



# FCC TEST REPORT

according to

## FCC Rules and Regulations Part 15 Subpart C

Applicant	:	Zhejiang Dahua Vision Technology Co., Ltd
		The 1st floor, building F, No.1199 Bin'an road,
Address	:	Changhe Street, Binjiang District, Hangzhou, P.R. China.
Equipment	:	High-Performance Narrow-beam Flat Radar
Model No.	:	DH-ITARD-024SA
FCC ID	:	SVNITARD-024SA
Brand name	:	

- The test result refers exclusively to the test presented test model / sample.,
- Without written approval of **Cerpass Technology (Suzhou) Co.,Ltd.** the test report shall not be reproduced except in full.
- The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Rules and Regulations Part 15. The test report has been issued separately.
- The test report must not be used by the clients to claim product certification approval by **NVLAP** or any agency of the Government.



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## History of this test report

■ ORIGINAL.

Additional attachment as following record:



# CERTIFICATE OF COMPLIANCE

according to

## FCC Rules and Regulations Part 15 Subpart C

Applicant : Zhejiang Dahua Vision Technology Co., Ltd  
The 1st floor, building F, No.1199 Bin'an road,  
Address : Changhe Street, Binjiang District, Hangzhou, P.R.  
China.

Equipment : High-Performance Narrow-beam Flat Radar

Model No. : DH-ITARD-024SA

FCC ID : SVNITARD-024SA

### I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4** The equipment was **passed** the test performed according to **FCC Rules and Regulations Part 15 Subpart C (2011)**.

The test was carried out on Mar 06, 2013 at **Cerpass Technology (Suzhou) Co.,Ltd**

Signature

Miro Chueh/ Technical director



## 1. Report of Measurements and Examinations

### 1.1 List of Measurements and Examinations

FCC Rule	Description of Test	Result
15.245(b)	. Field Strength of Fundamental Emissions	Pass
15.245(b)	. Field Strength of Radiated Emissions	Pass
15.207	. Conducted Emissions	Pass
15.245(b)	. Band Edges Measurement Data	Pass



## 2. Test Configuration of Equipment under Test

## 2.1 Feature of Equipment under Test

Frequency	24125MHz
Operating Temperature	-30°C to +70°C
Antenna type	Flat micro beam array antenna
Product	High-Performance Narrow-beam Flat Radar
Model Name	DH-ITARD-024SA

## 2.2 Carrier Frequency of Channels



### 2.3 Test Mode & Test Software

- a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4
- b. The complete test system included EUT for RF test.
- c. The EUT was executed to keep transmitting .
- d. The following test mode was performed for conduction and radiation test:
  - CH 1:24125MHz

### 2.4 Description of Test System

There is no supporting system during the test.



## 2.5 General Information of Test

Test Site:	Cerpass Technology (Suzhou) Co.,Ltd
Performand Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2
VCCI Registration Number :	T-343 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test below 1GHz G-227 for Radiated emission test above 1GHz

Laboratory accreditation



NEMKO



## 2.6 Measurement Uncertainty

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Conducted Emission	9 kHz ~ 30 MHz	LINE/NEUTRAL	±2.71 dB
Radiated Emission	30 MHz ~ 100GHz	Vertical	±4.11 dB
		Horizontal	±4.10 dB
Band Edges	---	---	±2.2 dB



### 3. Antenna Requirements

#### 3.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

#### 3.2 Antenna Construction and Directional Gain

Antenna type: Flat micro beam array antenna

Antenna Gain: 28 dBi



## 4. Test of Conducted Emission

### 4.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2009 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB $\mu$ V)	Average (dB $\mu$ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

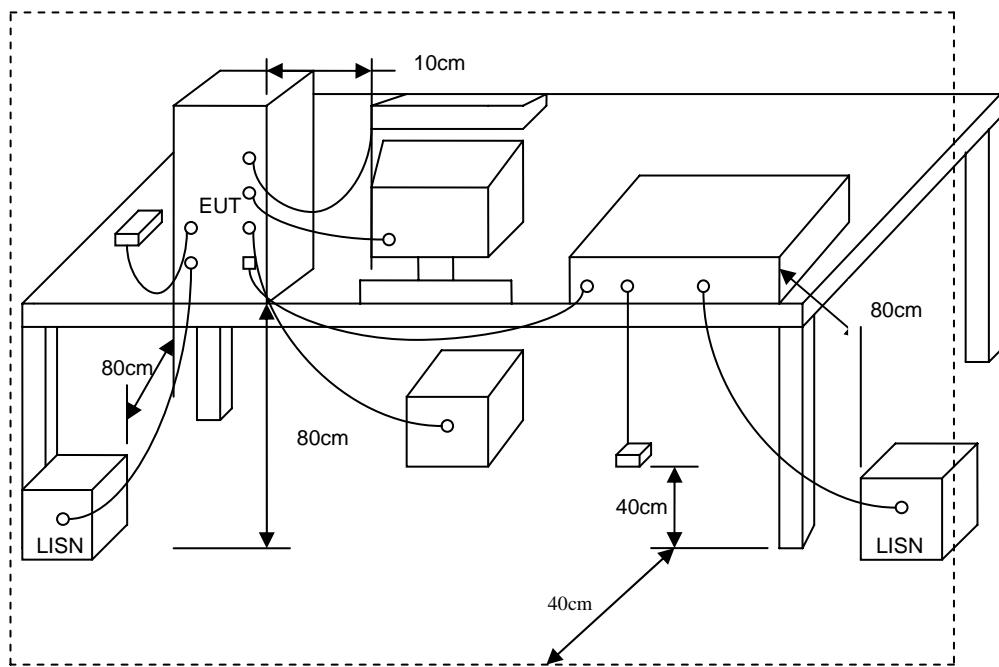
\*Decreases with the logarithm of the frequency.

### 4.2 Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connecting to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



### 4.3 Typical Test Setup



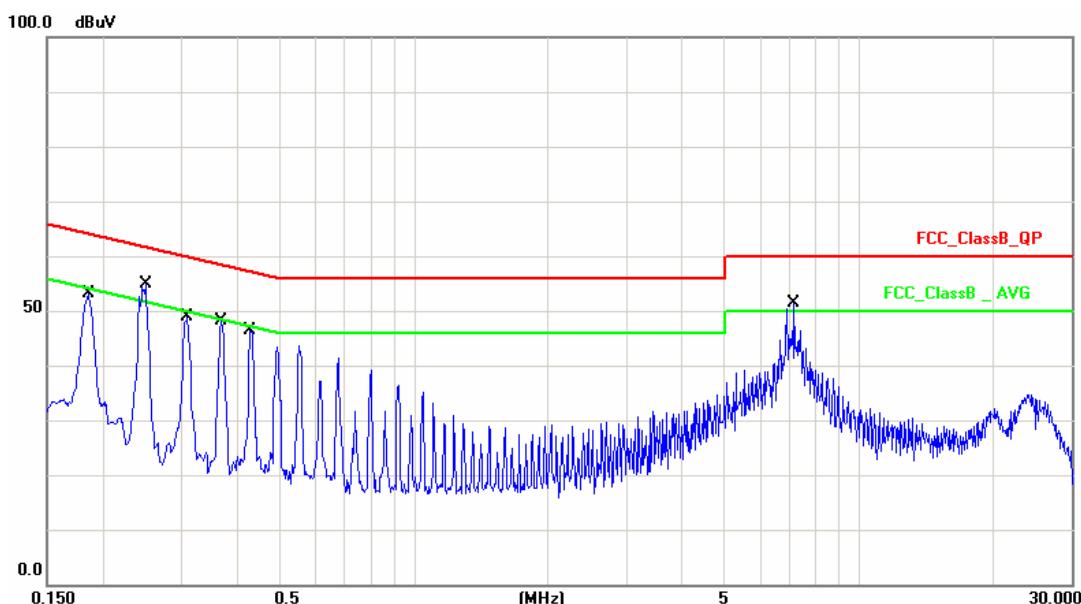
### 4.4 Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Test Receiver	R&S	ESCI	100565	2012.11.05	2013.11.04
ISN	FCC	FCC-TLISN-T2-02	20379	2012.12.08	2013.12.07
ISN	FCC	FCC-TLISN-T4-02	20380	2012.12.08	2013.12.07
ISN	FCC	FCC-TLISN-T8-02	20381	2012.12.08	2013.12.07



#### 4.5 Test Result and Data

Test Mode :	Normal link		
AC Power :	AC 120V/60Hz	Phase :	LINE
Temperature :	22°C	Humidity :	50%
Pressure(mbar) :	1002	Date:	2013/03/06

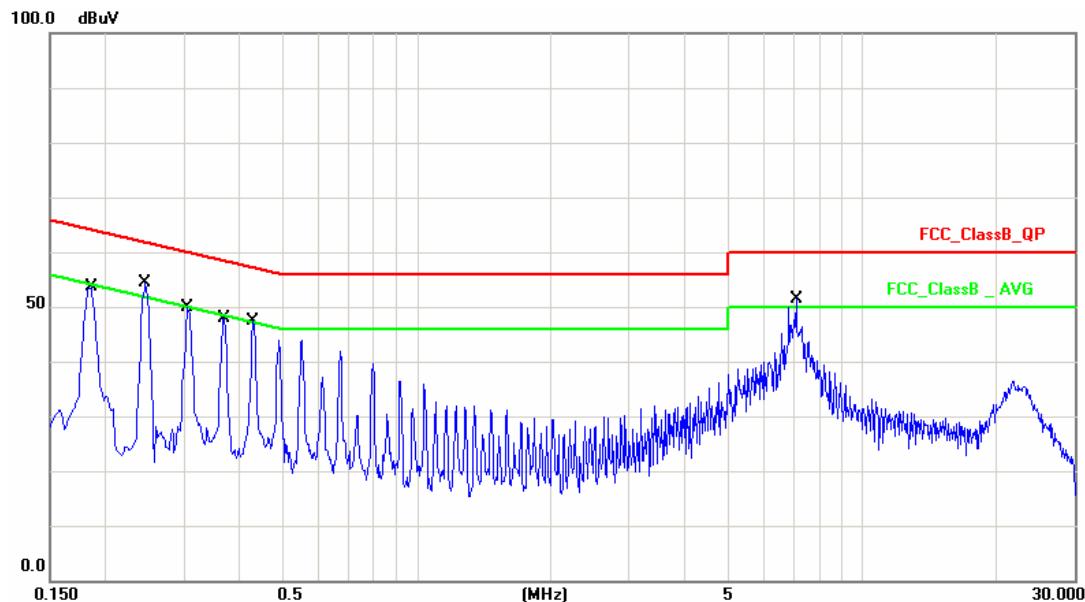


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1860	9.87	43.82	53.69	64.21	-10.52	QP
2	0.1860	9.87	40.27	50.14	54.21	-4.07	AVG
3	0.2460	9.87	46.36	56.23	61.89	-5.66	QP
4	0.2460	9.87	39.71	49.58	51.89	-2.31	AVG
5	0.3100	9.87	37.56	47.43	59.97	-12.54	QP
6	0.3100	9.87	37.20	47.07	49.97	-2.90	AVG
7	0.3700	9.86	38.84	48.70	58.50	-9.80	QP
8	0.3700	9.86	35.83	45.69	48.50	-2.81	AVG
9	0.4300	9.86	36.95	46.81	57.25	-10.44	QP
10	0.4300	9.86	34.49	44.35	47.25	-2.90	AVG
11	7.1460	9.73	27.15	36.88	60.00	-23.12	QP
12	7.1460	9.73	21.48	31.21	50.00	-18.79	AVG

Note: Measurement Level = Reading Level + Correct Factor



Test Mode :	Normal link		
AC Power :	AC 120V/60Hz	Phase :	NEUTRAL
Temperature :	22°C	Humidity :	50%
Pressure(mbar) :	1002	Date:	2013/03/06



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1860	9.87	41.93	51.80	64.21	-12.41	QP
2	0.1860	9.87	42.01	51.88	54.21	-2.33	AVG
3	0.2460	9.87	41.76	51.63	61.89	-10.26	QP
4	0.2460	9.87	40.06	49.93	51.89	-1.96	AVG
5	0.3060	9.87	38.62	48.49	60.08	-11.59	QP
6	0.3060	9.87	37.61	47.48	50.08	-2.60	AVG
7	0.3700	9.86	35.04	44.90	58.50	-13.60	QP
8	0.3700	9.86	35.10	44.96	48.50	-3.54	AVG
9	0.4300	9.86	35.26	45.12	57.25	-12.13	QP
10	0.4300	9.86	35.44	45.30	47.25	-1.95	AVG
11	7.1140	9.73	33.12	42.85	60.00	-17.15	QP
12	7.1140	9.73	27.23	36.96	50.00	-13.04	AVG

Note: Measurement Level = Reading Level + Correct Factor



## 5. Test of Radiated Emission and Field Strength

### 5.1 Test Limit

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

FREQUENCIES(MHz)	FIELD STRENGTH(microvolts/meter)	MEASUREMENT DISTANCE(meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

According to §15.245(b), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency(MHz)	Field strength of fundamental(millivolts/meter)	Field strength of harmonics(microvolts/meter)
902-928 MHz	500	1.6
2435-2465 MHz	500	1.6
5785-5815 MHz	500	1.6
10500-10550 MHz	2500	25.0
24075-24175 MHz	2500	25.0

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dB<sub>uV</sub>/m)=20 1og Emission level(uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

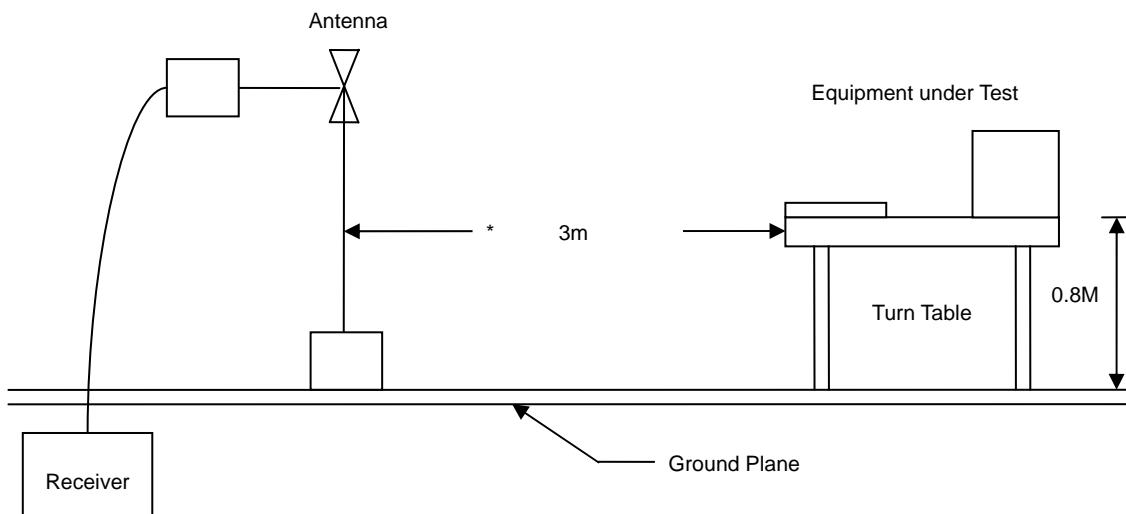


## 5.2 Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

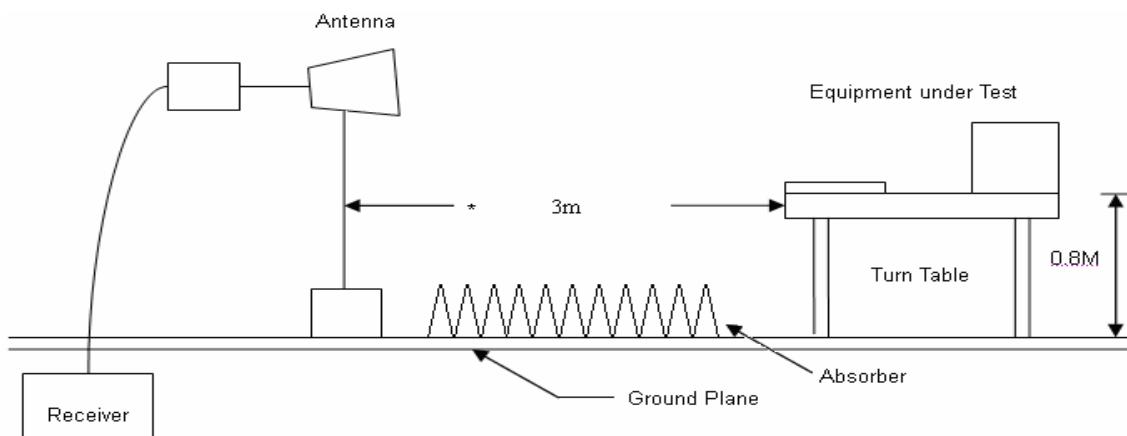
## 5.3 Typical Test Setup

Below 1GHz Test Setup





## Above 1GHz Test Setup



#### 5.4 Measurement equipment

Instrument	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	FSP40	R&S	100324	2013.03.10	2014.03.09
H64 Amplifier	8447F	HP	3113A05582	2013.03.10	2014.03.09
Preamplifier	8449B	Agilent	3008A02342	2013.03.10	2014.03.09
Ultra Broadband Antenna	HL562	R&S	100363	2013.05.03	2014.05.02
Broad-Band Horn Antenna	BBHA9120D	Schwarzbeck	9120D-619	2013.05.03	2014.05.02
Standard Horn Antenna	HO19R	Custom Microwave	U91113-A	2013.05.03	2014.05.02
Standard Horn Antenna	HO15R	Custom Microwave	V91113-A	2013.05.03	2014.05.02
Standard Horn Antenna	HO12R	Custom Microwave	E91113-A	2013.05.03	2014.05.02
Standard Horn Antenna	HO08R	Custom Microwave	F91113-A	2013.05.03	2014.05.02
Spectrum Analyzer	FSP40	R&S	100324	2013.03.10	2014.03.09
Temperature/ Humidity Meter	ZC1-11	Zhicheng	CEP-TH-002	2013.03.10	2014.03.09



## 5.5 Test Result and Data

The 9kHz-30MHz spurious emission is under limit 20dB more.

### 5.5.1 Test Result and Data of Transmitter

Site : EMC Lab AC 102	Time : 2013-03-06
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Test mode: normal link	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V/60Hz	

Under 1G

Freq. (MHz)	Ant.Pol. H/V	Reading (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
39.70	V	41.98	-6.36	35.62	40.00	-4.38	QP
53.28	V	47.10	-13.84	33.26	40.00	-6.74	QP
527.61	V	46.34	-4.22	42.12	46.00	-3.88	QP
600.36	V	42.70	-2.64	40.06	46.00	-5.94	QP
834.13	V	36.11	1.74	37.85	46.00	-8.15	QP
900.09	V	40.55	3.04	43.59	46.00	-2.41	QP
39.70	H	36.61	-6.36	30.25	40.00	-9.75	QP
527.61	H	47.80	-4.22	43.58	46.00	-2.42	QP
600.36	H	41.23	-2.64	38.59	46.00	-7.41	QP
640.13	H	40.78	-1.80	38.98	46.00	-7.02	QP
691.54	H	40.56	-0.71	39.85	46.00	-6.15	QP
900.09	H	40.61	3.04	43.65	46.00	-2.35	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



Site : EMC Lab AC 102	Time : 2013-7-4
Limit : FCC_CLASS_B	Margin : 6
Test mode: Transmit by 24125MHz	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V/60Hz	

1GHz-40GHz

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1049.88	V	48.82	46.06	-12.04	36.78	34.02	80.00	60.00	-25.98	average
23999.03	V	45.11	40.33	14.55	59.66	54.88	103.50	83.50	-28.62	average
24150.70	V	95.58	94.61	14.77	110.35	109.38	154.00	134.00	-24.62	average
29653.09	V	47.74	33.76	9.57	57.31	43.33	103.50	83.50	-40.17	average
1049.88	H	51.81	48.26	-12.04	39.77	36.22	80.00	60.00	-23.78	average
23999.03	H	43.94	36.95	14.55	58.49	51.50	103.50	83.50	-32.00	average
24150.71	H	74.60	74.67	14.77	89.37	89.44	154.00	134.00	-44.56	average
29653.10	H	44.80	32.31	9.57	54.37	41.88	103.50	83.50	-41.62	average

40GHz-100GHz

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	RX Antenna Gain(dBi)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
49105.00	V	-53.14	-54.44	24.00	76.12	74.84	103.50	83.50	-8.74	average
74460.00	H	51.81	-54.36	24.00	79.29	78.40	103.50	83.50	-5.16	average



Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.



## 6. Band Edges Measurement

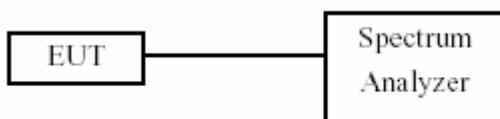
### 6.1 Test Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

### 6.2 Test Procedure

- a. The transmitter output was connected to the spectrum analyzer via a low loss cable.
- b. Set both RBW and VBW of spectrum analyzer to 100 KHz with convenient frequency span including 100 KHz bandwidth from band edge.
- c. The band edges was measured and recorded.

### 6.3 Test Setup Layout



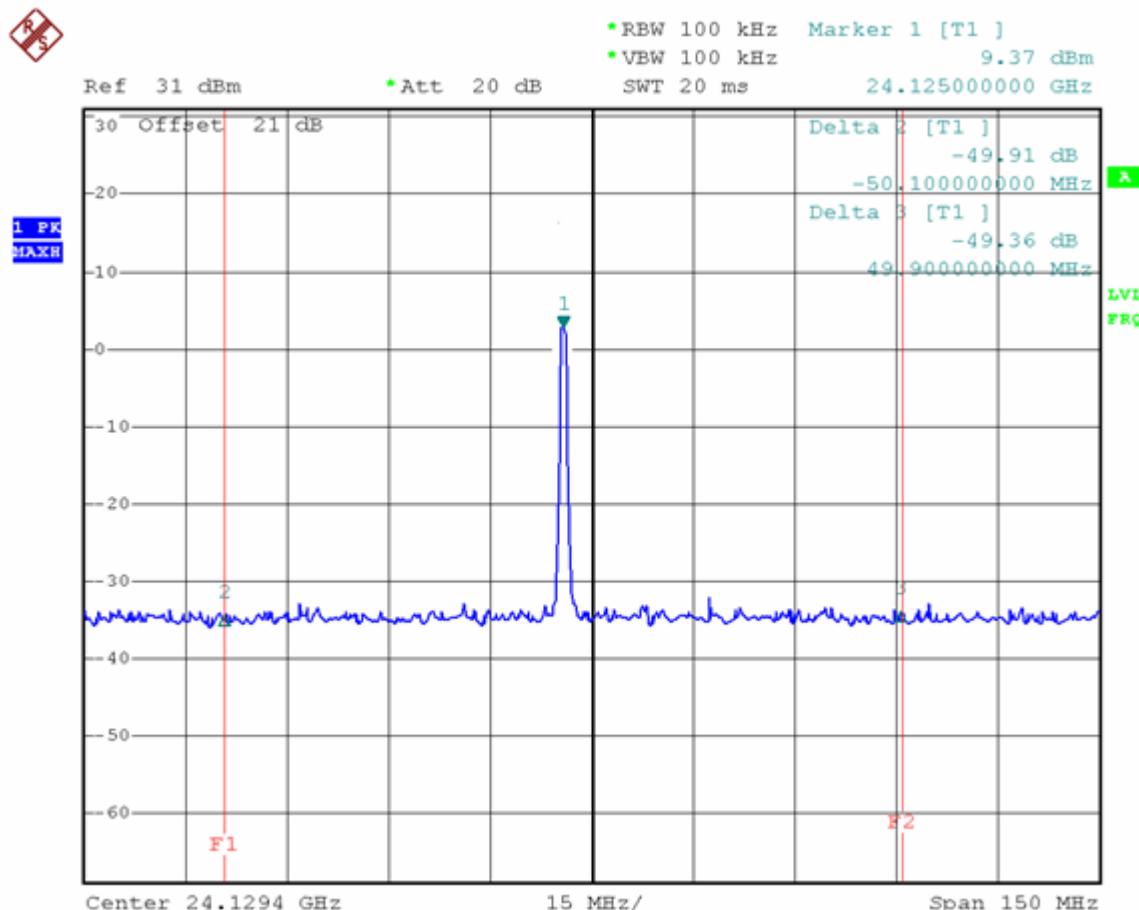
### 6.4 List of Measuring Equipment Used

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	FSP40	R&S	100324	2013.03.10	2014.03.09



## 6.5 Restrict band emission Measurement Data

Test Date : 2013-3-22  
Temperature : 23°C  
Humidity : 65%  
Atmospheric Pressure : 1020 hPa

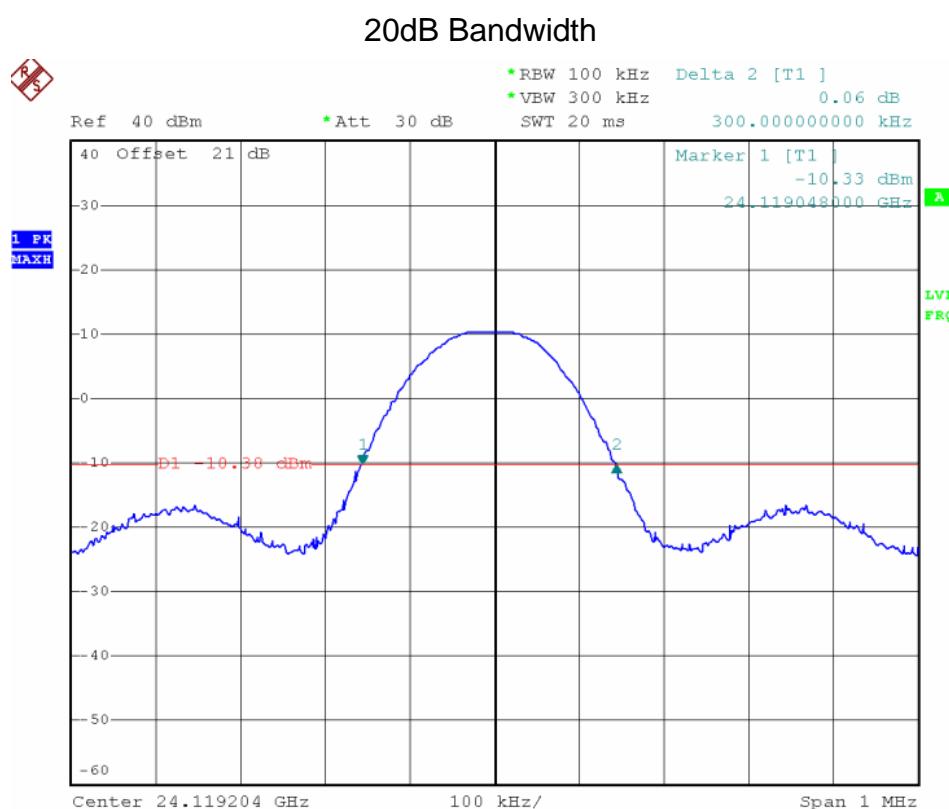




## 6.6 -20dB and 99% occupied Bandwidth

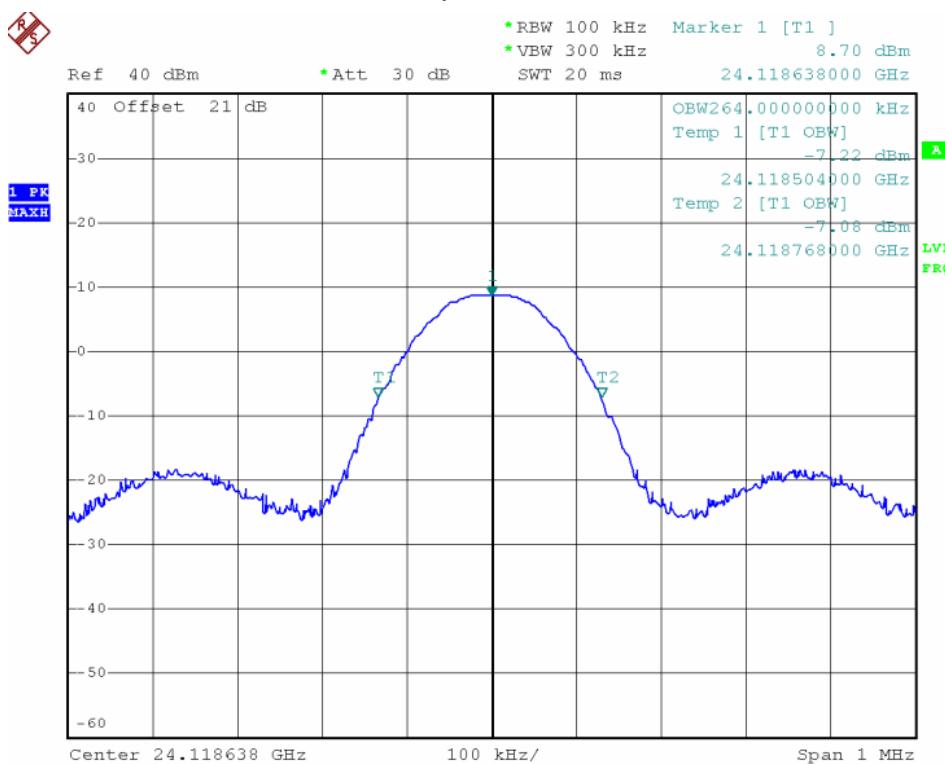
Test Date : 2013-7-26  
Temperature : 23°C  
Humidity : 65%  
Atmospheric Pressure : 1020 hPa

20dB Bandwidth (KHz)	99% occupied Bandwidth (KHz)
300KHz	264KHz





## 99% occupied Bandwidth





## 7. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

\*\*: Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

### 7.1 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.