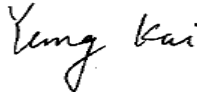


Prüfbericht - Nr.: 16802094 001			Seite 1 von 41 Page 1 of 41		
Test Report No.:					
Auftraggeber: Client:		Beijing ConST Instruments Technology Inc. D05A Keshi Plaza, No.A28 Xinxi Road, Haidian District, Beijing 100085 P.R. China			
Gegenstand der Prüfung: Test item:		Wireless Master Device			
Bezeichnung: Identification:		ConST970-1		Serien-Nr.: Serial No.:	
				Engineering sample	
Wareneingangs-Nr.: Receipt No.:		1140004039		Eingangsdatum: Date of receipt:	
				2013-03-14	
Zustand des Prüfgegenstandes bei Anlieferung: Condition of test item at delivery:			The sample is ok for test and not damaged.		
Prüfort: Testing location:			Refer to section 1.1		
Prüfgrundlage: Test specification:			FCC Part 15 Subpart C Section 15.207 FCC Part 15 Subpart C Section 15.209 FCC Part 15 Subpart C Section 15.247		
Prüfergebnis: Test Result:			Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). The test item passed the test specification(s).		
Prüflaboratorium: Testing Laboratory:			Refer to section 1.1		
geprüft/ tested by:			kontrolliert/ reviewed by:		
2013-5-8 Yang, Kai/PE 			2013-5-8 Sun, Lixun/Reviewer 		
Datum Date	Name/Stellung Name/Position	Unterschrift Signature	Datum Date	Name/Stellung Name/Position	Unterschrift Signature
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					
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 item. 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

4.1.1 ANTENNA REQUIREMENT

RESULT: Passed

4.1.2 PEAK OUTPUT POWER

RESULT: Passed

4.1.3 6dB BANDWIDTH AND 26dB BANDWIDTH

RESULT: Passed

4.1.4 CONDUCTED SPURIOUS EMISSIONS IN 100KHz BANDWIDTH

RESULT: Passed

4.1.5 POWER SPECTRAL DENSITY

RESULT: Passed

4.1.6 SPURIOUS EMISSION

RESULT: Passed

4.1.7 CONDUCTED EMISSIONS

RESULT: Passed

4.2.1 ELECTROMAGNETIC FIELDS

RESULT: Passed

Contents

1.	TEST SITES	4
1.1	TEST FACILITIES	4
1.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS	4
1.3	TRACEABILITY	5
1.4	CALIBRATION	5
1.5	MEASUREMENT UNCERTAINTY	5
2.	GENERAL PRODUCT INFORMATION	6
2.1	PRODUCT FUNCTION AND INTENDED USE	6
2.2	RATINGS AND SYSTEM DETAILS	6
2.3	INDEPENDENT OPERATION MODES	7
2.4	NOISE GENERATING AND NOISE SUPPRESSING PARTS	7
2.5	SUBMITTED DOCUMENTS	7
3.	TEST SET-UP AND OPERATION MODES	8
3.1	PRINCIPLE OF CONFIGURATION SELECTION	8
3.2	TEST OPERATION AND TEST SOFTWARE	8
3.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	8
3.4	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE	9
3.5	TEST SETUP DIAGRAM	9
4.	TEST RESULTS	11
4.1	TRANSMITTER REQUIREMENT & TEST SUITES	11
4.1.1	Antenna Requirement	11
4.1.2	Peak Output Power	12
4.1.3	6dB Bandwidth and 26dB Bandwidth	15
4.1.4	Conducted Spurious Emissions in 100kHz Bandwidth	19
4.1.5	Power Spectral Density	24
4.1.6	Spurious Emission	27
4.1.7	Conducted emissions	35
4.2	RADIO FREQUENCY EXPOSURE COMPLIANCE	38
4.2.1	Electromagnetic Fields	38
5.	PHOTOGRAPHS OF THE TEST SET-UP	39
6.	LIST OF TABLES	41
7.	LIST OF FIGURES	41
8.	LIST OF PHOTOGRAPHS	41

1. Test Sites

1.1 Test Facilities

Laboratory 1: TA Beijing Limited (FCC Registration No.: 413514)
Address: Building B-4, No.1, JingHai 3rd Road, BDA East Park, Beijing,
100176 China

The used test equipment is in accordance with CISPR 16-1 for measurement of radio interference.

1.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Type	S/N	Calibrated until
Spurious Radiated Emissions				
Bi-log Antenna	Rohde & Schwarz	HL562	100488	2014-02-15
Double Ridge Guide Horn Antenna	ETS-Lindgren	EMCO 3117	00056662	2014-02-15
EMI Test Receiver	Rohde & Schwarz	ESIB26	100301	2014-02-21
Radio Frequency Test Suite				
Signal Analyzer	Rohde & Schwarz	FSQ26	100846	2014-01-29
DC Power Supply	TFS	RS-1303DF	05022506	2013-05-24
Conducted Emissions				
EMI Test Receiver	Rohde & Schwarz	ESIB26	100301	2014-02-21
LISN	Rohde & Schwarz	ENV216	101094	2014-11-13

1.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology P.R. China) or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

1.4 Calibration

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

1.5 Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO/IEC 17025 are:

Table 2: Measurement Uncertainty

Items		Extended Uncertainty
RE (30-1000MHz)	Field strength (dBuV/m)	$U=\pm 4.94\text{dB}$, $k=2$, $\sigma=95\%$
RE (1-26GHz)	Field strength (dBuV/m)	$U=\pm 4.34\text{dB}$, $k=2$, $\sigma=95\%$

2. General Product Information

2.1 Product Function and Intended Use

The EUT (equipment under test) is a digital pressure gauge which designed to offer a truly compact, cost effective digital pressure gauge to cover a wide range of applications. It is not only can calibrate the precision pressure gauge, industry pressure gauge, blood-pressure meter and other pressure gauges, but also it can measure the high-accuracy pressure. The digital pressure gauge used the ZigBee technology (IEEE Std 802.15.4-2003 compliant) to communicate with the master device.

2.2 Ratings and System Details

Table 3: Rating of EUT

Kind of Equipment:	Wireless Master Device
Type Designation:	ConST970-1
FCC ID	SSQ-ConST970
Rated Input Voltage	DC 5.0V
Rated DC power	250mW max.

Table 4: Technical Specification

Item	Description
Operating Frequency band	2.405GHz—2.480GHz
Channel Number	16
Channel Center Frequency	2405MHz, 2410MHz, 2415MHz, 2420MHz, 2425MHz, 2430MHz, 2435MHz, 2440MHz, 2445MHz, 2450MHz, 2455MHz, 2460MHz, 2465MHz, 2470MHz, 2475MHz, 2480MHz
Modulation	DSSS
Antenna	Integrated Antenna
Antenna Gain (dBi)	0

2.3 Independent Operation Modes

The basic operation modes are:

- A. On, transmitting
- B. On, receiving
- C. Off

2.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

2.5 Submitted Documents

- | | |
|--------------------|----------------------|
| - Bill of Material | - Circuit Diagram |
| - PCB Layout | - Instruction Manual |
| - Photo Document | - Rating Label |

3. Test Set-up and Operation Modes

3.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level. The test modes were adapted accordingly in reference to the instructions for use.

3.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10: 2009.

3.3 Special Accessories and Auxiliary Equipment

Kind of accessories	Model	Manufacture
Computer	HP mini 210	Hewlett-Packard(HP)
Computer	X220	Lenovo

3.4 Countermeasures to achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

3.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test

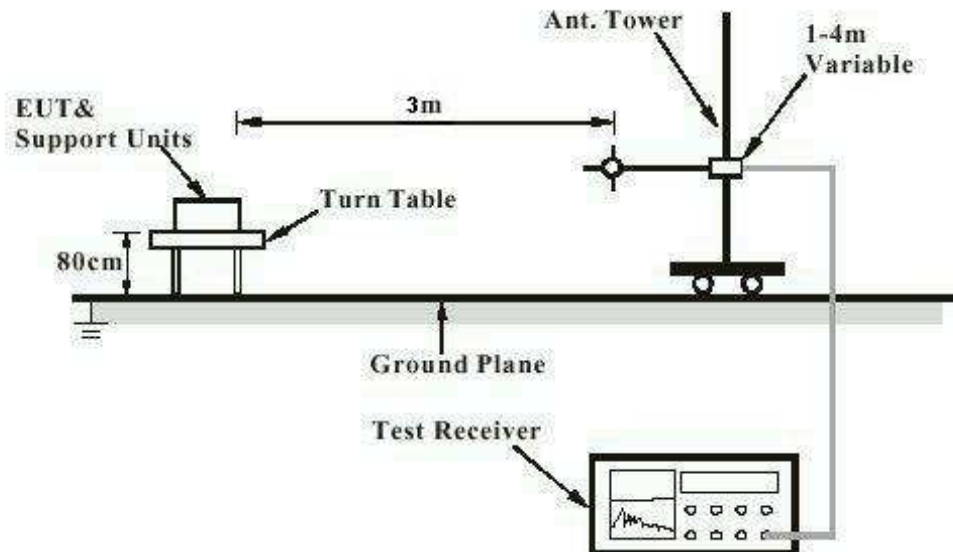


Diagram of Measurement Equipment Configuration for Conduction Measurement

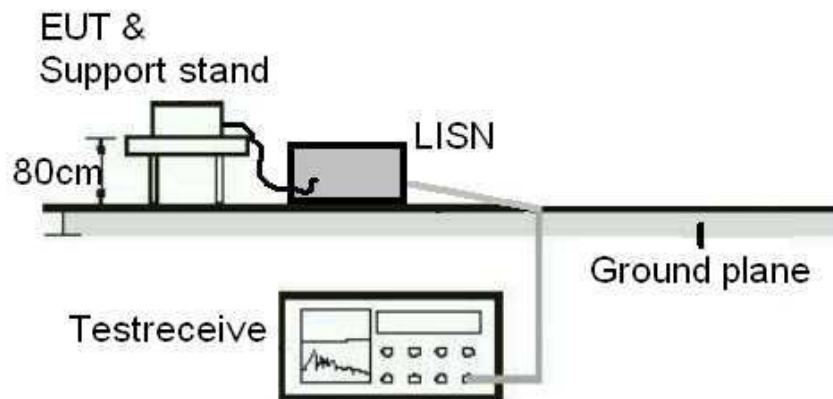
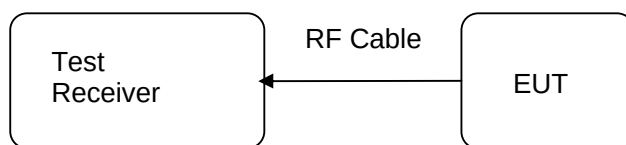


Diagram of Measurement Equipment Configuration for Transmitter Measurement



4. Test Results

4.1 Transmitter Requirement & Test Suites

4.1.1 Antenna Requirement

RESULT:**Passed**

Test date	:	2013-03-21
Test standard	:	FCC Part 15.247(b)(4) and Part 15.203
Limit	:	the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 0dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

4.1.2 Peak Output Power

RESULT:
Passed

Test date : 2013-03-21
 Test standard : FCC Part 15.247(b)(1)
 Basic standard : ANSI C63.10: 2009
 Limit : 1 Watt
 Kind of test site : Shielded room

Test setup

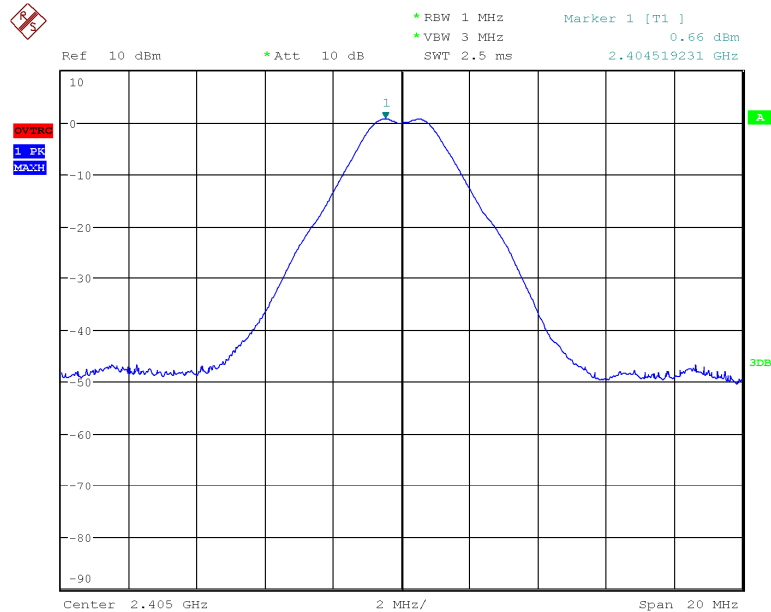
Test Channel : Low/ Middle/ High
 Operation Mode : A
 Ambient temperature : 23°C
 Relative humidity : 49%
 Atmospheric pressure : 101 kPa

Table 5: Test result of Peak Output Power

Channel	Channel Frequency (MHz)	Peak Output Power		Limit
		(dBm)	(mW)	(W)
Low Channel	2405	0.66	1.16	1
Middle Channel	2440	0.21	1.05	1
High Channel	2480	-0.26	0.94	1

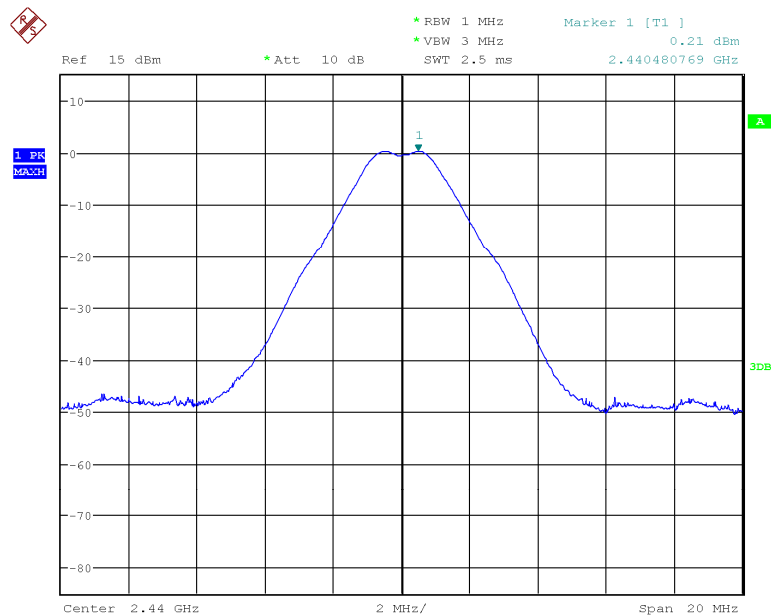
Test Graph of Peak Output Power

Low Channel



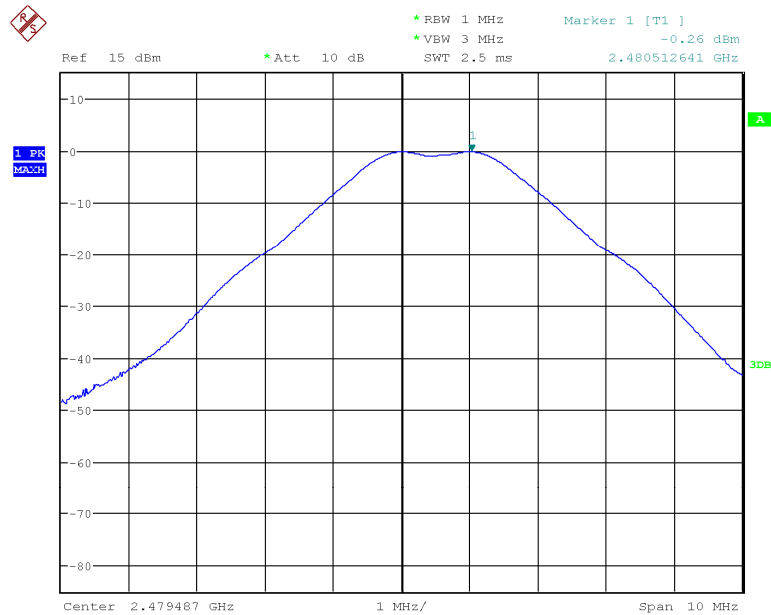
Date: 21.MAR.2013 14:53:19

Middle Channel



Date: 21.MAR.2013 14:39:45

High Channel



Date: 21.MAR.2013 14:19:59

4.1.3 6dB Bandwidth and 26dB Bandwidth**RESULT:****Passed**

Date of testing : 2013-03-21
Test standard : FCC Part 15.247(a)(2)
Basic standard : ANSI C63.10: 2009
Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High
Operation Mode : A
Ambient temperature : 23°C
Relative humidity : 49%
Atmospheric pressure : 101 kPa

Table 6: Test result of 6dB Bandwidth

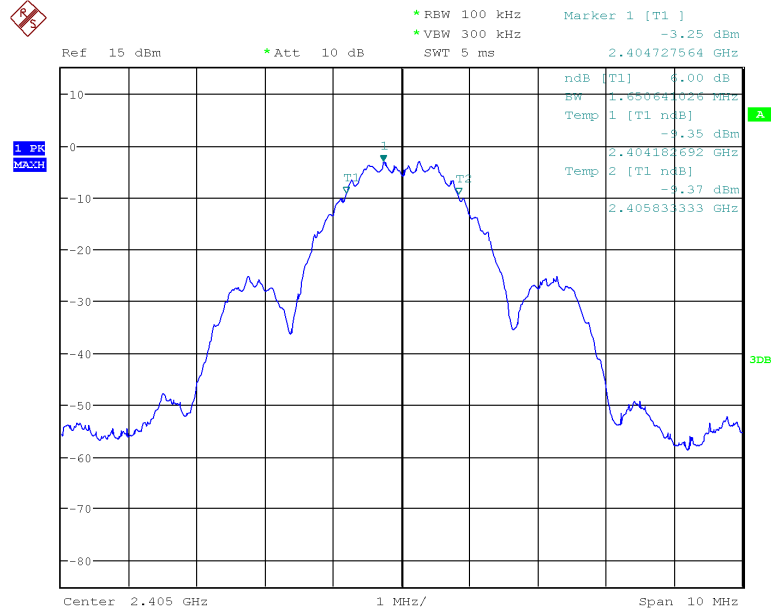
Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Limit(kHz)
Low Channel	2405	1650.6	>500
Mid Channel	2440	1618.6	>500
High Channel	2480	1602.6	>500

Table 7: Test result of 26dB Bandwidth

Channel	Channel Frequency (MHz)	26dB Bandwidth (kHz)
Low Channel	2405	3092.9
Mid Channel	2440	3076.9
High Channel	2480	3044.8

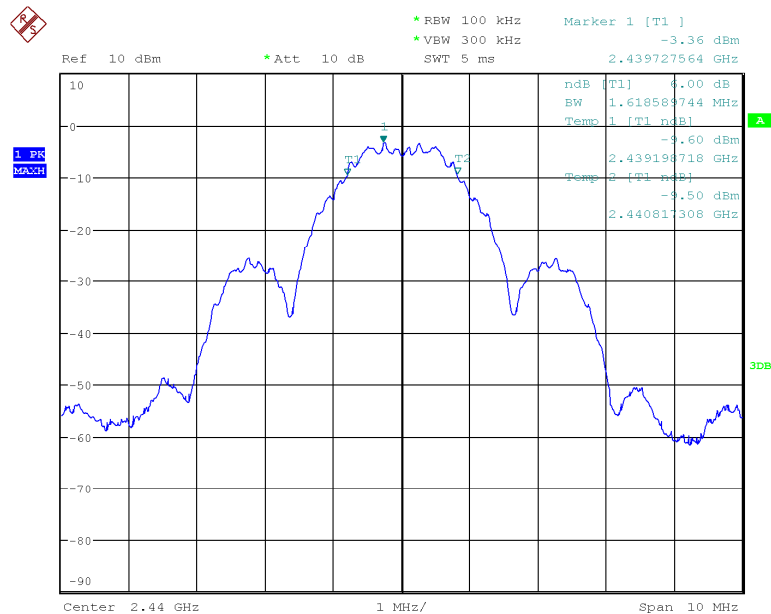
Notes: No specific 26dB bandwidth requirement in part 15.247(a) (1).

Test Graph of 6dB Bandwidth Low Channel

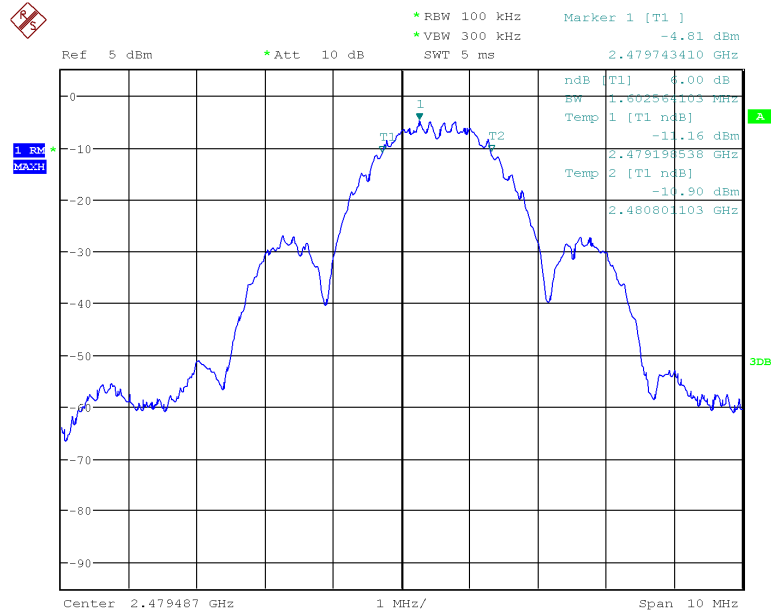


Date: 21.MAR.2013 14:43:51

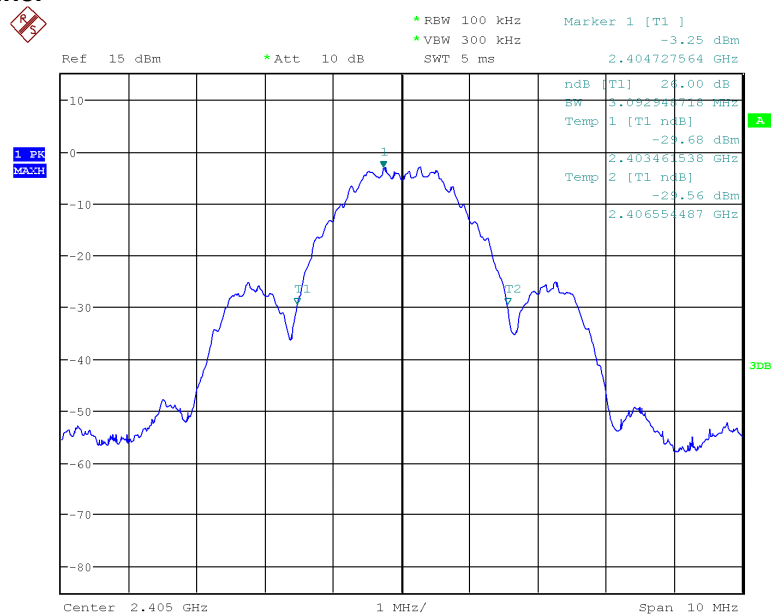
Middle Channel



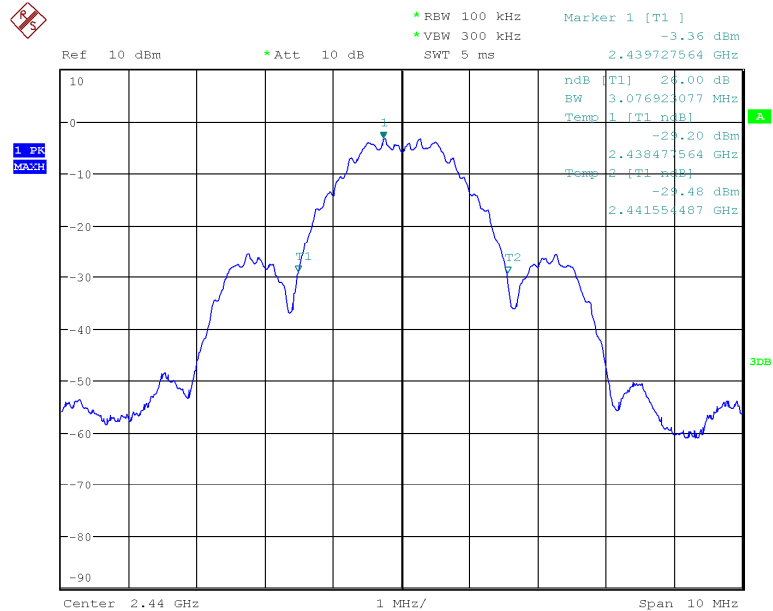
Date: 21.MAR.2013 14:33:36

High Channel


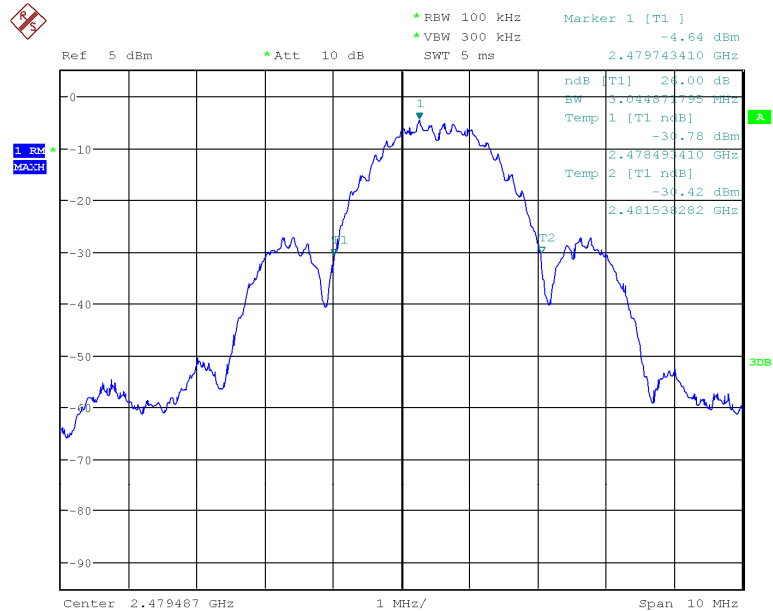
Date: 21.MAR.2013 14:07:48

Test Graph of 26dB Bandwidth
Low Channel


Date: 21.MAR.2013 14:44:22

Middle Channel


Date: 21.MAR.2013 14:34:07

High Channel


Date: 21.MAR.2013 14:09:52

4.1.4 Conducted Spurious Emissions in 100kHz Bandwidth

RESULT:**Passed**

Date of testing	:	2013-03-21
Test standard	:	FCC part 15.247(d)
Basic standard	:	ANSI C63.10: 2009
Limit	:	20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	:	Shield room

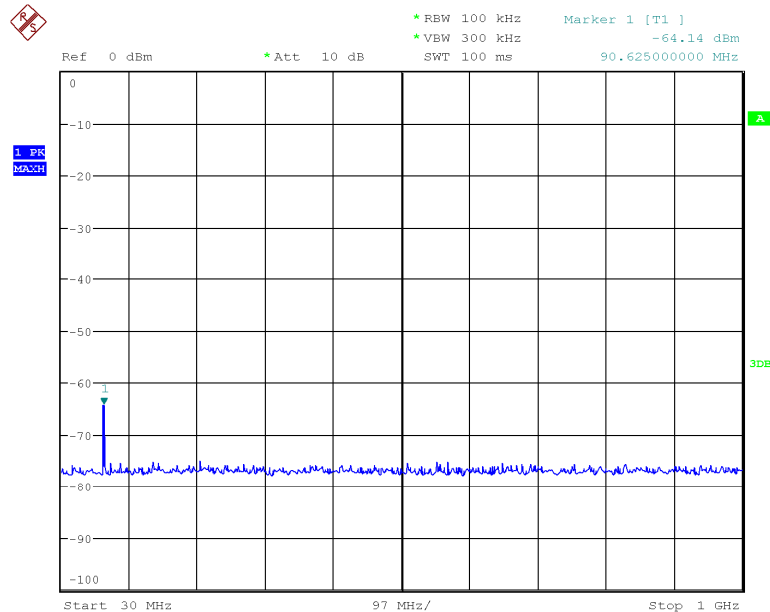
Test setup

Test Channel	:	Low/ Mid/High
Operation mode	:	A
Ambient temperature	:	23°C
Relative humidity	:	49%
Atmospheric pressure	:	101 kPa

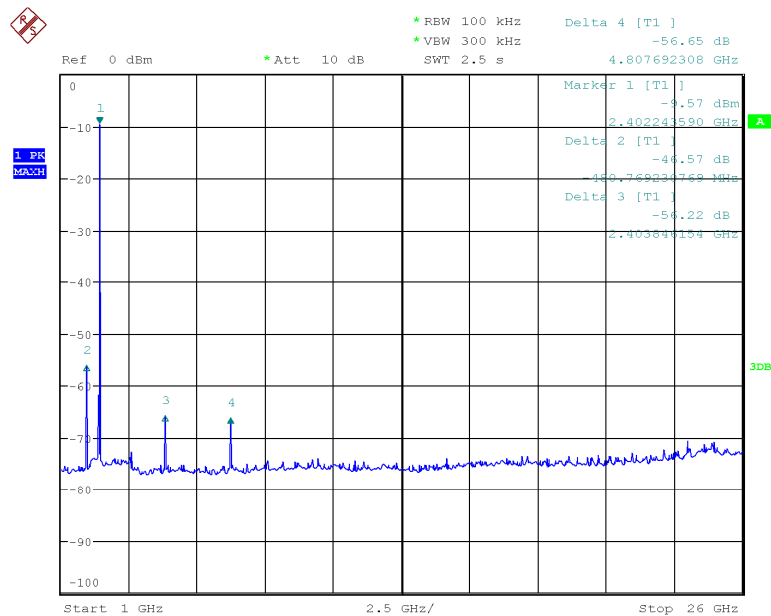
All emissions are more than 20dB below fundamental, details refer to following test Graph, and compliance is achieved as well.

Test Graph of Conducted Spurious Emissions measured in 100kHz Bandwidth

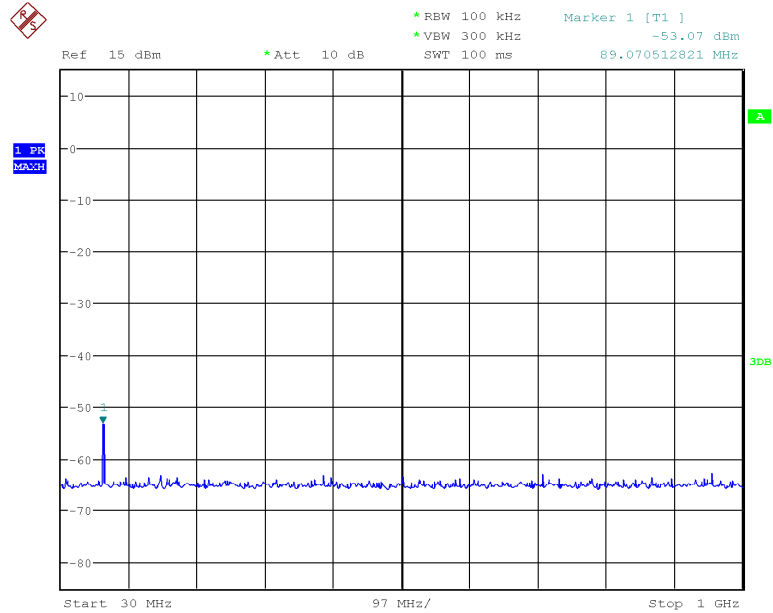
Low Channel



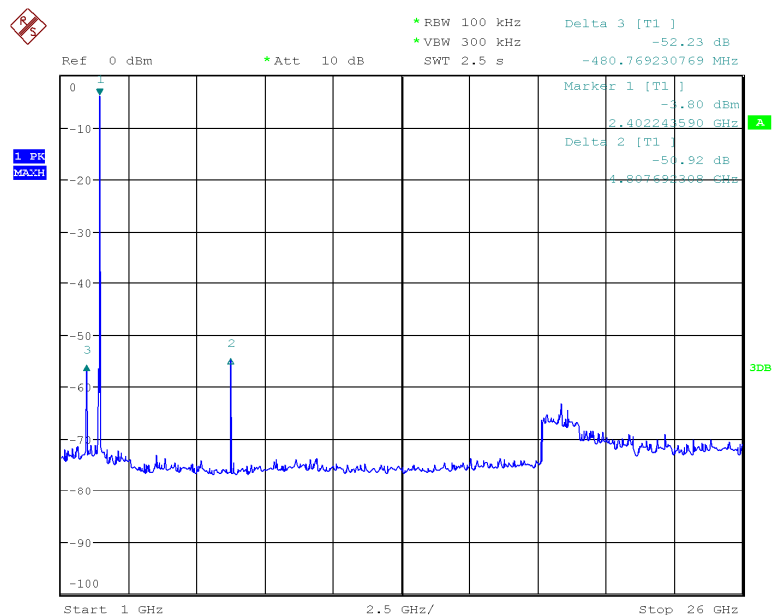
Date: 21.MAR.2013 13:11:19



Date: 21.MAR.2013 13:13:10

Middle Channel


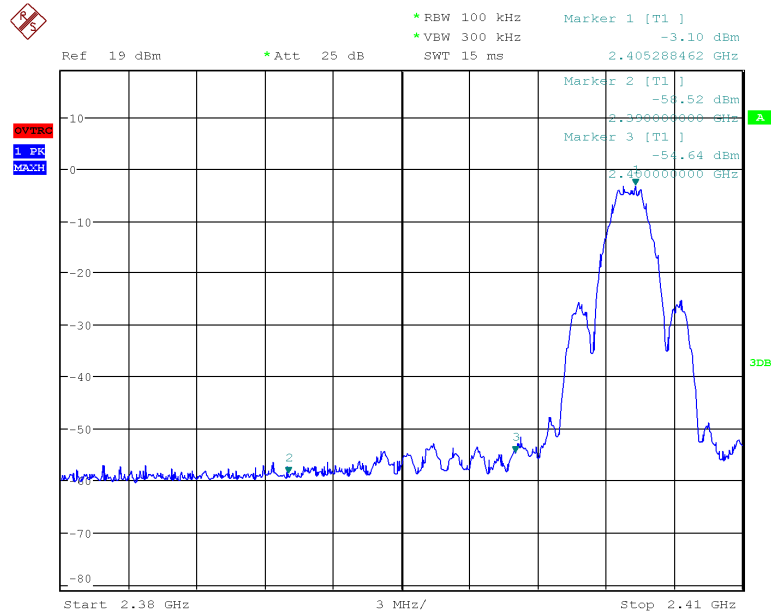
Date: 21.MAR.2013 14:46:53



Date: 21.MAR.2013 14:48:25

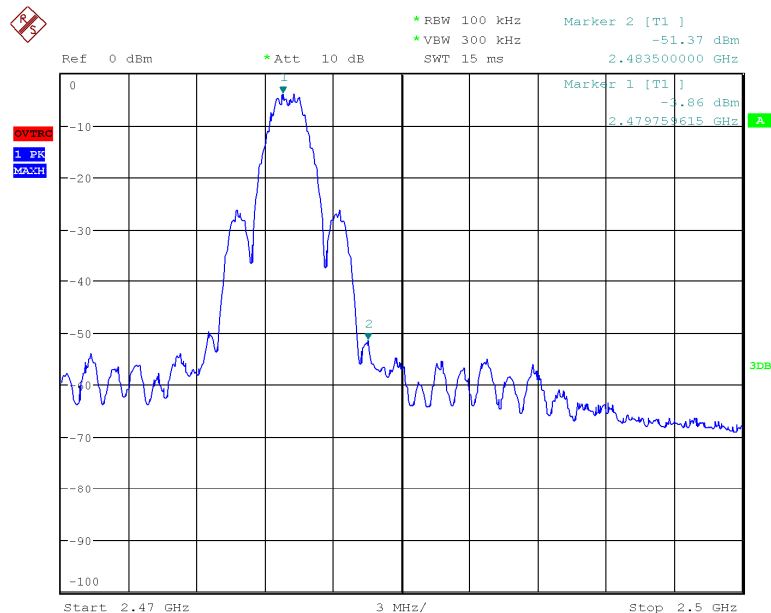
Test Graph of Band Edge measured in 100kHz Bandwidth

Low Channel



Date: 21.MAR.2013 14:56:17

High Channel



Date: 21.MAR.2013 14:30:43

4.1.5 Power Spectral Density

RESULT:
Passed

Date of testing : 2013-03-21
 Test standard : FCC part 15.247(e)
 Basic standard : ANSI C63.10: 2009
 Limits : 8.0 dBm (in any 3kHz band)
 Kind of test site : Shield room

Test Setup

Test Channel : Low/ Middle/ High
 Operation mode : A
 Ambient temperature : 23°C
 Relative humidity : 49%
 Atmospheric pressure : 101 kPa

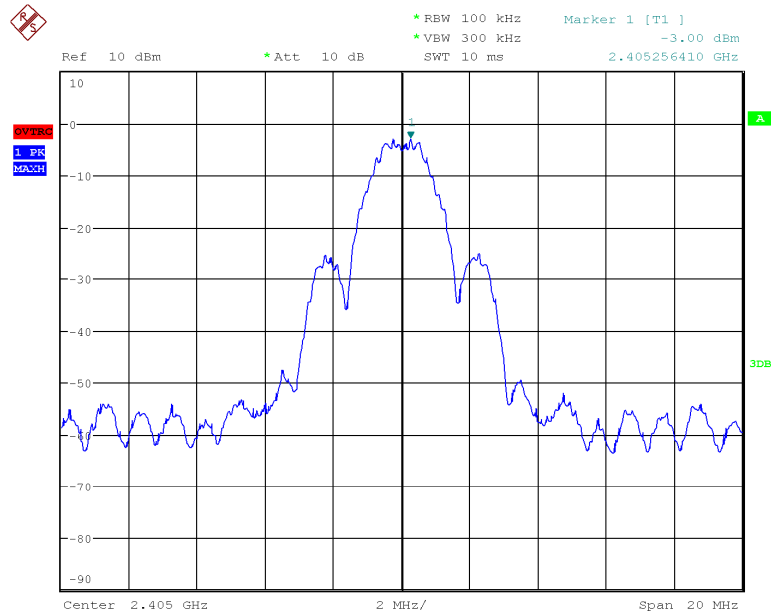
Table 8: Test result of power spectral density(PSD)

Channel	Maximum power spectral density (dBm/100kHz)	Maximum power spectral density (dBm/3kHz)	Limit (dBm/3kHz)
Low Channel	-3.00	-18.20	8
Mid Channel	-3.29	-18.49	8
High Channel	-3.89	-19.09	8

Note: According to the KDB558074, $PSD_{3kHz} = PSD_{100kHz} \times 10 \log(3kHz/100kHz) = PSD_{100kHz} - 15.2dB$

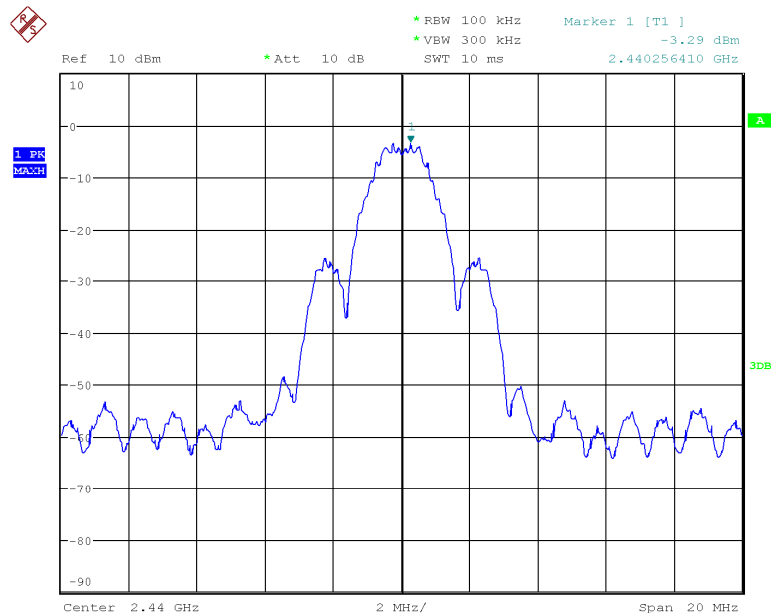
Test Graph of Power Spectral Density

Low Channel

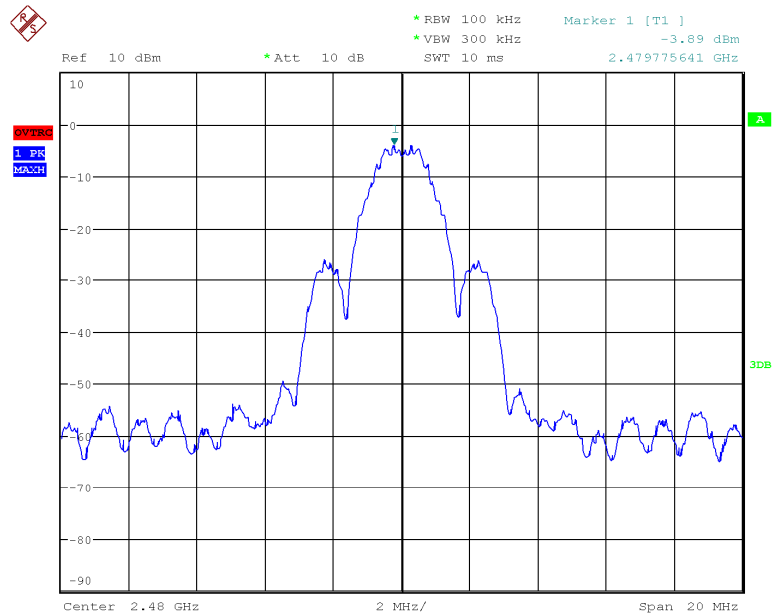


Date: 21.MAR.2013 14:51:56

Middle Channel



Date: 21.MAR.2013 14:37:47

High Channel


Date: 21.MAR.2013 14:25:23

4.1.6 Spurious Emission

RESULT:**Passed**

Date of testing	:	2013-03-25
Test standard	:	FCC part 15.247(d)
Basic standard	:	ANSI C63.10: 2009
Limits	:	Refer to 15.209(a)
Kind of test site	:	3m Semi-Anechoic Chamber

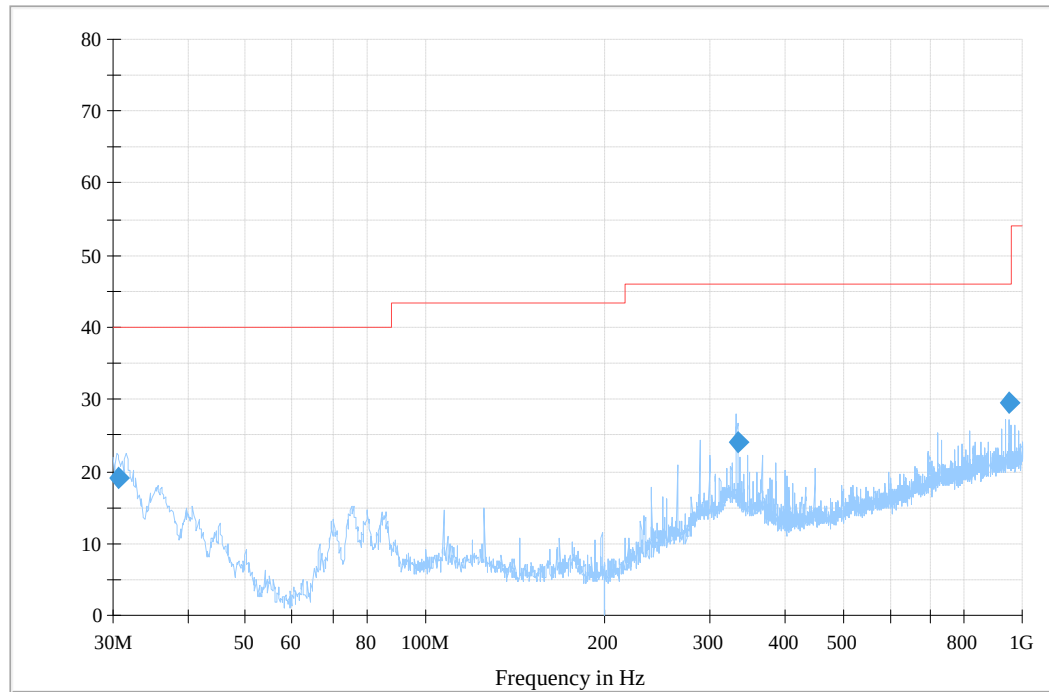
Test setup

Test Channel	:	Low/ Middle/ High
Operation mode	:	A
Ambient temperature	:	23°C
Relative humidity	:	49%
Atmospheric pressure	:	100 kPa

During the test, the wooden table was rotated 360° around and the antenna was varied from 1m to 4m to find the maximum disturbance. The test was performed with the antenna both in its horizontal and vertical polarizations. The following figures and tables were those measured by an automatic measurement system. The vertical results are marked with red, and the horizontal ones are marked with blue. Plots of the band edge are also shown.

Figure 1: Spurious emission measurement results, low channel, 30-1000MHz, vertical and horizontal polarization

Level in dBμV/m

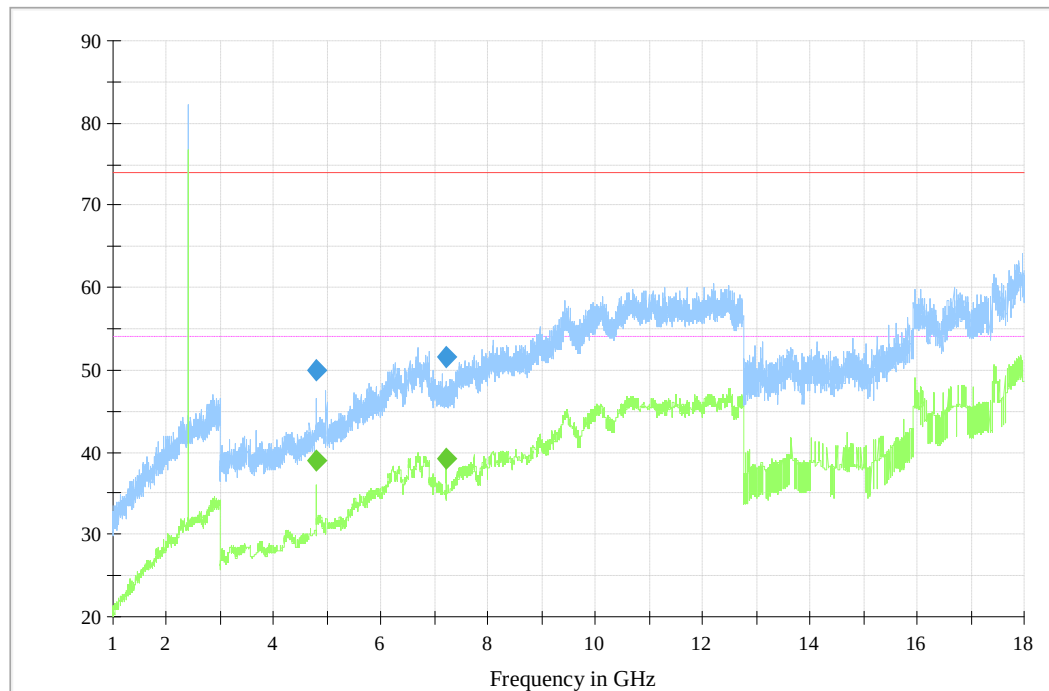


Final quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dBμV/m)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
30.660000	19.0	120.000	148.0	H	14.0	21.00	40.00
333.223728	24.1	120.000	100.0	V	85.0	21.90	46.00
947.935792	29.5	120.000	150.0	V	69.0	16.50	46.00

Figure 2: Spurious emission measurement results, low channel, 1-18GHz, vertical and horizontal polarization

Level in dB μ V/m



Final measurement result:

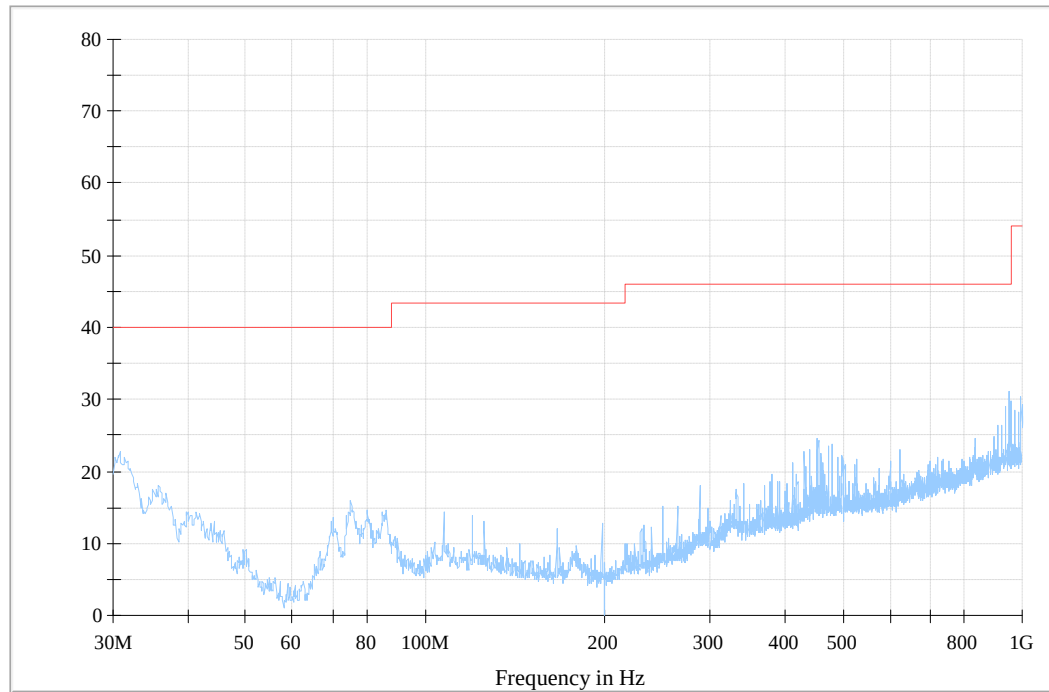
Frequency (MHz)	MaxPeak (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dB μ V/m)
4809.919840	50.0	100.0	H	262.0	24.00	74.00
7216.333066	51.6	100.0	V	290.0	22.40	74.00

Frequency (MHz)	Average (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dB μ V/m)
4809.919840	38.9	100.0	H	285.0	15.10	54.00
7213.827655	39.2	100.0	H	285.0	14.80	54.00

Note: At the frequency from 18GHz-26GHz, no emission was found above the background noise.

Figure 3: Spurious emission measurement results, mid channel, 30-1000MHz, vertical and horizontal polarization

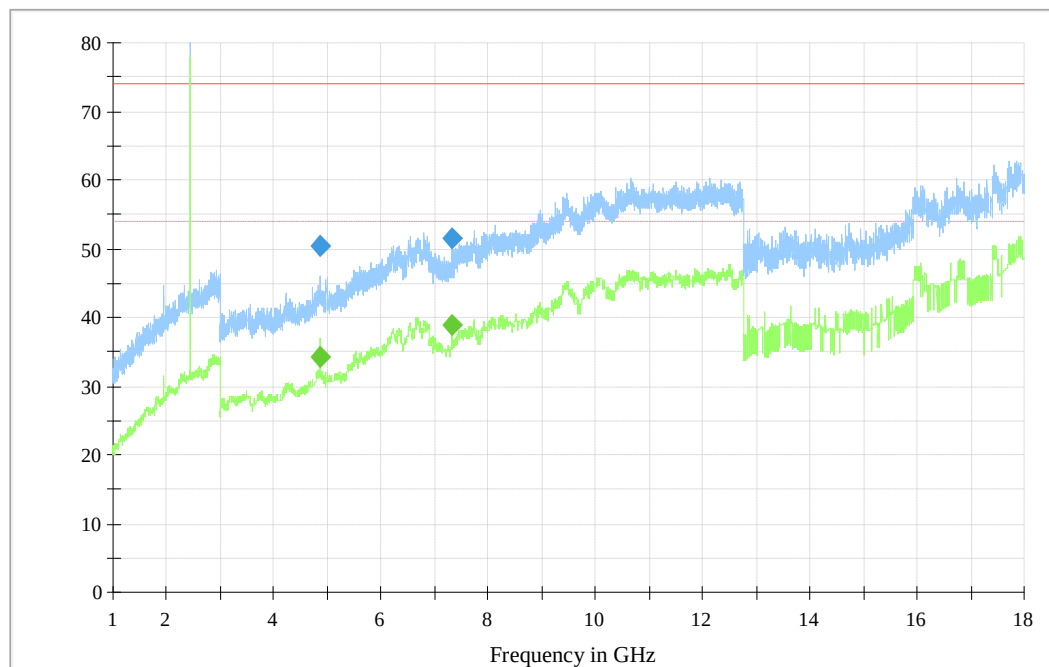
Level in dBµV/m



Final quasi-peak measurement result:
No emission was found above the background noise.

Figure 4: Spurious emission measurement results, mid channel, 1-18GHz, vertical and horizontal polarization

Level in dB μ V/m



Final measurement result:

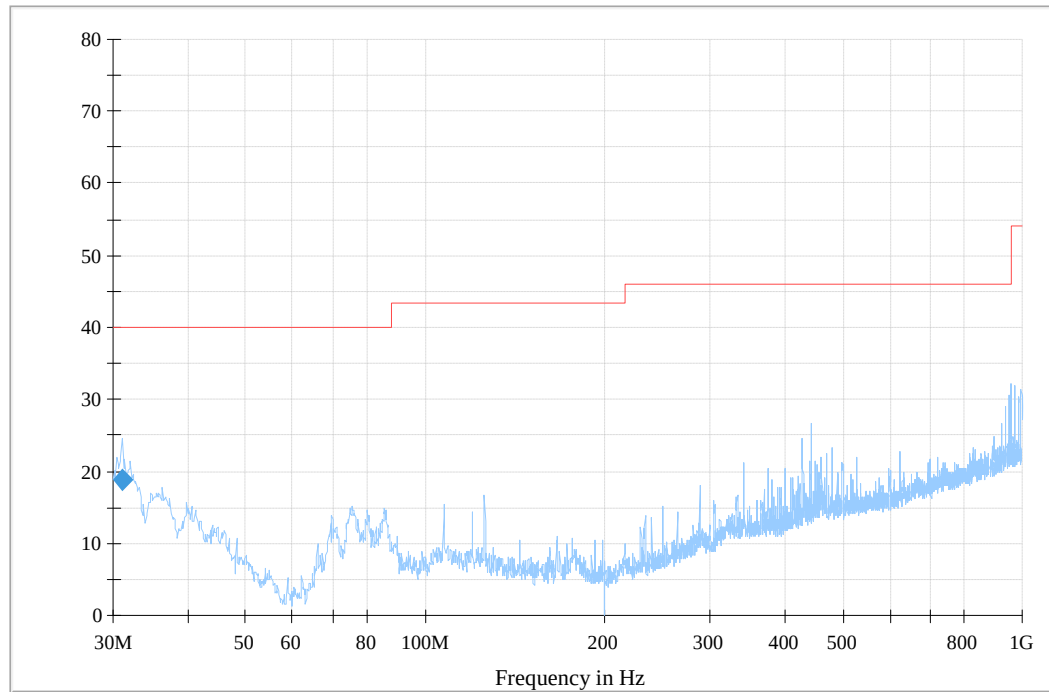
Frequency (MHz)	MaxPeak (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dB μ V/m)
4880.058718	50.3	100.0	H	263.0	23.70	74.00
7318.036874	51.6	100.0	V	290.0	22.40	74.00

Frequency (MHz)	Average (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dB μ V/m)
4879.358718	34.4	100.0	V	285.0	19.60	54.00
7322.044088	38.9	100.0	V	285.0	15.10	54.00

Note: At the frequency from 18GHz-26GHz, no emission was found above the background noise.

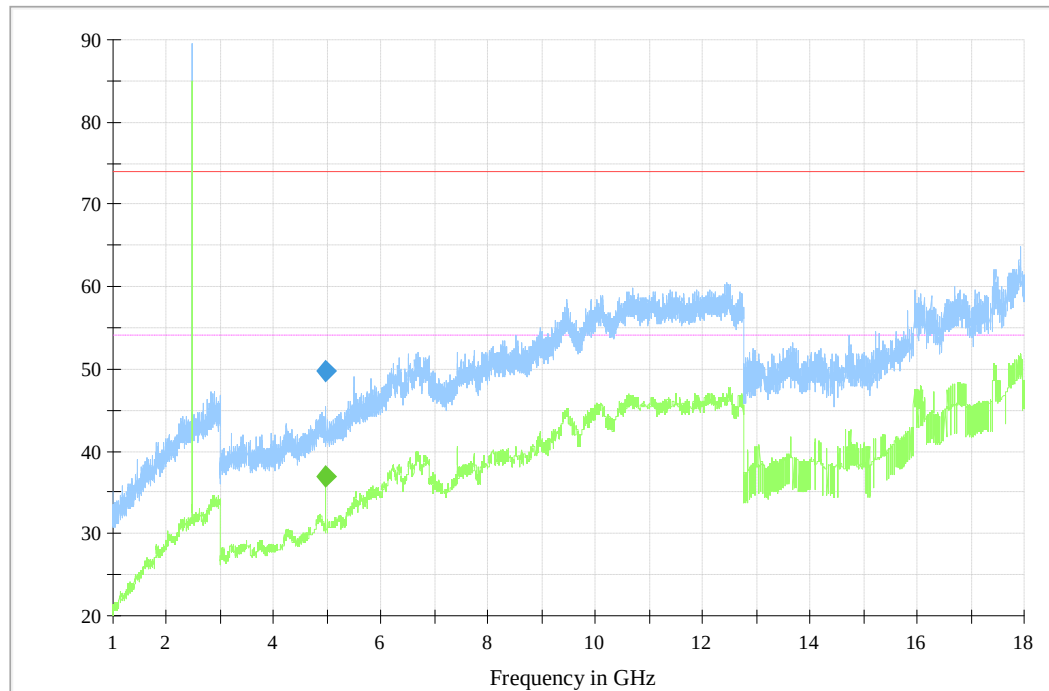
Figure 5: Spurious emission measurement results, high channel, 30MHz-1GHz, vertical and horizontal polarization

Level in dB μ V/m



Final quasi-peak measurement result:

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dB μ V/m)
31.020000	18.9	120.000	100.0	V	75.0	21.10	40.00

Figure 6: Spurious emission measurement results, high channel, 1-18GHz, vertical and horizontal polarization


Final measurement result:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
4960.019239	49.7	100.0	V	262.0	24.30	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
4959.619239	36.9	100.0	V	285.0	17.10	54.00

Note: At the frequency from 18GHz-26GHz, no emission was found above the background noise.

Prüfbericht - Nr.: 16802094 001
Test Report No.

Seite 34 von 41
Page 34 of 41

Band Edge measurement results

No significant harmonic emissions was detected at the lower (2390MHz) and upper (2483.5MHz) restricted band.

4.1.7 Conducted emissions

RESULT:**Passed**

Date of testing : 2013-03-25
Test standard : FCC Part 15.207(a)
Basic standard : ANSI C63.10: 2009
Frequency range : 0.15 – 30MHz
Limits : FCC Part 15.207(a)
Kind of test site : Shield room

Test setup

Input Voltage : DC 5V (via power supply unit)
Operation Mode : A
Earthing : Not Connected
Ambient temperature : 23°C
Relative humidity : 49%
Atmospheric pressure : 100 kPa

The measurement setup was made in a shielded room.

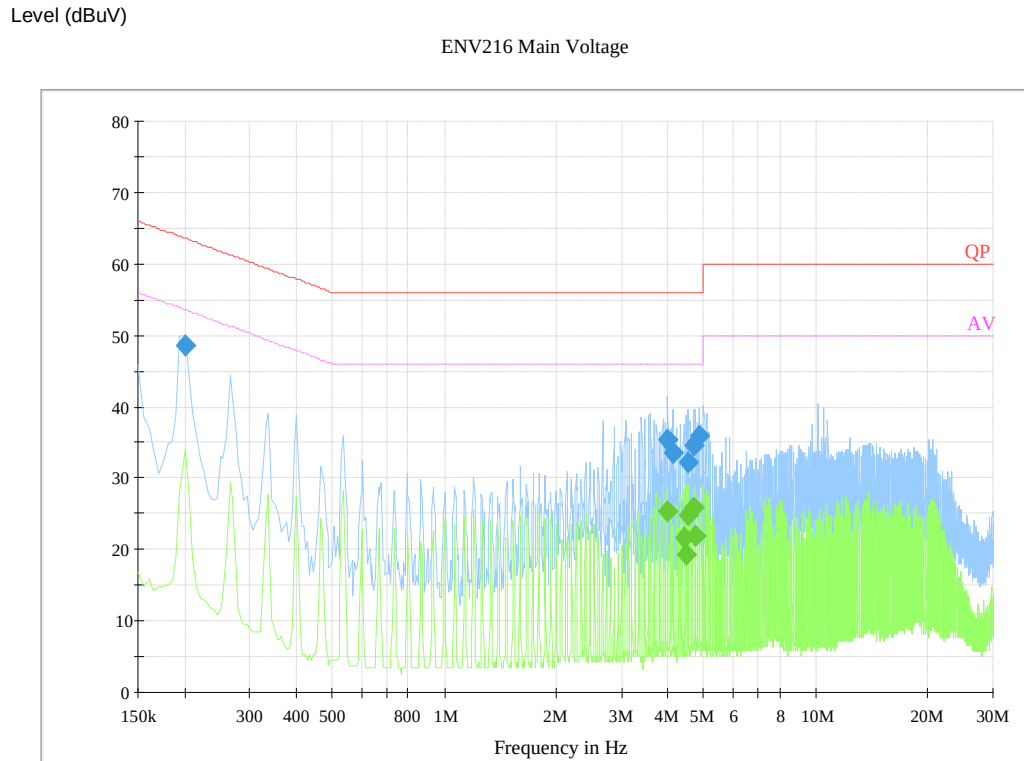
The measurement equipment like test receivers, quasi-peak detector, average detector and LISN are in compliance with CISPR 16-1 series standards and ANSI C63.10-2009. The tested object was operated under its rated voltage and its rated frequency. Prior to the measurements the test object operated about 5 minutes (warm-up) in order to stabilize its operating conditions and to ensure reliable measurement values.

Furthermore an internal calibration with the test receiver was conducted prior to each measurement.

The EUT was set 0.8m away from the LISN. The cord longer than necessary to be connected to the LISN was folded forth and back parallel so as to form a bundle with a length between 0.3m and 0.4m.

The interference voltage was determined while measuring the line conductor by turns.

The following figures and tables were those measured by an automatic measuring system. A preview test was first made with peak detector. Final test with quasi-peak detector and average detector was only performed at these critical frequencies found via preview test.

Figure 7: Conducted emission measurement results, Line L


Final quasi-peak measurement results:

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.200000	48.5	15000.0	9.000	On	L1	9.9	15.1	63.6
4.005000	35.3	15000.0	9.000	On	L1	9.7	20.7	56.0
4.140000	33.5	15000.0	9.000	On	L1	9.7	22.5	56.0
4.540000	32.2	15000.0	9.000	On	L1	9.7	23.8	56.0
4.675000	34.6	15000.0	9.000	On	L1	9.7	21.4	56.0
4.875000	35.9	15000.0	9.000	On	L1	9.7	20.1	56.0

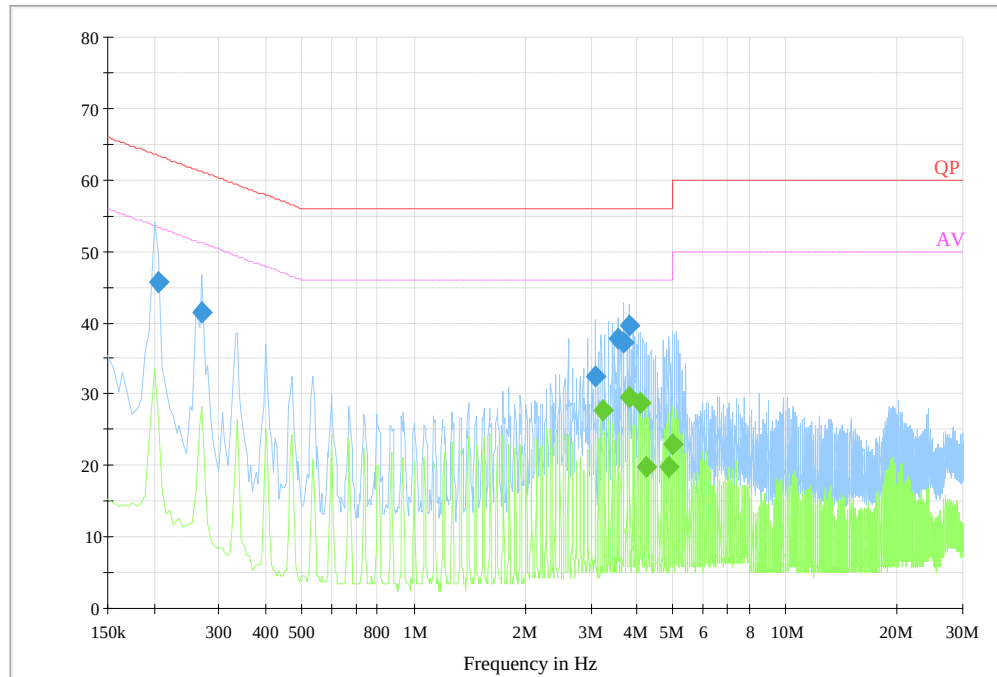
Final average measurement results:

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
4.005000	25.3	15000.0	9.000	On	L1	9.7	20.7	46.0
4.405000	21.7	15000.0	9.000	On	L1	9.7	24.3	46.0
4.470000	19.2	15000.0	9.000	On	L1	9.7	26.8	46.0
4.540000	24.7	15000.0	9.000	On	L1	9.7	21.3	46.0
4.675000	26.0	15000.0	9.000	On	L1	9.7	20.0	46.0
4.740000	22.0	15000.0	9.000	On	L1	9.7	24.0	46.0

Figure 8: Conducted emission measurement results, Line N

Level (dBuV)

ENV216 Main Voltage



Final quasi-peak measurement results:

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.205000	45.8	15000.0	9.000	On	N	9.9	17.6	63.4
0.270000	41.5	15000.0	9.000	On	N	10.0	19.6	61.1
3.075000	32.5	15000.0	9.000	On	N	9.8	23.5	56.0
3.545000	37.8	15000.0	9.000	On	N	9.8	18.2	56.0
3.680000	37.2	15000.0	9.000	On	N	9.8	18.8	56.0
3.815000	39.6	15000.0	9.000	On	N	9.8	16.4	56.0

Final average measurement results:

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
3.215000	27.6	15000.0	9.000	On	N	9.8	18.4	46.0
3.815000	29.6	15000.0	9.000	On	N	9.8	16.4	46.0
4.085000	28.8	15000.0	9.000	On	N	9.8	17.2	46.0
4.215000	19.9	15000.0	9.000	On	N	9.7	26.1	46.0
4.885000	19.8	15000.0	9.000	On	N	9.7	26.2	46.0
4.955000	23.1	15000.0	9.000	On	N	9.7	22.9	46.0

4.2 Radio Frequency Exposure Compliance

4.2.1 Electromagnetic Fields

RESULT:**Passed**

Date of testing : 2013-03-25
Test standard : FCC KDB publication 447498

Test setup

The product shall exclude from routine SAR evaluation if
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0

as per 447498 D01 General RF Exposure Guidance

Here,

At 2.4GHz band

The highest RF output power = 1.16mW

The distance between the antenna and the outer edge of enclosure is 3mm

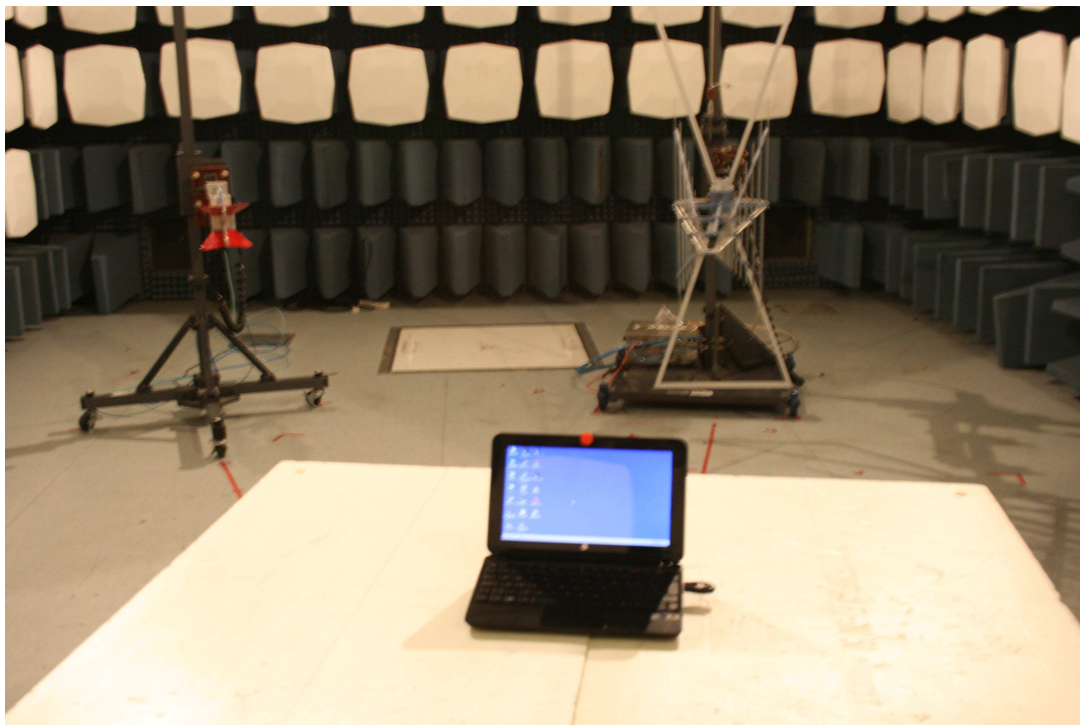
Applying the above details in the formula,

$$(1.16/3) \cdot \sqrt{2.45} = 0.605 \leq 3.0$$

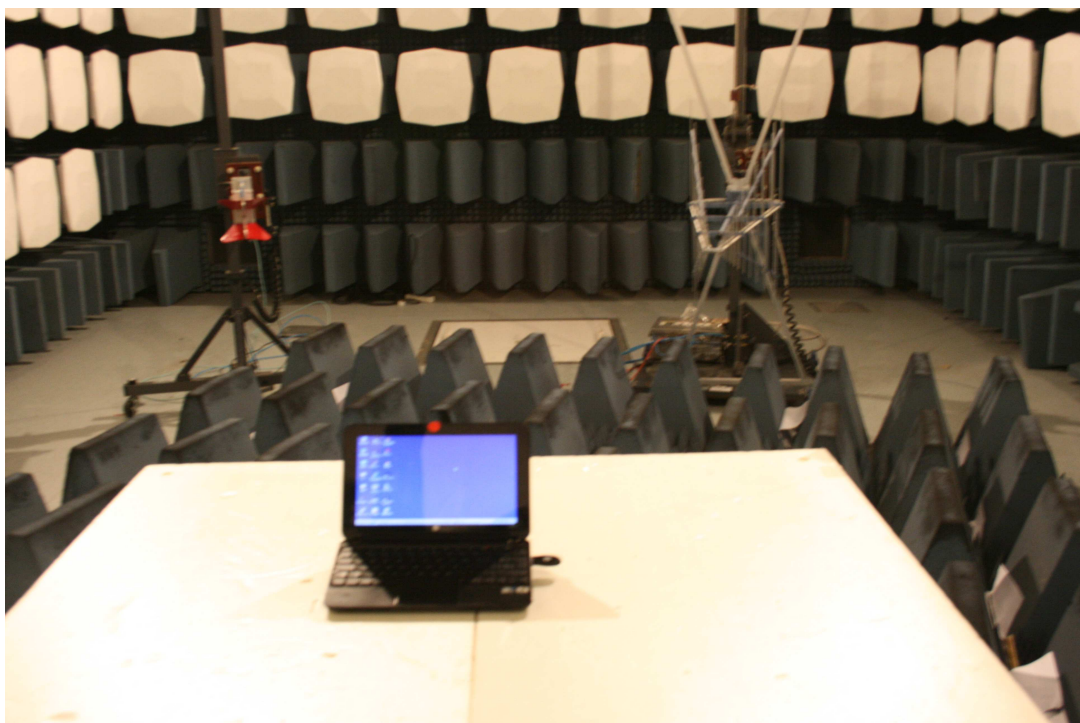
Hence, the EUT is exempted from routine SAR evaluation

5. Photographs of the Test Set-Up

Photograph 1: Set-up for Spurious Emissions, below 1GHz



Photograph 2: Set-up for Spurious Emissions, above 1GHz



Photograph 3: Set-up for Conduited emission



6. List of Tables

Table 1: List of Test and Measurement Equipment	4
Table 2: Measurement Uncertainty	5
Table 3: Rating of EUT	6
Table 4: Technical Specification	6
Table 5: Test result of Peak Output Power	12
Table 6: Test result of 6dB Bandwidth	15
Table 7: Test result of 26dB Bandwidth	15
Table 8: Test result of power spectral density(PSD)	24

7. List of Figures

Figure 1: Spurious emission measurement results, low channel, 30-1000MHz, vertical and horizontal polarization	28
Figure 2: Spurious emission measurement results, low channel, 1-18GHz, vertical and horizontal polarization	29
Figure 3: Spurious emission measurement results, mid channel, 30-1000MHz, vertical and horizontal polarization	30
Figure 4: Spurious emission measurement results, mid channel, 1-18GHz, vertical and horizontal polarization	31
Figure 5: Spurious emission measurement results, high channel, 30MHz-1GHz, vertical and horizontal polarization	32
Figure 6: Spurious emission measurement results, high channel, 1-18GHz, vertical and horizontal polarization	33
Figure 7: Conducted emission measurement results, Line L	36
Figure 8: Conducted emission measurement results, Line N	37

8. List of Photographs

Photograph 1: Set-up for Spurious Emissions, below 1GHz	39
Photograph 2: Set-up for Spurious Emissions, above 1GHz	39
Photograph 3: Set-up for Conduited emission	40