

## FCC - TEST REPORT

Report Number	: <b>68.950.15.290.01</b>	Date of Issue: <u>October 30, 2015</u>
Model	: <b>Le Max</b>	
Product Type	: TD LTE digital mobile phone	
Applicant	: Lemobile Information Technology (Beijing) Co., Ltd	
Address	: WENHUAYING NORTH (No.1, LINKONG 2nd St), GAOLIYING, SHUNYI DISTRICT, BEIJING, China	
Production Facility	: MAINTEK COMPUTER (SUZHOU) CO LTD	
Address	: NO. 233, JIN FENG ROAD, NEW DISTRICT, SUZHOU, CHINA	
Test Result	: <input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
Total pages including Appendices	: <u>20</u>	

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch is a subcontractor to TÜV SÜD Product Service GmbH according to the principles outlined in ISO 17025.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch reports apply only to the specific samples tested under stated test conditions. Construction of the actual test samples has been documented. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. The manufacturer/importer is responsible to the Competent Authorities in Europe for any modifications made to the production units which result in non-compliance to the relevant regulations. TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval

## 1 Table of Contents

1	Table of Contents.....	2
2	Details about the Test Laboratory .....	3
3	Description of the Equipment Under Test.....	4
4	Summary of Test Standards.....	5
5	Summary of Test Results.....	6
6	General Remarks .....	7
7	Test Setups.....	8
8	Test Methodology .....	9
8.1	Conducted Emission on AC power port.....	9
8.2	Radiated Unwanted Emission .....	13
8.3	Field strength of fundamental emissions & outside the allocated band emissions .....	14
8.4	Frequency tolerance .....	16
8.5	20dB Bandwidth.....	17
9	Systems test configuration .....	18
10	Test Equipment List .....	19
11	System Measurement Uncertainty .....	20

## 2 Details about the Test Laboratory

### Details about the Test Laboratory

#### Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch  
Building 12&13, Zhiheng Wisdomland Business Park,  
Nantou Checkpoint Road 2, Nanshan District,  
Shenzhen City, 518052,  
P. R. China

FCC Registration Number: 502708

Telephone: 86 755 8828 6998  
Fax: 86 755 8828 5299

#### Test Site 2

Company name: Shenzhen Academy of Metrology and Quality Inspection  
National Digital Electronic Product Testing Center  
NETC Building, No.4 Tongfa Rd., Xili,  
Nanshan, Shenzhen,  
China

FCC Registration Number: 97379(open area test site) and  
274801(semi anechoic chamber).

Telephone: +86 755 8692 8965  
Fax: +86 755 8600 9898-31396

Remark: All test items were performed at Site 2.

### 3 Description of the Equipment Under Test

Product:	TD LTE digital mobile phone
Model no.:	Le Max
FCC ID:	2AFWMLEMAX
Brand Name:	Letv
Rating:	DC 3.8V by Li-ion Battery or DC 5.0V/2A by adapter Powered by external power supply: Adaptor Input: 100-240VAC, 50/60Hz; 500mA Adaptor Output: 5.0V, 2A
RF Transmission Frequency:	13.56MHz
Modulation:	ASK
Antenna Type:	Integral Antenna
Antenna Gain:	0dBi
Description of the EUT:	The Equipment Under Test (EUT) is a Mobile Phone with NFC function which operated at 13.56MHz.

## 4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2014 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

## 5 Summary of Test Results

Technical Requirements				
FCC Part 15 Subpart C				
Test Condition		Pages	Test Site	Test Result
§15.207	Conducted emission AC power port	9	Site 2	Pass
§15.209 §15.225(d)	Radiated unwanted emissions	13	Site 2	Pass
§15.225(a) §15.225 (b) §15.225 (c)	Field strength of fundamental emissions	14	Site 2	Pass
	Field strength outside the allocated band emissions		Site 2	Pass
§15.225(e)	Frequency tolerance	16	Site 2	Pass
§15.215(c)	20dB Bandwidth	17	Site 2	Pass

Note 1: N/A=Not Applicable.

Note 2: The EUT uses an integral antenna, which gain is 0dBi. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.

## 6 General Remarks

### Remarks

This submittal(s) (test report) is intended for FCC ID: 2AFWMLEMAX complies with Section 15.207, 15.209, 15.215, 15.225 of the FCC Part 15, Subpart C Rules.

### SUMMARY:

All tests according to the regulations cited on page 5 were

- Performed

- **Not** Performed

The Equipment Under Test

- **Fulfills** the general approval requirements.

- **Does not** fulfill the general approval requirements.

Sample Received Date: September 6, 2015

Testing Start Date: September 7, 2015

Testing End Date: October 27, 2015

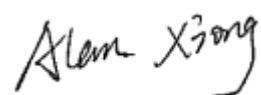
TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch

Reviewed by:



John Zhi  
EMC Project Manager

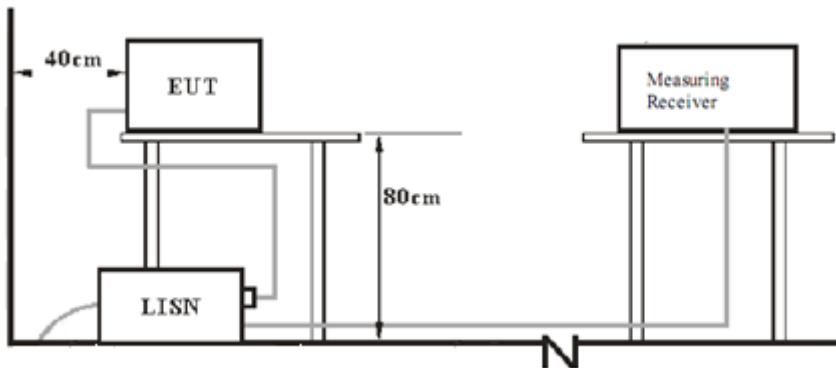
Prepared by:



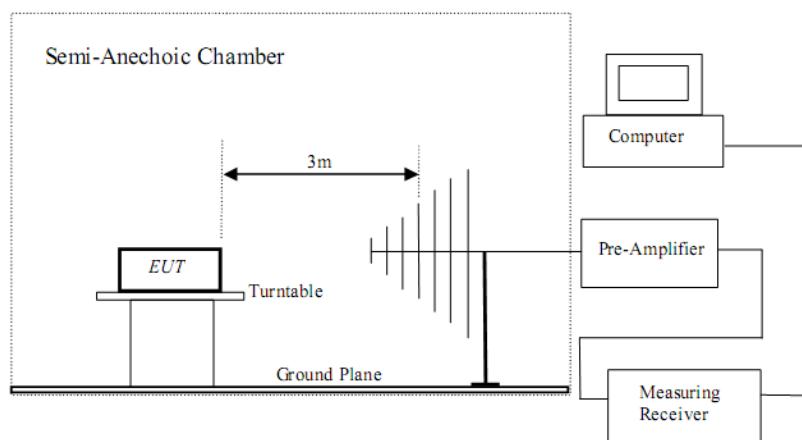
Alan Xiong  
EMC Project Engineer

## 7 Test Setups

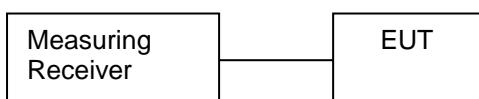
### 7.1 AC Power Line Conducted Emission test setups



### 7.2 Radiated test setups



### 7.3 Conducted RF test setups



## 8 Test Methodology

### 8.1 Conducted Emission on AC power port

#### Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

#### Limit

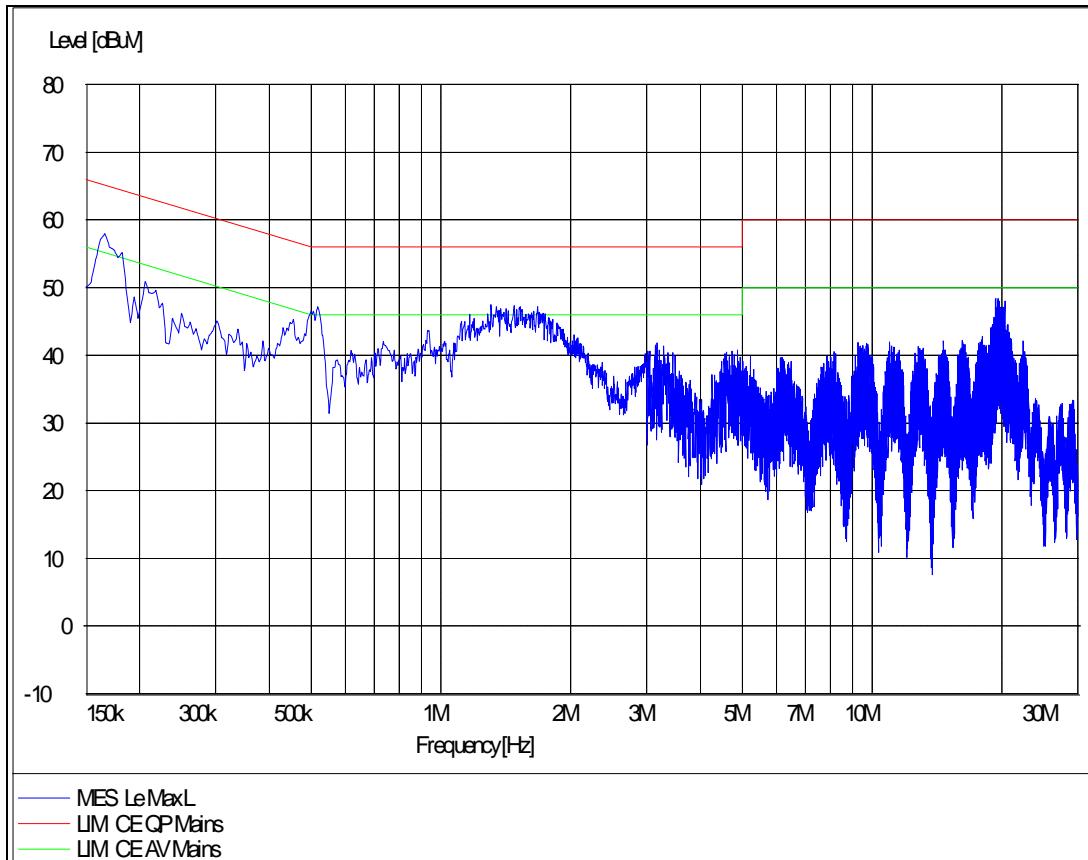
According to §15.207, conducted emissions limit as below:

Frequency MHz	QP Limit dB $\mu$ V	AV Limit dB $\mu$ V
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Decreasing linearly with logarithm of the frequency

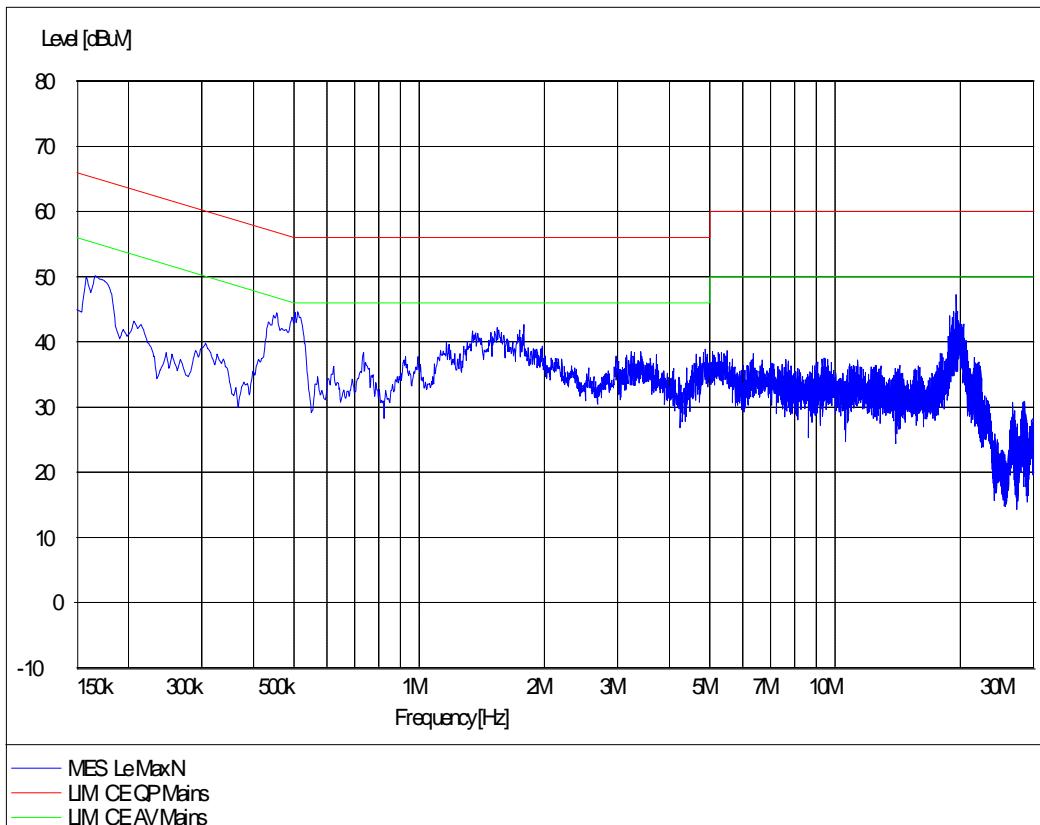
## Conducted Emission

Product Type : TD LTE digital mobile phone  
M/N : Le Max  
Operating Condition : Charging and Transmitting  
Test Specification : Line  
Comment : AC 120V/60Hz



## Conducted Emission

Product Type : TD LTE digital mobile phone  
M/N : Le Max  
Operating Condition : Charging and Transmitting  
Test Specification : Neutral  
Comment : AC 120V/60Hz



## Conducted Emission

Model No.: Le Max

Test mode: Charging and transmitter

	Frequency (MHz)	Correction Factor (dB)	Quasi-Peak			Average		
			Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V)	Limits (dB $\mu$ V)	Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V)	Limits (dB $\mu$ V)
Line	0.166	9.7	38.5	48.2	65.2	22.3	32.0	55.2
	0.518	9.8	32.4	42.2	56.0	22.9	32.7	46.0
	1.342	9.8	31.6	41.4	56.0	21.0	30.8	46.0
	1.498	9.8	31.7	41.5	56.0	21.4	31.2	46.0
	1.670	9.8	30.9	40.7	56.0	20.6	30.4	46.0
	19.384	9.9	32.4	42.3	60.0	22.8	32.7	50.0
Neutral	0.446	9.7	29.7	39.4	56.9	22.9	32.6	46.9
	0.510	9.8	29.7	39.5	56.0	22.2	32.0	46.0
	1.538	9.8	26.8	36.6	56.0	19.4	29.2	46.0
	19.512	9.9	27.6	37.5	60.0	21.7	31.6	50.0
	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--

REMARKS: 1. Emission level(dBuV)=Read Value(dBuV) + Correction Factor(dB)  
 2. Correction Factor(dB) =LISN Factor (dB) + Cable Factor (dB)+Limiter Factor(dB)  
 3. The other emission levels were very low against the limit.

## 8.2 Radiated Unwanted Emission

### Test Method

The sample was placed 0.8m above the ground plane on a standard emission test site \*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations for frequency above 30MHz. And for frequency below 30MHz, a loop antenna is used to measure the field strength. The emissions worst-case are shown in Test Results of the following pages.

\*On a standard emission test site with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules.

The measuring bandwidth is:

Frequency of Emission(MHz)	RBW/VBW
0.009-0.15	100/300Hz
0.15-30	10/30KHz
30-1000	100/300KHz

### Limit:

Frequency Range(MHz)	Field Strength(Microvolts/meter)	Field Strength(dB $\mu$ V/m) @3m
0.009-0.49	2400/F(KHz) @300m	129-94
0.49-1.705	24000/F(KHz) @30m	74-63
1.705-30	30 @30m	70
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Note: Where the limits have been defined at one distance, and a signal level measured at another, the limits have been extrapolated using the following formula:

Extrapolation(dB)=40\*log10(Measuring Distance/Specified Distance) below 30MHz

Extrapolation(dB)=20\*log10(Measuring Distance/Specified Distance) above 30MHz

### Measuring Result:

Investigate frequency range	Frequency	Emission Level	Polarization	Limit	Detector	Result
MHz	MHz	dBuV/m	(H/V)	dBuV/m		
0.009-30	--	--	--	--	--	--
0.009-30	--	--	--	--	--	--
30-1000	37.775	31.1	Horizontal	40	QP	Pass
30-1000	154.408	30.1	Horizontal	43.5	QP	Pass
30-1000	74.109	22.1	Vertical	40	QP	Pass
30-1000	290.48	25.4	Vertical	46	QP	Pass

## 8.3 Field strength of fundamental emissions & outside the allocated band emissions

### Test Method

The sample was placed 0.8m above the ground plane on a standard emission test site \*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, a loop antenna is used to measure the field strength. The emissions worst-case are shown in test results of the following pages.

The measuring bandwidth is:

Frequency of Emission(MHz)	RBW/VBW
13.11-14.01	10/30KHz

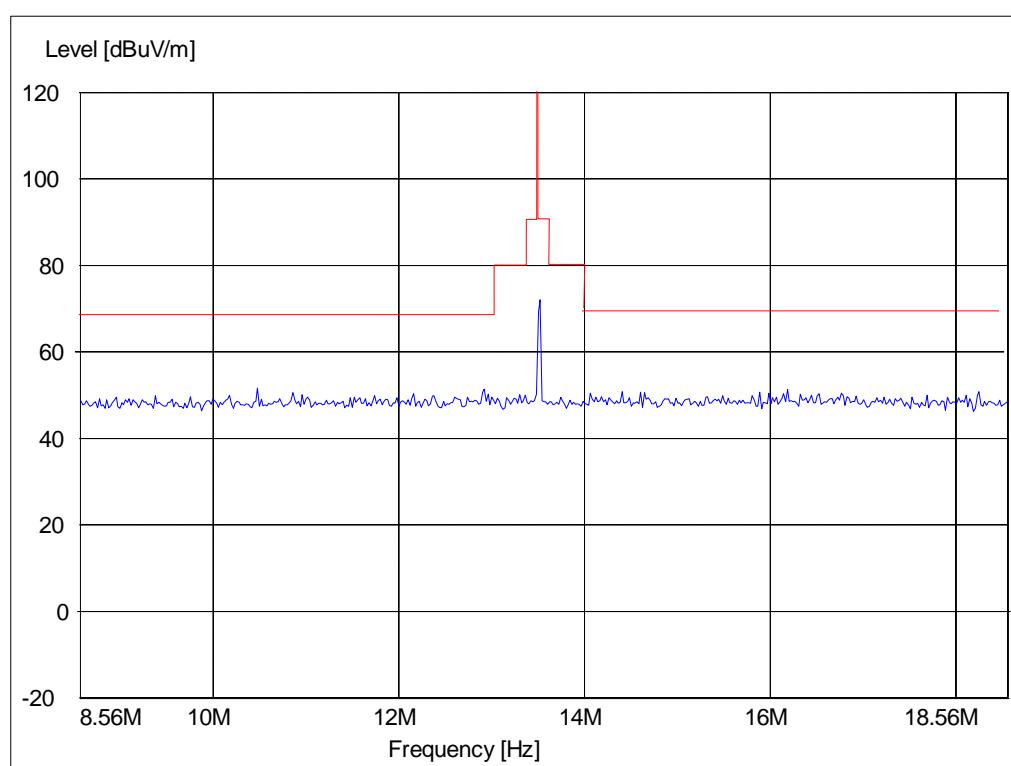
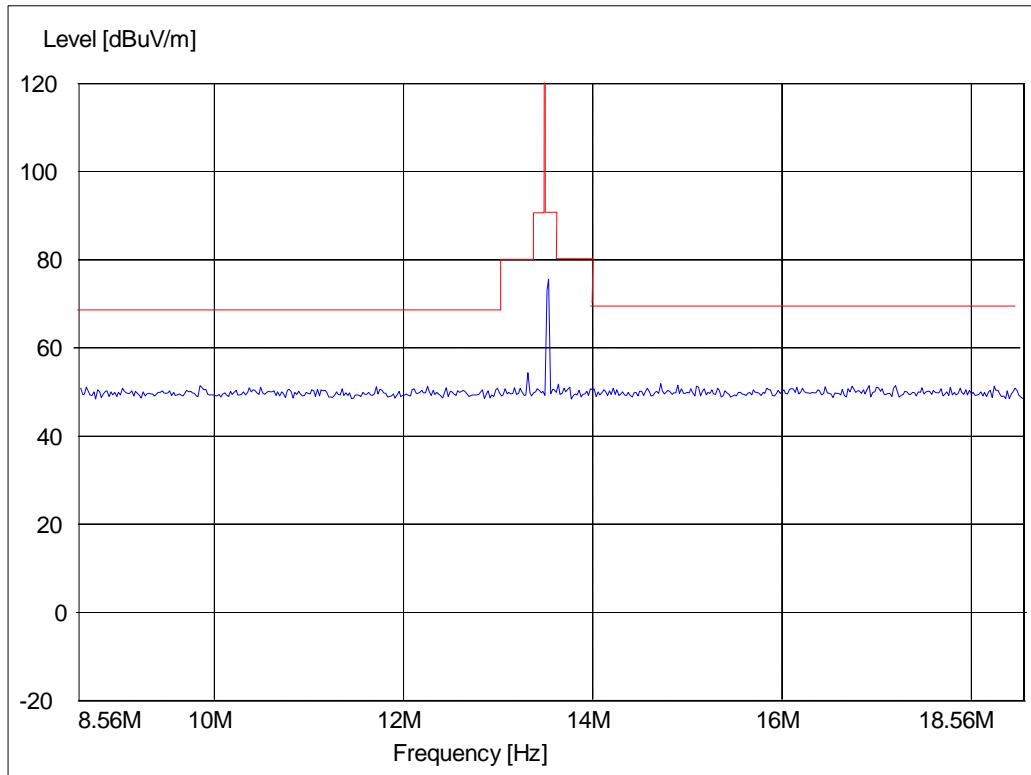
### Limit:

Frequency Range(MHz)	Field Strength(Microvolts/meter)	Field Strength(dB $\mu$ V/m) @3m
13.56±0.007	+15,848	124
13.410 to 13.553	+334	90
13.567 to 13.710		
13.110 to 13.410	+106	81
13.710 to 14.010		

Note: Where the limits have been defined at one distance, and a signal level measured at another, the limits have been extrapolated using the following formula:

$$\text{Extrapolation(dB)} = 40 * \log_{10}(\text{Measuring Distance}/\text{Specified Distance}) \text{ below 30MHz}$$

### Measuring Result:



## 8.4 Frequency tolerance

### Test Method

The transmitter output signal was picked up by receiver antenna connected to the test receiver, while the receiver antenna was placed within a thermostat to keep in temperature rang from -20 to 50 Celsius degrees.

### Limit:

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

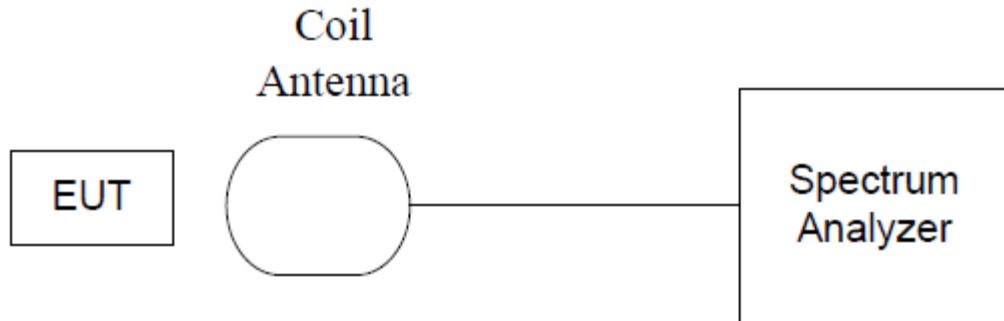
### Test result:

Test conditions	Carrier frequency	Carrier frequency tolerance
NVLT	13.561071	+0.0079%
NVHT	13.561138	+0.0084%
NTLV	13.560261	+0.0019%
NTHV	13.559169	-0.0061%

## 8.5 20dB Bandwidth

### Test method:

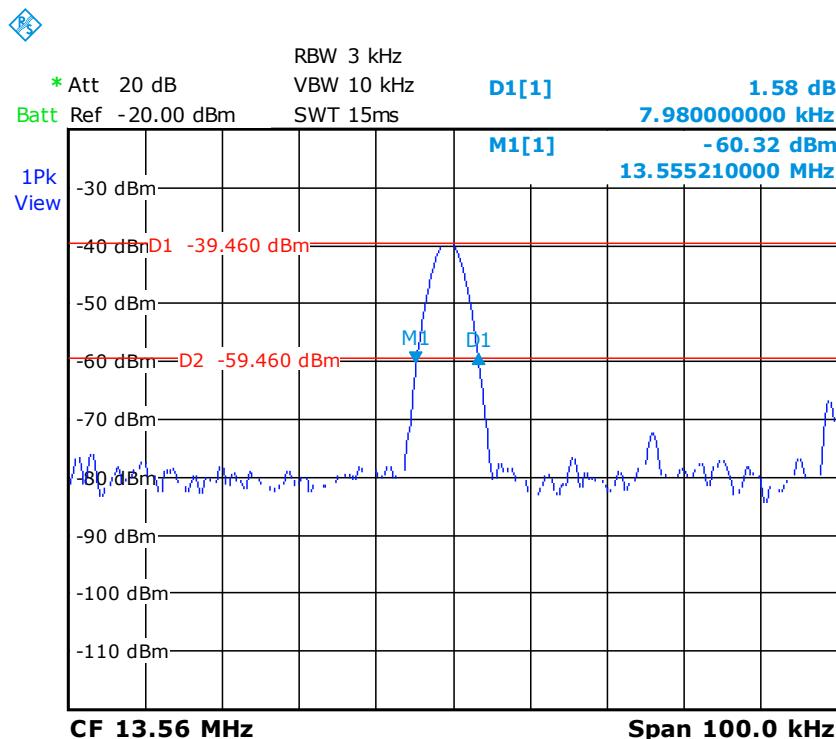
The Transmitter output signal was picked up by coil antenna to the spectrum analyzer.



### Limit:

The 20dB bandwidth shall be less than 80% of the permitted frequency band. For equipment operated at 13.56MHz of clause 15.225, the permitted frequency range is 13.553-13.567MHz, so the limit is 11.2 KHz

### Measuring result:



## 9 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
RFID IC card	--	--	--

## 10 Test Equipment List

### List of Test Instruments

No.	Equipment	Manufacturer	Model No.	LAST CALIB	Period
SB3436	EMI Test Receiver	Rohde & Schwarz	ESI26	Dec.29,2014	1 Year
SB5472/02	Bilog Antenna	SCHWARZBECK	VULB9163	Jan.18,2015	1 Year
SB9422/16	Horn Antenna	Rohde & Schwarz	HF907	May.19.2015	1 Year
----	Radiated Emissions Cable set	HUBER+SUHNE R	---	Jan.19, 2015	1 Year
---	Radiated Emissions Cable set	HUBER+SUHNE R	---	Jan.19, 2015	1 Year
SB8501/17	Preamplifier	Rohde & Schwarz	SCU-18	Mar.27, 2015	1 Year
SB8501/16	Preamplifier	Rohde & Schwarz	SCU-26	Mar.27, 2015	1 Year
SB3319	EMI Test Receiver	R&S	ESCS30	Dec.20,2014	1 Year
SB4357	AMN	R&S	ENV216	Oct.14,2014	1 Year
SB3321	AMN	R&S	ESH2-Z5	Jan.19,2015	1 Year
---	Conducted Emissions Cable set	HUBER+SUHNE R	FAC X3/AP1	Dec.20,2014	1 Year

## 11 System Measurement Uncertainty

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

### System Measurement Uncertainty

Items	Extended Uncertainty
Uncertainty for Conducted Emission 150kHz-30MHz	3.50dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	4.5dB
Uncertainty for Radiated Emission in 3m chamber 1000MHz-26500MHz	4.6dB
Uncertainty for Conducted RF test	Power level test involved: 2.04dB Frequency test involved: $1.1 \times 10^{-7}$