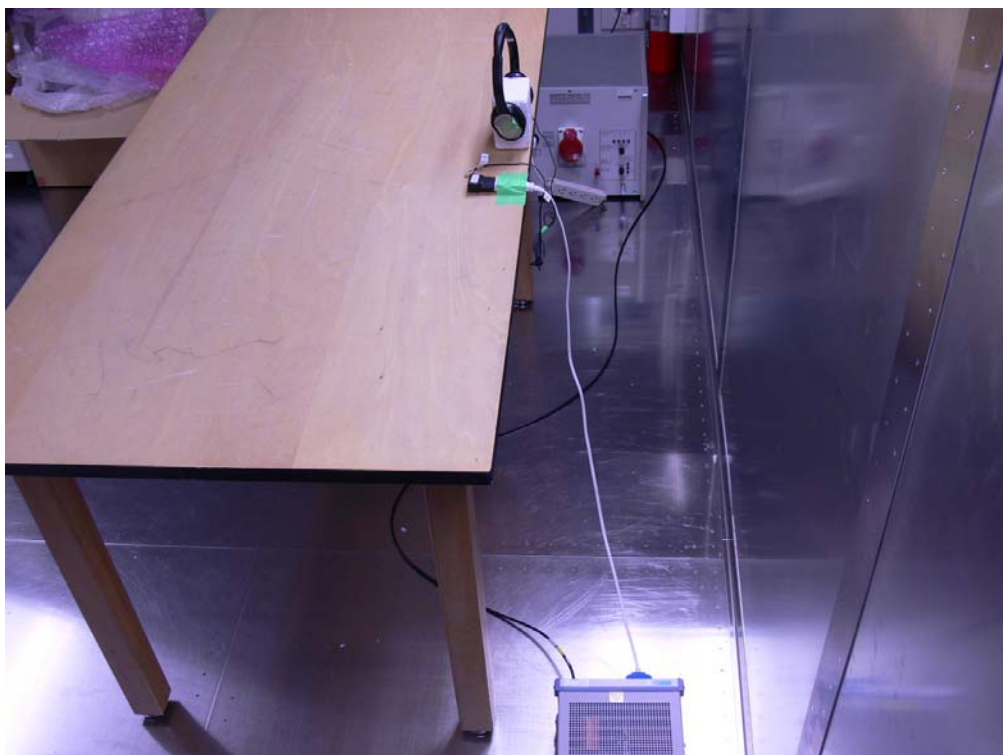
Photograph 3: Set-up for Radiated Emission, EUT Configuration Z-Axis



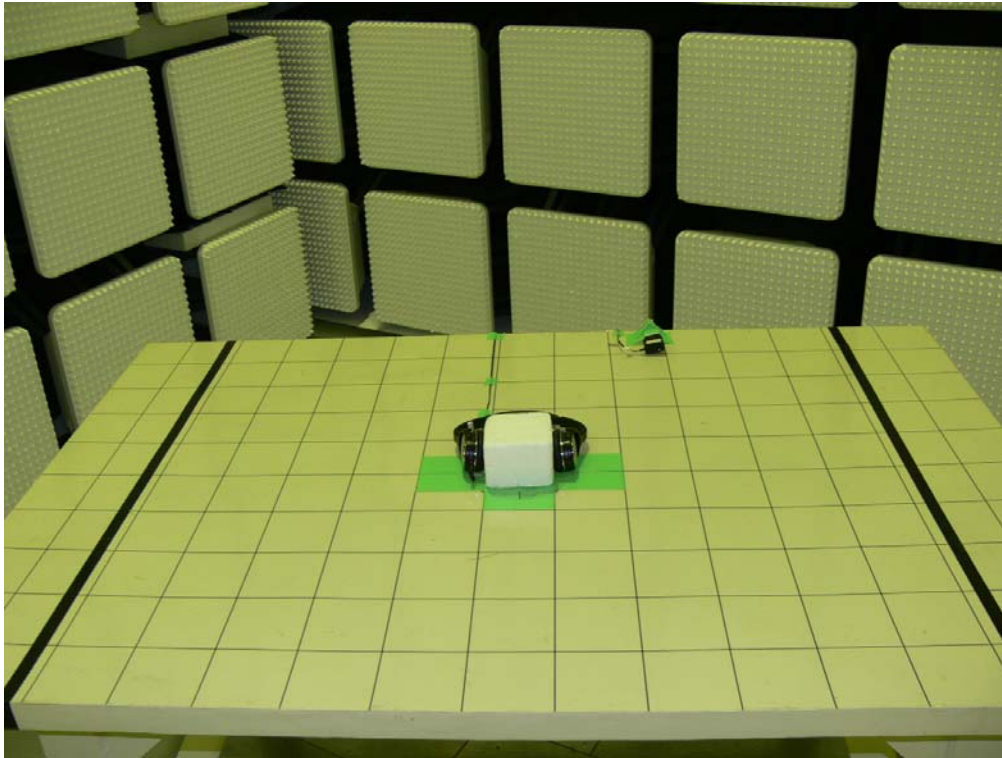
Photograph 4: Set-up for AC Mains Conducted Emission of Transmitter and Receiver, Front View



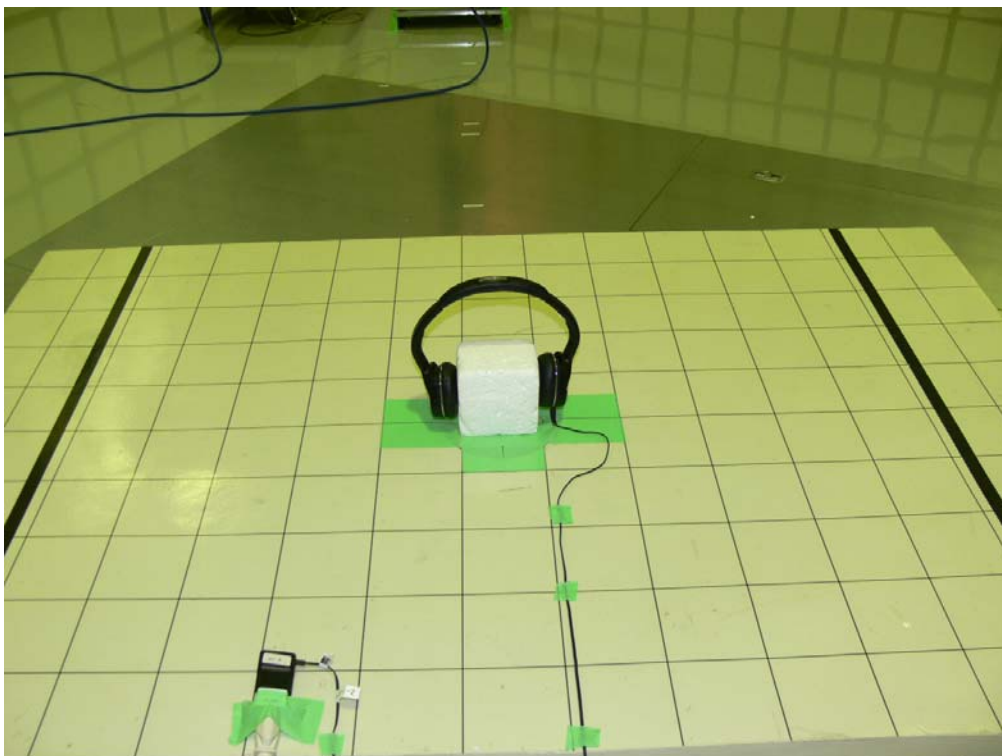
Photograph 5: Set-up for AC Mains Conducted Emission of Transmitter and Receiver, Rear View



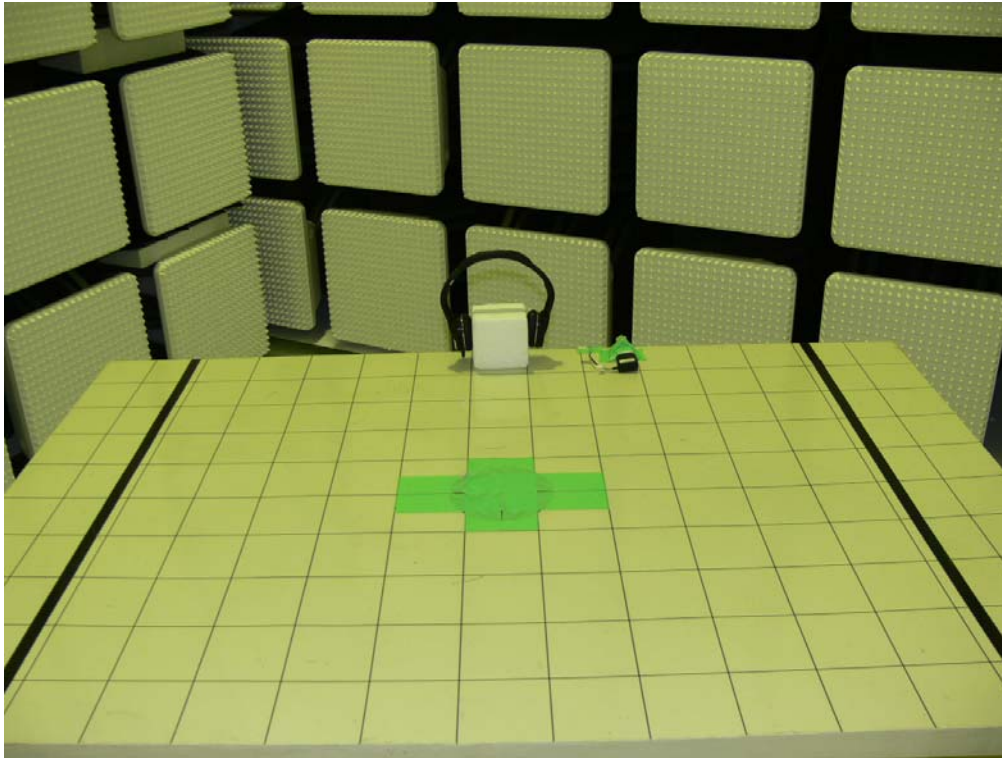
Photograph 6: Set-up for Radiated Emission of Transmitter, Front View



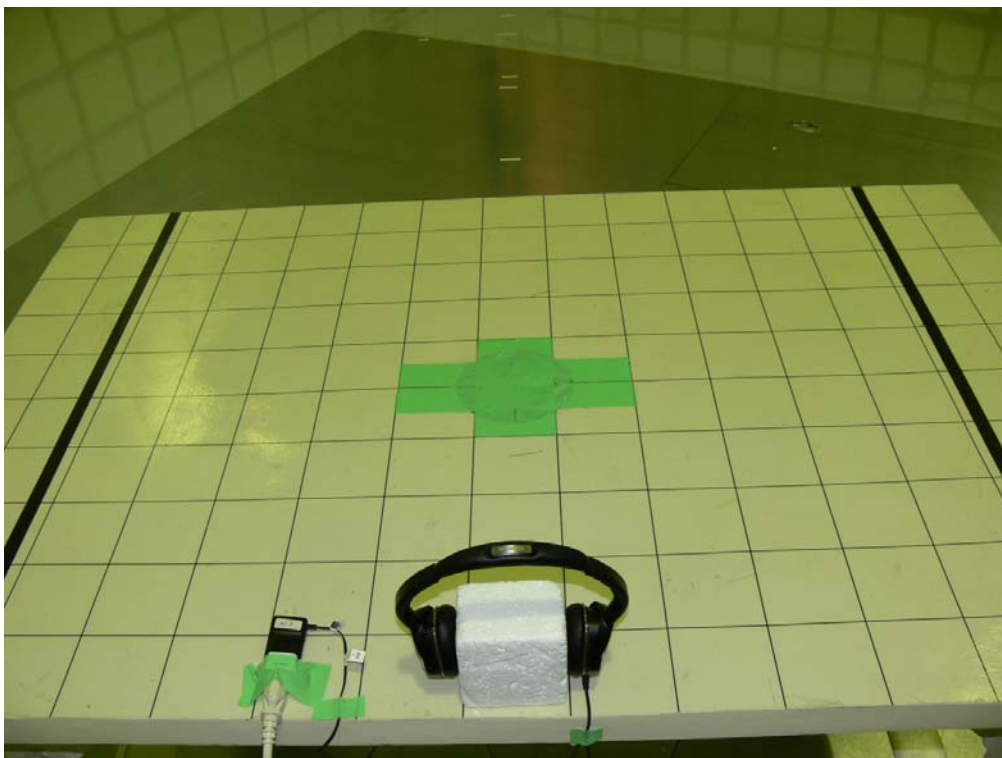
Photograph 7: Set-up for Radiated Emission of Transmitter, Rear View



Photograph 8: Set-up for Radiated Emission of Receiver, Front View



Photograph 9: Set-up for Radiated Emission of Receiver, Rear View



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