Deutscher Akkreditierungs Rat

DAT-P-174/04-00

NO.L0447

Registration No.612767

TEST REPORT

Report No.: SRMC2006-H024-E001

Product Name: CDMA Fixed Wireless Phone

Product Model: Indigo FWT-200E

Manufacture: MAYBROOKE ENTERPRISES INC.

Specification: FCC Part 24, Part 2

FCC ID: UN3FWT-200E

STATE RADIO MONITORING CENTER (SRMC)

No.80 Beilishi Road Xicheng District Beijing, China

Tel: 86-10-68009181 Fax: 86-10-68009195

CONTENTS

1. General information

1.1 Notes of the test report

The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written permission of The State Radio Monitoring Center.
The test results relate only to individual items of the samples which have been tested.

1.2 Information about the testing laboratory

Company: State Radio Monitoring Center
Address: No.80 Beilishi Road, Xicheng District, Beijing China 100037
City: Beijing
Country or Region: China
Contacted person: Wang Junfeng
Tel +86 10 68009181
Fax: +86 10 68009195
Email: Wangjf@srrc.org.cn

1.3 Applicant's details

Company: MAYBROOKE ENTERPRISES INC.
Address： Edificio Torre MMG, Piso 14, Calle 53E Urb. Marbella Panama City, PANAMA 0831-01587
City: Panama City
Country or Region: PANAMA
Grantee Code: UN3
Contacted person: Robert J Scodellaro
Tel: + (507) 265 7691
Fax: + (507) 223-1467
Email: maybrooke@ptycmd.com

1.4 Manufacturer's details

Company： MAYBROOKE ENTERPRISES INC.
Address： Edificio Torre MMG, Piso 14, Calle 53E Urb. Marbella Panama City, PANAMA 0831-01587
City: Panama City
Country or Region: PANAMA
Grantee Code: UN3
Contacted person: Robert J Scodellaro
Tel: + (507) 265 7691
Fax: + (507) 223-1467
Email: maybrooke@ptycmd.com

1.5 Application details

Date of receipt of application: 18th Sep. 2006
Date of receipt of test sample: 22th Sep. 2006
Date of test: 26th Sep. 2006 to 28 th Sep. 2006

1.6 Reference specification

FCC Part 24, Part 2

1.7 Information of EUT

1.7.1 General information

Name of EUT	CDMA Fixed Wireless Phone
FCC ID	UN3FWT-200E
Frequency range	PCS1900: Tx:1850~1910MHz Rx:1930~1990MHz
Rated output power	23.0dBm
Modulation type	CDMA
Duplex mode	FDD
Duplex spacing:	80MHz
Antenna type	External
Power Supply	Battery or charger
Rated Power Supply Voltage	3.7V
Extreme Temperature	-30°C~+50°C

1.7.2 EUT details

Name	Model	Serial number
CDMA Fixed Wireless Phone	Indigo FWT-200E	Sample 1

1.7.3 Auxiliary equipment details

Equipment	Charger
Manufacturer	Pacific Tel
Model Number	P-010B-B818

Equipment	Battery
Manufacturer	Pacific Tel
Model Number	-----
Capacity	1200mAh
Rated Voltage	3.7V

2. Test information:

2.1 Summary of the test results:

No.	Test case	FCC reference	Verdict
1	RF Power Output	2.1046	Pass
2	Effective Isotropic Radiated Power	24.232	Pass
3	Occupied Bandwidth,	2.1049	Pass
4	Spurious Emissions at antenna terminals	2.1051	Pass
5	Out of band emissions	24.238	Pass
6	Frequency Stability	2.1055/24.235	Pass
7	Radiated Spurious emissions	24.238	Pass
8	Conducted emissions	2.1057	Pass

This Test Report Is Issued by:	Checked By:
Tested By:	Issued date: 2006.10.11

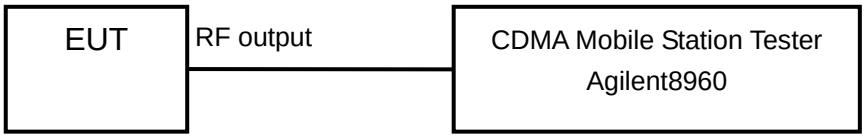
2.2 Test result

2.2.1 RF Power Output –FCC Part2.1046

Ambient condition:

Temperature	Relative humidity	Pressure
25°C	46%	102.5kPa

Test Setup:



Test procedure:

After a radio link has been established between EUT and Tester, the output power of the cell signal of the testing equipment will be decreased until the output power of the EUT reach a maximum value. Then the test data can be read at the tester screen. The loss between RF output port of the EUT and the input port of the tester will be taken into consideration.
The measurement will be conducted at three channels No.25, No.600 and No.1175 (Bottom, middle and top channels of PCS1900 band)

Test result:

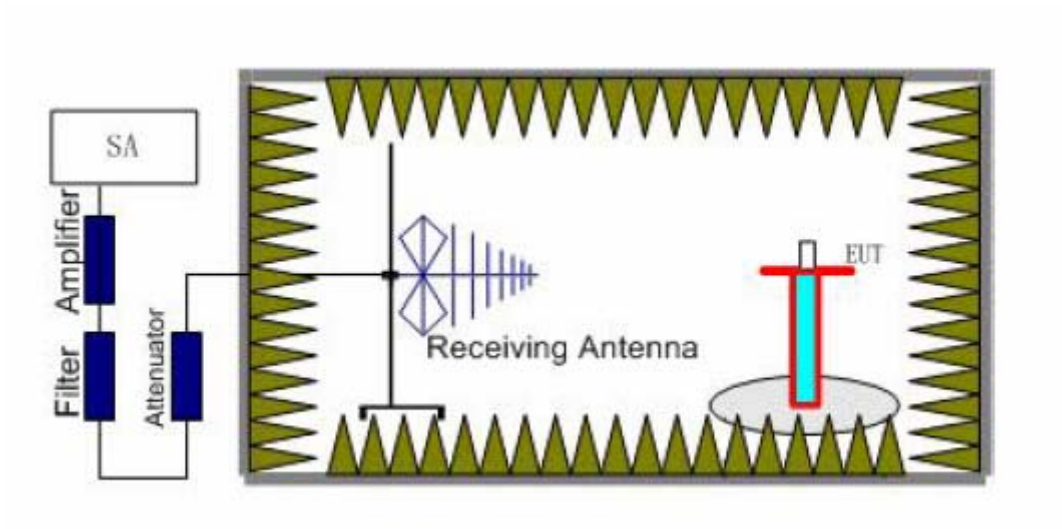
Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
1851.25	25	23.2
1880	600	23.0
1908.75	1175	23.1

2.2.2 Effective Isotropic Radiated Power-FCC Part24.232

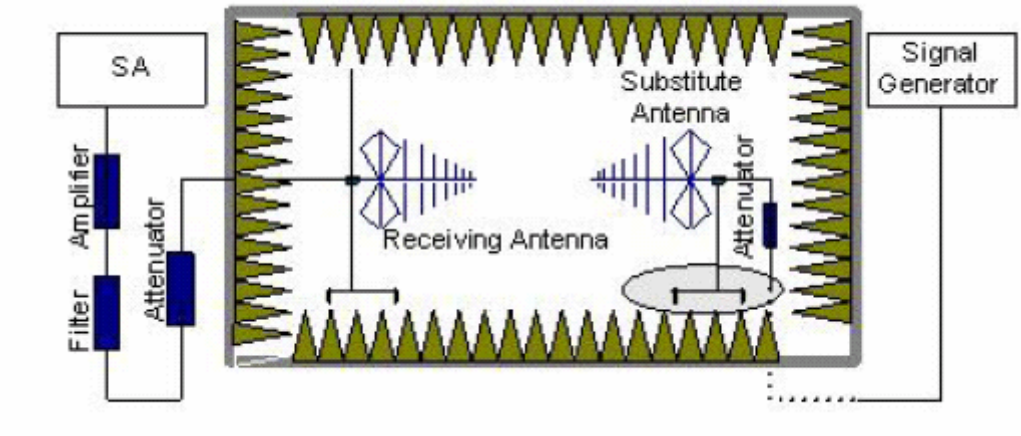
Ambient condition:

Temperature	Relative humidity	Pressure
28°C	46%	102.5kPa

Test setup



Step 1



Step 2

Test procedure:
Step 1:
EUT was placed on a 2.4 meters high non-conductive table at a 3 meters test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. The height of receiving antenna is 2.4m. A radio link shall be established between EUT and Tester. The output power of the cell signal of the tester will be decreased until the output power of the EUT reach a maximum value. A RMS detector is used and RBW is set

to 3MHz.Then the antenna height and turn table rotation is adjusted till the maximum power value is founded on spectrum analyzer or receiver.
Step 2:
A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The EIRP of the EUT can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

The measurement will be conducted at three channels No.25, No.600 and No.1175 (Bottom, middle and top channels of PCS1900 band)

Test result:

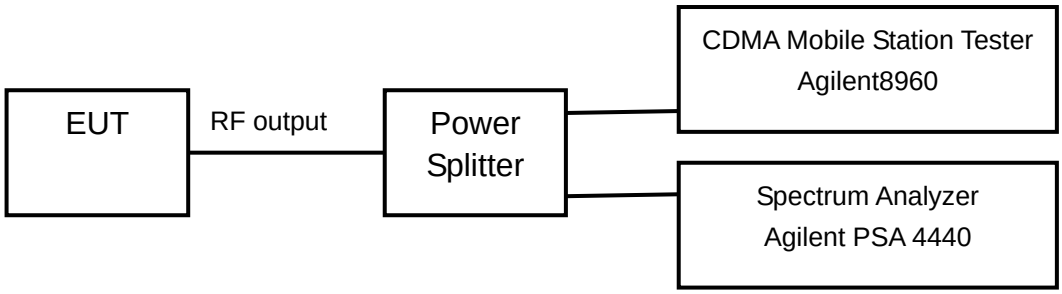
Carrier frequency (MHz)	Channel No.	E.I.R.P. (dBm)
1851.25	25	22.9
1880	600	22.4
1908.75	1175	23.7

2.2.3 Occupied Bandwidth-FCC Part2.1049

Ambient condition:

Temperature	Relative humidity	Pressure
28°C	46%	102.5kPa

Test Setup:

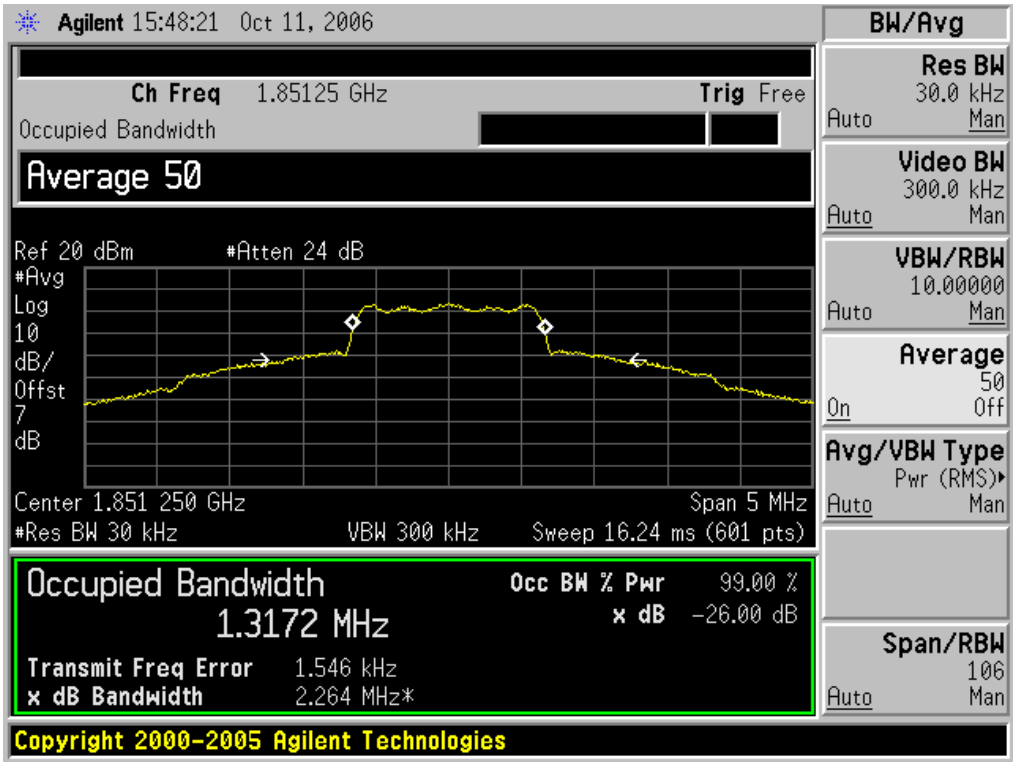


Test procedure:

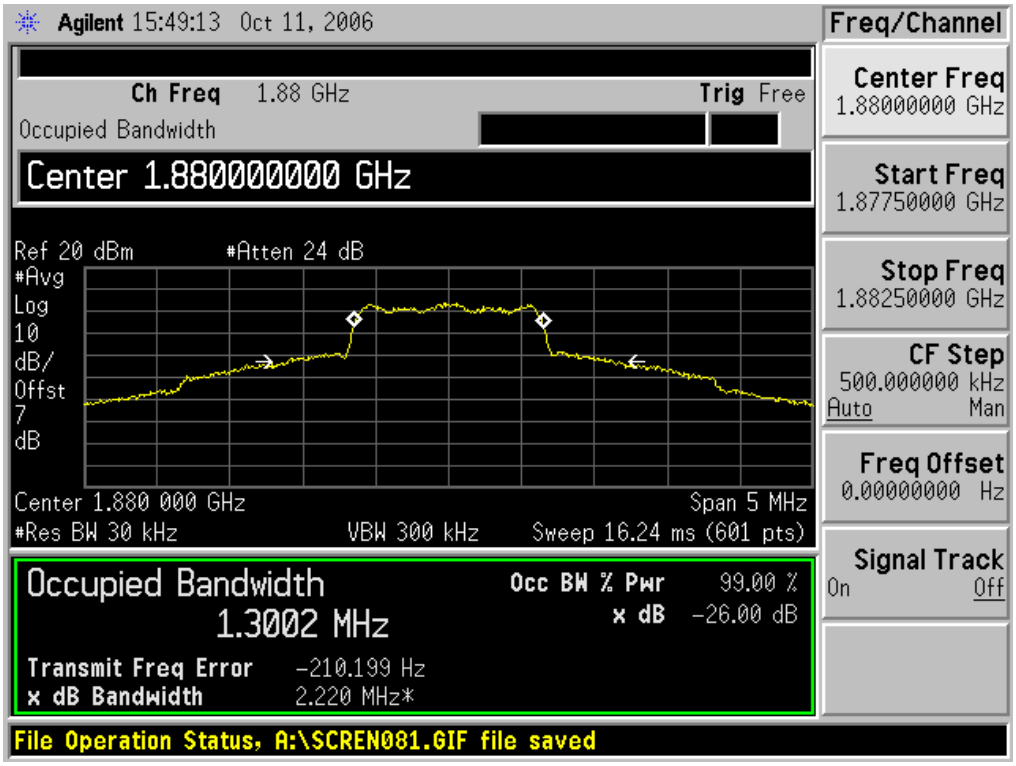
After a radio link has been established between EUT and Tester, the output power of the cell signal of the testing equipment will be decreased until the output power of the EUT reach a maximum value. The occupied bandwidth is measured using spectrum analyzer. RBW is set to 30kHz on spectrum analyzer. The bandwidth of 99% power can be read on spectrum analyzer.
The measurement will be conducted at three channels No.25, No.600 and No.1175 (Bottom, middle and top channels of PCS1900 band)

Test result:

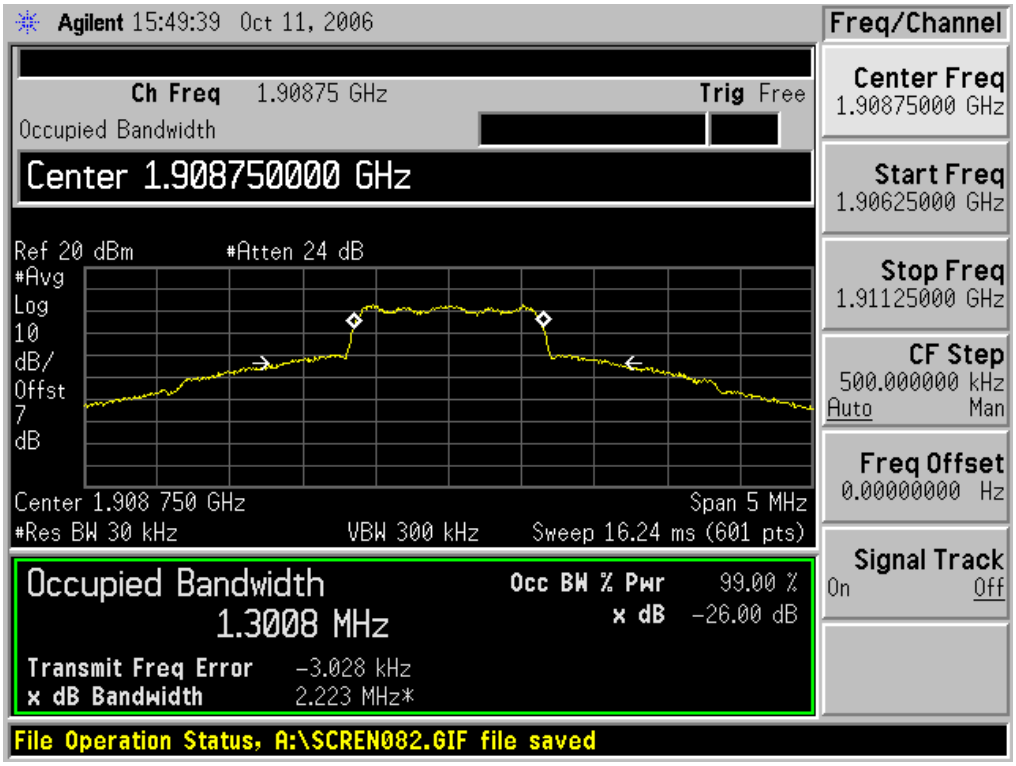
Carrier frequency (MHz)	Channel No.	Bandwidth of 99% Power (MHz)
1851.25	25	1.32
1880	600	1.30
1908.75	1175	1.30



Channel 25



Channel 600



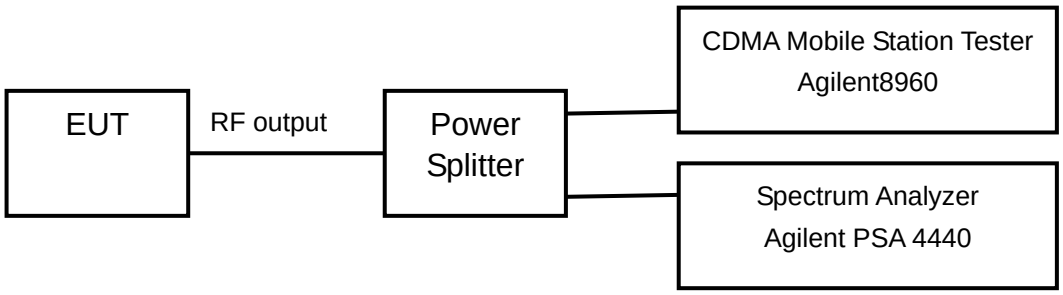
Channel 1175

2.2.4 Spurious Emissions at antenna terminals-FCC Part2.1051

Ambient condition:

Temperature	Relative humidity	Pressure
28°C	46%	102.5kPa

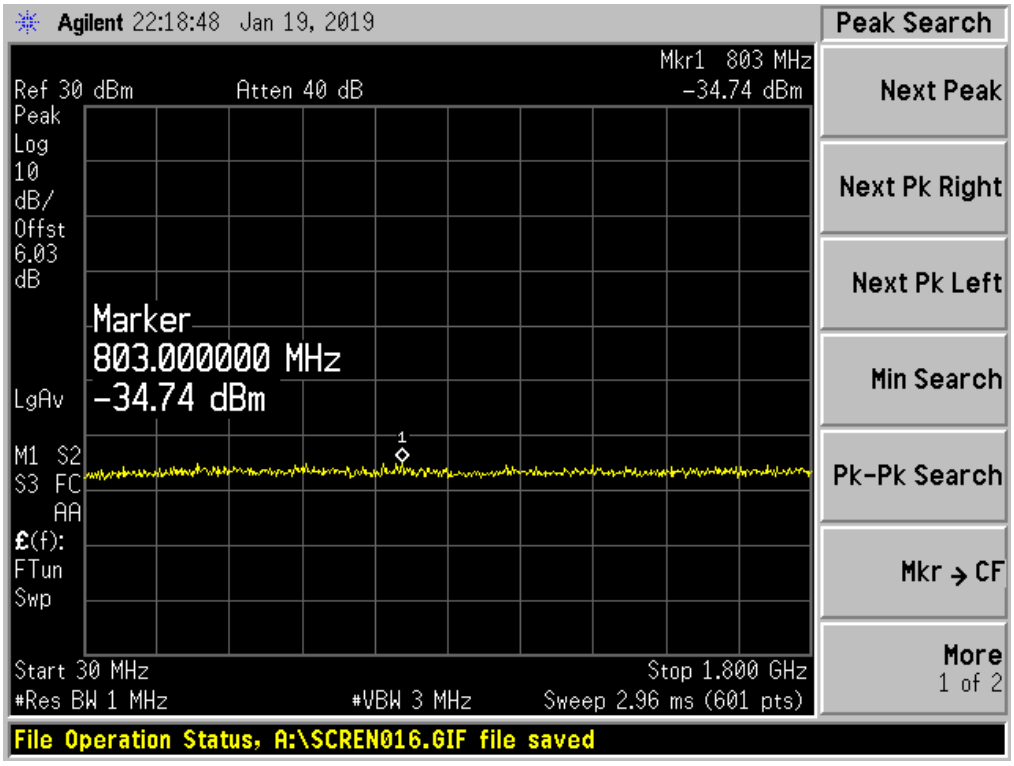
Test Setup:



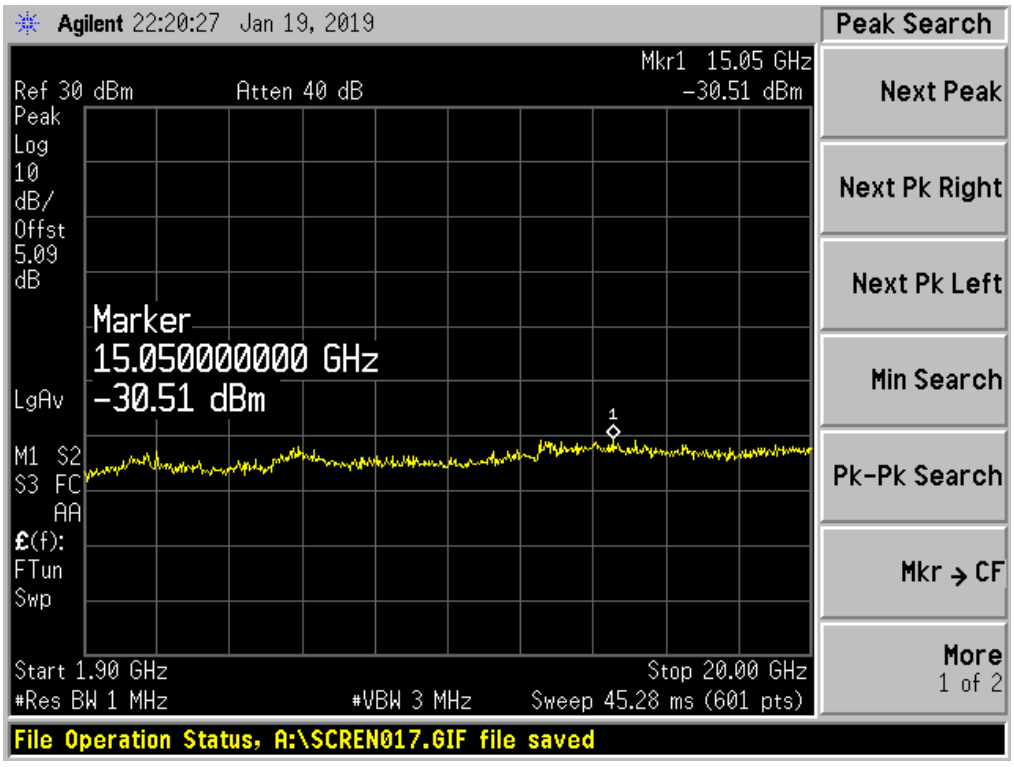
Test procedure:

After a radio link has been established between EUT and Tester, the output power of the cell signal of the testing equipment will be decreased until the output power of the EUT reach a maximum value. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 30MHz to 20GHz (higher than the 10^{th} harmonic of the carrier). The peak detector is used and RBW is set to 1MHz on spectrum analyzer.
The measurement will be conducted at three channels No.25, No.600 and No.1175 (Bottom, middle and top channels of PCS1900 band)

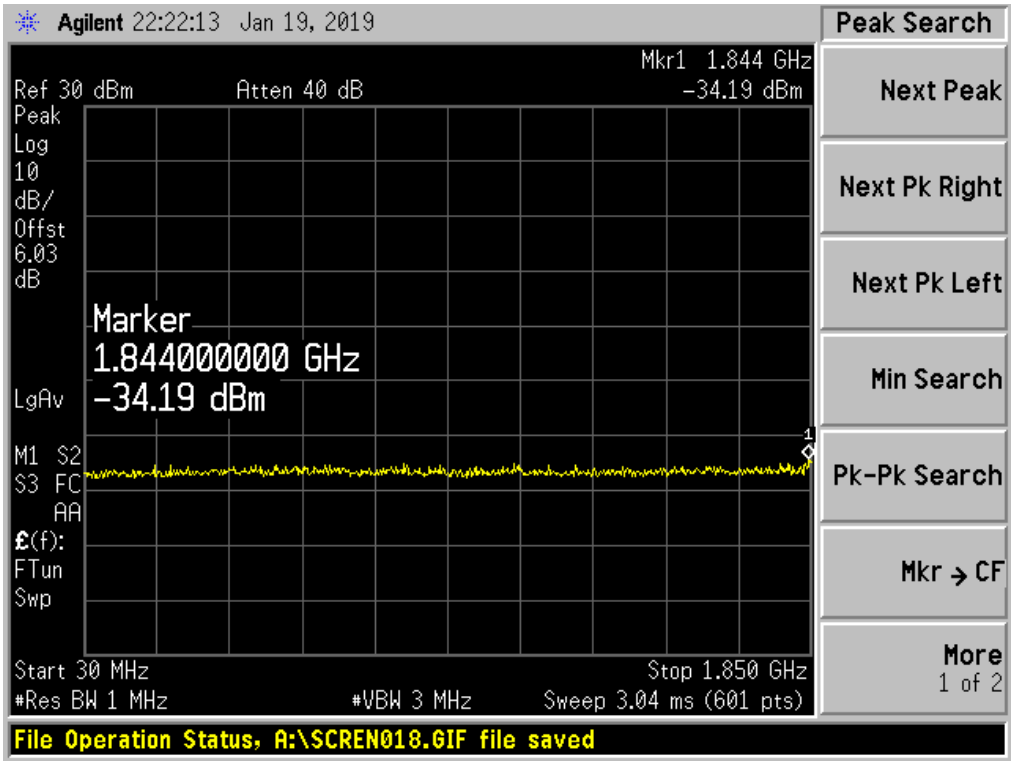
Test result:
Refer to the following figures.



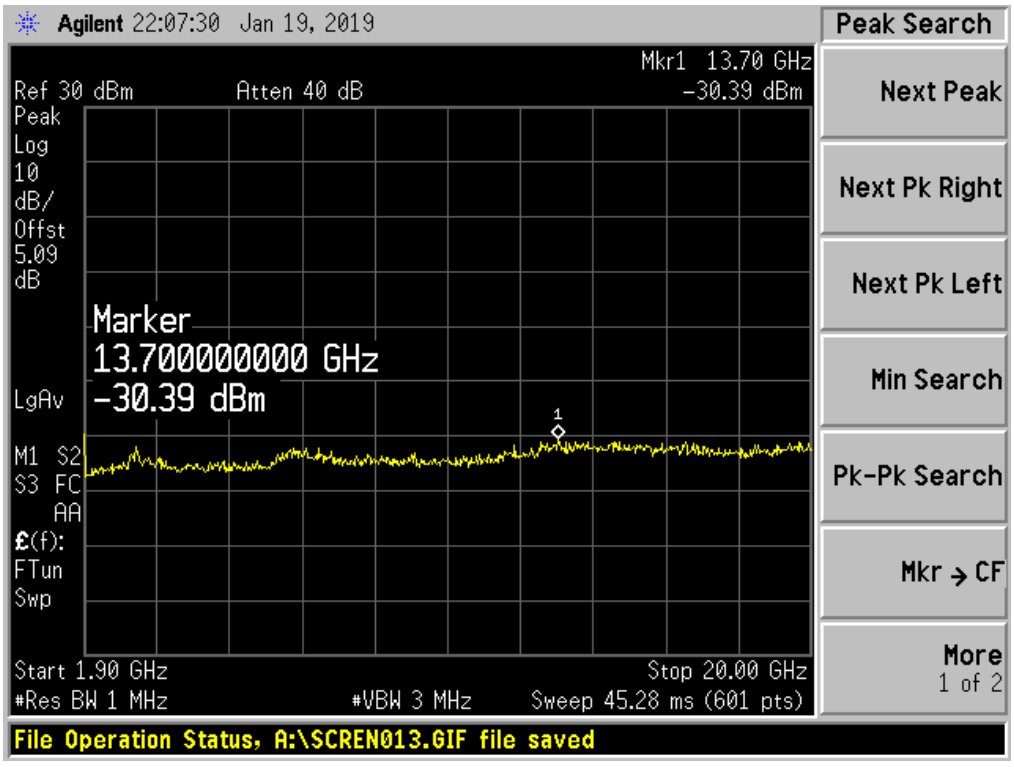
Channel 25, 30MHz~1850MHz



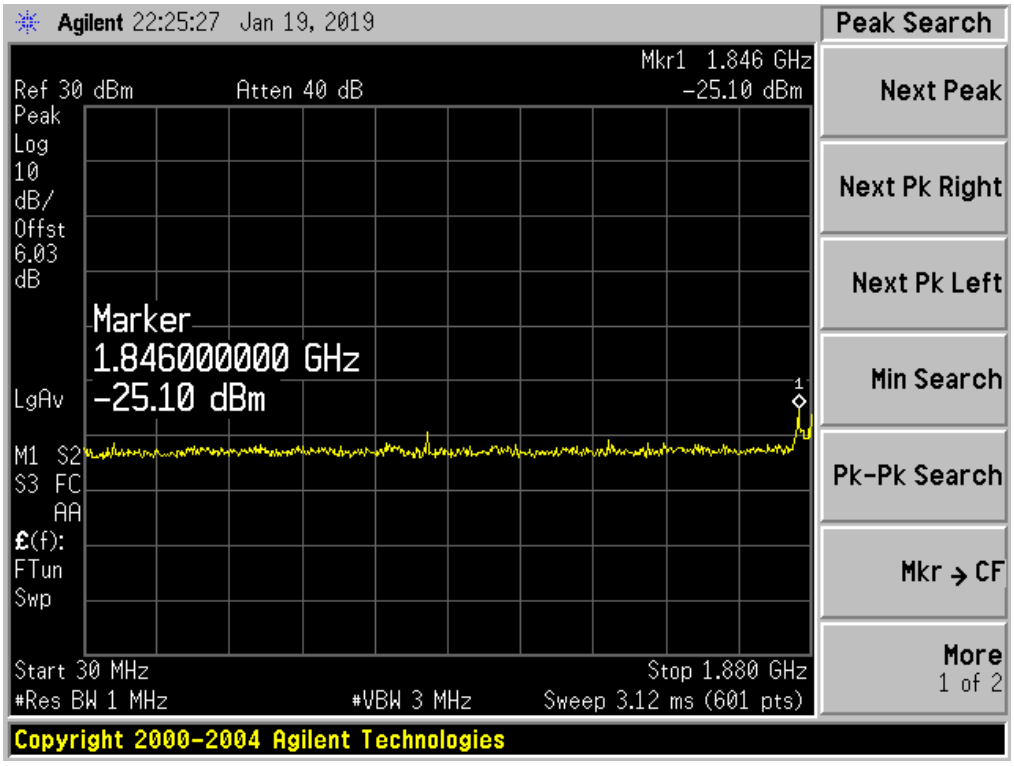
Channel 25, 1910MHz~20GHz



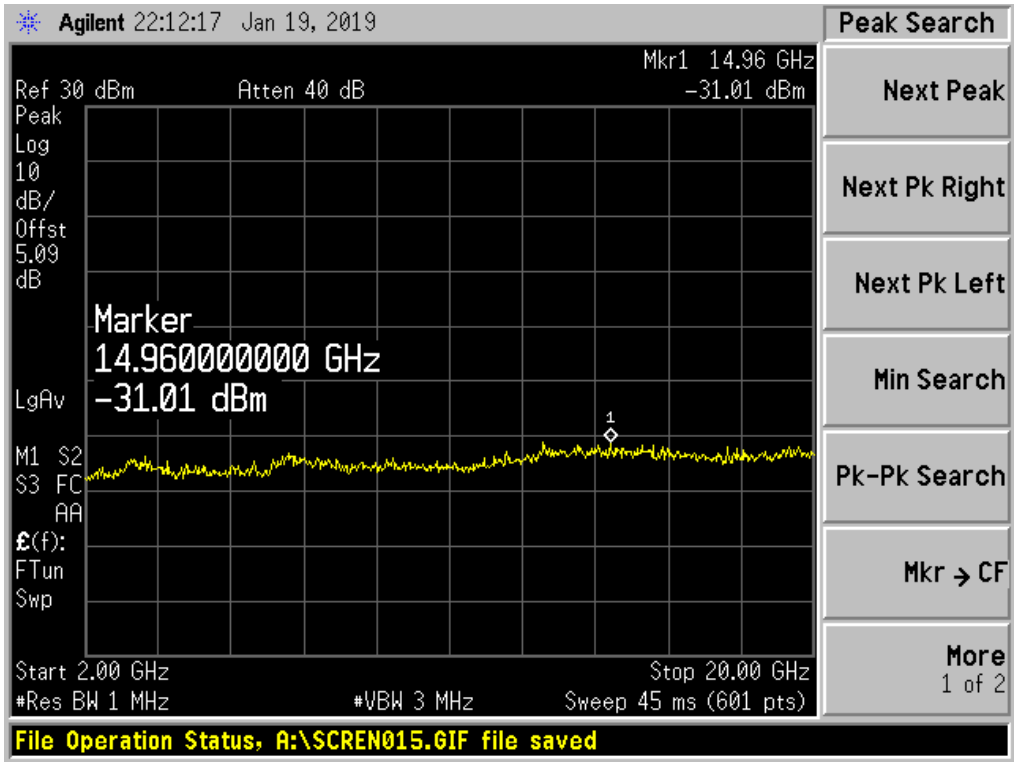
Channel 600, 30MHz~1850MHz



Channel 600, 1910MHz~20GHz



Channel 1175, 30MHz~1850MHz



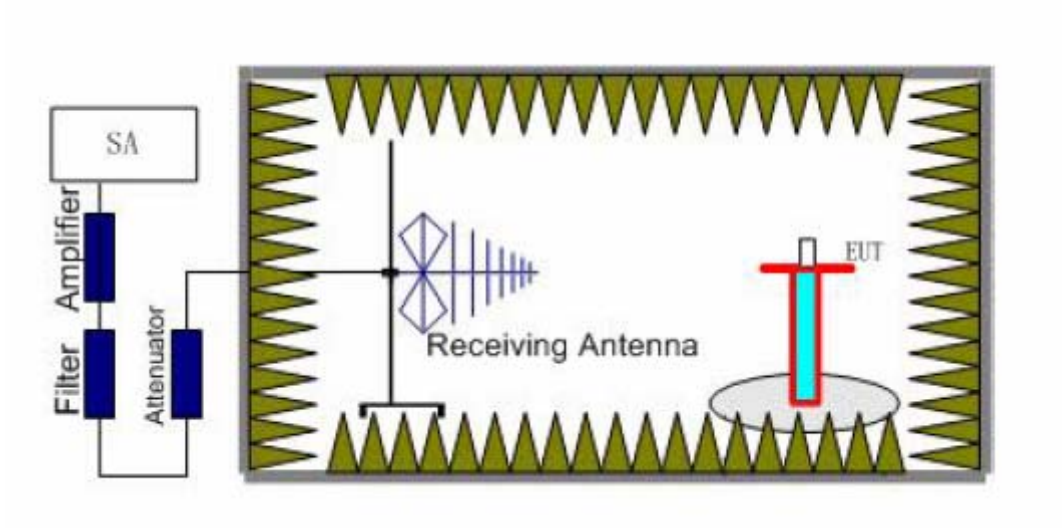
Channel 1175, 1910MHz~20GHz

2.2.5 Out of Band emissions-FCC Part24.238

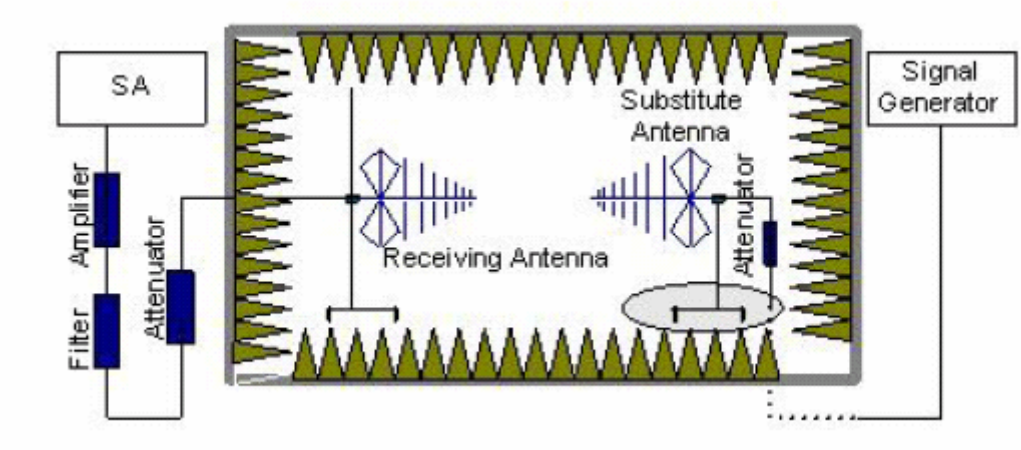
Ambient condition:

Temperature	Relative humidity	Pressure
28°C	46%	102.5kPa

Test Setup:



Step 1



Step 2

Test procedure:

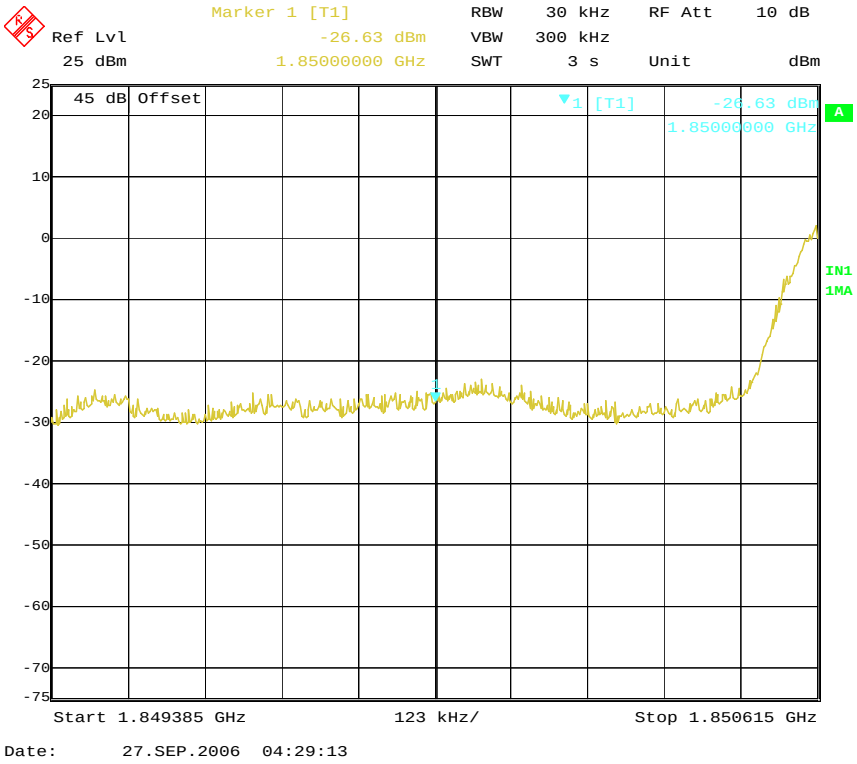
Step 1:

EUT was placed on a 2.4 meter high non-conductive table at a 3 meter test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. The height of receiving antenna is 2.4m. A radio link shall be established between EUT and Tester. The output power of the cell signal of the tester will be decreased until the output power

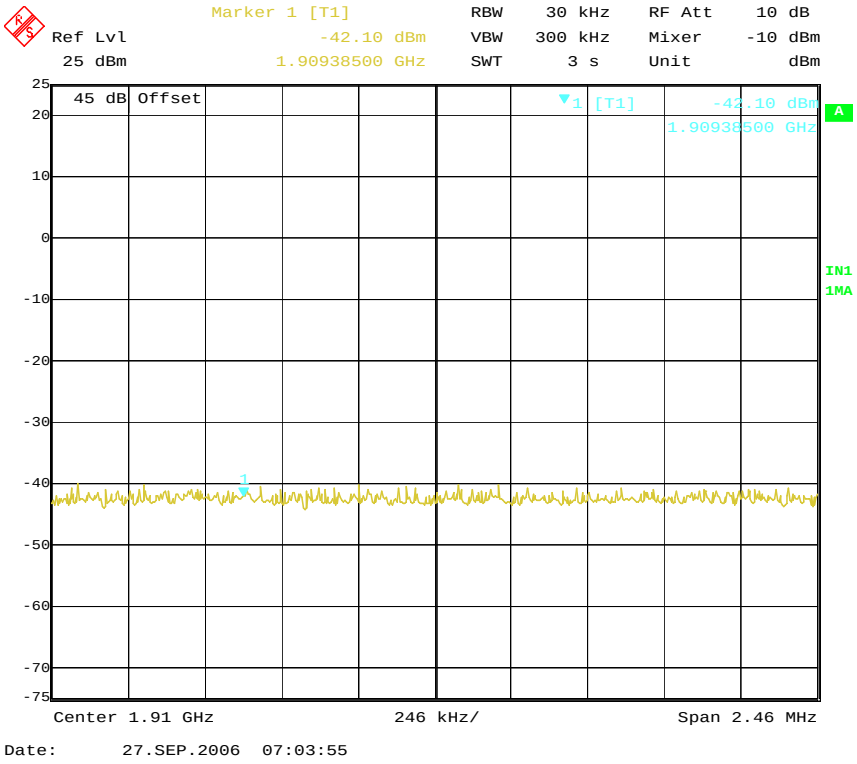
of the EUT reach a maximum value. A peak detector is used and RBW is set to 1MHz.Then the antenna height and turn table rotation is adjusted till the maximum power value is founded on spectrum analyzer or receiver. Then the level on frequencies both low edge and up edge of the operating frequency band will be measured.
Step 2:
A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the band edge frequency can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

The measurement will be conducted at three channels No.25, No.600 and No.1175 (Bottom, middle and top channels of PCS1900 band)

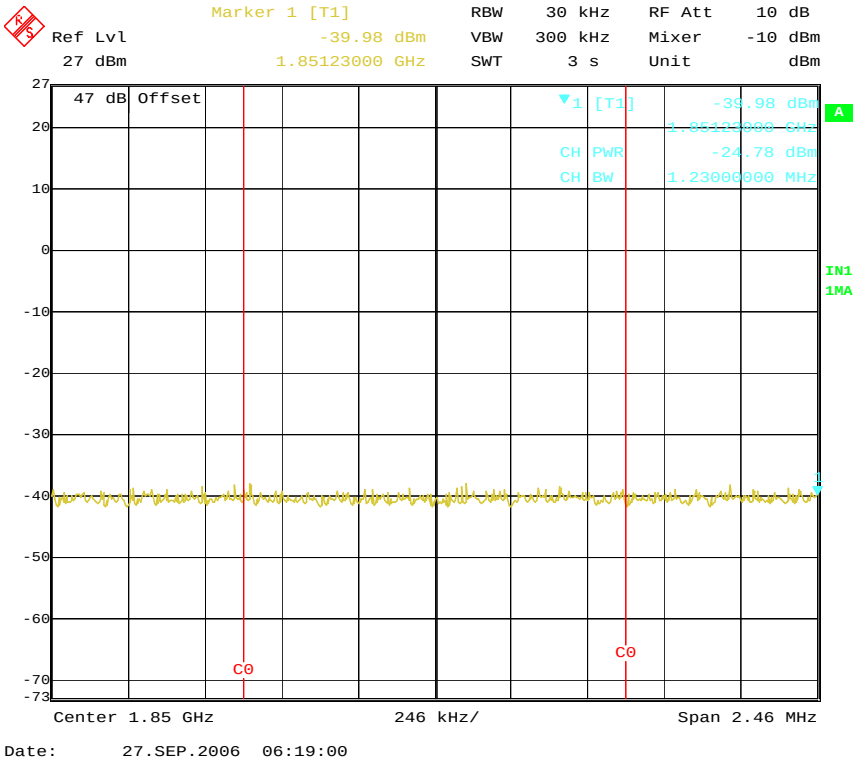
Test result:
Refer to the following figures.



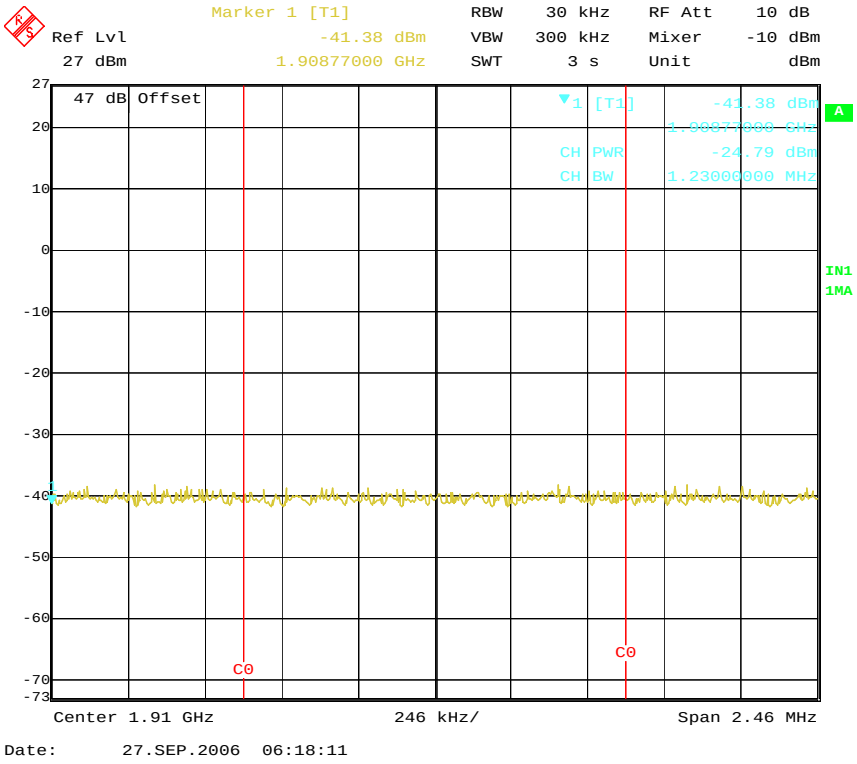
Channel 25, low edge



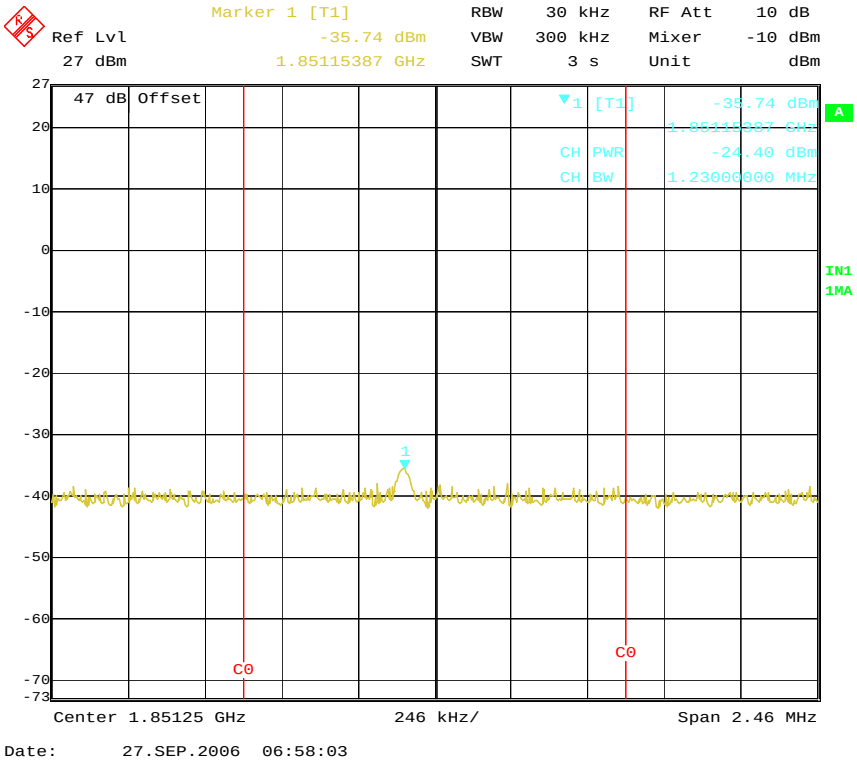
Channel 25, up edge



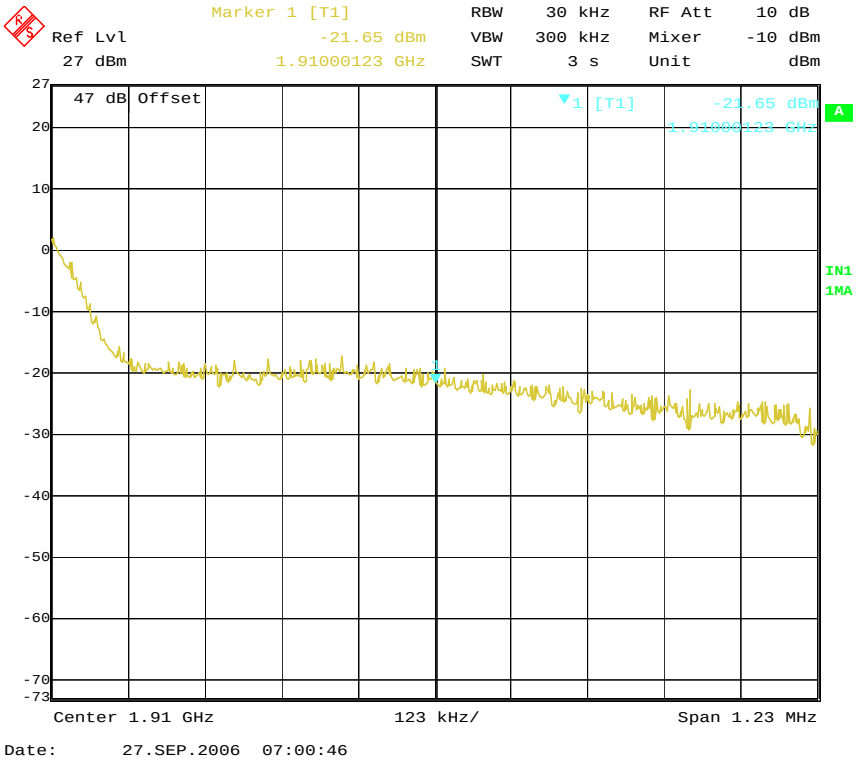
Channel 600, low edge



Channel 600, up edge



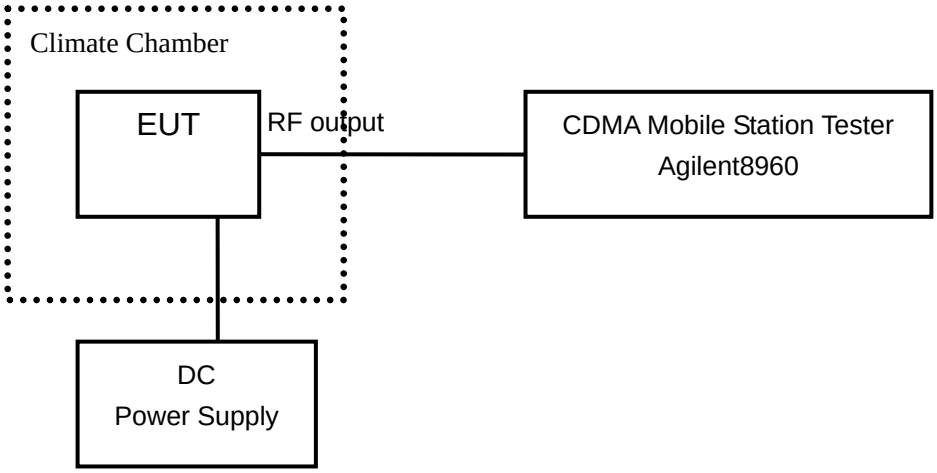
Channel 1175, low edge



Channel 1175, up edge

2.2.6 Frequency Stability-FCC Part2.1055/Part24.235

Test setup:



Test Procedure:
A radio link shall be established between EUT and Tester. The tester will sample the transmitter RF output signal and measure its frequency. The temperature inside the climate chamber is varied from -30 to +50° C in 10° C step size, and also the DC power supply voltage to the EUT is varied from 3.5 to 4.2 V.

Test Result:

Temperature(° C)	Test Result (Hz)		
	Channel 25	Channel 600	Channel 1175
-30	2.04	0.93	0.82
-20	-0.04	0.33	-0.14
-10	-0.06	0.97	0.94
0	-0.12	1.17	1.19
+10	2.38	0.52	-0.45
+20	1.81	1.50	1.45
+30	0.31	2.00	1.77
+40	-2.63	-0.51	0.81
+50	1.94	1.11	0.33

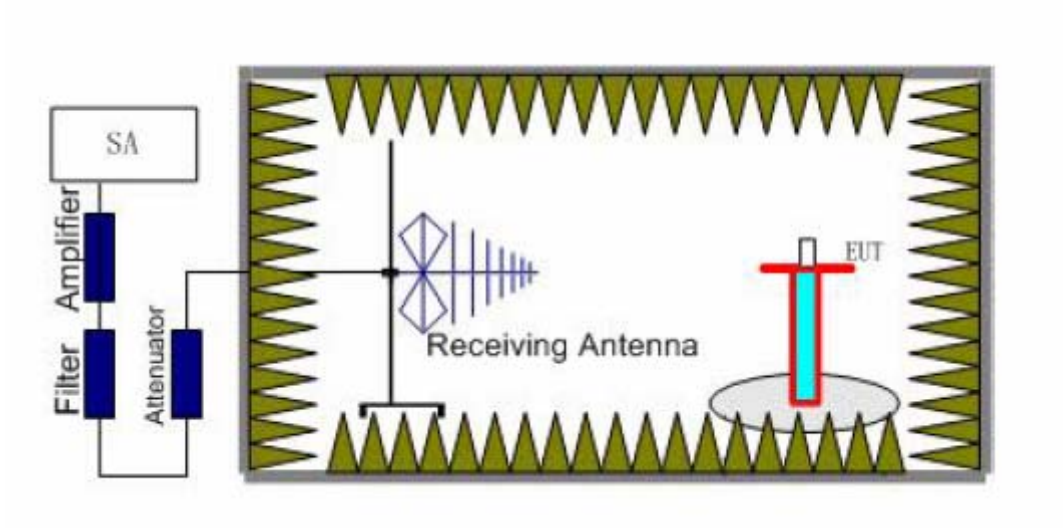
Voltage (V)	Test Result (Hz)		
	Channel 25	Channel 600	Channel 1175
3.5	1.03	1.30	1.21
4.2	0.86	0.90	0.77

2.2.7 Radiated Spurious Emissions-FCC Part24.238

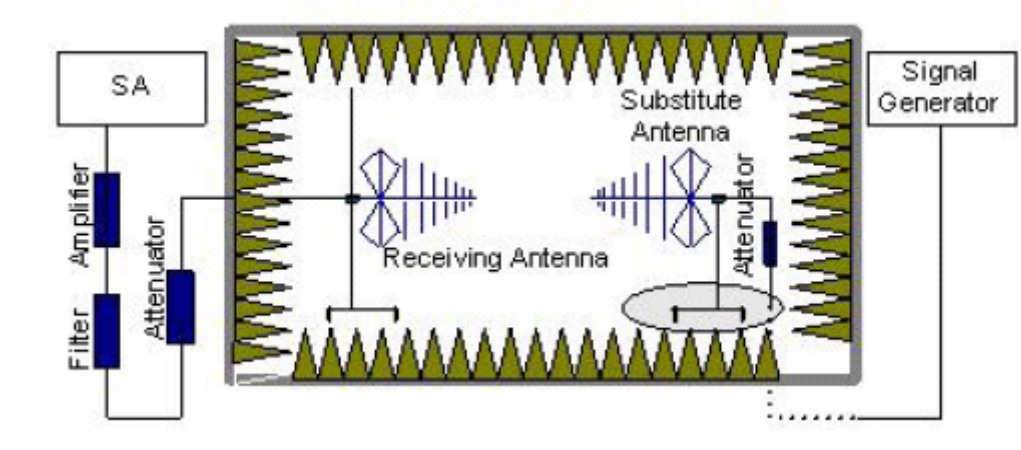
Ambient condition

Temperature	Relative humidity	Pressure
28°C	46%	102.5kPa

Test Setup:



Step 1



Step 2

Test procedure:

Step 1:

EUT was placed on a 2.4 meter high non-conductive table at a 3 meter test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. The height of receiving antenna is 2.4m. A radio link shall be established between EUT and Tester. The output power of the cell signal of the tester will be decreased until the output power

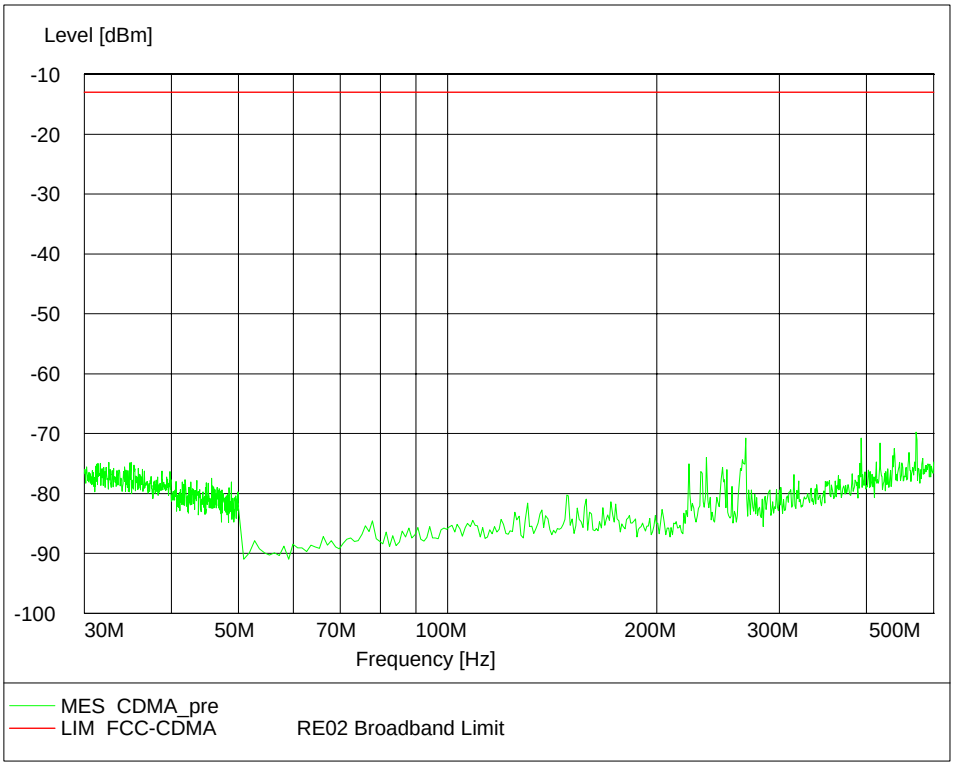
of the EUT reach a maximum value. The measurement is carried out using a spectrum analyzer or receiver. The spectrum analyzer scans from 30MHz to 20GHz (higher than the 10^{th} harmonic of the carrier). The peak detector is used and RBW is set to 1MHz on spectrum analyzer. Then the antenna height and turn table rotation is adjusted till the maximum power value is founded on spectrum analyzer or receiver. A notch filter is necessary in the band near to the carrier frequency. A high pass filter is needed to avoid the distortion of the testing equipment in the band above the carrier frequency.
Step 2:
A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

Calculation procedure:
The data of cable loss, antenna gain and air loss has been calibrated in full testing frequency range before the testing.

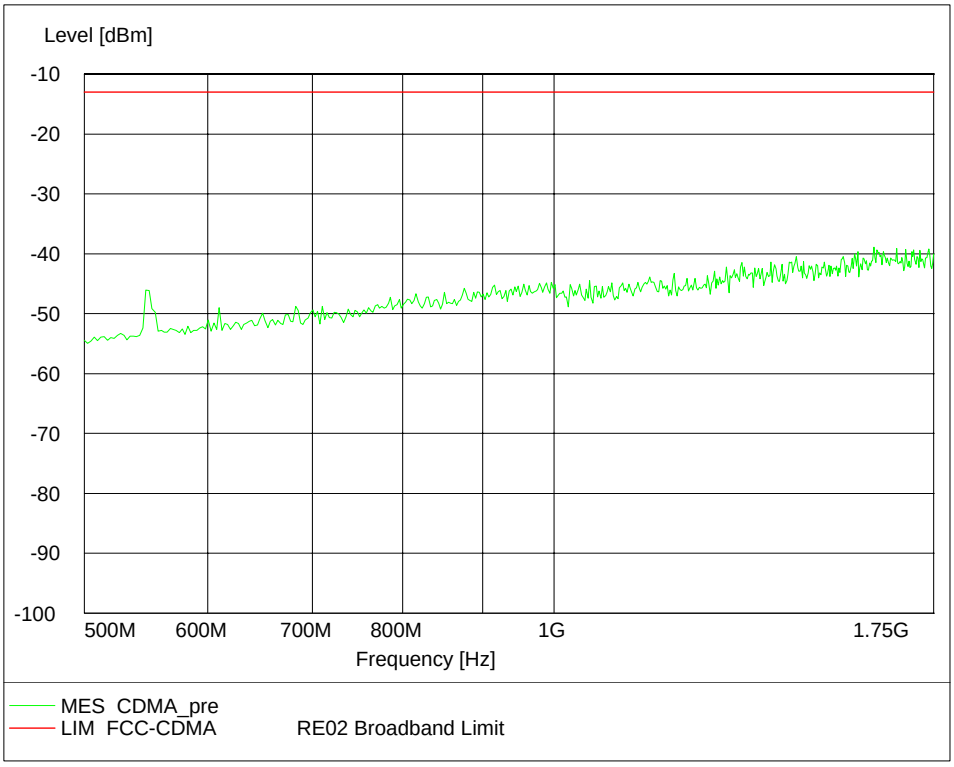
The power of the Radiated Spurious Emissions is calculated by adding the cable loss, antenna gain and air loss. The basic equation with a sample calculation is as followed:
$P=P_R+L_C+L_A-G$
Where
P: Power of the Radiated Spurious Emissions (dBm)
P_R: reading of the receiver (dBm)
L_C: Cable Lose (dB)
L_A: Air loss (dB)
G: Antenna Gain (dBi)
Assumed the reading of the receiver is -60dBm. A cable lose of 10dB, an air lose of 30dB and an antenna gain of 11dBi are added.
$P=P_R+L_C+L_A-G=-60+10+30-11=-31dBm$

The measurement will be conducted at three channels No.25, No.600 and No.1175 (Bottom, middle and top channels of PCS1900 band)

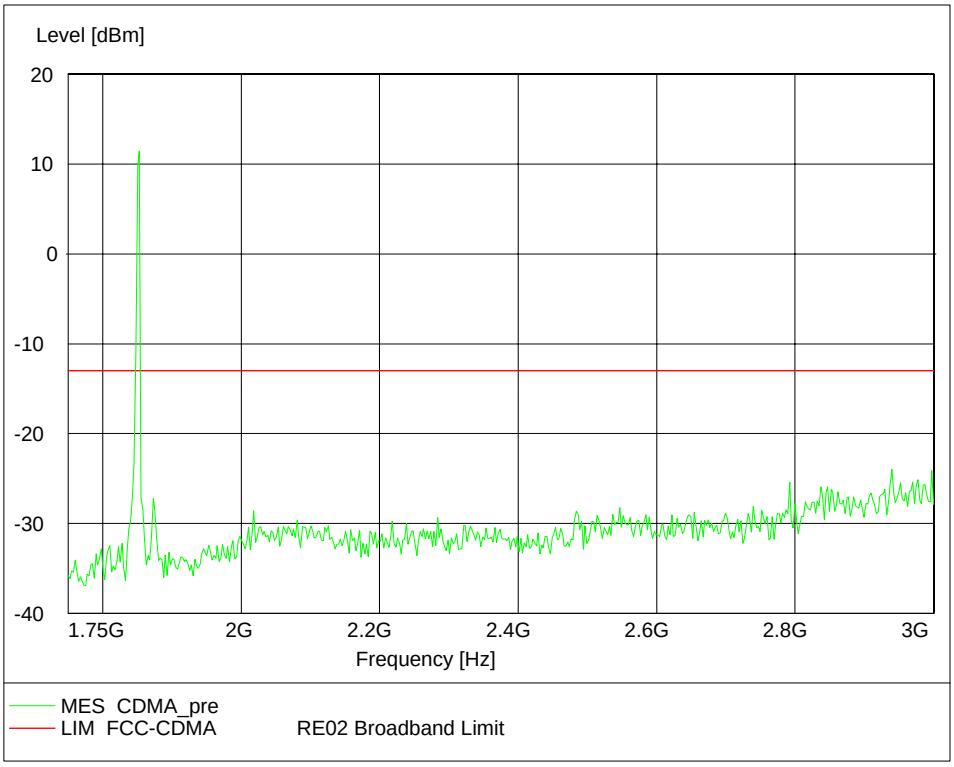
Test result:
Refer to the following figures.



Channel 25, 30MHz~500MHz

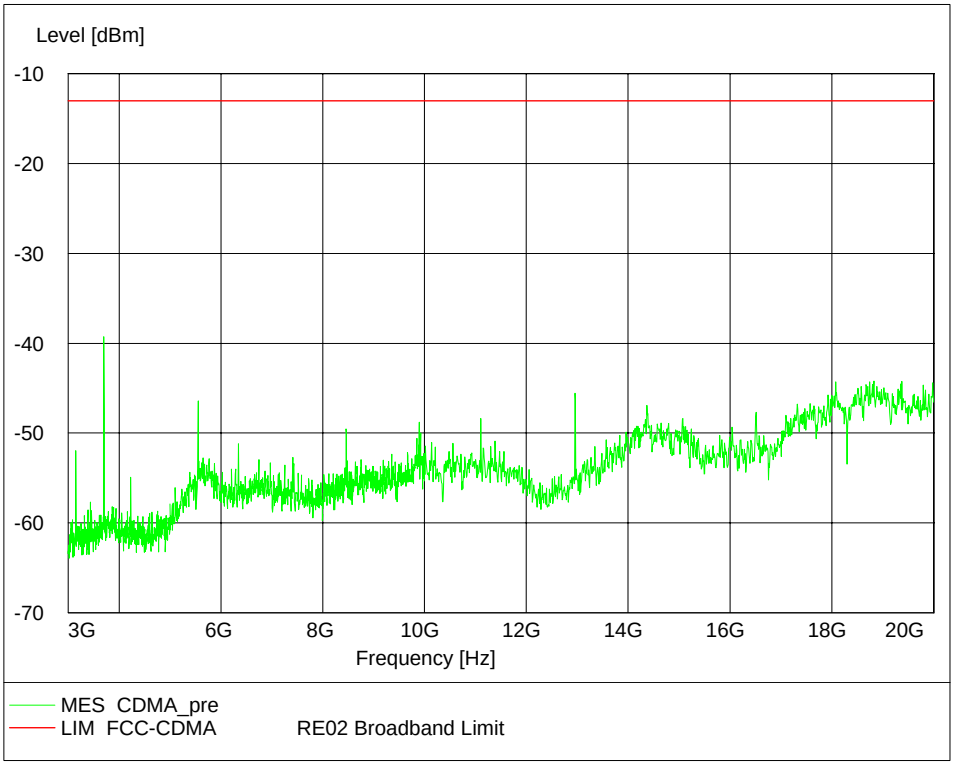


Channel 25, 500MHz~1750MHz

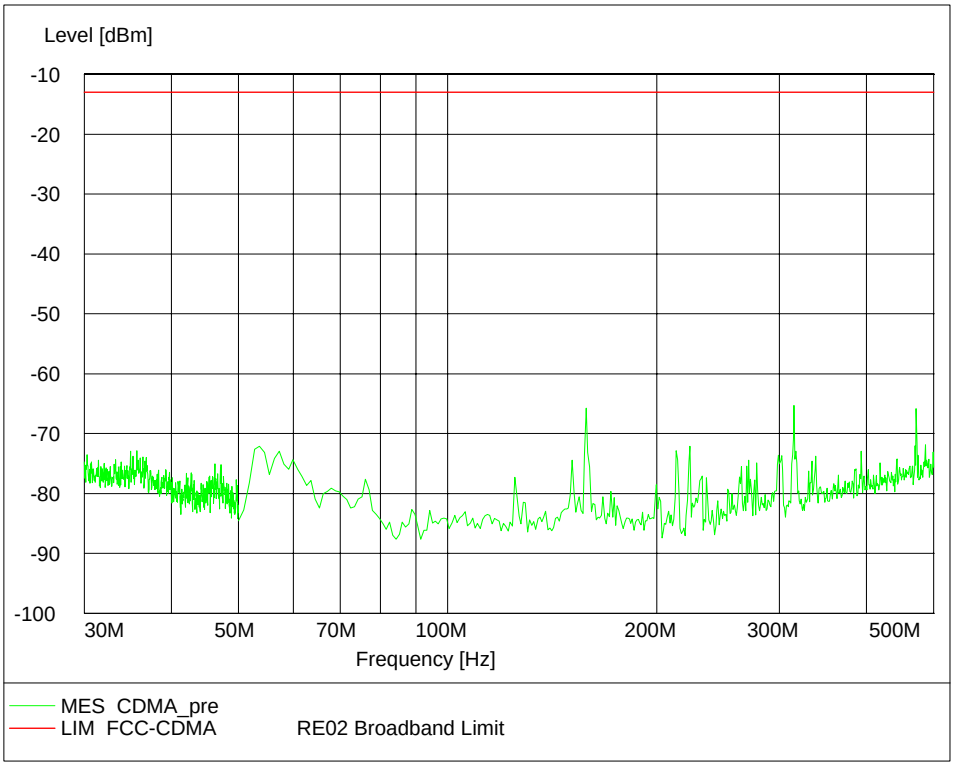


Channel 25, 1750MHz~3GHz

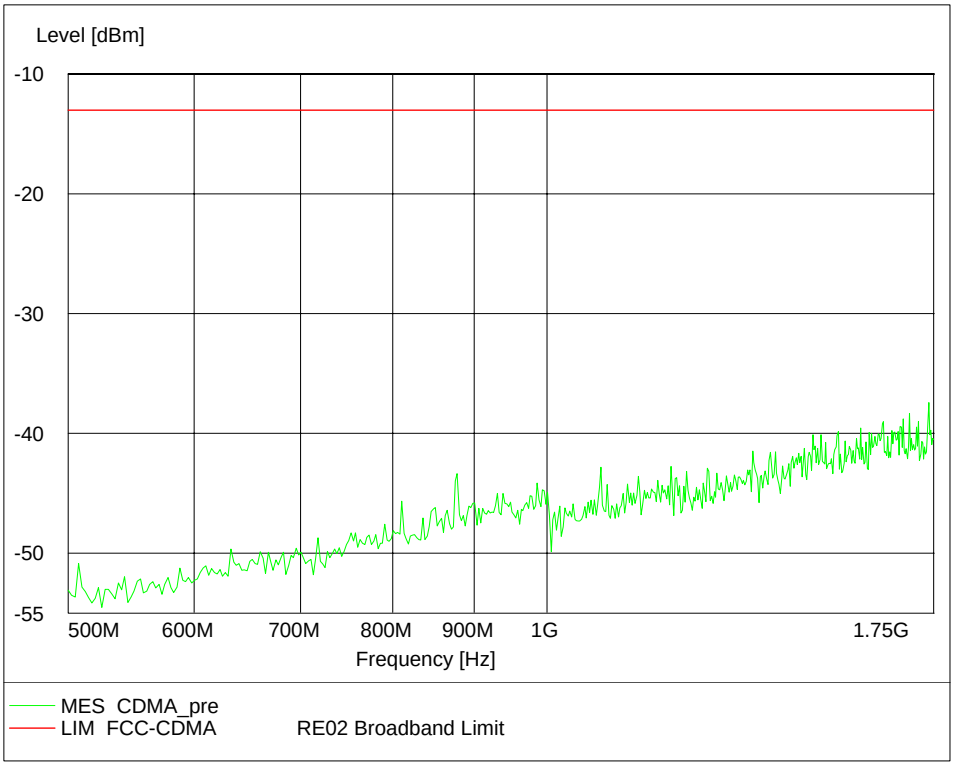
Note: The signal beyond the limit is carrier.



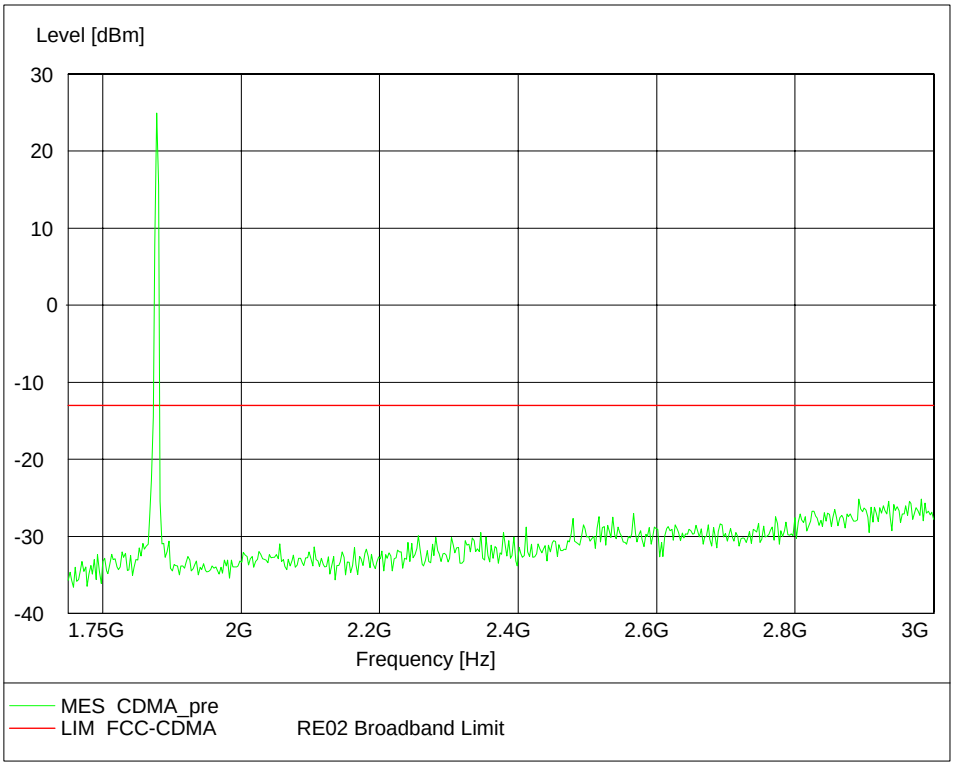
Channel 25, 3GHz~20GHz



Channel 600, 30MHz~500MHz

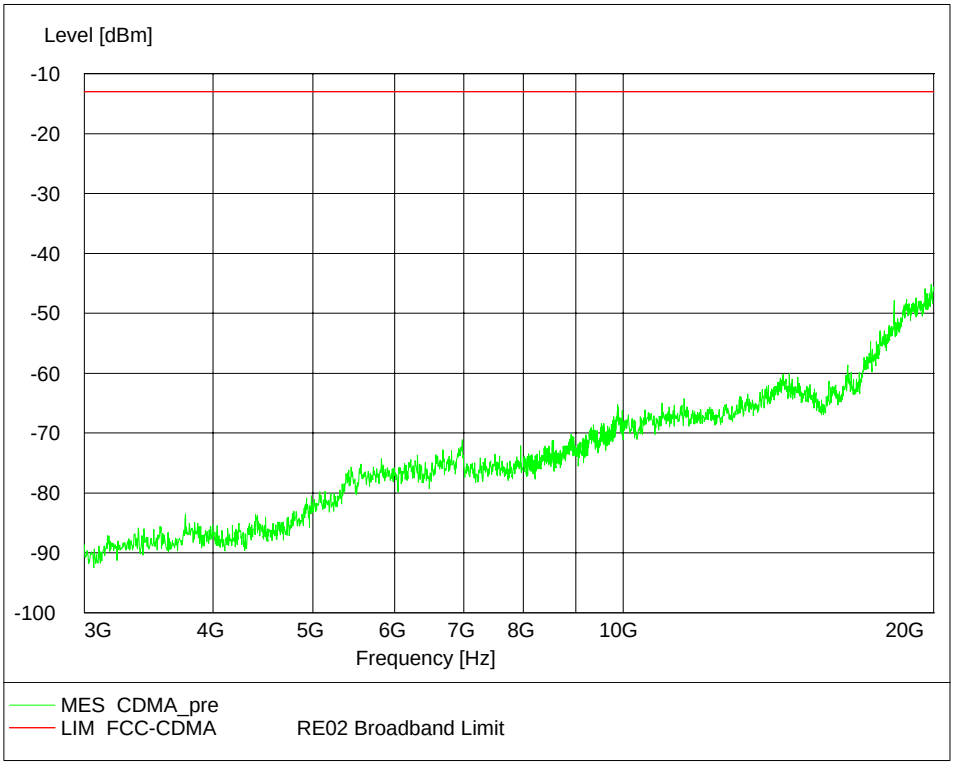


Channel 600, 500MHz~1750MHz

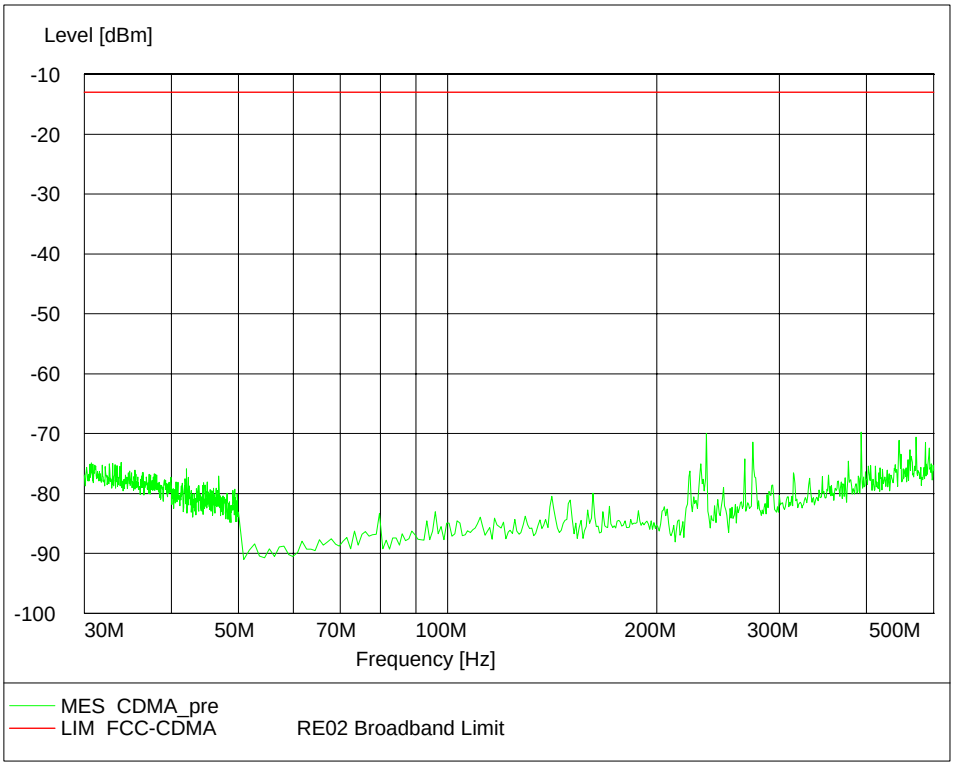


Channel 600, 1750MHz~3GHz

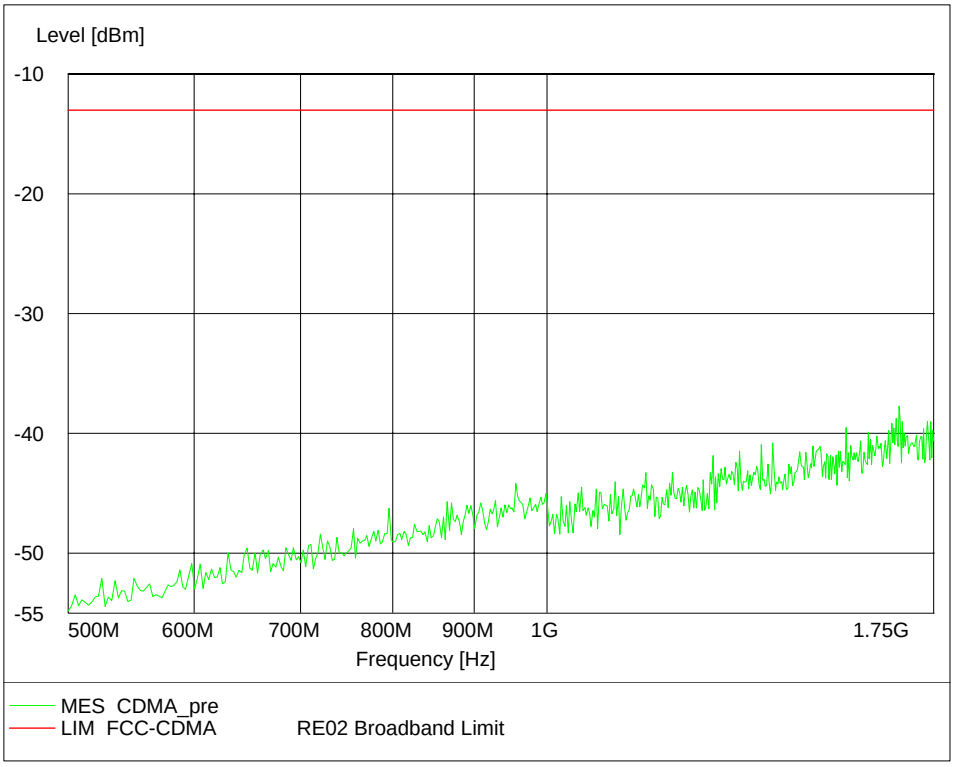
Note: The signal beyond the limit is carrier.



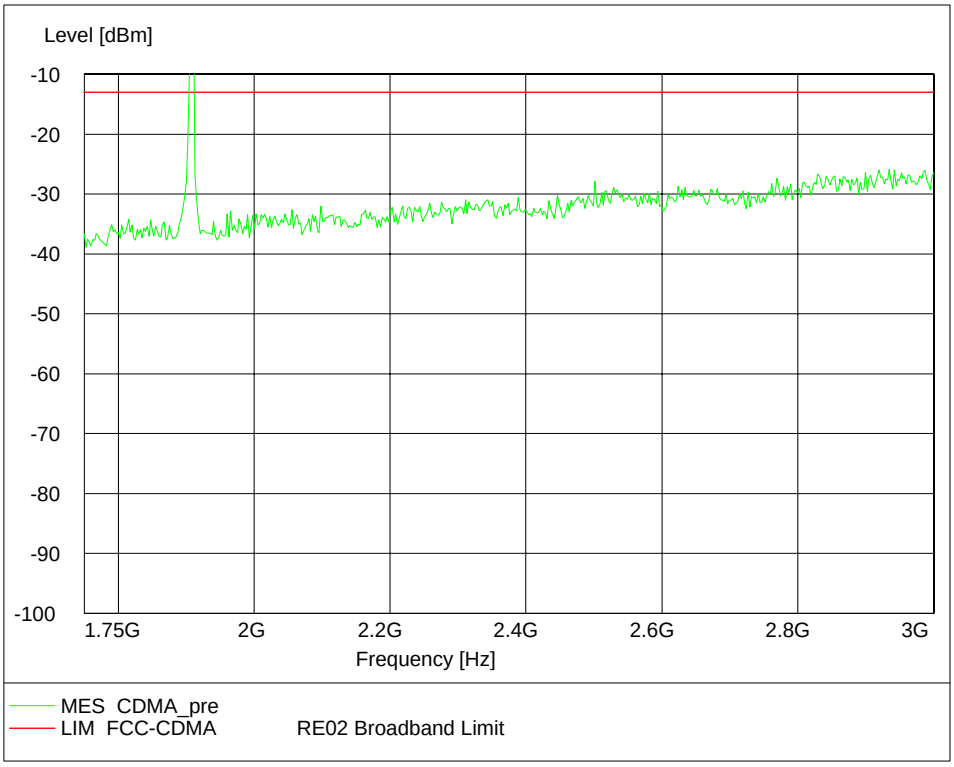
Channel 600, 3GHz~20GHz



Channel 1175, 30MHz~500MHz

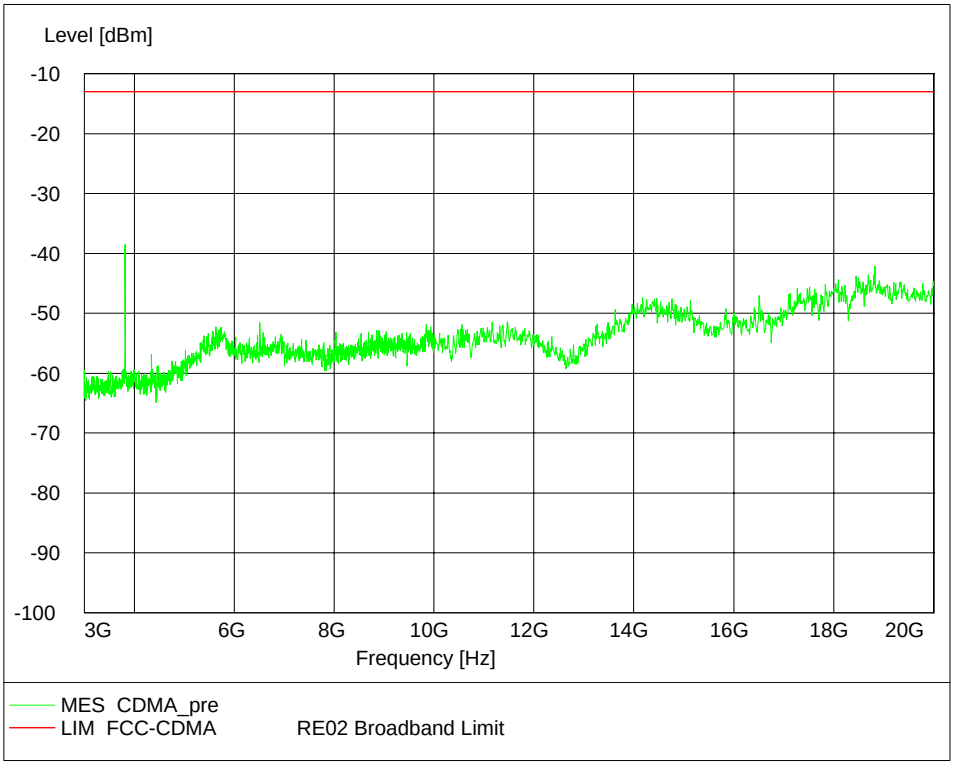


Channel 1175, 500MHz~1750MHz



Channel 1175, 1750MHz~3GHz

Note: The signal beyond the limit is carrier.



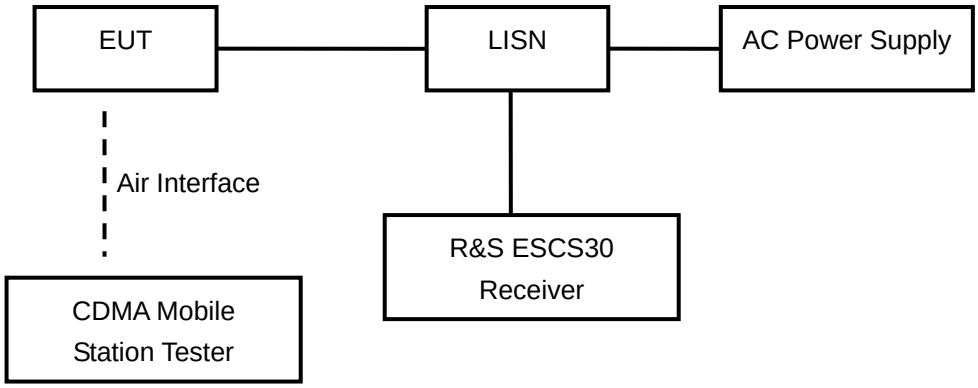
Channel 1175, 3GHz~20GHz

2.2.8 Conducted Emissions-FCC Part2.1057

Ambient condition:

Temperature	Relative humidity	Pressure
28°C	46%	102.5kPa

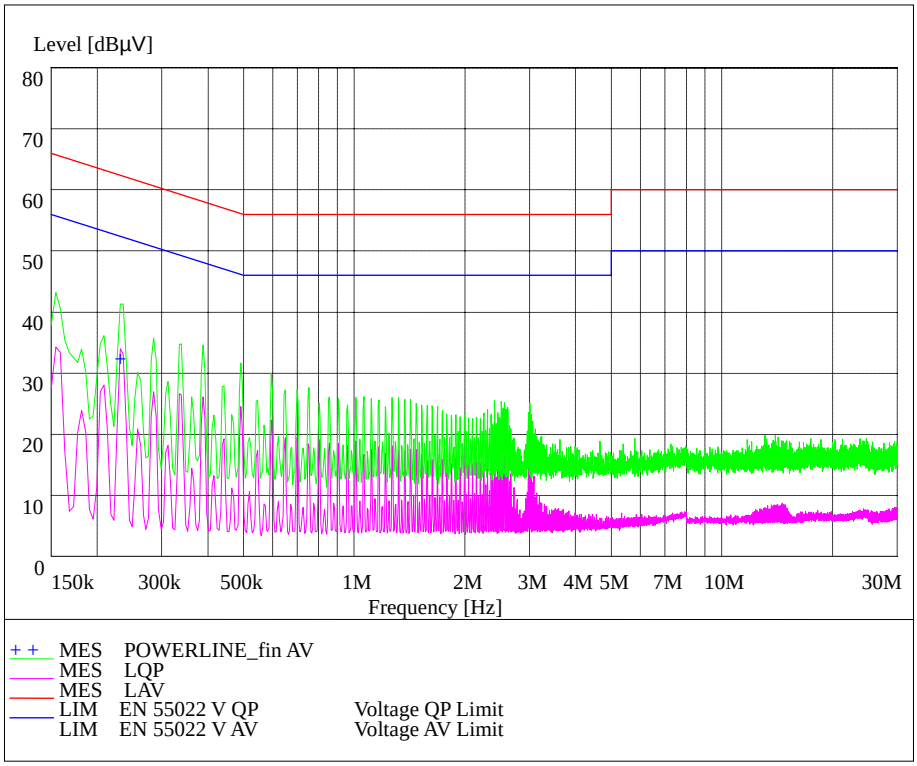
Test Setup:



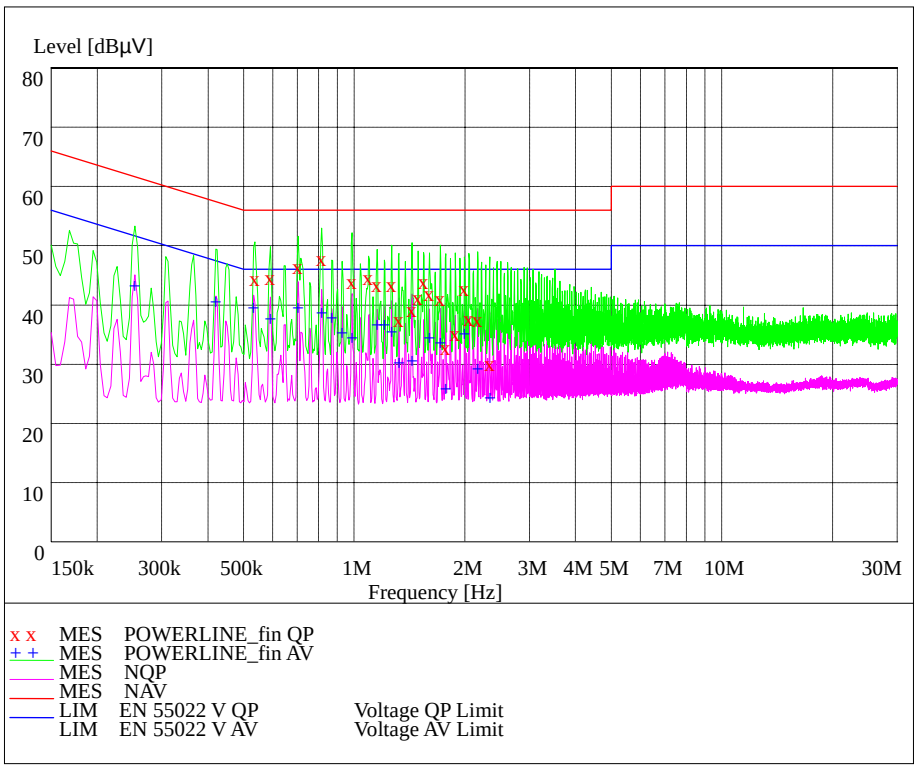
Test Procedure:

The EUT is placed on a non-matellic table 0.8m above the horizontal metal reference ground plane. The EUT is connected to LISN and LISN is connected to the reference ground. All other supplemental devices are connected with EUT through other LISN. The distance between EUT and LISN is 80cm. The measurement should be done both L line and N line. The receiver uses both average detector and qausi-peak detector. A radio link is established between EUT and the tester. The output power of the EUT is controlled by the tester and driven to maximum value.

Test result:
Refer to the following figures.


Level [dBµV]
80
70
60
50
40
30
20
10
0
150k
300k
500k
1M
2M
3M
4M
5M
7M
10M
30M
Frequency [Hz]
+ + MES POWERLINE_fin AV
MES LQP
MES LAV
LIM EN 55022 V QP Voltage QP Limit
LIM EN 55022 V AV Voltage AV Limit

L Line


Level [dBµV]
80
70
60
50
40
30
20
10
0
150k
300k
500k
1M
2M
3M
4M
5M
7M
10M
30M
Frequency [Hz]
x x MES POWERLINE_fin QP
+ + MES POWERLINE_fin AV
MES NQP
MES NAV
LIM EN 55022 V QP Voltage QP Limit
LIM EN 55022 V AV Voltage AV Limit

N Line

2.3. List of test equipments

No.	Name/Model	Manufacturer	S/N	Calibration Date
1	8960 E5515C Mobile Station Tester	Agilent	GB44050904	Mar. 2006
2	PSA E4440A Spectrum Analyzer	Agilent	MY41000183	Mar. 2006
5	66309B DC Power Supply	Agilent	MY43000461	Aug. 2006
6	1506A Power Splitter	Weinschel	MN154	Aug. 2006
7	9.080m×5.255m×3.525m Shielding room	FRANKONIA	-----	Aug. 2006
8	ESI 40 EMI test receiver	R&S	100015	Aug. 2006
9	SMR 20 Signal generator	R&S	100086	Aug. 2006
10	CMU 200 Radio tester	R&S	100313	Aug. 2006
11	12.65m*8.03m*7.50m Fully-Anechoic Chamber	FRANKONIA	-----	Aug. 2006
12	HL562 Ultra log test antenna	R&S	100016	Aug. 2006
13	ESH3-Z2 Pulse limiter	R&S	10002	Aug. 2006
14	ESH3-Z5 Attenuator	R&S	100020	Aug. 2006
15	ESH2Z11 LISN	R&S	50FH-020-10	Aug. 2006
16	CMU 200 Radio tester	R&S	100313	Aug. 2006
17	HF 906 Double-Ridged Waveguide Horn Antenna	R&S	100030	Aug. 2006
18	HF 906 Double-Ridged Waveguide Horn Antenna	R&S	100029	Aug. 2006
19	PS2000 Turn Table	FRANKONIA	-----	Aug. 2006
20	MA260 Antenna Master	FRANKONIA	-----	Aug. 2006
21	SH-241Climatic Chamber	ESPEC	92000389	Aug. 2006
22	E5515C Mobile Station Tester	Agilent	GB45071696	Aug. 2006
23	ES-K1EMI test software	R&S	-----	Aug. 2006
24	HL562 Receive antenna	R&S	100167	Aug. 2006

Appendix

Appendix1 Test Setup