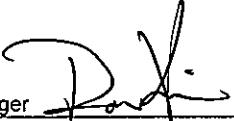
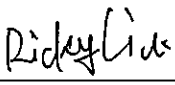


Prüfbericht - Nr.: 16012110 001		Seite 1 von 26 Page 1 of 26	
<i>Test Report No.:</i>			
Auftraggeber: <i>Client:</i>	Seikaku Technical Group Limited. Offshore Chambers, P.O. Box. 217 Apia, Samoa		
Gegenstand der Prüfung: <i>Test item:</i>	Wireless Microphone		
Bezeichnung: <i>Identification:</i>	UB-8P	FCC ID: <i>FCC ID</i>	H38UB-8P
Wareneingangs-Nr.: <i>Receipt No.:</i>	173027444	Eingangsdatum: <i>Date of receipt:</i>	28.12.2007
Prüfart: <i>Testing location:</i>	TÜV Rheinland (Guangdong) Ltd. EMC Laboratory Guangzhou Auto Market, Yuan Gang Section of Guangshan Road, Guangzhou 510650 P. R. China	Listed test laboratory according to FCC rules section 2.948 for measuring devices under Parts 74	
Prüfgrundlage: <i>Test specification:</i>	ANSI C63.4: 2003 FCC "Rules and Regulations", Part 74: 01, Oct., 1997 Subpart H, Section 74.861		
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 (Guangdong) Ltd.		
geprüft / tested by:		kontrolliert/ reviewed by:	
<p>14. Mar. 2008 Dave Xie Project Manager </p> <p>Datum Name/Stellung Unterschrift Date Name/Position Signature</p>		<p>14. Mar. 2008 Ricky Liu Project Manager </p> <p>Datum Name/Stellung Unterschrift Date Name/Position Signature</p>	
Sonstiges/ Other Aspects:			
Abkürzungen: P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet		Abbreviations: P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested	
<p>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. 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.</p>			

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 2 von 26
Page 2 of 26

TEST SUMMARY

5.1 POWER OUTPUT MEASUREMENT FOR FCC PART 74 PER SECTION 74.861(E)(1)

RESULT: Pass

5.2 SPURIOUS RADIATION MEASUREMENT FOR FCC PART 74 PER SECTION 74.861(E)(6)(III)

RESULT: Pass

5.3 MODULATION CHARACTERISTICS MEASUREMENT

RESULT: Pass

5.4 OCCUPIED BANDWIDTH FOR FCC PART 74 PER SECTION 74.861(E)(3), 74.861(E)(5) AND 74.861(E)(6)

RESULT: Pass

5.5 FREQUENCY TOLERANCE FOR FCC PART 74 PER SECTION 74.861(E)(4)

RESULT: Pass

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 3 von 26
Page 3 of 26

Contents

1	GENERAL REMARKS.....	5
1.1	COMPLEMENTARY MATERIALS.....	5
2	TEST SITES.....	5
2.1	TEST FACILITIES.....	5
2.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS.....	6
2.3	TRACE ABILITY.....	6
2.4	CALIBRATION.....	6
2.5	MEASUREMENT UNCERTAINTY.....	7
2.6	LOCATION OF ORIGINAL DATA.....	7
2.7	STATUS OF FACILITY USED FOR TESTING.....	7
3	GENERAL PRODUCT INFORMATION.....	7
3.1	PRODUCT FUNCTION AND INTENDED USE.....	7
3.2	RATINGS AND SYSTEM DETAILS.....	8
3.3	INDEPENDENT OPERATION MODES.....	9
3.4	SUBMITTED DOCUMENTS.....	9
4	TEST SET-UP AND OPERATION MODE.....	10
4.1	PRINCIPLE OF CONFIGURATION SELECTION.....	10
4.2	TEST OPERATION AND TEST SOFTWARE.....	10
4.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT.....	10
4.4	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE.....	10
4.5	TEST SET-UP.....	11
5	TEST RESULTS EMISSION.....	14
5.1	POWER OUTPUT MEASUREMENT FOR FCC PART 74 PER SECTION 74.861(E)(1).....	14
5.2	SPURIOUS RADIATION MEASUREMENT FOR FCC PART 74 PER SECTION 74.861(E)(6)(III).....	16
5.3	MODULATION CHARACTERISTICS MEASUREMENT.....	19
5.4	OCCUPIED BANDWIDTH FOR FCC PART 74 PER SECTION 74.861(E)(3), 74.861(E)(5) AND 74.861(E)(6).....	20
5.5	FREQUENCY TOLERANCE FOR FCC PART 74 PER SECTION 74.861(E)(4).....	22
6	PHOTOGRAPHS OF THE TEST SET-UP.....	24

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 4 von 26
Page 4 of 26

7	LIST OF TABLES.....	26
8	LIST OF PHOTOGRAPHS.....	26

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 5 von 26
Page 5 of 26

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix 1: Test result

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Guangdong) Ltd. EMC Laboratory

Guangzhou Auto Market, Yuan Gang Section of Guangshan Road
Guangzhou 510650

P. R. China

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 6 von 26
Page 6 of 26

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Type	Manufacturer	S/N	Calibrated until	Calibrated Interval
EMI Test Receiver	ESCI-3	Rohde & Schwarz	100216	05.Dec.2007	1 year
Spectrum Analyzer	FSP30	Rohde & Schwarz	100286	24.Aug.2008	1 year
Trilog-Broadband Antenna	VULB9168	SCHWARZBECK MESS-ELEKTRONIK	210	08.May.2009	2 year
Double-Ridged Waveguide Horn Antenna	HF906	Rohde & Schwarz	100385	18.Jul.2009	2 year
Double-Ridged Waveguide Horn Antenna	HF906	Rohde & Schwarz	100407	08.May.2009	2 year
Pre-amplifier	AFS42- 00101800- 25-S-42	MITEQ	1101599	31.Jul.2009	2 year
Band Reject Filter	BRM50702	Micro-Tronics	023	15.Feb.2008	2 year
Standard Gain Horn Antenna	3160-09	EMCO	21642	N/A	2 year
Standard Gain Horn Antenna	3160-09	EMCO	21645	N/A	2 year
Pre-amplifier	AFS33- 18002650- 30-8P-44	MITEQ	1108282	31.Jul.2009	2 year
3m Anechoic Chamber	N/A	Albatross Project GmbH	N/A	16.Apr.2008	2 year

2.3 Trace ability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 7 von 26
Page 7 of 26

2.5 Measurement Uncertainty

Uncertainty for conducted emissions measurements is ± 2.51 dB.

Uncertainty for radiated emissions measurements is ± 4.9 dB (30MHz-1GHz), ± 4.84 dB (>1GHz).

The reported expanded uncertainty is based on a standard uncertainty multiply by a coverage factor $k=2$, providing a level of confidence of approximately 95%.

2.6 Location of original data

The original copies of all test data taken during actual testing were attached at Appendix 1 of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Guangzhou) file for certification follow-up purposes.

2.7 Status of facility used for testing

TÜV Rheinland (Guangdong) Ltd. EMC Laboratory; Guangzhou Auto Market, Yuan Gang Section of Guangshan Road, Guangzhou 510650, P. R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements, the register no. 833845

3 General Product Information

The submitted sample is a wireless microphone, which is a transmitter and operates in the frequency range of 740 MHz to 769 MHz.

All the test are perform on three operation frequencies, which are low channel 740.125 MHz, mid channel 753.125 MHz and high channel 768.725 MHz.

3.1 Product Function and Intended Use

For details, refer to technical document and the user manual.

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 8 von 26
Page 8 of 26

3.2 Ratings and System Details

Frequency range	:	740 – 769 MHz
Nominal Operating frequencies	:	Refer to the Frequency List below
RF output power	:	0.0095W
Type of antenna	:	Integral antenna
FCC ID:		H3BUB-8P
Power supply	:	DC 3V (2 x “AA” type 1.5V battery)
Frequency Response	:	30Hz-15kHz
Frequency Stability	:	0.0014%
Emission designator	:	94K6F3E
Ports	:	N/A
Protection Class	:	III

Frequency List:

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8	Group9	Group10	Group11	Group12
1	740.125	740.325	740.525	740.725	740.925	741.125	741.325	741.525	741.725	741.925	742.125	742.325
2	742.525	742.725	742.925	743.125	743.325	743.525	743.725	743.925	744.125	744.325	744.525	744.725
3	744.925	745.125	745.325	745.525	745.725	745.925	746.125	746.325	746.525	746.725	746.925	747.125
4	747.325	747.525	747.725	747.925	748.125	748.325	748.525	748.725	748.925	749.125	749.325	749.525
5	749.725	749.925	750.125	750.325	750.525	750.725	750.925	751.125	751.325	751.525	751.725	751.925
6	752.125	752.325	752.525	752.725	752.925	753.125	753.325	753.525	753.725	753.925	754.125	754.325
7	754.525	754.725	754.925	755.125	755.325	755.525	755.725	755.925	756.125	756.325	756.525	756.725
8	756.925	757.125	757.325	757.525	757.725	757.925	758.125	758.325	758.525	758.725	758.925	759.125
9	759.325	759.525	759.725	759.925	760.125	760.325	760.525	760.725	760.925	761.125	761.325	761.525
10	761.725	761.925	762.125	762.325	762.525	762.725	762.925	763.125	763.325	763.525	763.725	763.925
11	764.125	764.325	764.525	764.725	764.925	765.125	765.325	765.525	765.725	765.925	766.125	766.325
12	766.525	766.725	766.925	767.125	767.325	767.525	767.725	767.925	768.125	768.325	768.525	768.725

Refer to the technical document for further information.

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 9 von 26
Page 9 of 26

3.3 Independent Operation Modes

The basic operation modes are:

- Transmitting without modulation
- Transmitting with modulation

For further information refer to User Manual

3.4 Submitted Documents

- Block Diagram
- Circuit Diagram
- Components List
- PCB layout
- FCC label
- User Manual
- Photo document

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 10 von 26
Page 10 of 26

4 Test Set-up and Operation Mode

4.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Refer to Test set-up in chapter 5.

4.3 Special Accessories and Auxiliary Equipment

None

4.4 Countermeasures to achieve EMC Compliance

The test sample, which has been tested, contained the noise suppression parts as described in the technical document. No additional measures were employed to achieve compliance.

4.5 Test set-up

Diagram 1 of Measurement Equipment Configuration for Testing Radiated Emission

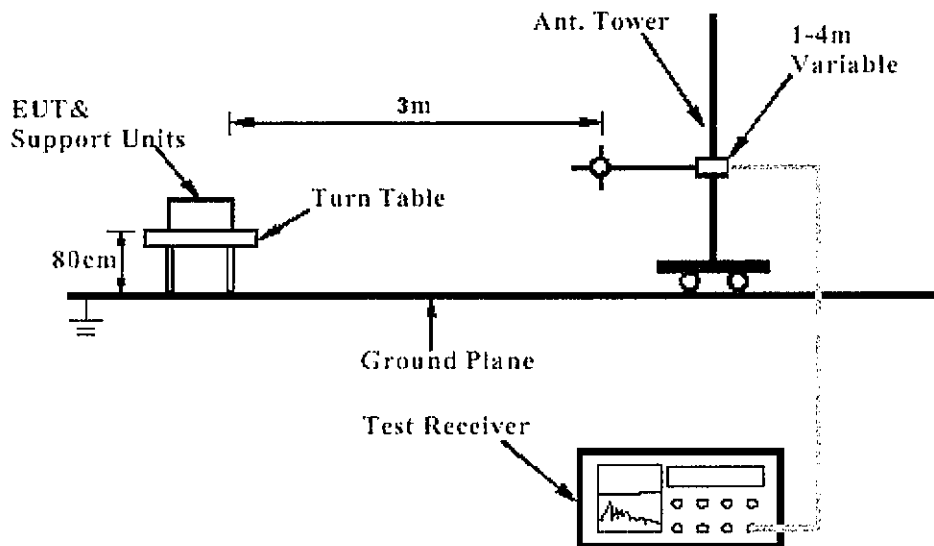


Diagram 2 of Measurement Equipment Configuration for Substitution Method

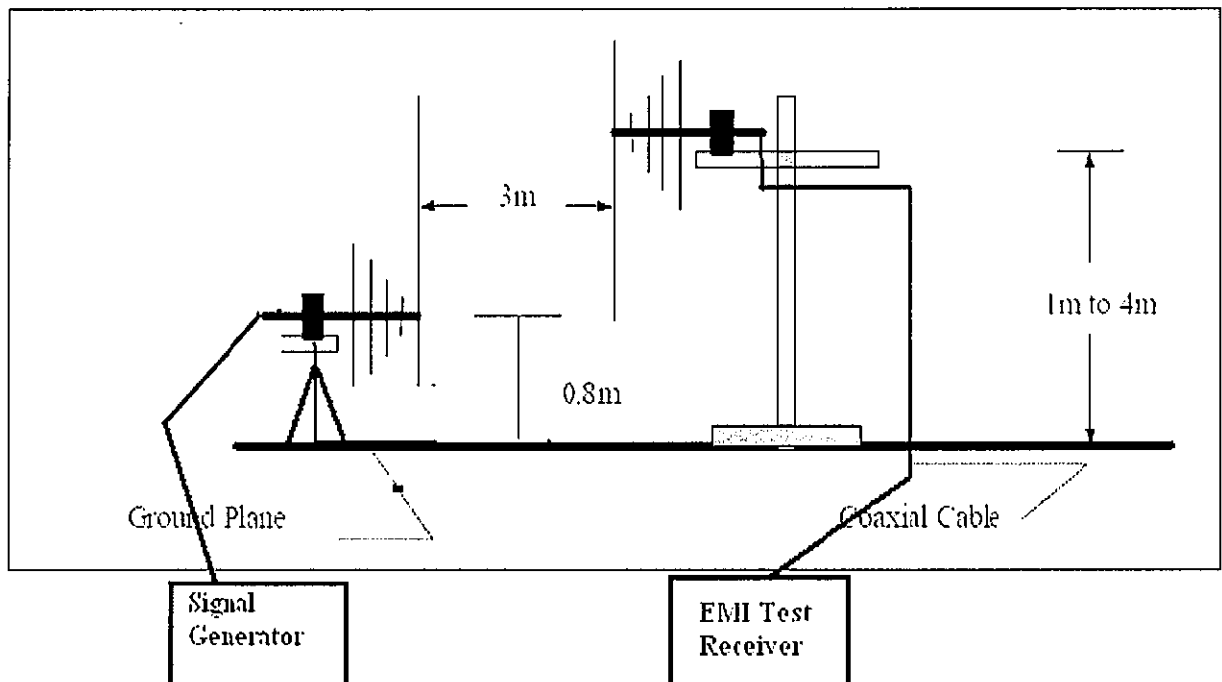


Diagram 3 of Measurement Equipment Configuration for Testing Modulation Characteristics measurement

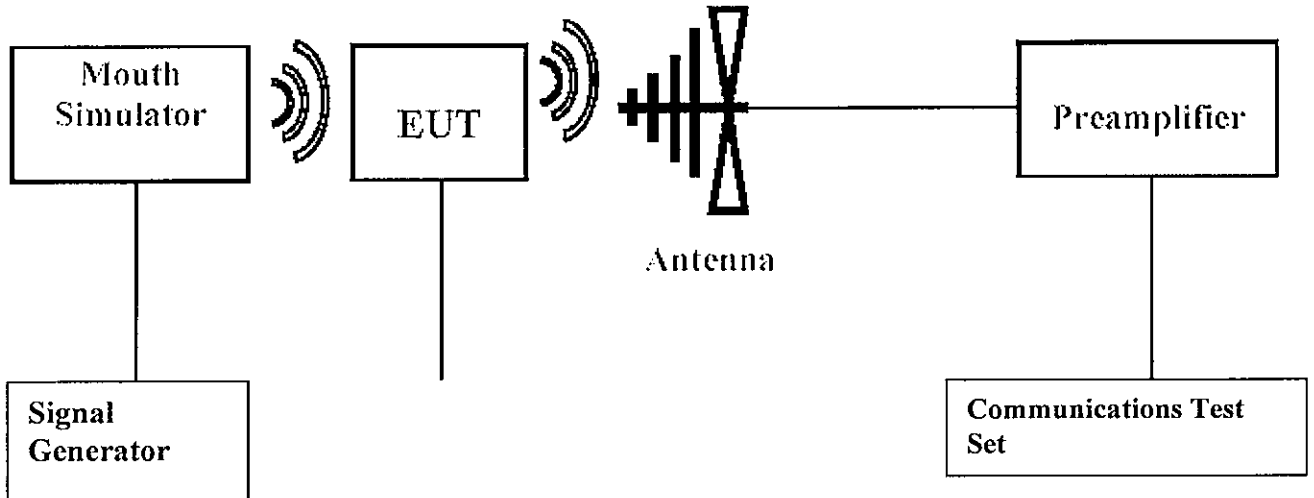
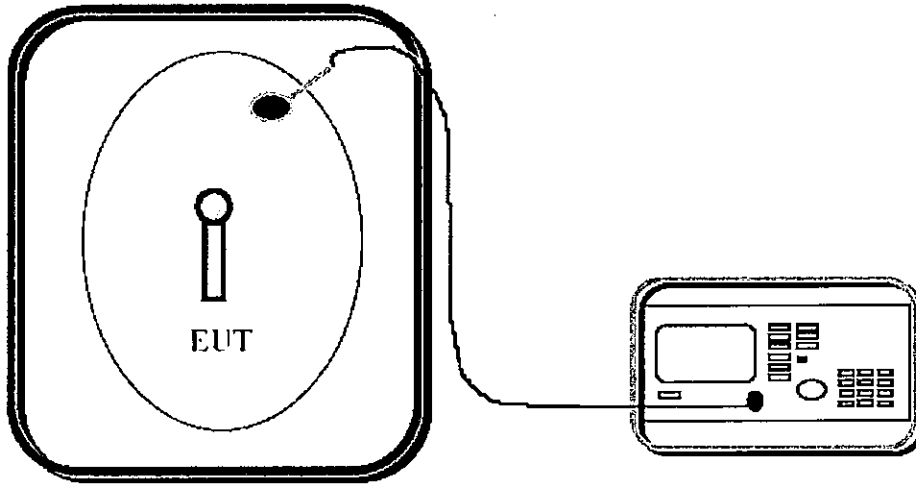
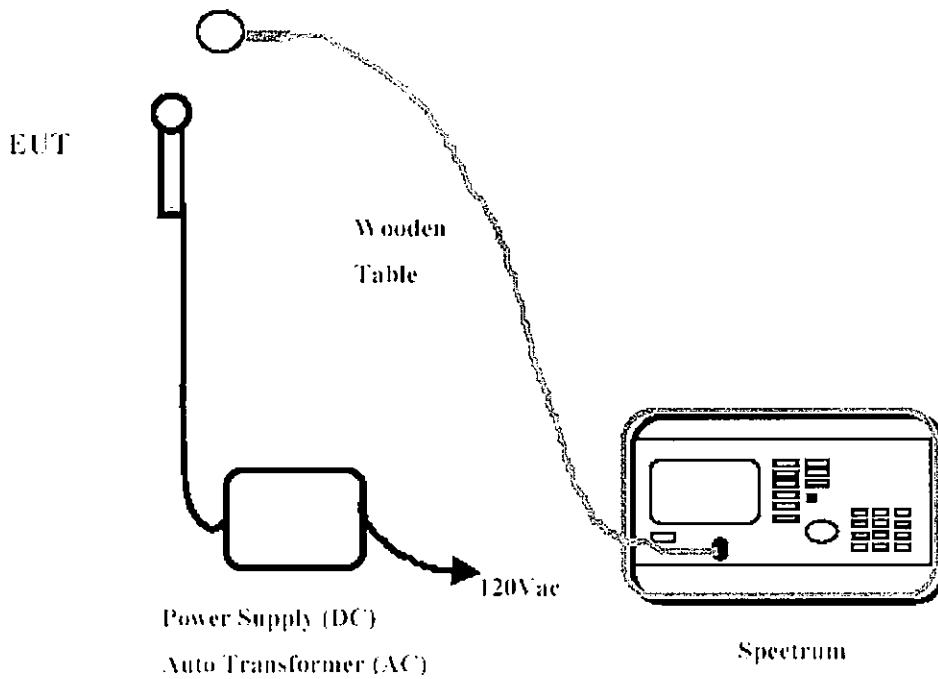


Diagram 4 of Measurement Equipment Configuration for Testing Frequency Tolerance



Chamber

Spectrum



Spectrum

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 14 von 26
Page 14 of 26

5 Test Results EMISSION

5.1 Power output measurement for FCC part 74 Per Section 74.861(e)(1)

RESULT:

Pass

Date of testing	:	29.01.2008
Test specification	:	FCC Part 2 Per Section 2.1046(a)
Limits	:	FCC Part 74 Per Section 74.861(e)(1)
Deviations from Standard Test procedures	:	None
Kind of test site	:	3m Anechoic Chamber
Operation mode	:	Transmitting (unmodulated)
Temperature	:	22°C
Humidity	:	65%

Measurement procedure:

1. The EUT was placed on an 80cm high turntable in the anechoic chamber.
2. For radiated power output of the EUT, the measuring antenna was raised and lowered to obtain a maximum reading on the spectrum analyzer with the test antenna polarized vertically and horizontally. The turntable was rotated 360 to further searching the maximum reading on the spectrum analyzer. Then the max value on spectrum was recorded.
3. The EUT was removed and be replaced with a substitute dipole antenna. The length of the antenna was adjusted to a half-wave of transmitting frequency measured. The centre of the dipole antenna was placed approximately at the same location as the centre place of the EUT in step 1 and 2.
4. The dipole antenna was connected to a signal generator with a coaxial cable.
5. The signal generator is tuned to the transmitting frequency with the substitute antenna polarized both vertically and horizontally, the output level of the signal generator output was then adjusted to get a maximum reading in the spectrum with the same value recorded in the step 2.
6. The input RF power in the dipole antenna was calculated from the coaxial cable loss and the signal generator output level obtained in step 5. This value was regarded as final result and recorded in following table 2.

Prüfbericht - Nr.:

16012110 001

Seite 15 von 26

Test Report No.:

Page 15 of 26

Note: While in Step 2, the EUT was placed in 3 orthogonal planes to find a maximum reading.

Table 2: Measurement Result of output power on frequencies 740.125MHz, 753.125MHz and 768.725MHz

Channel	Freq. (MHz)	Polarization (V/H)	Transmit power (dBm)	Transmit power (mW)	Limit (mW)
Low	740.125	V	4.712	2.96	250
	740.125	H	3.155	2.07	250
Mid	753.125	V	7.230	5.28	250
	753.125	H	0.625	1.15	250
High	768.725	V	9.791	9.53	250
	768.725	H	3.621	2.30	250

The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz at frequency below 1GHz.

The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz at frequency above 1GHz.

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 16 von 26
Page 16 of 26

5.2 Spurious Radiation Measurement for FCC Part 74 Per Section 74.861(e)(6)(iii)

RESULT:

Pass

Date of testing	:	29.01.2008
Test specification	:	FCC Part 2 Per Section 2.1053(a) and 2.1057
Limits	:	FCC Part 74 Per Section 74.861(e)(6)(iii)
Deviations from Standard Test procedures	:	None
Kind of test site	:	3m Full-Anechoic Chamber
Operation mode	:	Transmitting (unmodulated)
Temperature	:	22°C
Humidity	:	65%

Measurement procedure:

1. The EUT was turned on and placed on the top of a rotatable table 0.8 meters above the ground with 3-orthogonal XYZ direction and be kept close enough to the measurement receiving antenna (especially for the measurement frequency range above 1 GHz). The table was then rotated 360 degrees to detect the suspected emission frequency points. The position of the worst radiation case with both horizontal and vertical receiving antenna polarization was then recorded together with the suspected emission frequency points above-mentioned.
2. The EUT was then set 3 meters away from the receiving antenna, which was mounted on a variable-height antenna tower.
3. For each suspected emission frequency point recorded in step 1, the EUT was arranged to its worst case that the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to read the maximum emission.
4. The EUT was removed and be replaced with substitute antenna correspondent to the suspected frequency point mentioned in Step 3 (if necessary, characteristic frequency of the antenna is adjusted to a half-wave of the suspected frequency point). The substitute antenna was then connected to a signal generator with a coaxial cable and its center is placed approximately at the same location as the centre place of the EUT in Step 3.
5. The signal generator is tuned to the suspected frequency point mentioned in Step 3 with the substitute antenna polarized both vertically and horizontally, the output level of the signal generator output was then adjusted to get a maximum reading in the spectrum with the same value recorded in the step 3.
6. For each suspected frequency point, the input RF power in the substitute antenna was calculated from the coaxial cable loss, antenna factor and the signal generator output level obtained in step 5. This value was regarded as final result and recorded in following table 4, table 5 and table 6.

Prüfbericht - Nr.:

16012110 001

Seite 17 von 26

Test Report No.:

Page 17 of 26

To determine the Limit for Spurious Emissions the following method was used:

Maximum output power in watts:

Maximum output power in Watt: 0.01398W (see table 2)

The emission must be reduced by:

$$43+10*\text{Log}(0.01398)= 24.455 \text{ dB}$$

Therefore, the Emission Limit equals:

$$10*\text{Log}(0.01398*1000)- 24.455\text{dB} = -13\text{dBm}$$

While testing, the EUT was placed in 3 orthogonal planes and the maximum reading was recorded in the following tables.

Table 3: Spurious Emission: EUT operated on Bottom frequency (740.125MHz)

Freq. (MHz)	Polarization (V/H)	Transmit power (dBm)	Limit (dBm)
2121.75	H	- 41.1	-13
2757.87	H	- 37.2	-13
3419.38	H	- 27.2	-13
4117.63	H	- 28.3	-13
5159.75	H	- 26.8	-13
7146.00	H	- 24.3	-13
1480.37	V	- 44.3	-13
1850.50	V	- 42.9	-13
3474.50	V	- 27.9	-13
4886.25	V	- 27.2	-13
5810.75	V	- 25.9	-13
7377.00	V	- 23.7	-13

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 18 von 26
Page 18 of 26

Table 4: Spurious Emission: EUT operated on Bottom frequency (753.125MHz)

Freq. (MHz)	Polarization (V/H)	Transmit power (dBm)	Limit (dBm)
2523.37	H	-38.6	-13
3439.50	H	-27.8	-13
5137.00	H	-27.2	-13
6068.00	H	-25.2	-13
1386.75	V	-44.7	-13
2323.00	V	-40.4	-13
3468.37	V	-27.7	-13
5165.87	V	-27.0	-13
6303.37	V	-25.9	-13
7367.37	V	-23.0	-13

Table 5: Spurious Emission: EUT operated on Bottom frequency (768.725MHz)

Freq. (MHz)	Polarization (V/H)	Transmit power (dBm)	Limit (dBm)
1797.12	H	-41.8	-13
2730.75	H	-37.1	-13
3360.75	H	-26.6	-13
4616.37	H	-26.9	-13
6096.00	H	-24.6	-13
7501.25	H	-21.8	-13
2085.87	V	-40.9	-13
2780.62	V	-37.7	-13
3533.12	V	-26.5	-13
4206.87	V	-27.9	-13
5624.37	V	-25.6	-13
7089.12	V	-23.1	-13

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 19 von 26
Page 19 of 26

5.3 Modulation Characteristics measurement

RESULT:

Pass

Date of testing	:	28.01.2008
Test specification	:	FCC Part 2 Per Section 2.1047(a) and (b)
Limits	:	FCC Part 2 Per Section 2.1047(a) and (b)
Deviations from Standard Test procedures	:	None
Operation mode	:	Transmitting
Temperature	:	22°C
Humidity	:	65%

Measurement procedure:

Audio frequency response:

- 1) Configure the EUT as shown in diagram 3.
- 2) Adjust the audio input for 20% of rated system deviation at 1 kHz using this level as a reference (0 dB).
- 3) Vary the Audio frequency from 200 Hz to 20 kHz and record the frequency deviation

Modulation limit:

- 1). Configure the EUT as shown in diagram 3, adjust the audio input for 60% of rated system deviation at 1kHz using this level as a reference (0dB) and vary the input level from -30db to +20dB. Record the frequency deviation obtained as a function of the input level.
- 2). Repeat step 1 with input frequency changing to 500Hz, 800Hz, 1kHz, 2.5kHz, 5kHz, 10kHz and 15kHz in sequence.

Refer to appendix for curves.

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 20 von 26
Page 20 of 26

5.4 Occupied Bandwidth for FCC Part 74 Per Section 74.861(e)(3), 74.861(e)(5) and 74.861(e)(6)

RESULT:

Pass

Date of testing	:	28.01.2008
Test specification	:	FCC Part 2 Per Section 2.1049(c)1
Limits	:	FCC Part 74 Per Section 74.861(e)(3), 74.861(e)(5) and 74.861(e)(6)
Deviations from Standard Test procedures	:	None
Operation mode	:	Transmitting (modulated)
Temperature	:	22°C
Humidity	:	65%

Measurement procedure:

1. Connect the EUT as diagram 3 in Section 4.5.
2. Plot the unmodulated chart shows on spectrum.
3. According to the result of Modulation Characteristics, set the output of the signal generator to 500Hz, 1 kHz, 5 kHz, 10 kHz, increase the amplitude of the signal, until maximum modulation is shown on the spectrum analyzer.
4. The Occupied Bandwidth was measured in appendix of this report

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 21 von 26
Page 21 of 26

Table 6: Maximum Deviation

Reading:	42.3kHz
Limit:	± 75kHz

Table 7: Operation Bandwidth (Bn)

Parameter:	M	D
Reading	5kHz	42.3kHz
Bn:	94.6kHz	
Limit:	200kHz	
Emission Designator:	94K6F3E	
Bn=2M+2D*K Bn: operation bandwidth M: Max. Modulation Frequency D: Peak Frequency Deviation K=1		

Refer for appendix for measurements.

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 22 von 26
Page 22 of 26

5.5 Frequency tolerance for FCC Part 74 Per Section 74.861(e)(4)

RESULT:

Pass

Date of testing	:	29.01.2008
Test specification	:	FCC Part 2 Per Section 2.1055
Limits	:	FCC Part 74 Per Section 74.861(e)(4)
Deviations from Standard Test procedures	:	None
Test procedure	:	Procedure specified in ANSI C63.4 were followed
Operation mode	:	Transmitting (unmodulated)
Temperature	:	-30°C to 50°C
Humidity	:	65%

Measurement procedure:

A. Frequency stability versus environmental temperature

1. Setup the configuration as diagram 4 in section 4.5 for frequency measured inside an environment chamber and install new battery in the EUT.
2. Turn on EUT and set spectrum analyzer center frequency to the EUT operating frequency. Set spectrum analyzer Resolution Bandwidth to 1 kHz and Video Resolution Bandwidth to 1 kHz and Frequency Span to 50kHz. Record this frequency as reference frequency.
3. Set the temperature of chamber to 50°C. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.
4. Repeat step 2 with a 10°C decreased per stage until the lowest temperature -30°C is measured, record all measured frequencies on each temperature step.

B. Frequency stability versus input voltage

1. Setup the configuration as diagram 4 for frequencies measurement at temperature range from 15°C to 25°C. Otherwise, an environment chamber set for a temperature of 20°C shall be used.
2. Set spectrum analyzer center frequency to the EUT operating frequency. Set spectrum analyzer Resolution Bandwidth to 1 kHz and Video Resolution Bandwidth to 1 kHz. Record this frequency as reference frequency.
3. Set the supply voltage to the nominal voltage of the EUT.
4. Turn the EUT on and measure the EUT operating frequency
5. Repeat step 4 with decreased supply voltage, record all measured frequencies on each voltage step.
6. Stop the test until the lowest voltage specified by the manufacturer is reached or the EUT case to emission radio signal.

Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 23 von 26
Page 23 of 26

Table 8: the measurement of Frequency tolerance (temperature)

Test condition	Power supply	Low Frequency (MHz) (740.125)	Mid Frequency (MHz) (753.125)	High Frequency (MHz) (768.725)
-30°C	New batteries	740.1232	753.1228	768.7224
-20°C	New batteries	740.1248	753.1252	768.7232
-10°C	New batteries	740.1256	753.1256	768.7256
0°C	New batteries	740.1252	753.1252	768.7252
10°C	New batteries	740.1240	753.1244	768.7240
20°C	New batteries	740.1224	753.1224	768.7220
30°C	New batteries	740.1204	753.1200	768.7200
40°C	New batteries	740.1196	753.1196	768.7192
50°C	New batteries	740.1148	753.1172	768.7168
Frequency Error:		0.0102	0.0078	0.0082
Frequency Error rate:		0.0014%	0.001%	0.001%
Frequency Tolerance Limit:		0.005%		

Table 9: the measurement of Frequency tolerance (supply voltage)

Temperature: 25°C

Test condition (Power supply)	Low Frequency (MHz) (740.125)	Mid Frequency (MHz) (753.125)	High Frequency (MHz) (768.725)
3V	740.1224	753.1220	768.7224
2.8V	740.1224	753.1220	768.7224
2.6V	740.1224	753.1220	768.7224
2.4V	740.1224	753.1220	768.7224
2.2V	740.1220	753.1220	768.7224
2.0V	740.1220	753.1204	768.7220
1.8V	740.1224	753.1204	768.720
1.6V	740.1224	753.1204	768.7220
1.4V	740.1224	753.1204	768.7220
1.2V	---	753.1200	---
Frequency Error :	0.005	0.005	0.003
Frequency Error rate:	0.0007%	0.0007%	0.0004%
Frequency Tolerance Limit:	0.005%		

The equipment remains on channel when the power source was reduced below the lower extreme test voltage limit until zero. The EUT ceases to function below the voltage at DC 1.2V.

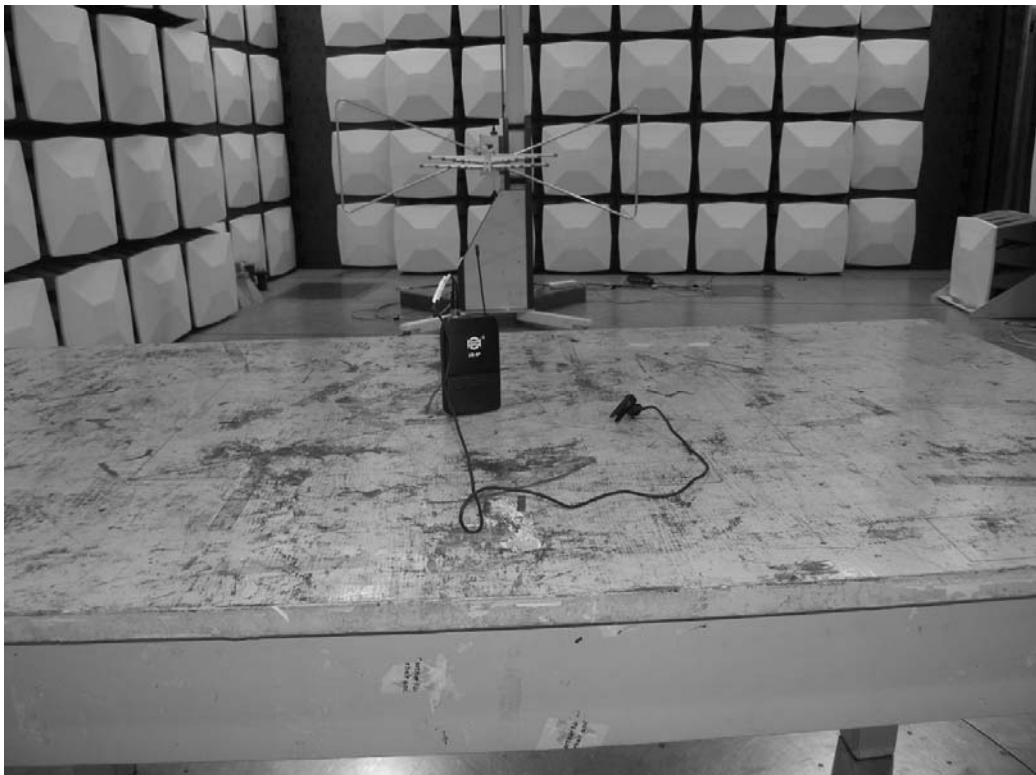
Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 24 von 26
Page 24 of 26

6 Photographs of the Test Set-Up

Photograph 1: Set-up for Radiation Measurement Below 1GHz



Prüfbericht - Nr.:
Test Report No.:

16012110 001

Seite 25 von 26
Page 25 of 26

Photograph 2: Set-up for Radiation Measurement above 1GHz



7 List of Tables

Table 1: List of Test and Measurement Equipment.....	6
Table 2: Measurement Result of output power on frequencies 740.125MHz, 753.125MHz and 768.725MHz.....	15
Table 3: Spurious Emission: EUT operated on Bottom frequency (740.125MHz).....	17
Table 4: Spurious Emission: EUT operated on Bottom frequency (753.125MHz).....	18
Table 5: Spurious Emission: EUT operated on Bottom frequency (768.725MHz).....	18
Table 6: Maximum Deviation.....	21
Table 7: Operation Bandwidth (Bn).....	21
Table 8: the measurement of Frequency tolerance (temperature).....	23
Table 9: the measurement of Frequency tolerance (supply voltage).....	23

8 List of Photographs

Photograph 1: Set-up for Radiation Measurement Below 1GHz.....	24
Photograph 2: Set-up for Radiation Measurement above 1GHz.....	25

Prüfbericht - Nr.:

16012110 001

Seite 1 von 19

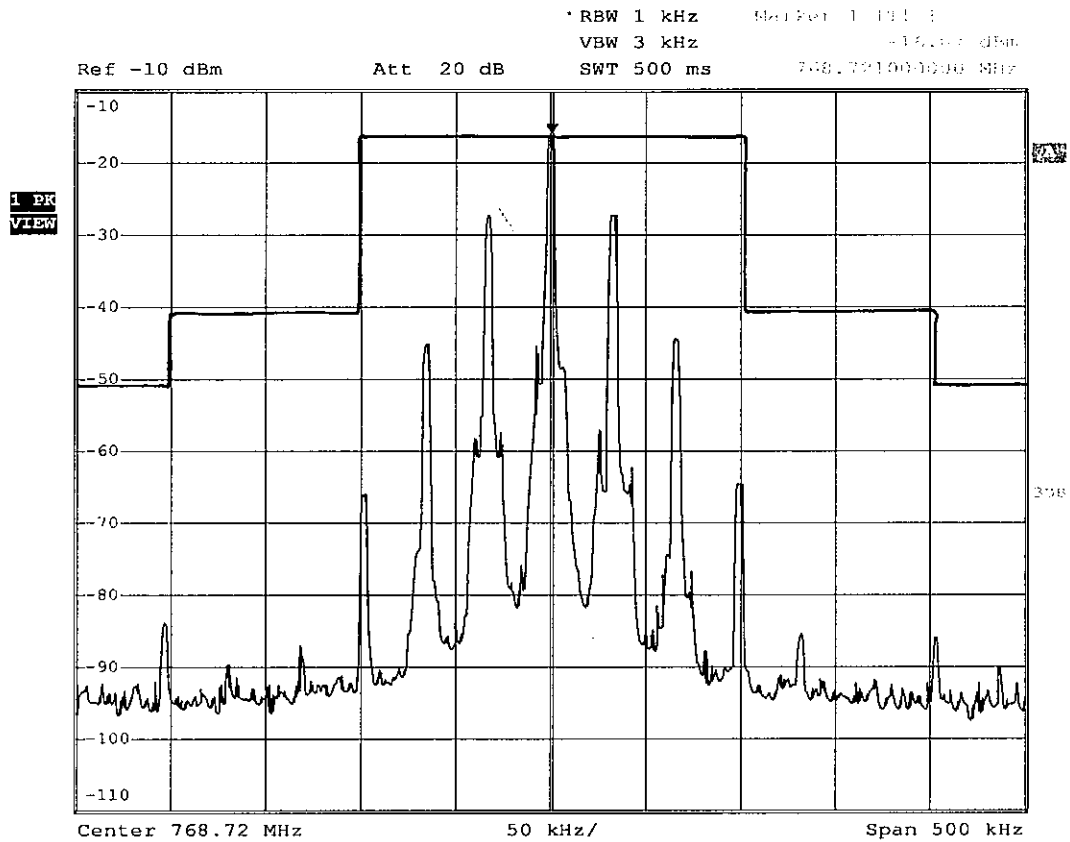
Page 1 of 19

Test Report No.

Occupied Bandwidth:

High channel

Unmodulation RF output



Date: 22.FEB.2008 15:28:56

Prüfbericht - Nr.:

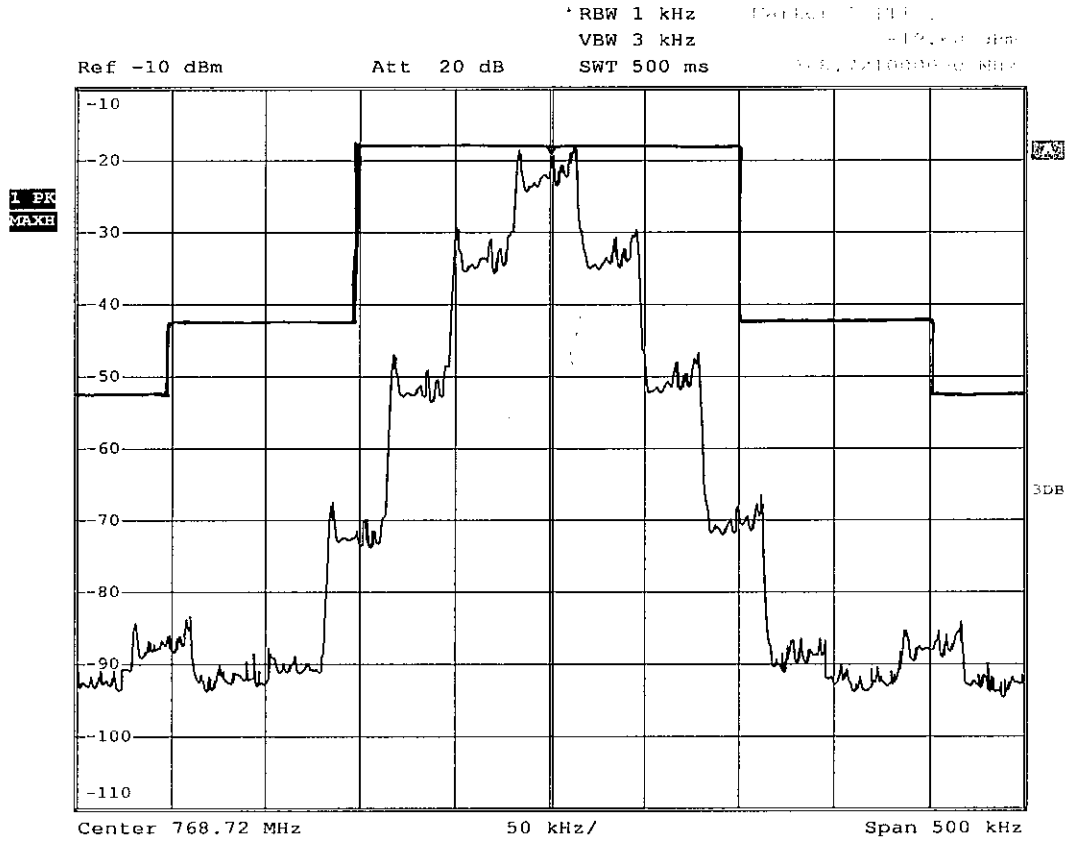
16012110 001

Seite 2 von 19

Page 2 of 19

Test Report No.

Input Audio signal: 500Hz



Date: 22.FEB.2008 15:29:43

Prüfbericht - Nr.:

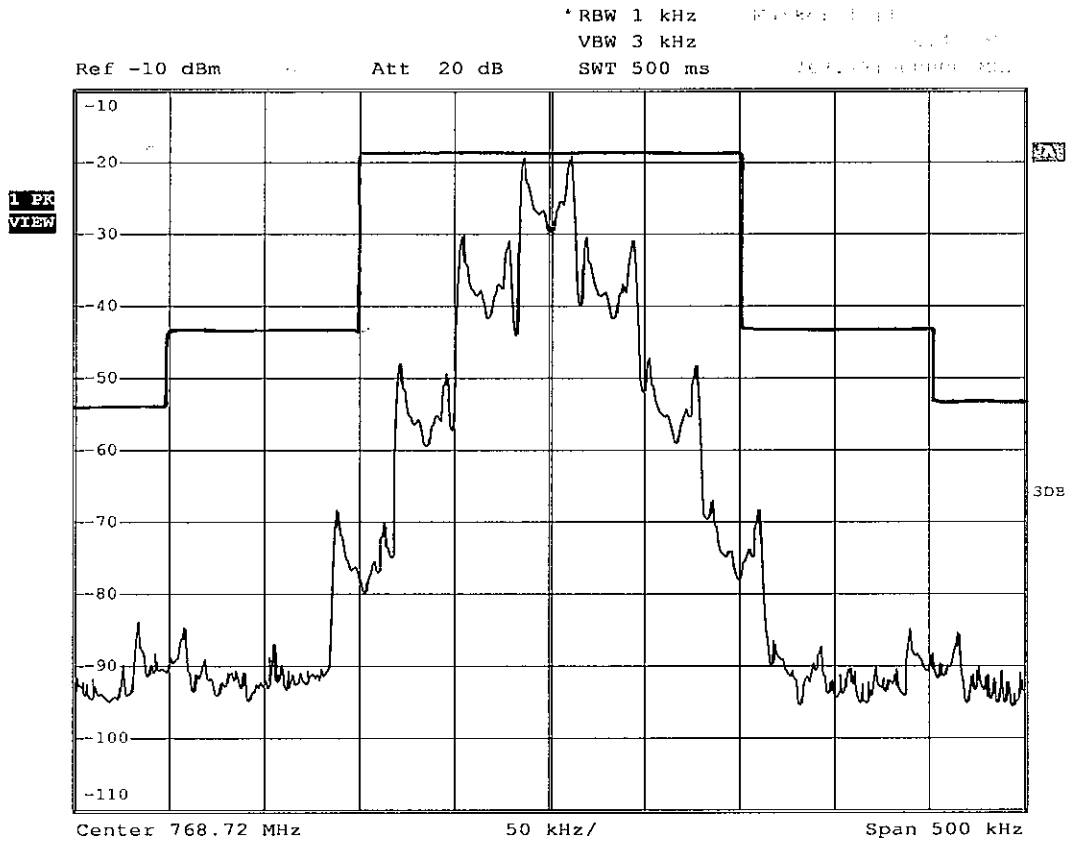
16012110 001

Seite 3 von 19

Page 3 of 19

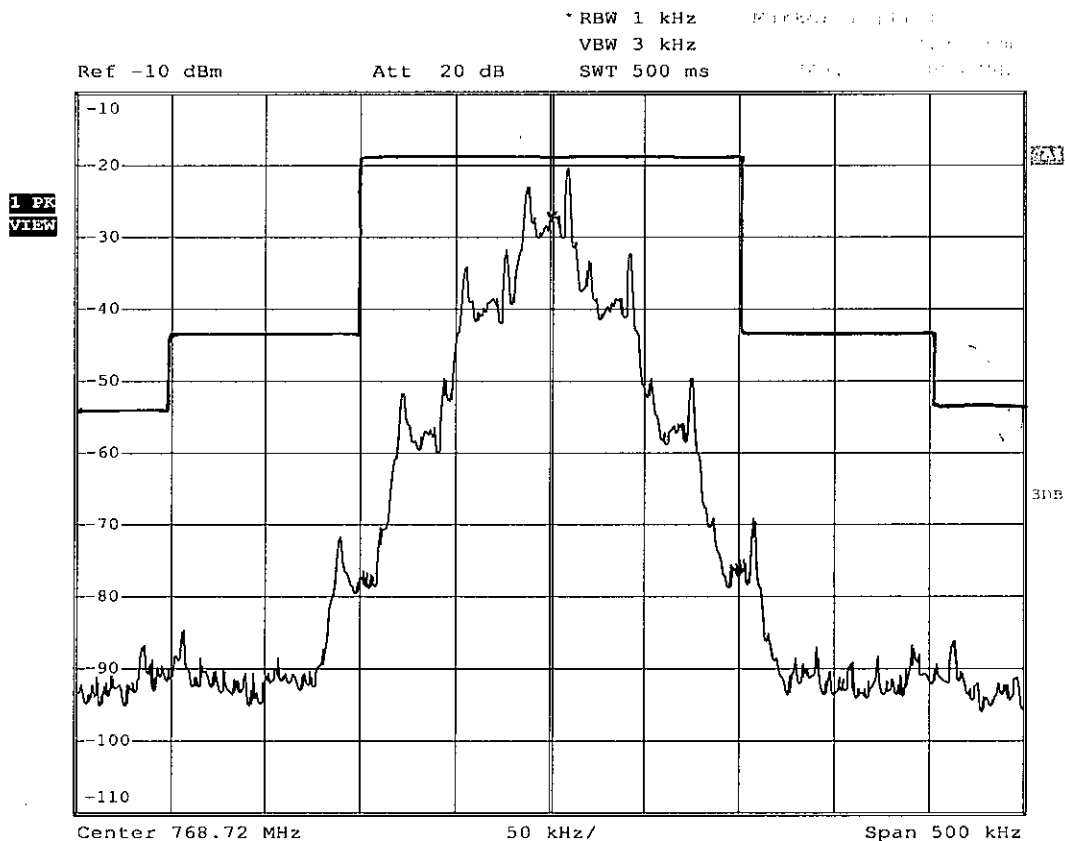
Test Report No.

Input Audio signal: 1kHz



Date: 22.FEB.2008 15:30:30

Input Audio signal: 5kHz



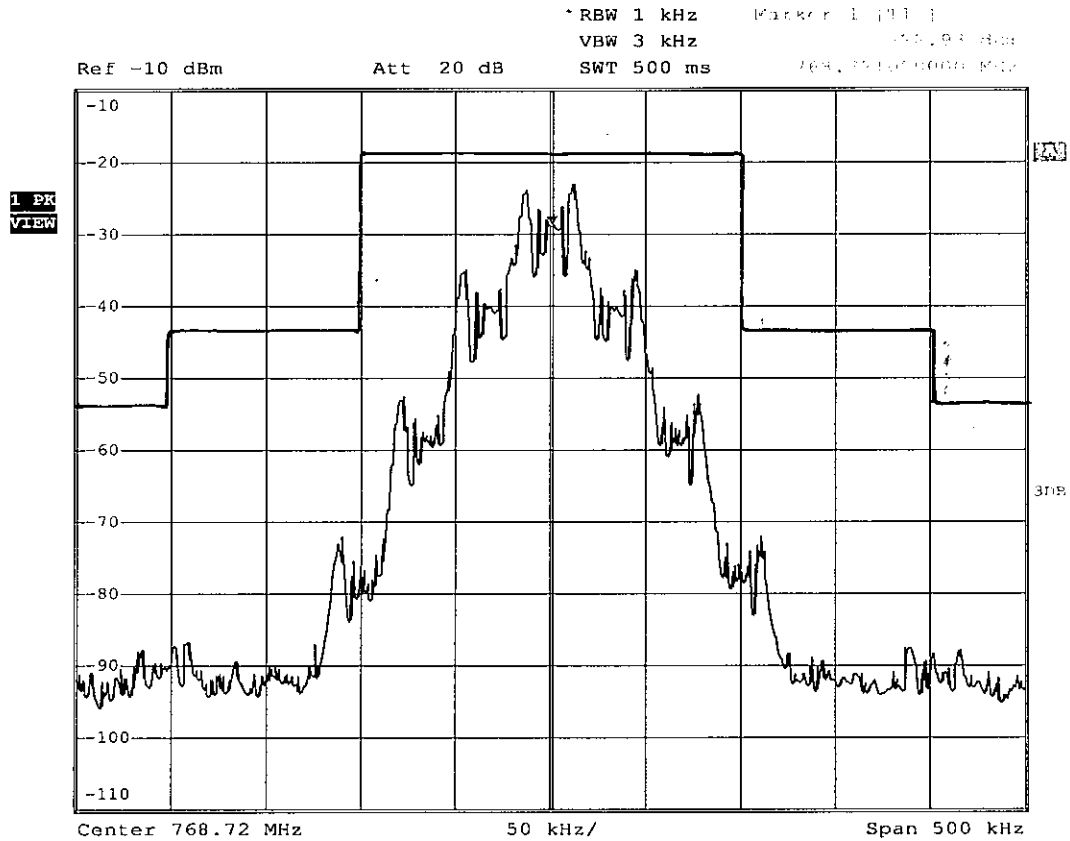
Date: 22.FEB.2008 15:31:09

Prüfbericht - Nr.:
Test Report No.

16012110 001

Seite 5 von 19
Page 5 of 19

Input Audio signal: 10kHz



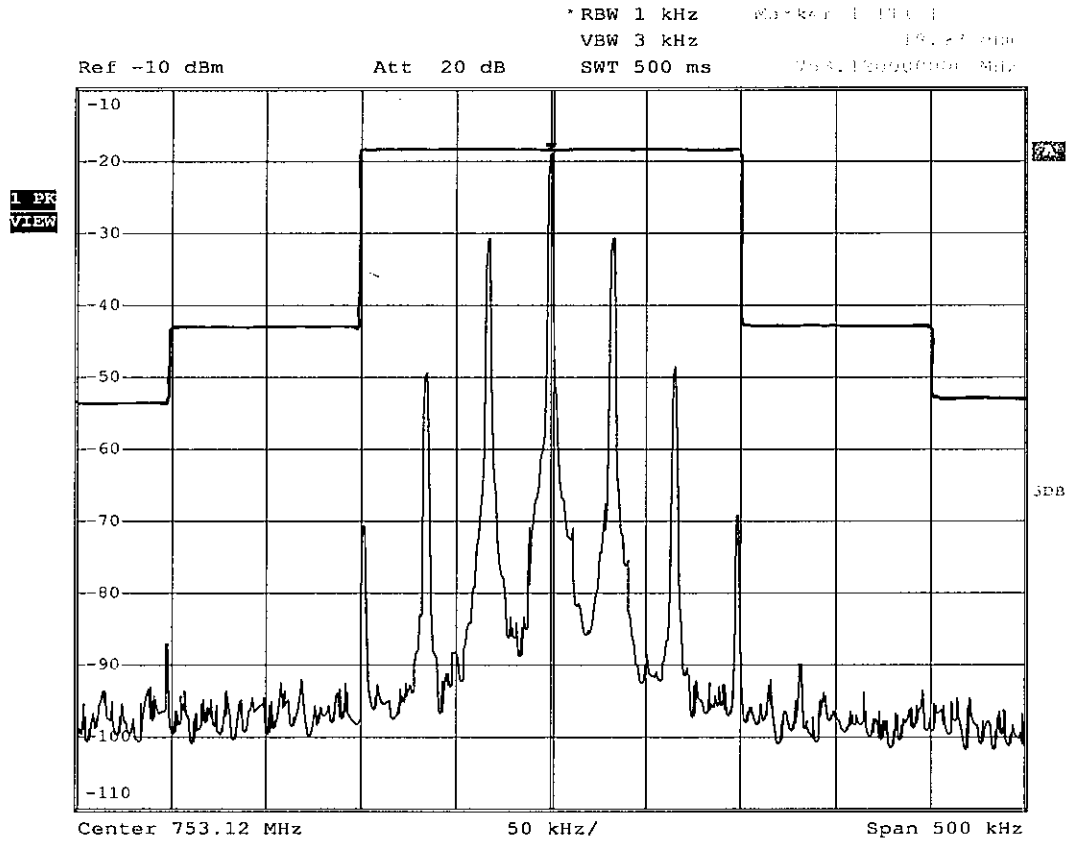
Date: 22.FEB.2008 15:31:50

Prüfbericht - Nr.:
Test Report No.

16012110 001

Seite 6 von 19
Page 6 of 19

Middle channel

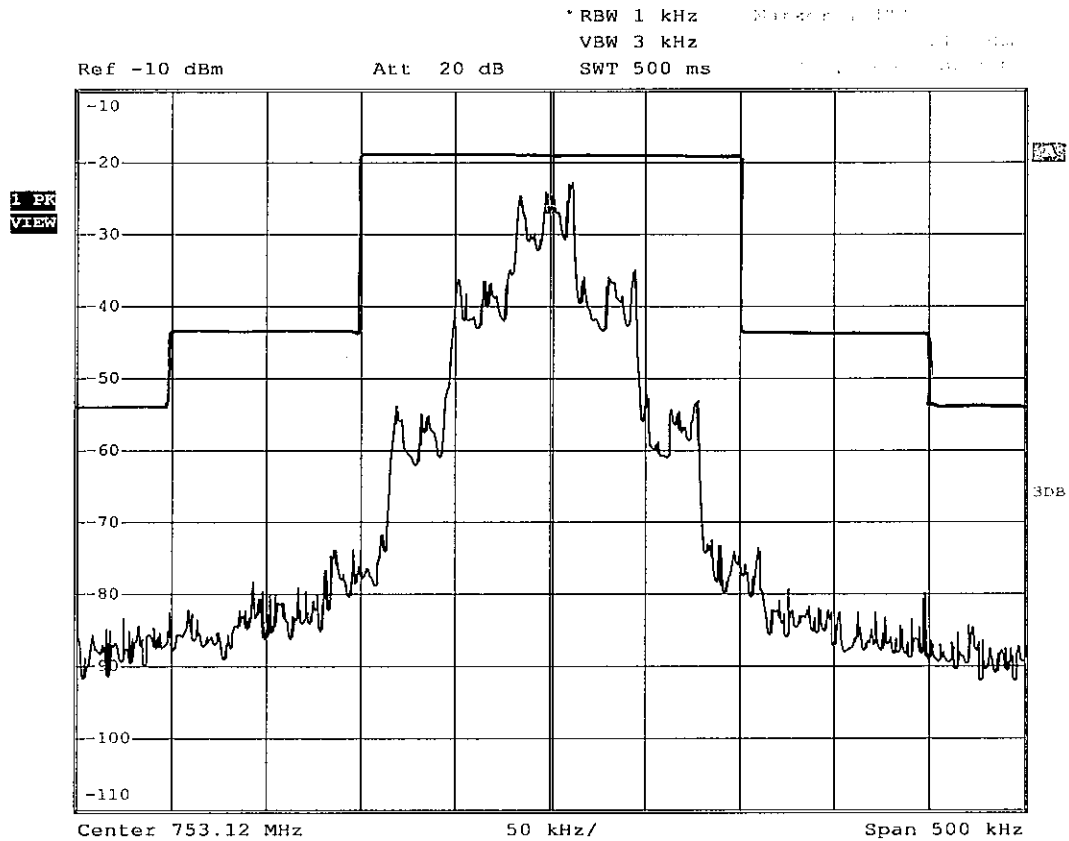


Date: 22.FEB.2008 15:32:57

Prüfbericht - Nr.: 16012110 001
Test Report No.

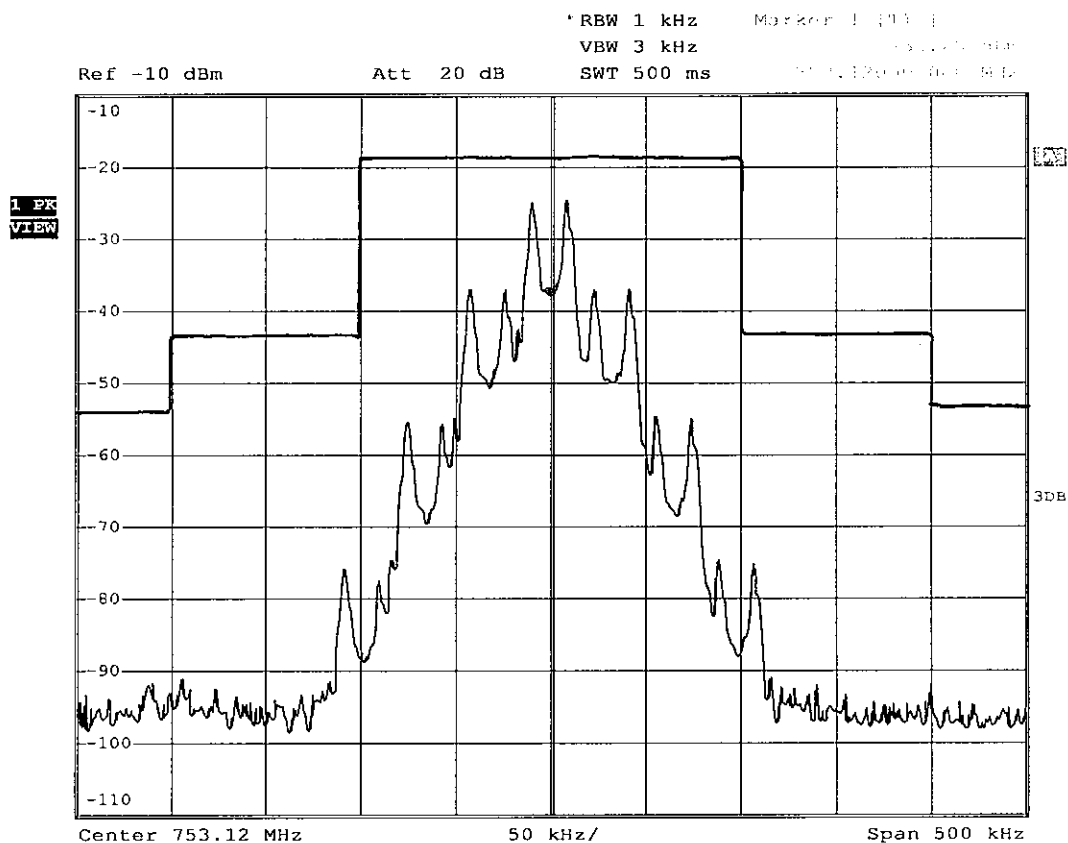
Seite 7 von 19
Page 7 of 19

Input Audio signal: 500Hz



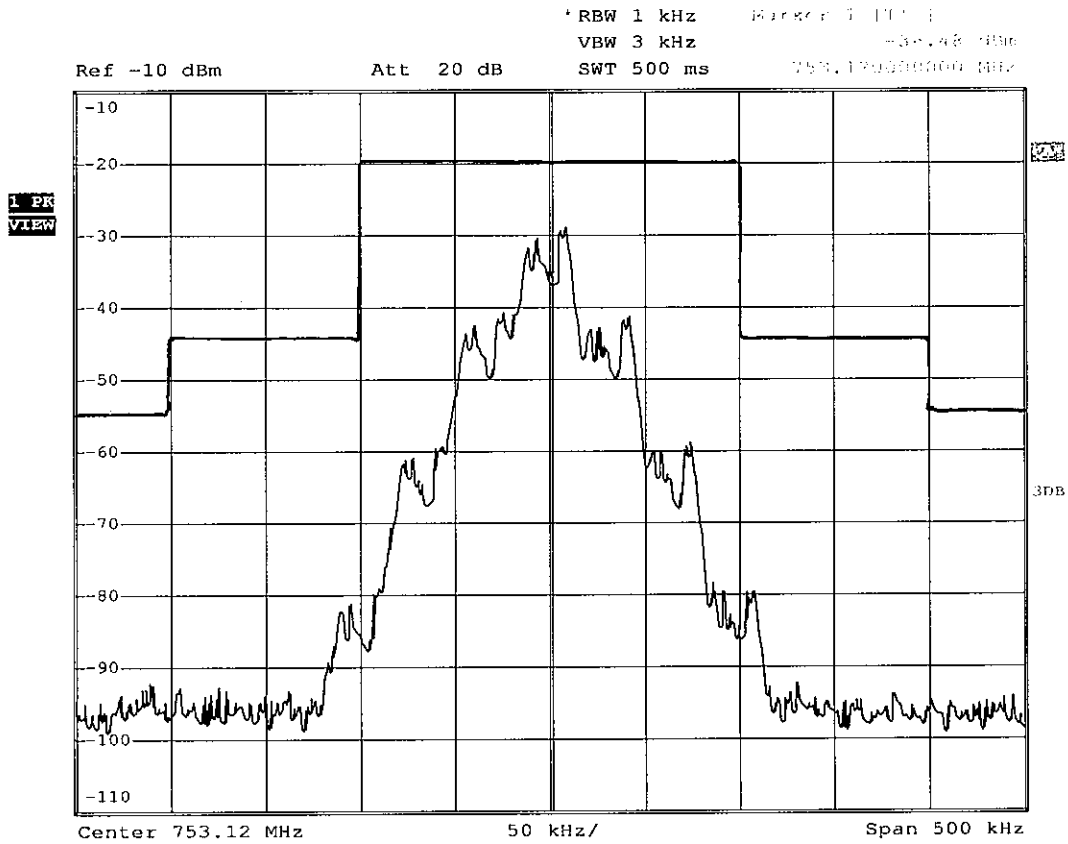
Date: 22.FEB.2008 15:36:03

Input Audio signal: 1kHz



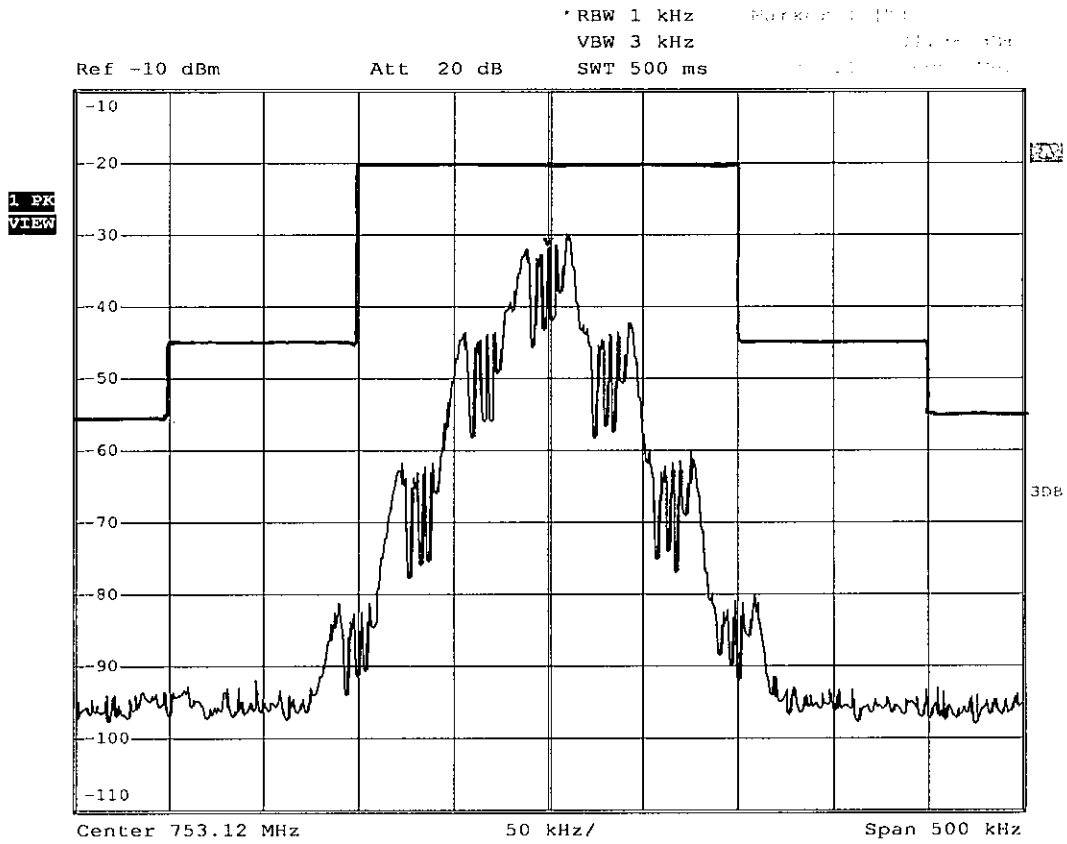
Date: 22.FEB.2008 15:35:06

Input Audio signal: 5kHz



Date: 22.FEB.2008 15:34:16

Input Audio signal: 10kHz

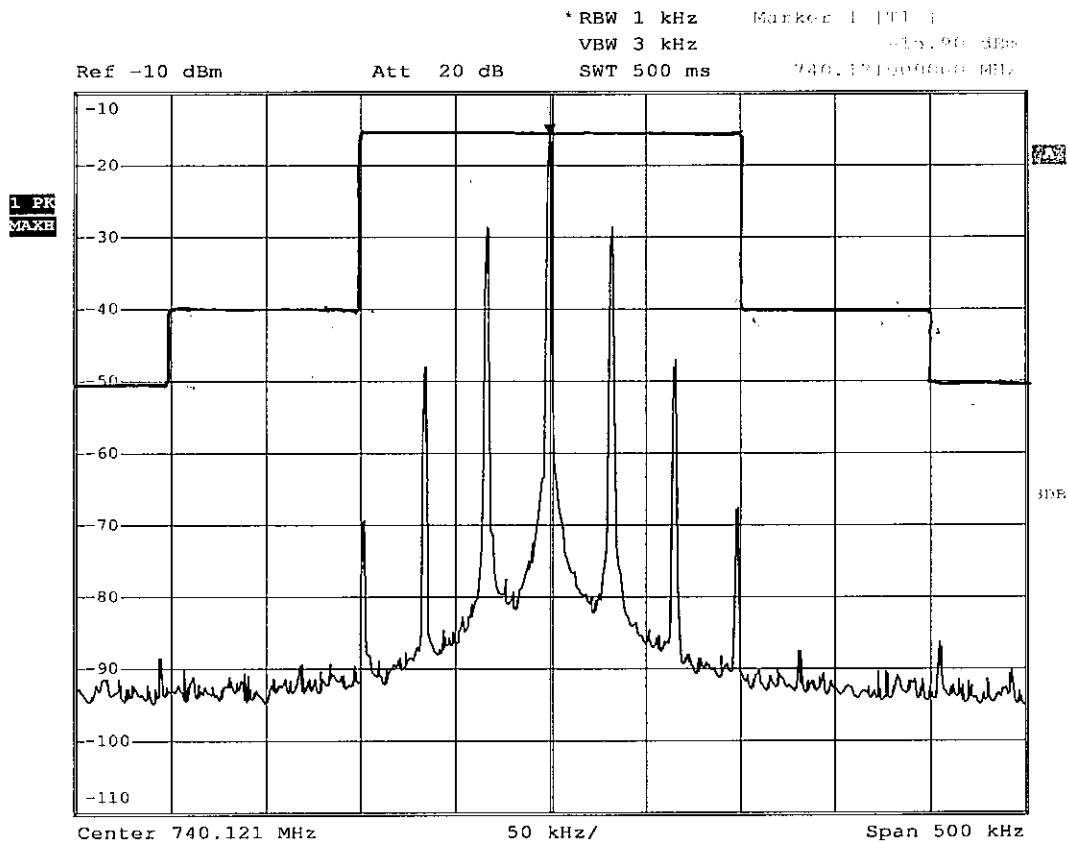


Date: 22.FEB.2008 15:33:43

Prüfbericht - Nr.: 16012110 001
Test Report No.

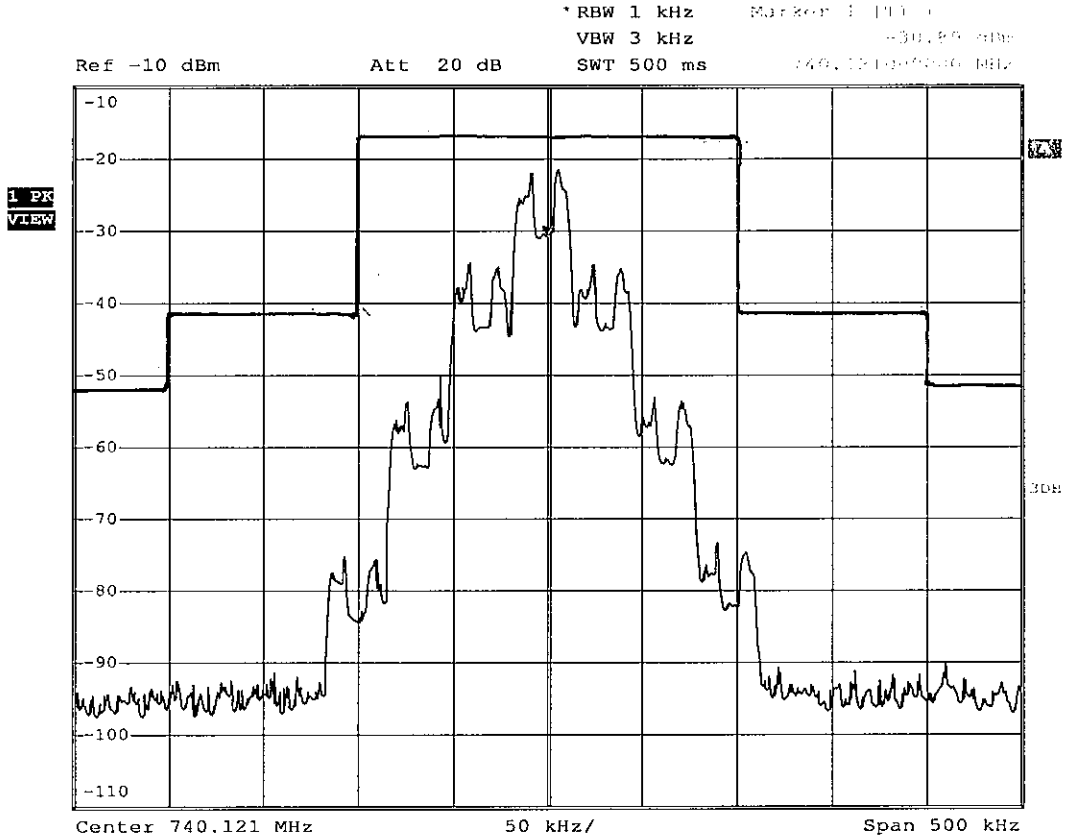
Seite 11 von 19
Page 11 of 19

Low channel



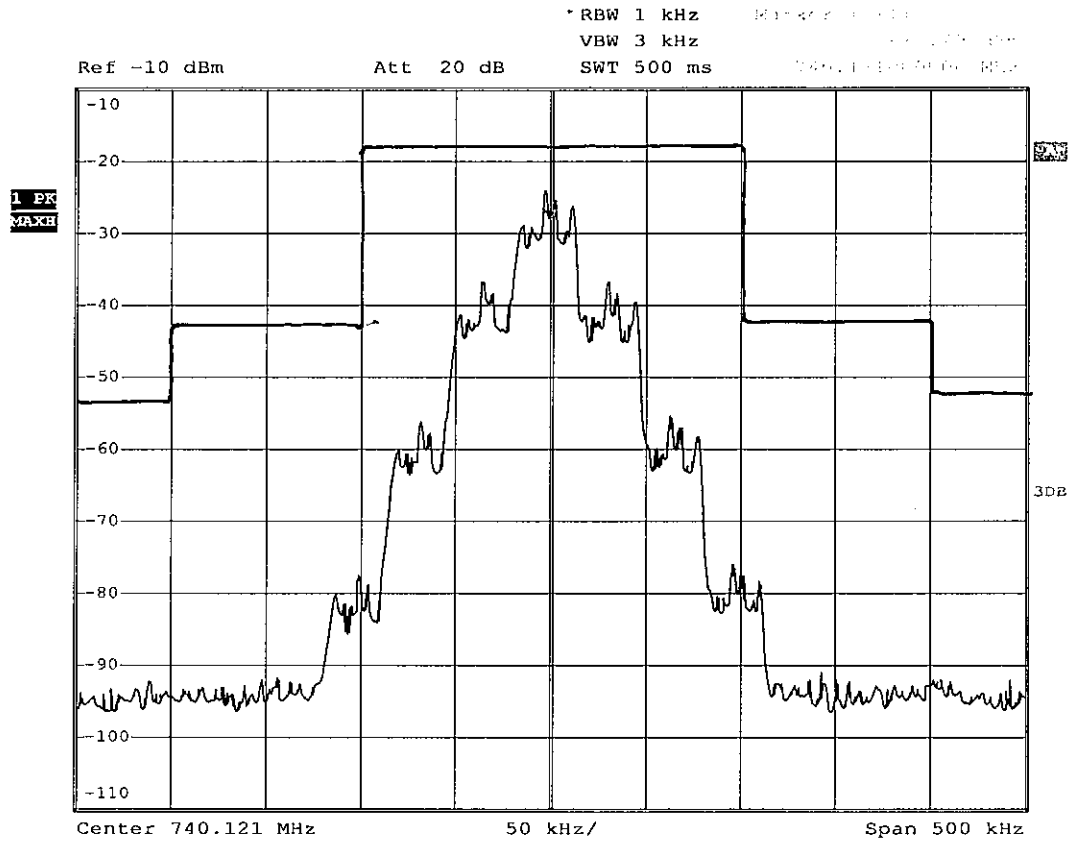
Date: 22.FEB.2008 15:23:04

Input Audio signal: 500Hz



Date: 22.FEB.2008 15:27:00

Input Audio signal: 1kHz



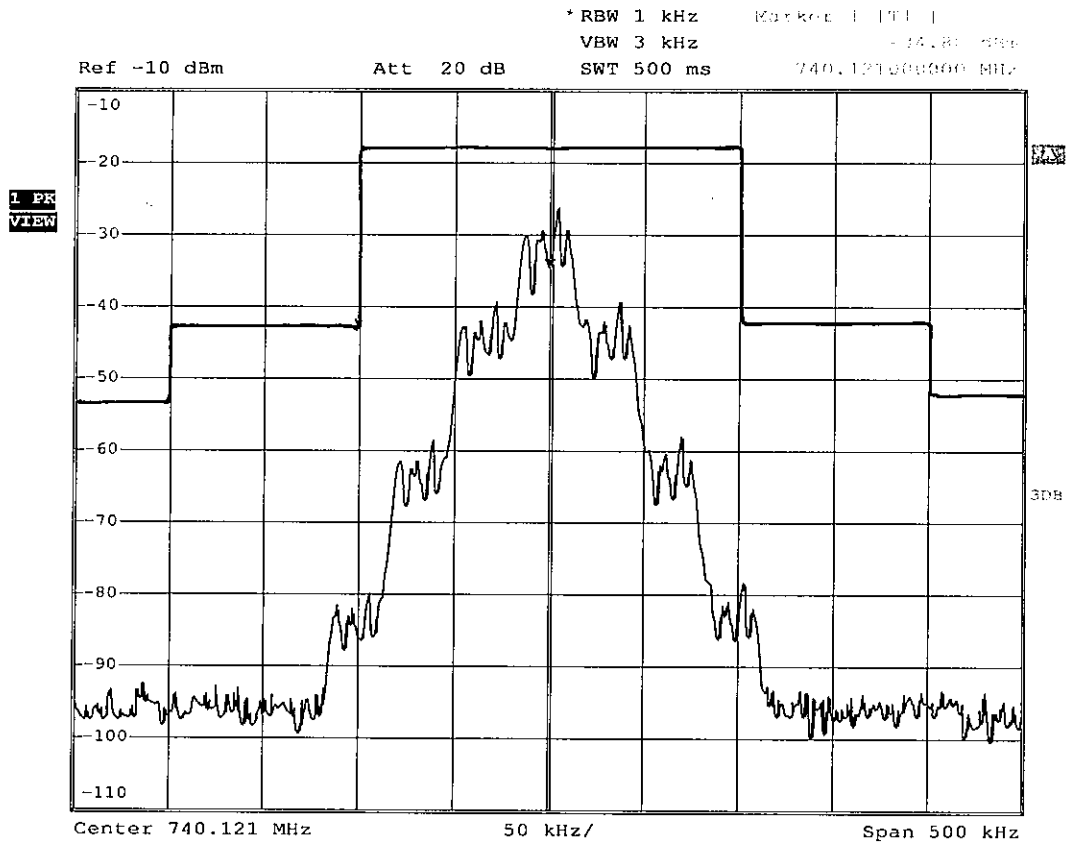
Date: 22.FEB.2008 15:26:20

Prüfbericht - Nr.:
Test Report No.

16012110 001

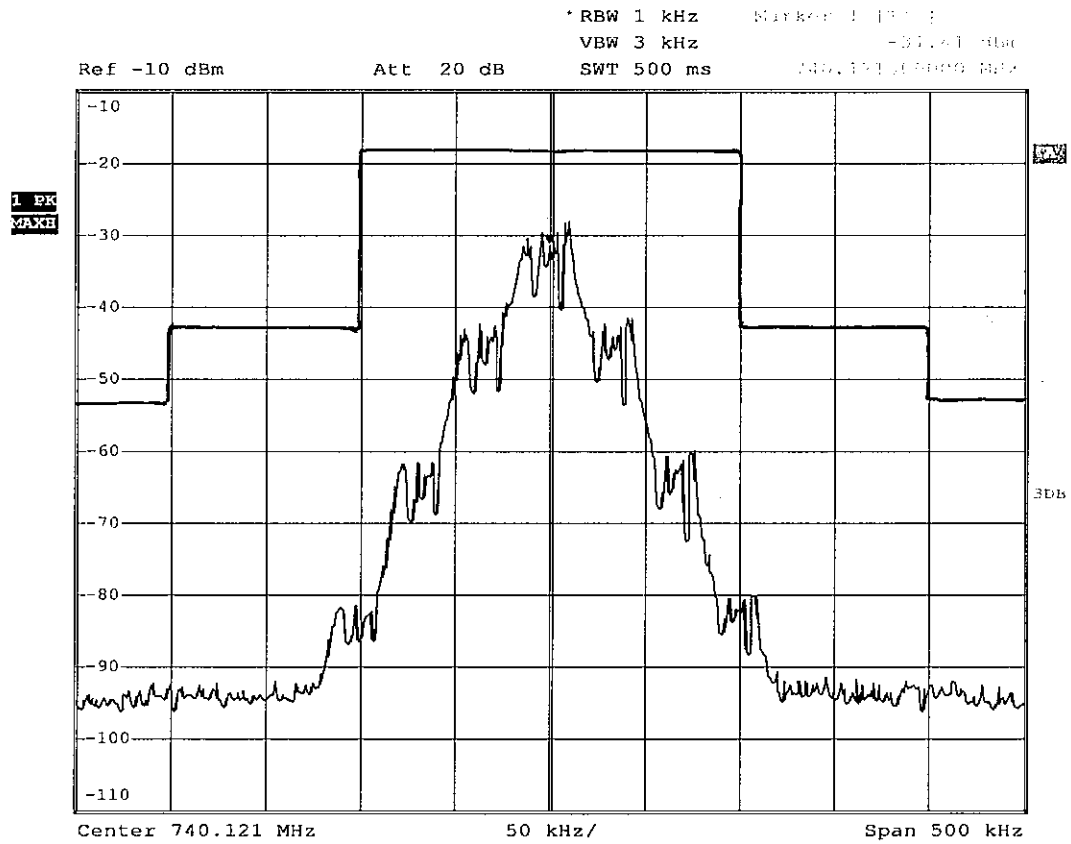
Seite 14 von 19
Page 14 of 19

Input Audio signal: 5kHz



Date: 22.FEB.2008 15:25:39

Input Audio signal: 10kHz



Date: 22.FEB.2008 15:24:19

Prüfbericht - Nr.:

16012110 001

Seite 16 von 19

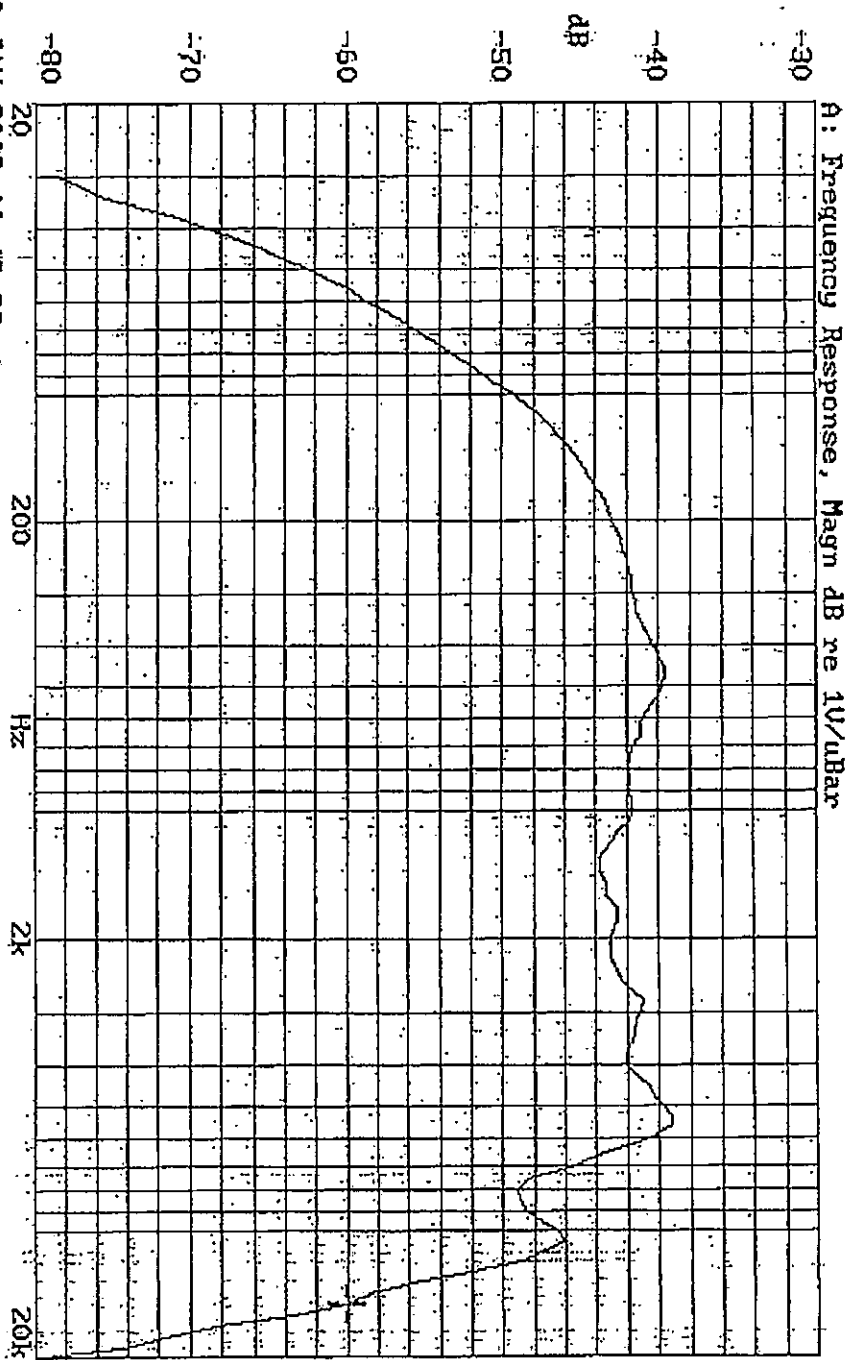
Page 16 of 19

Test Report No.

Modulation characteristics:

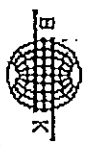
Mode: MICMEAS

30-JAN-2008 16:43:33



X:15.000KHz *Y:-60.02dB ZA:Live Curve SSR Fund.

U8-8P



Prüfbericht - Nr.:**16012110 001**

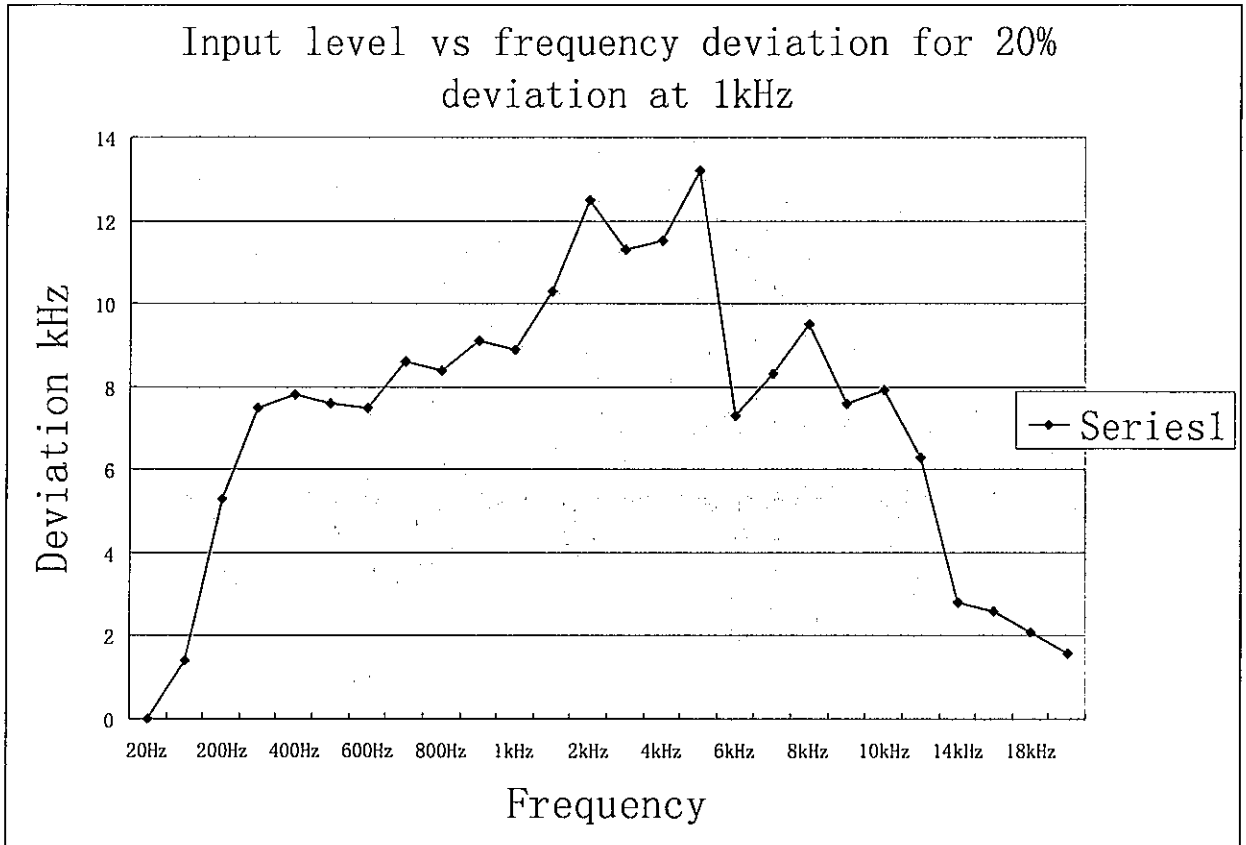
Seite 17 von 19

Page 17 of 19

Test Report No.

Modulation characteristics:

Frequency (Hz)	Deviation (kHz)
100	1.4
200	5.3
300	7.5
400	7.8
500	7.6
600	7.5
700	8.6
800	8.4
900	9.1
1000	8.9
1500	10.3
2000	12.5
3000	11.3
4000	11.5
5000	13.2
6000	7.3
7000	8.3
8000	9.5
9000	7.6
10000	7.9
12000	6.3
14000	2.8
16000	2.6
18000	2.1
20000	1.6



Modulation (dB)	-30	-20	-10	0	10	15	20
500Hz	2.2	3.3	5.2	7.6	14.5	28.3	35.8
800Hz	2.5	3.2	5.3	8.4	21.6	29.8	34.1
1kHz	2.6	4.1	6.9	8.9	21.8	28.3	33.6
2.5kHz	2.8	4.3	6.2	12.5	23.7	33.8	36.3
5kHz	2.8	4.1	7.4	13.2	28.3	39.7	42.3
10kHz	1.8	2.5	3.6	7.9	14.5	21.3	25.7
15kHz	1.1	1.5	1.8	2.4	3.1	10.3	11.8

