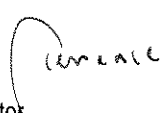
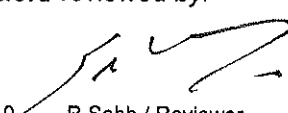


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Auftraggeber: <i>Client:</i>		Matsushita Electric Industrial Co., Ltd 4-3-1 Tsunashima-Higashi, Kohoku-ku, Yokohama 223-8639, Japan			
Gegenstand der Prüfung: <i>Test item:</i>		Center Module			
Bezeichnung: <i>Identification:</i>		WX-C3010		Serien-Nr.: <i>Serial No.:</i>	
				Pre-production	
Wareneingangs-Nr.: <i>Receipt No.:</i>		213080562		Eingangsdatum: <i>Date of receipt:</i>	
				2008-06-20	
Prüfart: <i>Testing location:</i>		TÜV Rheinland Japan Ltd. - Global Technology Assessment Center 4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan			
Prüfgrundlage: <i>Test specification:</i>		47 CFR Part 15.247 (Subpart: B) 47 CFR Part 15 (Subpart: D) ANSI C63.4-2003 ANSI C63.17-1998 RSS-213 (Issue 2): 2007 RSS-Gen (Issue 2): 2007			
Prüfresultat: <i>Test Result:</i>		Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The test item passed the test specification(s).</i>			
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:		
 2008-09-10 T. Cheung / Inspector			 2008-09-10 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:					
Abkürzungen: P(ass) = entspricht Prüfgrundlage F(all) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet					
Abbreviations: P(ass) = passed F(all) = 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>					

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TEST SUMMARY

3.2.1 ANTENNA REQUIREMENTS FCC 15.203, 15.303(c)(8), FCC 15.204 AND RSS-213 §4.3.4(B)(8)

RESULT: PASS

5.1.1 CONDUCTED OUTPUT POWER AT ANTENNA TERMINALS FCC 15.319(C) AND RSS-213 § 6.5

RESULT: PASS

5.1.2 26dB BANDWIDTH FCC 15.303(c),15.323(A) AND RSS-213 § 6.4

RESULT: PASS

5.1.3 IN-BAND UNWANTED EMISSIONS, EMISSIONS FCC 15.323(D) AND RSS-213 §6.7.2

RESULT: PASS

5.1.4 OUT-OF-BAND UNWANTED EMISSIONS, EMISSIONS FCC 15.323(D) AND RSS-213 § 6.7.1

RESULT: PASS

5.1.5 PEAK POWER SPECTRAL DENSITY FCC 15.319(D) AND RSS-213 § 6.6

RESULT: PASS

6.1.1 MAINS TERMINAL CONTINUOUS DISTURBANCE VOLTAGE FCC PART 15.207

RESULT: PASS

6.1.2 MAINS TERMINAL CONTINUOUS DISTURBANCE VOLTAGE FCC PART 15.107

RESULT: PASS

6.1.3 MAINS TERMINAL CONTINUOUS DISTURBANCE VOLTAGE FCC PART 15.107

RESULT: PASS

7.1.1 RADIATED EMISSION OUT-OF-BAND AND SPURIOUS EMISSION FCC PART 15.323(D) AND RSS-213 § 6.7

RESULT: PASS

8.1.1 RADIATED EMISSION RECEIVER

RESULT: PASS

8.1.2 RADIATED EMISSION DIGITAL SPURIOUS

RESULT: PASS

9.1.1 AUTOMATIC DISCONTINUATION OF TRANSMISSION FCC 15.319(F) AND RSS-213 § 4.3.4(A)

RESULT: PASS

9.1.2 LISTEN BEFORE TRANSMIT FCC 15.323(c)

RESULT: PASS

9.1.3 MONITORING TIME FCC 15.323(c)(1) AND RSS-213 § 4.3.4(B)

RESULT: N/A

9.1.4 MONITORING THRESHOLD, LEAST INTERFERED CHANNEL FCC 15.323(c)(2)(5) AND RSS-213 § 4.3.4(B)

RESULT: PASS

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9.1.5 SYSTEM ACKNOWLEDGMENT AND MAXIMUM TRANSMIT PERIOD 15.323(c)(3)(4) AND RSS-213 §4.3.4(B)

RESULT: PASS

9.1.6 CHANNEL CONFIRMATION PERIOD 15.323(c)(5) AND RSS-213 § 4.3.4(B)

RESULT: PASS

9.1.7 SYSTEM ACKNOWLEDGMENT AND MAXIMUM TRANSMIT PERIOD 15.323(c)(5) AND RSS-213 §4.3.4(B)(5)

RESULT: PASS

9.1.8 SEGMENT OCCUPANCY 15.323(c)(5) AND RSS-213 §4.3.4(B)(5)

RESULT: PASS

9.1.9 RANDOM WAITING 15.323(c)(6) AND RSS-213 §4.3.4(B)(6)

RESULT: N/A

9.1.10 MONITORING BANDWIDTH 15.323(c)(7) AND RSS-213 §4.3.4(B)(7)

RESULT: PASS

9.1.11 MONITORING REACTION TIME 15.323(c)(7) AND RSS-213 §4.3.4(B)(7)

RESULT: PASS

9.1.12 MONITORING THRESHOLD RELAXATION 15.323(c)(9) AND RSS-213 §4.3.4(B)(9)

RESULT: PASS

9.1.13 DUPLEX SYSTEM LBT 15.323(c)(10) AND RSS-213 §4.3.4(B)(10)

RESULT: N/A

9.1.14 ALTERNATIVE MONITORING INTERVAL 15.323(c)(11) AND RSS-213 §4.3.4(B)(11)

RESULT: N/A

9.1.15 FAIR ACCESS 15.323(c)(12) AND RSS-213 §4.3.4(B)(12)

RESULT: N/A

9.1.16 FRAME PERIOD 15.323(E) AND RSS-213 §4.3.4(C)

RESULT: PASS

9.1.17 FREQUENCY STABILITY 15.323(F) AND RSS-213 §6.2

RESULT: PASS

9.2.1 CALCULATION RF EXPOSURE

RESULT: PASS

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1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report.

1.2 FCC Cross-Reference Table

The results of emission measurements and product related information contained in this test report and the attached materials relate to the contents of the FCC standard report in the following way:

FCC § / Heading

1.1 Product Description	See 3.1
1.2 Tested System Details	See 4.2
1.3 Test Methodology	See 4.1
1.4 Test Facility	See 2.1
3.2 EUT Exercise Software	See 4.3
3.3 Special Accessories	See 4.4
3.4 Configuration of Tested System	See 4.2

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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.

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2.2 List of Test and Measurement Instruments

Test Equipment calibration is traceable to NIST

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Model Name	Serial Number	Equipment ID	Calibrated until
Receiver	Rohde & Schwarz	ESU 40	100029	RF-0021	2009-02
Two-Line V-Network (LISN)	Rohde & Schwarz	ENV216	100276	RF-0016	2009-05
Receiver	Rohde & Schwarz	ESU 8	100025	RF-0020	2009-02
RF Selector (10m)	Toyo Corporation	NS4900	0703-182	RF-0029	2009-05
Low Noise Pre-Amplifier	TSJ	MLA-10K01-B01-35	1370750	RF-0253	2009-05
3dB Attenuator 50Ohm	Tamagawa Electronics Co., Ltd.	CFA-01	-	RF-0265	2009-05
Trilog Antenna	Schwarzbeck	VULB9168	0245	RF-0019	2009-05
Biconical Antenna	EMCO	3110B	9603-2379	RF-0207	2009-03
Broad Band Horn Antenna 1-10GHz	Schwarzbeck	BBHA9120B	419	RF-0050	2009-05
Double Ridged Broadband Horn Antenna (2-18GHz)	Toyo Corporation	HAP06-18W	00000025	RF-0065	2009-05
Broad Band Horn Antenna (18-26.5GHz)	Toyo Corporation	HAP18-26N	00000010	RF-0070	2009-05
Band Reject Filter	Nitsuki	NF-49BT	027	RF-0131	2008-12
Microwave Preamplifier, 1-8GHz	Toyo Corporation	TPA0108-40	0634	RF-0052	2008-12
Broad-Band Horn Antenna 1-10GHz	Schwarzbeck	BBHA9120B	420	RF-0051	2009-05
Double Ridged Horn Antenna (2-18GHz)	Schwarzbeck Mess-Elektronik	BBHA9120C	400	RF-0064	2009-02
Standard Gain Horn Antenna (18-26.5GHz)	EMCO	3160-09	00069343	RF-0072	2009-02
DC POWER SUPPLY	Agilent	E3646A	MY400046 42	N/A	
Signal Generator	Rohde & Schwarz	SMIQ03B	100581	BT-8041	2009-12
Signal Generator	Rohde & Schwarz	SMIQ03B	835742/060	BT-8026	2011-04
Signal Generator	Rohde & Schwarz	SMR27	100010	BT-8005	2008-08
RF Signal Generator (1GHz-40GHz)	Rohde & Schwarz	SMR40	100498	RF-0074	2009-08

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2.3 Measurement Uncertainty

Measurement Type	Frequency	Uncertainty
Antenna Port Conducted Emissions	< 1GHz	±0.39dB
	> 1GHz	±0.68dB
Radiated Emission	9kHz-30MHz	±4.77dB
	30-1000MHz	±5.11dB
	1000-40GHz	±5.19dB

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3. General Product Information

3.1 Product Function and Intended Use

The **EUT (Equipment Under Test)** is DECT radio operating in the 1920-1930 MHz band (UPCS). It use as a base unit operating in drive-thru or in quick service restaurant. The communication is controlled by the crews or manager of the quick service restaurant.

3.2 System Details

Radio Standard:	DECT
Specified power output:	19.0dBm
Antenna gain:	+3.42 dBi
Antenna type:	Dipole antenna
Mounting type:	External (permanently fixed to the unit)
Frequency range:	1920 – 1930 MHz
Number of channel:	5
Frame Period:	10ms
Slots per Frame:	24 slots / 12 RX, 12 TX
Modulation type:	GFSK
FCC Classification:	PUB
Typical Nominal Voltage:	AC 120V, 60Hz
Protection Class:	I

UPCS Channel	Frequency MHz
4	1928.448
3	1926.720
2	1924.994
1	1923.264
0	1921.536

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3.2.1 Antenna Requirements FCC 15.203, 15.303(c)(8), FCC 15.204 and RSS-213 § 4.3.4(b)(8)**RESULT:****PASS**

The EUT has external antennas which are permanently fixed to the product. Hence it complies with the requirements.

Also monitoring system use the same antenna used for transmission.

3.3 Clock Frequencies

The EUT generates internally following clock frequencies:

10.368 MHz
8 MHz
4 MHz

3.4 Independent Operation Modes

The system was configured for testing with its typical normal connection.

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 C63.17: 1998.

Testing was performed at the lowest operating frequency (1921.536 MHz), the operating frequency in the middle of the specified frequency band (1924.994 MHz), the highest operating frequency (1928.448 MHz) or typical communication with digital communication tester or companion device.

3.5 Noise Suppressing Parts

Refer to schematic provided by the client.

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4. Test Set-up and Operation Modes

4.1 Test Methodology

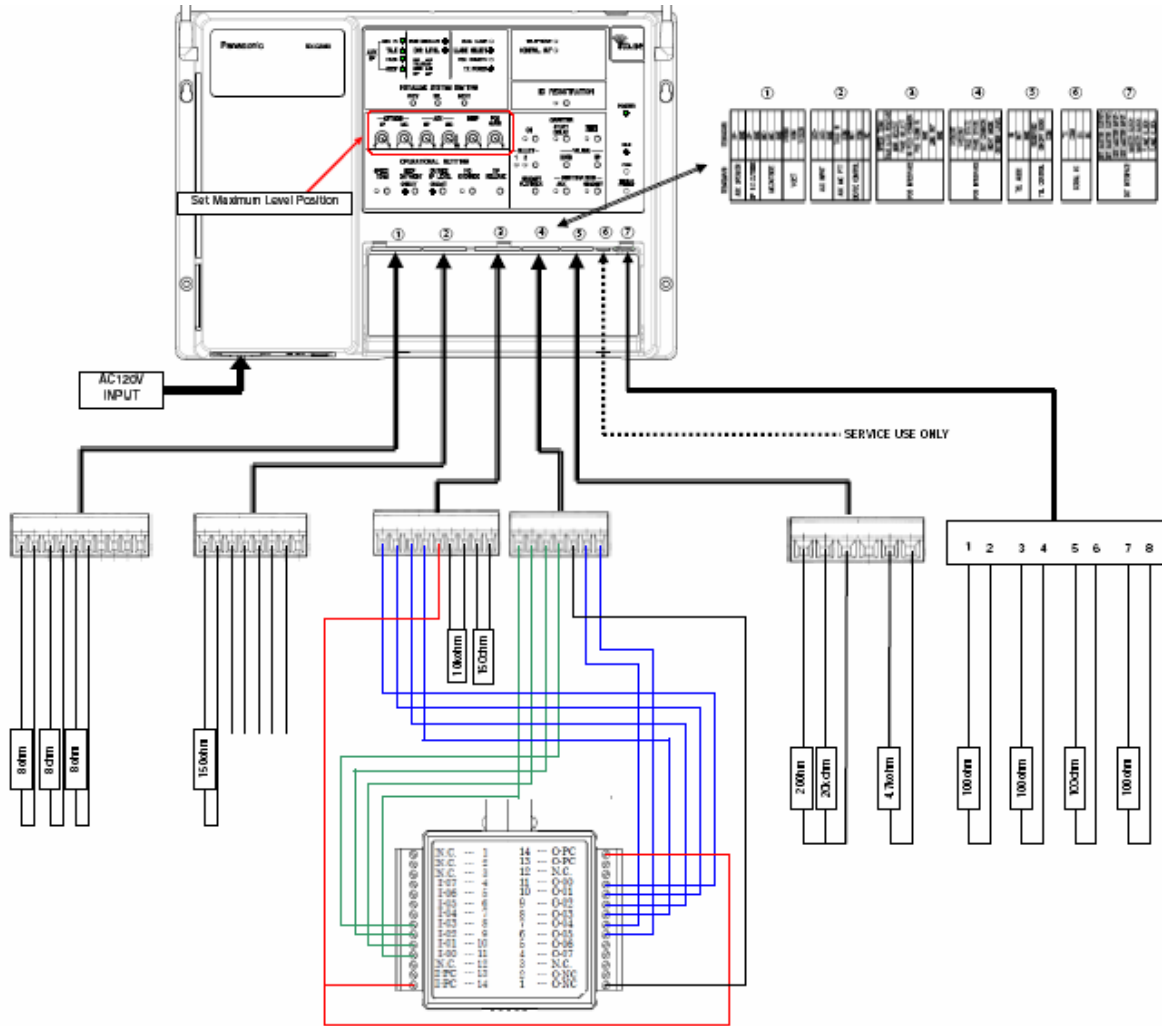
The test methodology used is based on the requirements of 47 CFR Part 15 (2007-04-05), sections 15.31, 15.33, 15.35, 15.205, 15.209.

The test methods, which have been used, are based on ANSI C63.17: 1998.
Details see under each test.

4.2 Physical Configuration for Testing

Refer to section: Photographs of the Test Set-Up

Figure 1: Test setup



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

4.3 Test Operation and Test Software

Software version used for testing: N/A

The EUT had built-in test modes.

The EUT was exercised in the operation modes listed under 3.4 as appropriate.

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4.4 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessory

1. Product: All-In-One Headset
Manufacturer: Matsushita Electric
Model: WX-H3050
Serial Number: Preproduction

2. Product: Order Taker
Manufacturer: Matsushita Electric
Model: WX-T3020
Serial Number: Preproduction

3. Product: Digital Radio Communication Tester
Manufacturer: Rohde & Schwarz
Model: CMD60
Serial Number: 100185

4. Product: Digital Radio Test
Manufacturer: Rohde & Schwarz
Model: CTS60
Serial Number: 100762

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5. Test Results Conducted Testing At Antenna Port

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

5.1.1 Conducted Output Power at Antenna Terminals FCC 15.319(c) and RSS-213 § 6.5

RESULT:
PASS

Date of testing: 2008-06-19

Ambient temperature: 24.0 °C

Relative humidity: 24 %

Atmospheric pressure: 1010hPa

Requirements:

For systems operating in the 1920-1930MHz band the maximum peak output power is 100 microwatt multiplied by the square root of the occupied bandwidth in hertz.

Test procedure:

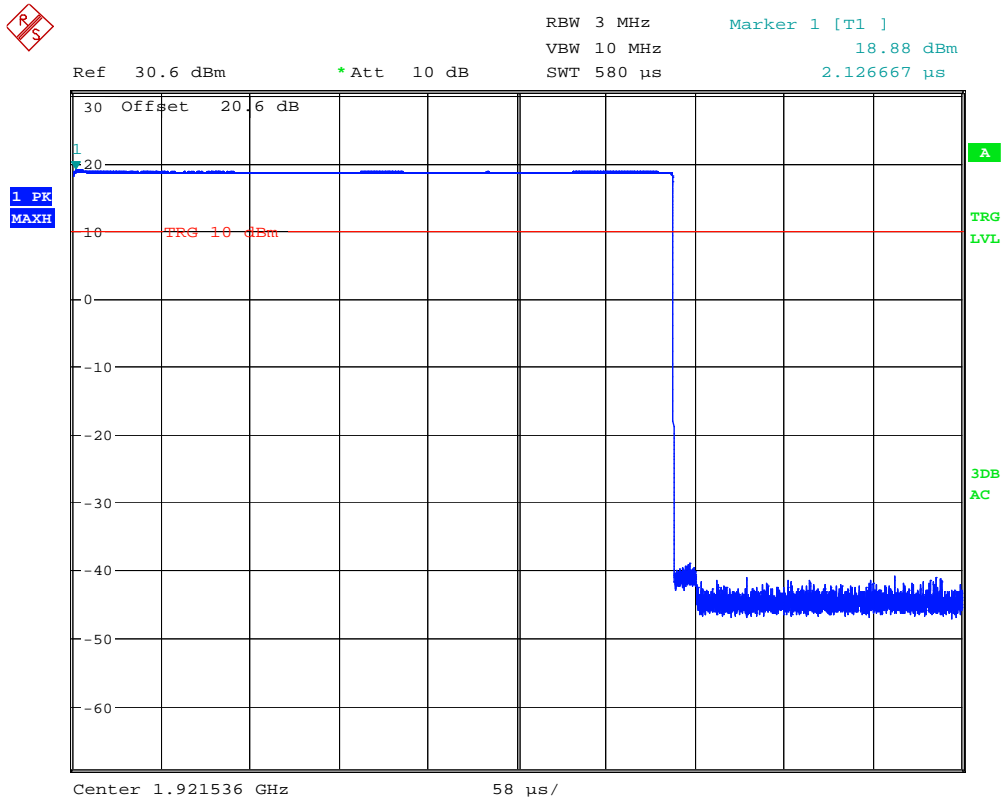
ANSI C63.17-1998 section 6.1.2

The maximum peak output power (conducted) was measured directly (without additional cable) at the antenna connector with the spectrum analyzer following the procedure of ANSI 63.17-1998.

Table 2: Conducted output power at antenna port 0

Frequency (MHz)	Limit (dBm)	Output (dBm)	Output (mW)	Margin (dB)
1921.536	20.1	18.9	77.6	1.2
1924.994	20.0	18.8	75.8	1.2
1928.448	20.1	18.9	77.6	1.2

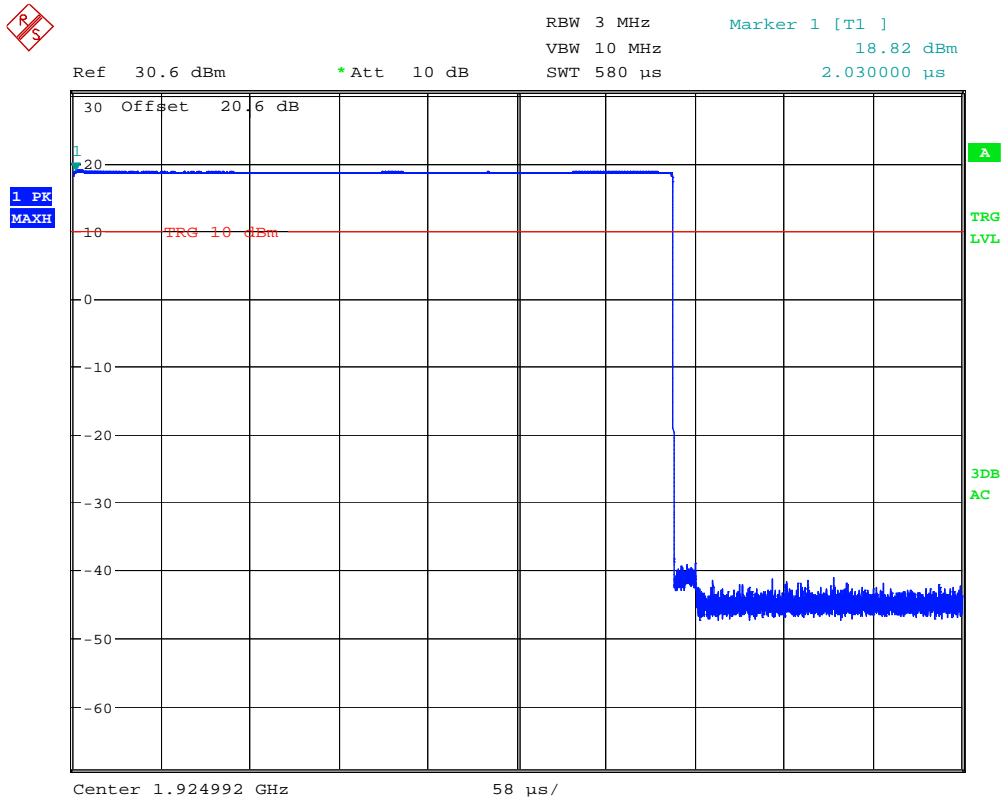
Figure 2: Power plots antenna port 0 of 1921.536MHz



power low channel

Date: 19.JUN.2008 17:46:51

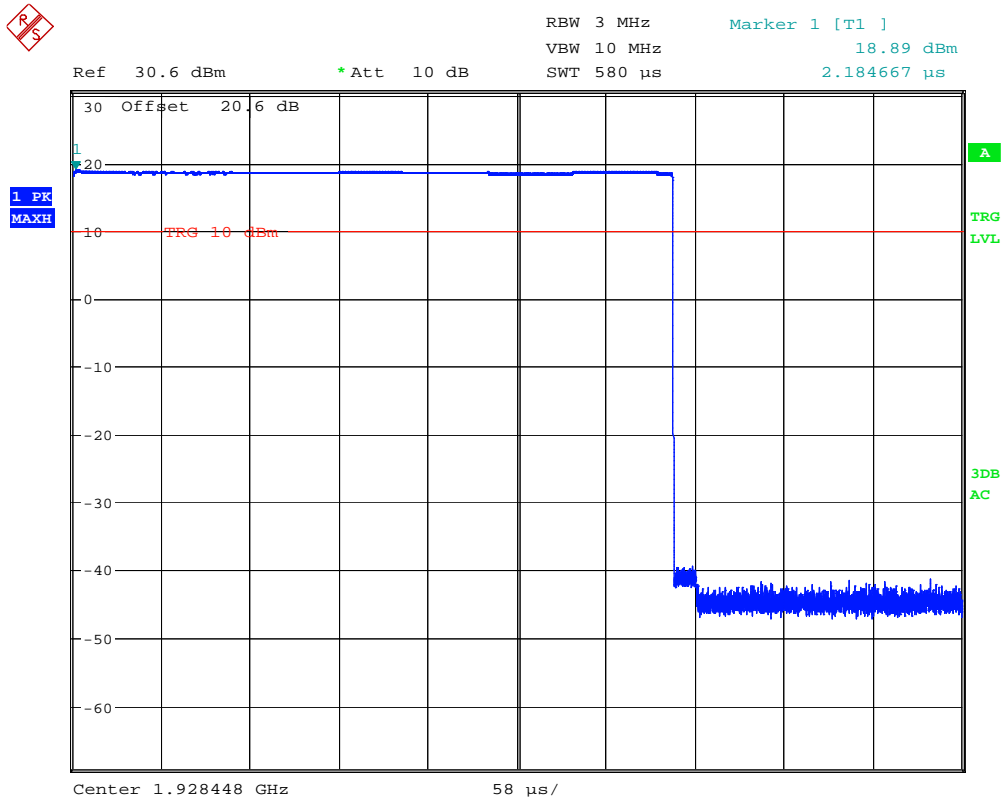
Figure 3: Power plots antenna port 0 of 1924.994MHz



power mid channel

Date: 19.JUN.2008 17:45:13

Figure 4: Power plots antenna port 0 of 1928.448MHz

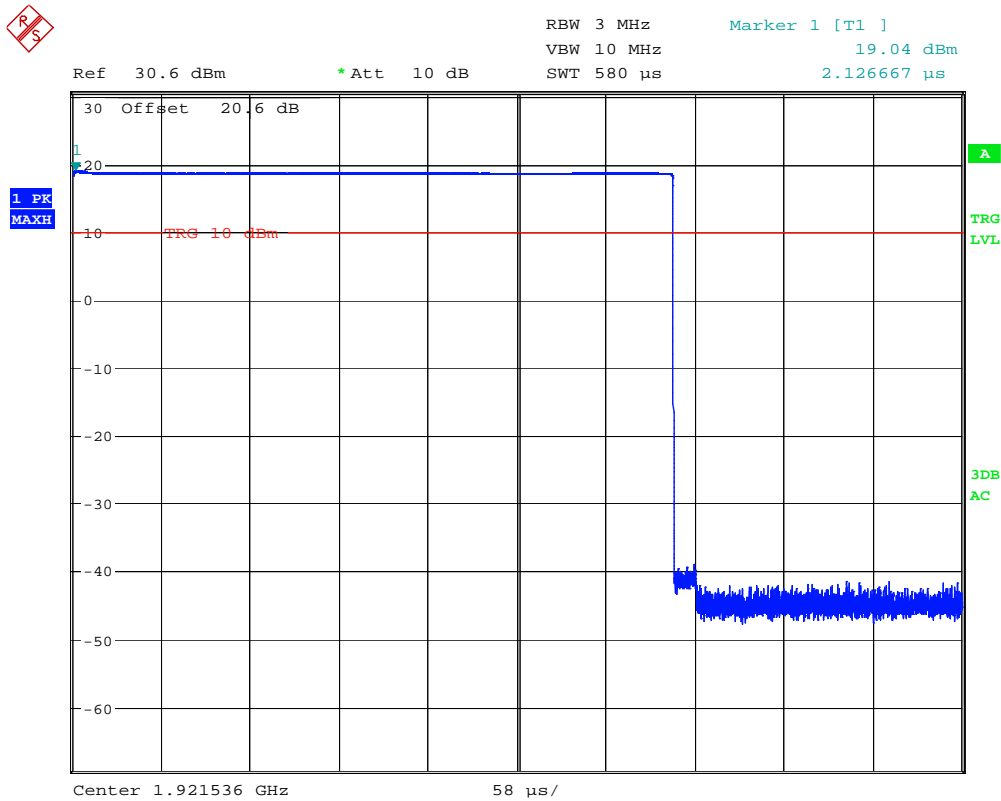


power high channel
Date: 19.JUN.2008 17:43:38

Table 3: Conducted output power at antenna port 1

Frequency (MHz)	Limit (dBm)	Output (dBm)	Output (mW)	Margin (dB)
1921.536	20.2	19.0	79.4	1.2
1924.994	20.0	18.9	77.6	1.2
1928.448	20.1	18.9	77.6	1.2

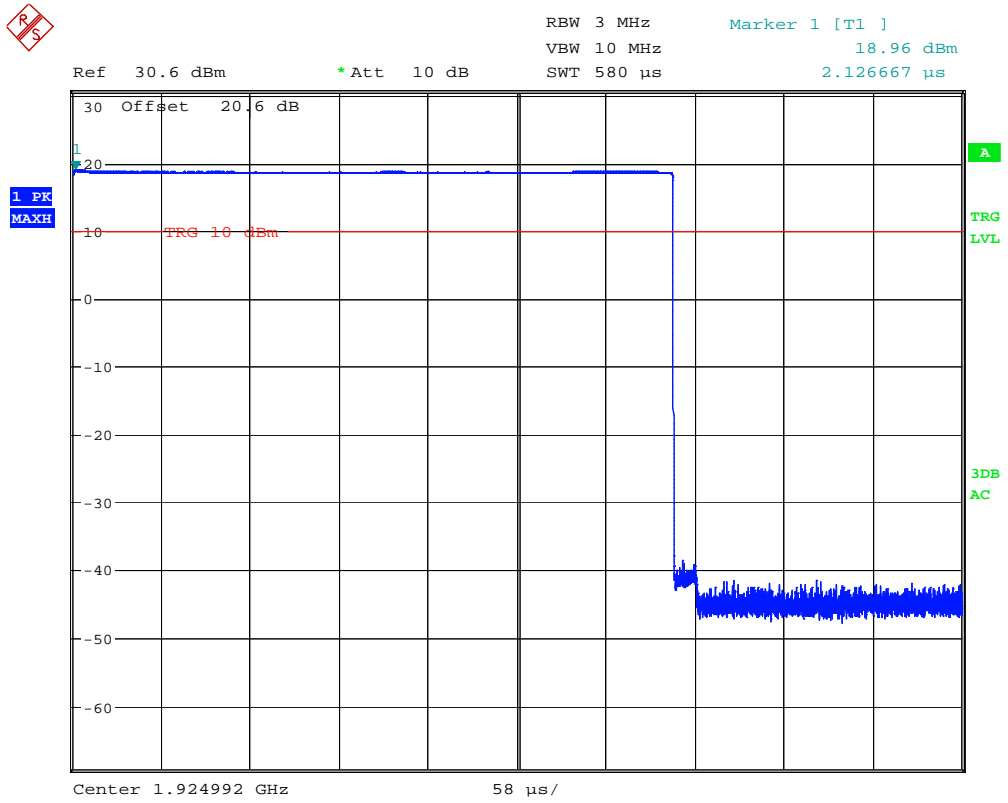
Figure 5: Power plots antenna port 1 of 1921.536MHz



power low channel

Date: 19.JUN.2008 17:48:42

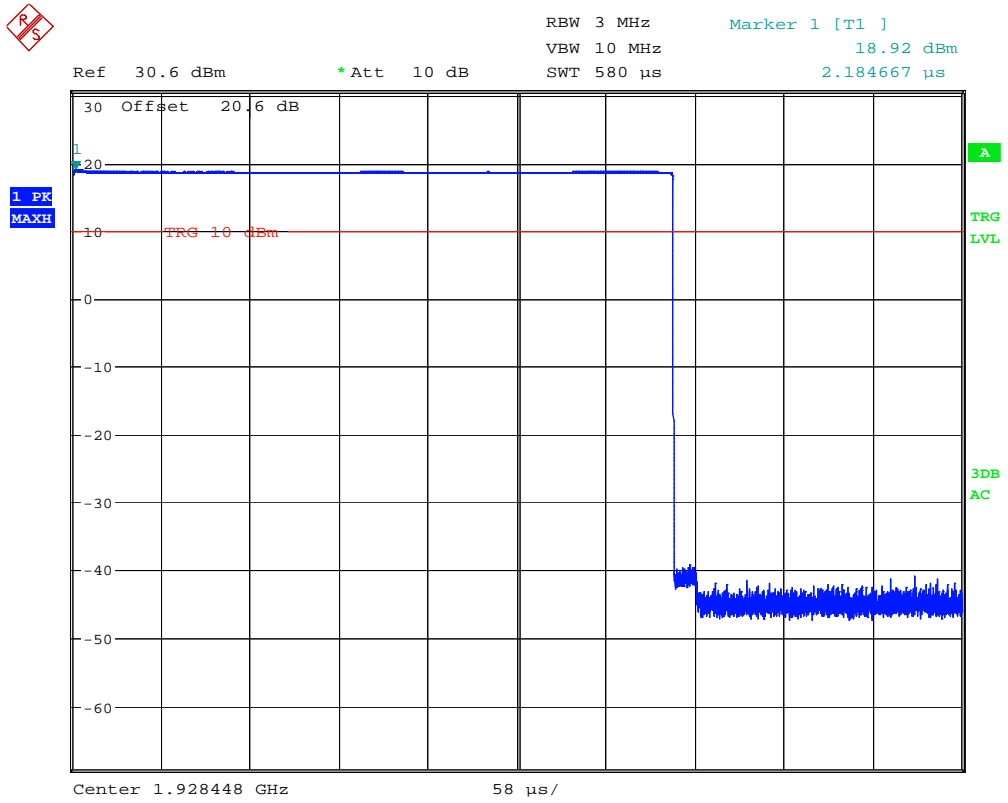
Figure 6: Power plots antenna port 1 of 1924.994MHz



power mid channel

Date: 19.JUN.2008 17:49:52

Figure 7: Power plots antenna port 1 of 1928.448MHz



power high channel
Date: 19.JUN.2008 17:50:56

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5.1.2 26dB Bandwidth FCC 15.303(c),15.323(a) and RSS-213 § 6.4
RESULT:
PASS

Date of testing: 2008-06-17

Ambient temperature: 24.0 °C

Relative humidity: 24 %

Atmospheric pressure: 1010hPa

Requirements:

For systems using digital modulation in the 1920-1930MHz band the minimum 26dB bandwidth shall be at least 50 kHz and less than 2.5 MHz.

Test procedure:

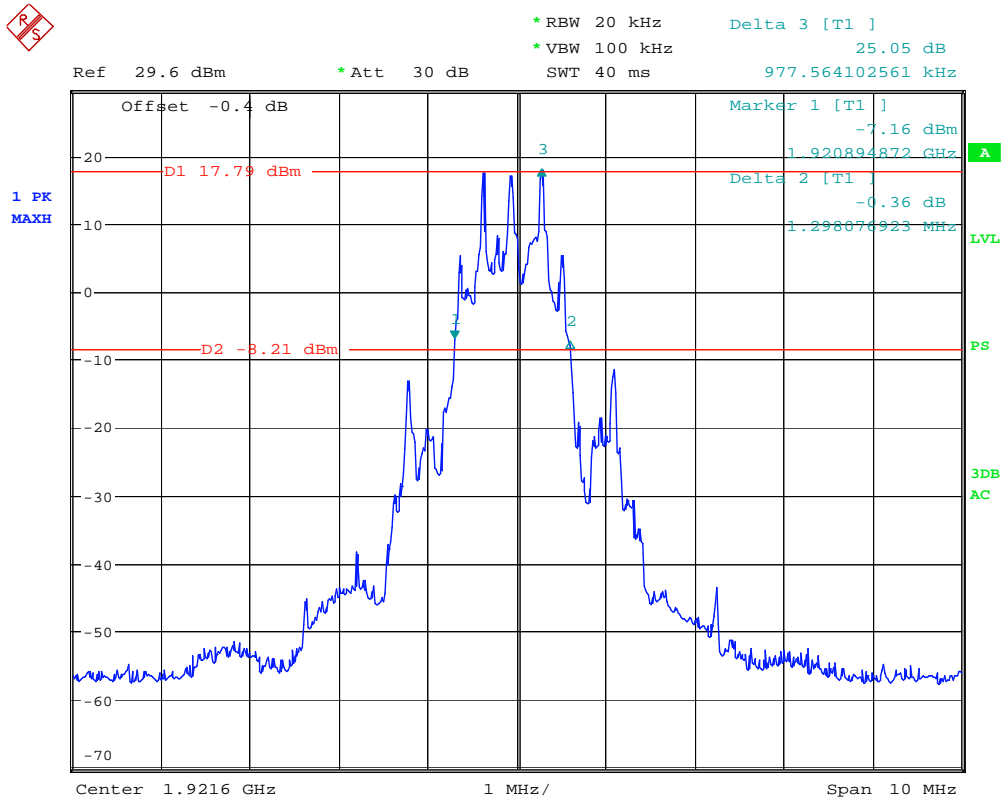
ANSI C63.17-1998 section 6.1.3

The output connector is connected to a spectrum analyzer. The spectrum analyzer resolution bandwidth was set to 1% of the emission bandwidth and the spectrum analyzer center at the nominal frequency of the channel. The 26dBc(or 20 dBc) Bandwidth was measured by using the DELTA MARKER function of the analyzer.

Table 4: Bandwidth

Frequency (MHz)	Bandwidth (kHz)
1921.536	1299(26dB)
1924.994	1233(20dB)
1928.448	1282(26dB)

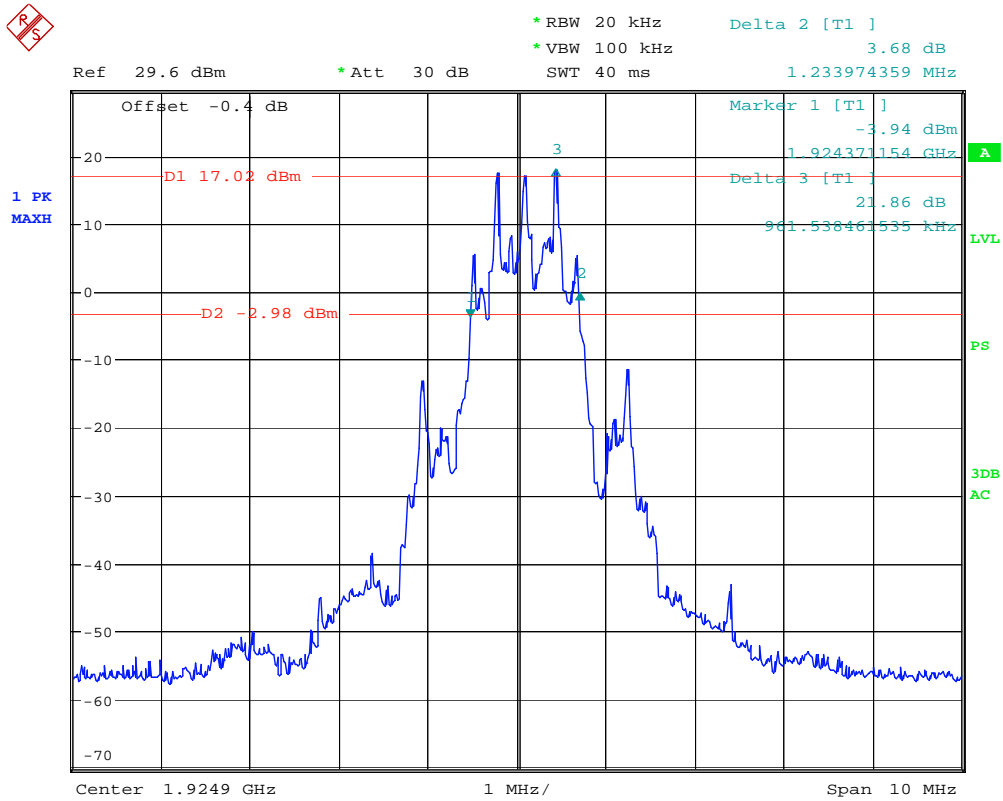
Figure 8: 26dB Bandwidth of 1921.536MHz antenna port 0



Low Channel (4)

Date: 17.JUN.2008 19:39:23

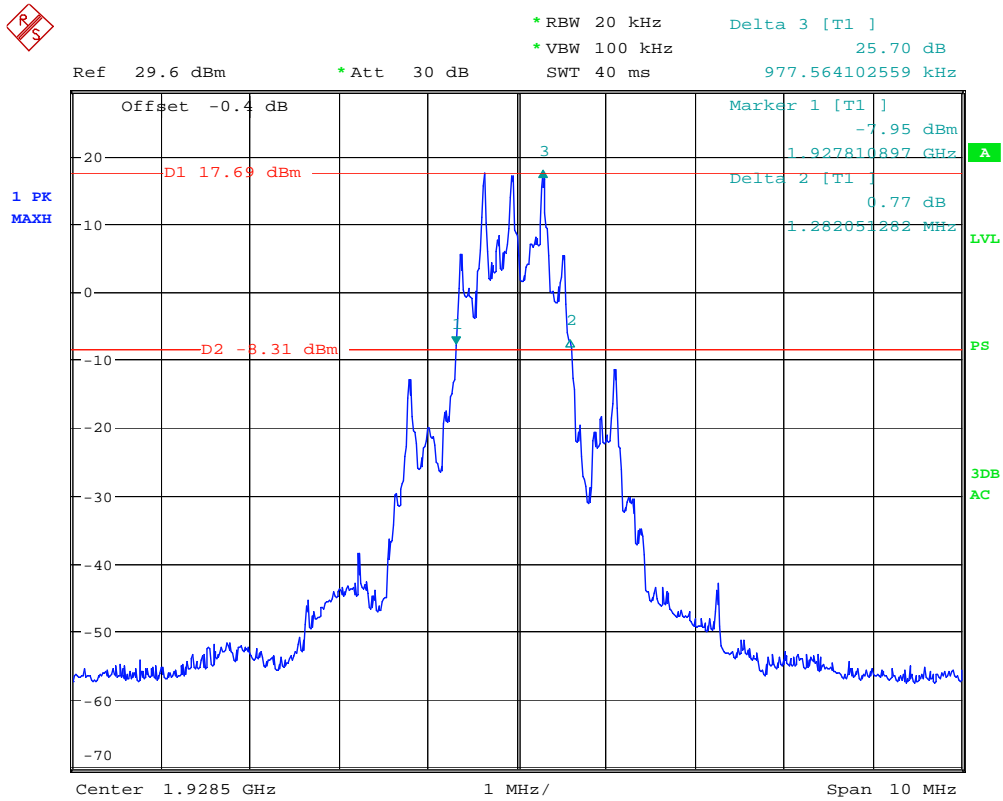
Figure 9: 20dB Bandwidth of 1924.994MHz antenna port 0



Mid Channel (2)

Date: 17.JUN.2008 19:41:42

Figure 10: 26dB Bandwidth of 1928.448MHz antenna port 0



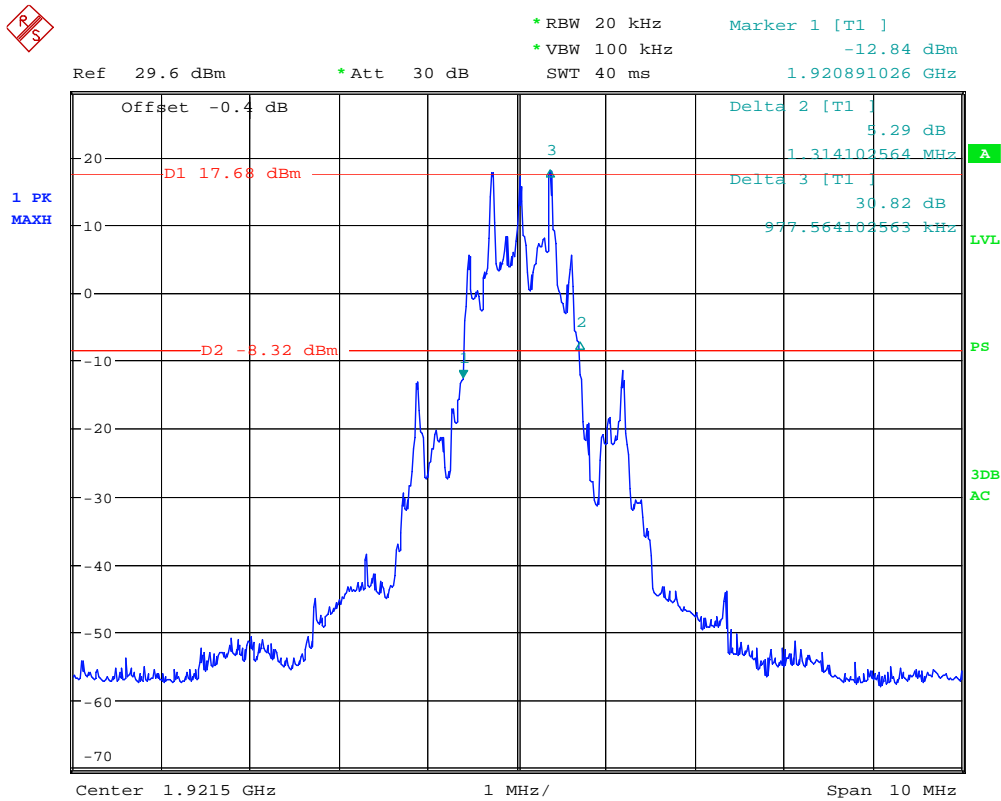
High Channel (0)

Date: 17.JUN.2008 19:37:49

Table 5: Bandwidth

Frequency (MHz)	Bandwidth (kHz)
1921.536	1314(26dB)
1924.994	1230(20dB)
1928.448	1298(26dB)

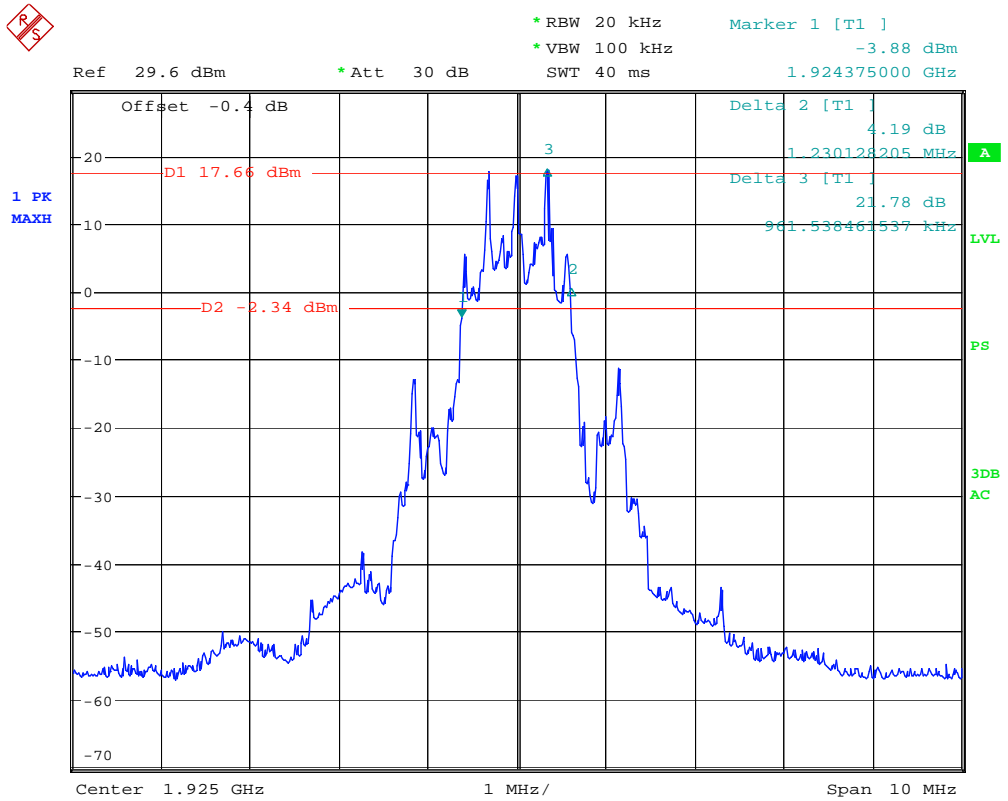
Figure 11: 26dB Bandwidth of 1921.536MHz antenna port 1



Low Channel (4)

Date: 17.JUN.2008 19:50:56

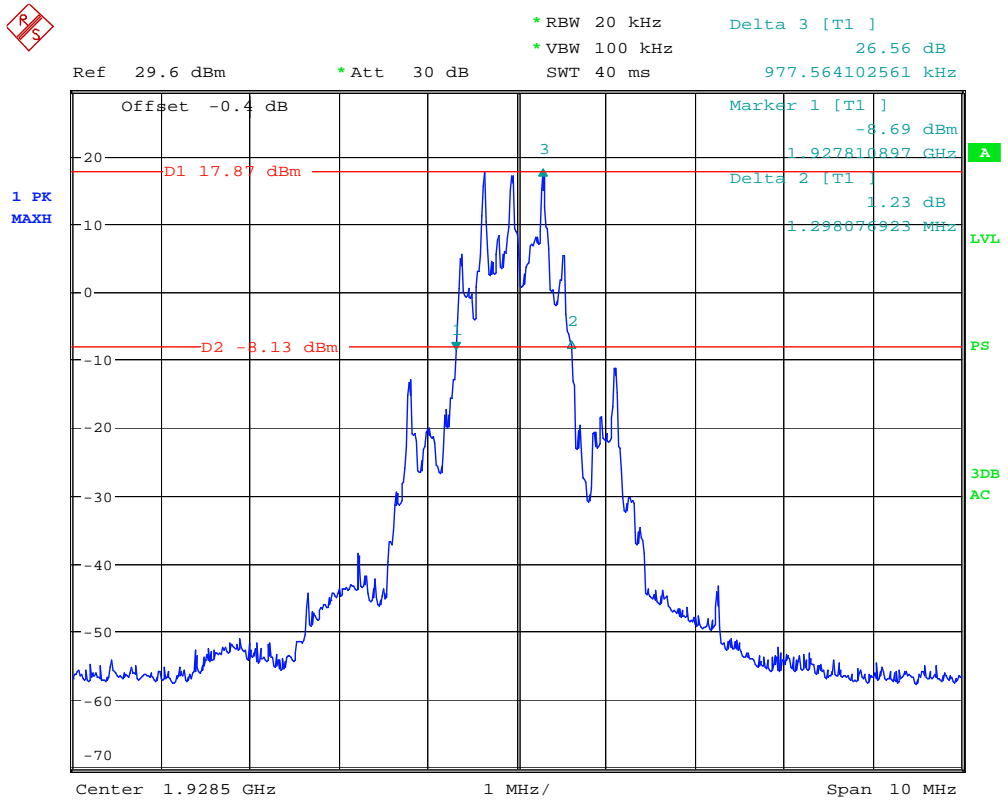
Figure 12: 20dB Bandwidth of 1924.994MHz antenna port 1



Mid Channel (2)

Date: 17.JUN.2008 19:47:46

Figure 13: 26dB Bandwidth of 1928.448MHz antenna port 1



High Channel (0)

Date: 17.JUN.2008 19:49:14

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**5.1.3 In-Band Unwanted Emissions, Emissions FCC 15.323(d) and
RSS-213 §6.7.2****RESULT:****PASS**

Date of testing: 2008-06-18

Ambient temperature: 24.0 °C

Relative humidity: 24 %

Atmospheric pressure: 1010hPa

Requirements:

B<f≤2B:less than or equal to 30 dB below max. permitted peak power level

2B<f≤3B:less than or equal to 50 dB below max. permitted peak power level

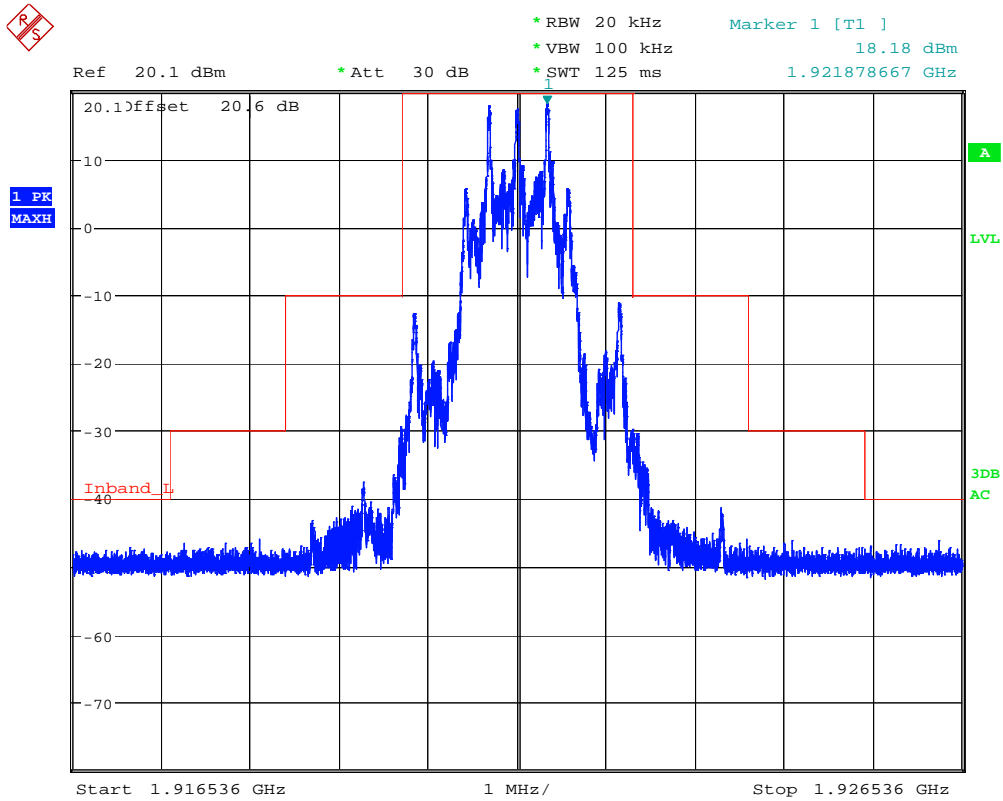
3B<f≤Band Edge:less than or equal to 60 dB below max. permitted peak power level

Test procedure:

ANSI C63.17-1998 § 6.1.6.1

A spectrum analyzer was connected to the antenna port of the transmitter. For each channel investigated, the in-band measurements were performed.

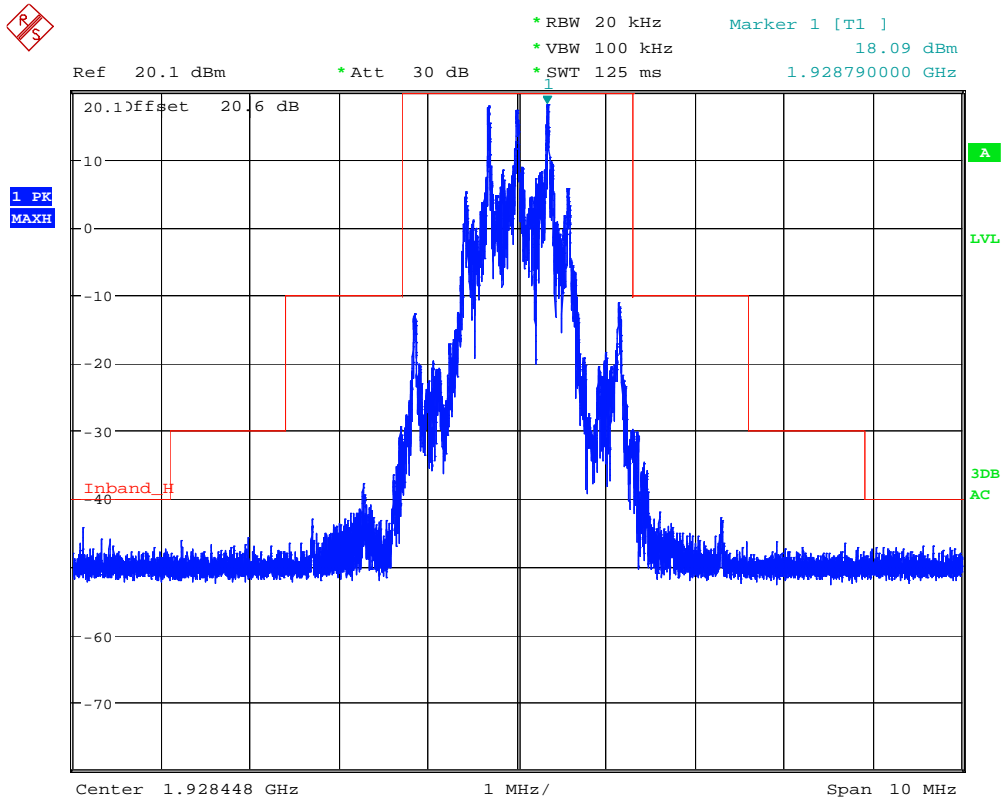
Figure 14: In-band emission of 1921.536MHz antenna port 0



In-band emission

Date: 18.JUN.2008 18:33:09

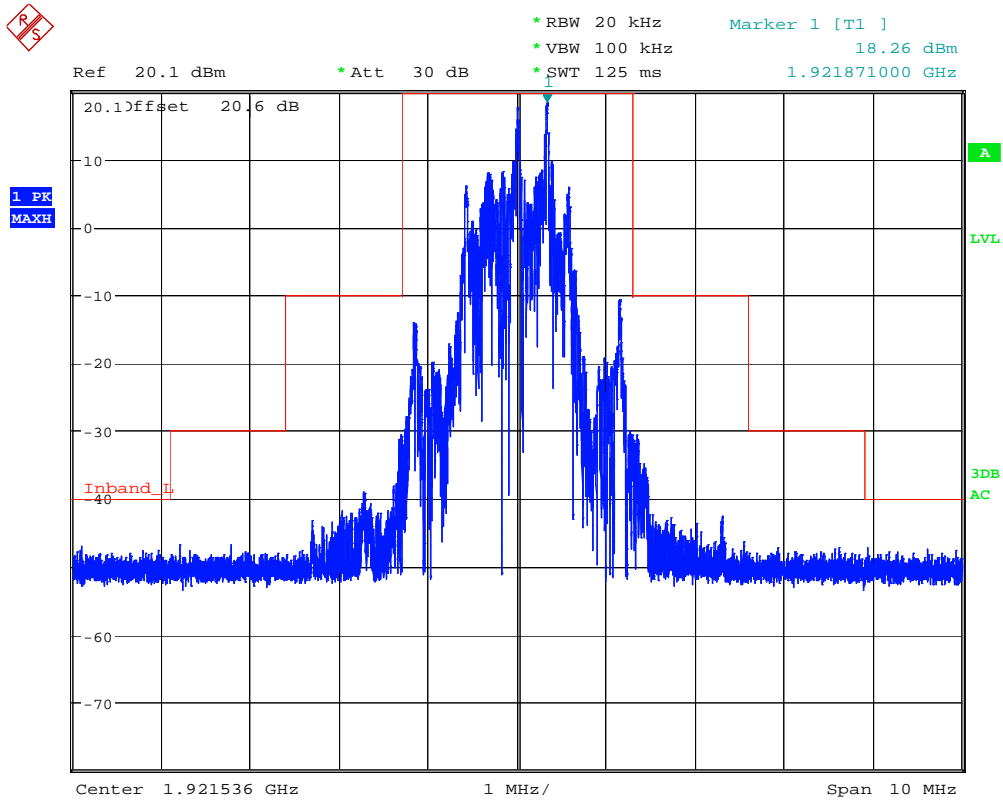
Figure 15: In-band emission of 1928.448MHz antenna port 0



In-band emission

Date: 18.JUN.2008 18:40:35

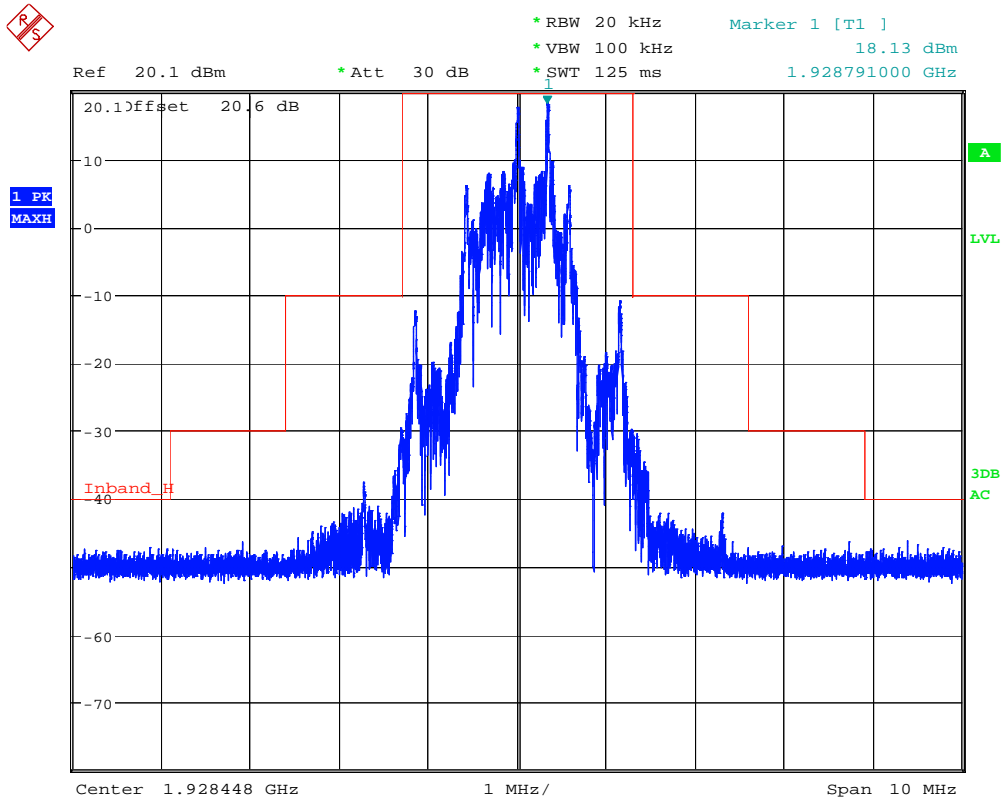
Figure 16: In-band emission of 1921.536MHz antenna port 1



In-band emission

Date: 18.JUN.2008 18:50:53

Figure 17: In-band emission of 1928.448MHz antenna port 1



In-band emission

Date: 18.JUN.2008 18:47:07