



TEST REPORT

according to

FCC Rules and Regulations Part 15 Subpart C

Applicant	: Zhejiang Dahua Vision Technology Co., Ltd.
Address	: The 1 st floor, building F, No.1199 Bin'an road, Changhe Street, Binjiang District, Hangzhou, P.R. China.
Manufacturer	: Zhejiang Dahua Vision Technology Co., Ltd.
Address	: The 1 st floor, building F, No.1199 Bin'an road, Changhe Street, Binjiang District, Hangzhou, P.R. China.
Equipment	: Remote Control
Model No.	: DH-CE-RC 、PR1
FCC ID	: SVNDHCERC

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CERTIFICATE OF COMPLIANCE

According to

FCC Rules and Regulations Part 15 Subpart C

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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 (2010)**.

The test was carried out on Dec. 08~Dec.17, 2014 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 Rules and Regulations Part 15 Subpart C		
Normative References	Test Parameter	Test Performed
15.207	. Conducted Emission	Pass
15.209	. Radiated Emission	Pass
15.215	. 20dB Bandwidth Measurement	Pass
15.249	. Band Edges Measurement Data	Pass



2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

Modle No.	LSD4RF379-02D0
Carrier Frequency	2440MHz
EUT Power Ratings	I/P: 100-240V~, 50/60Hz, 50W
Antenna Specification	Antenna name: GKZS-AD3115B Antenna type: internal antenna PIFA Antenna 5.37 dBi
Modulation technology	GFSK

Note: For more details, please refer to the User's manual of the EUT.

2.2 Test Mode & Test Software

- During testing, the interface cables and equipment positions were varied according to ANSI C63.4
- The complete test system included EUT for RF test.
- Adjust the EUT at the test mode and the test channel. Then test. .
- The following test mode was performed for conduction and radiation test:



2.3 General Information of Test

Test Site:	Cerpass Technology (Suzhou) Co., Ltd
Performed 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

2.4 Measurement Uncertainty

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Conducted Emission	9 kHz ~ 30 MHz	LINE/NEUTRAL	± 2.71 dB
Radiated Emission	30 MHz ~ 25GHz	Vertical	± 4.11 dB
		Horizontal	± 4.10 dB
Occupied Bandwidth	---	---	± 7500 Hz
Maximum Peak Output Power	---	---	± 1.4 dB
Band Edges	---	---	± 2.2 dB
Power Spectral Density	---	---	± 2.2 dB



3. Test of Conducted Emission

3.1 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 μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

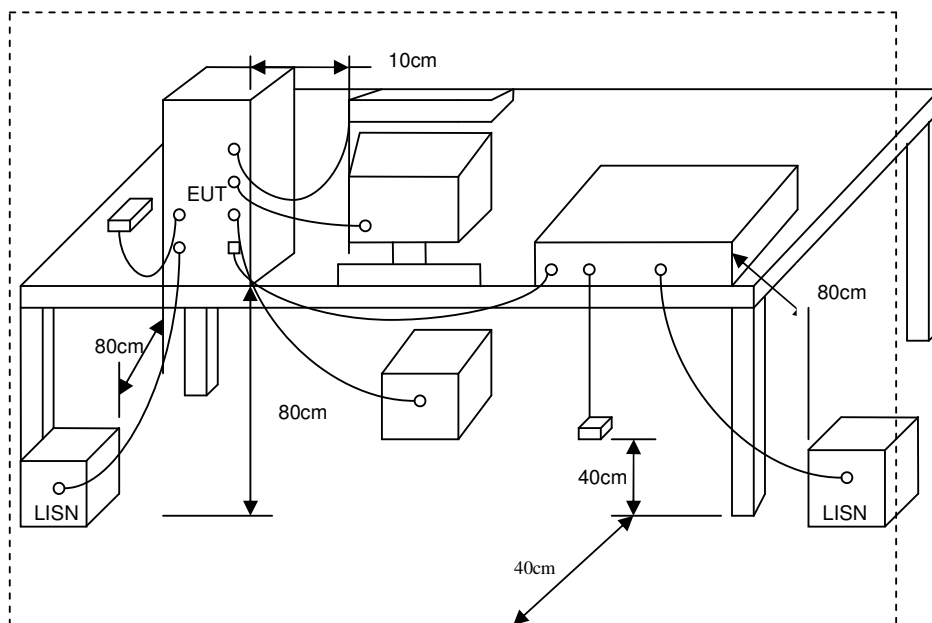
*Decreases with the logarithm of the frequency.

3.2 Test Procedures

- 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.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



3.3 Typical Test Setup



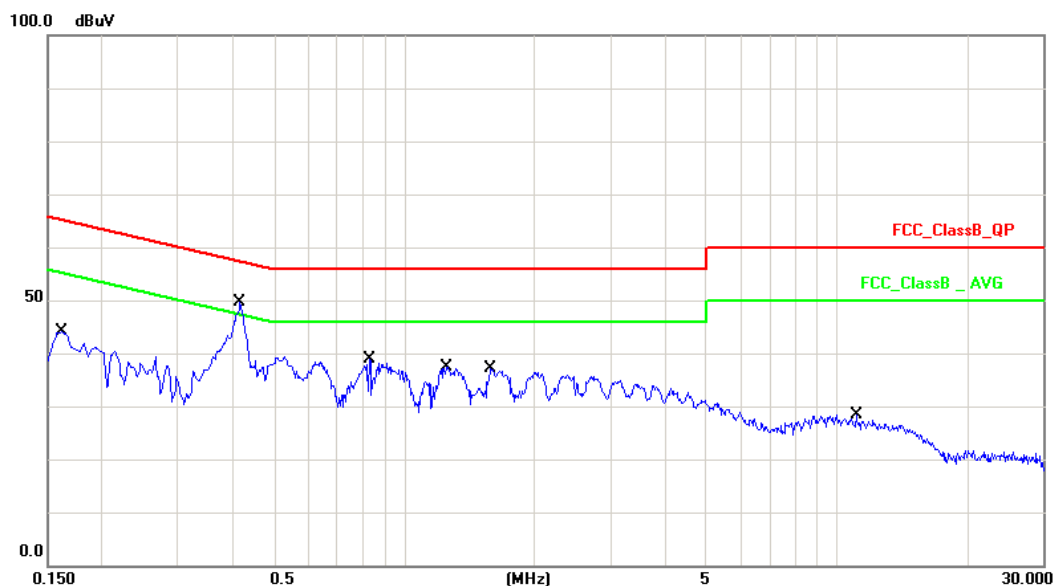
3.4 Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Test Receiver	R&S	ESCI	100565	2014.03.24	2015.03.23
AMN	R&S	ESH2-Z5	100182	2014.09.04	2015.09.03
Two-Line V-Network	R&S	ENV216	100325	2014.12.04	2015.12.03
ISN	FCC	FCC-TLISN-T2-02	20379	2014.03.24	2015.03.23
ISN	FCC	FCC-TLISN-T4-02	20380	2014.03.24	2015.03.23
ISN	FCC	FCC-TLISN-T8-02	20381	2014.03.24	2015.03.23
ISN	TESEQ	ISN ST08	30175	2014.03.24	2015.03.23
Current Probe	R&S	EZ-17	100303	2014.04.04	2015.04.03
Passive Voltage Probe	R&S	ESH2-Z3	100026	2014.03.24	2015.03.23
Pulse Limiter	R&S	ESH3-Z2	100529	2014.03.24	2015.03.23
Temperature/Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2014.03.31	2015.03.30



3.5 Test Result and Data

Test Mode :	Mode 1: Normal Operation		
AC Power :	AC 120V/60Hz	Phase :	LINE
Equipment :		Model No :	LSD4RF379-02D0
Temperature :	26°C	Humidity :	60%
Pressure(mbar) :	1002	Date :	2014/12/17

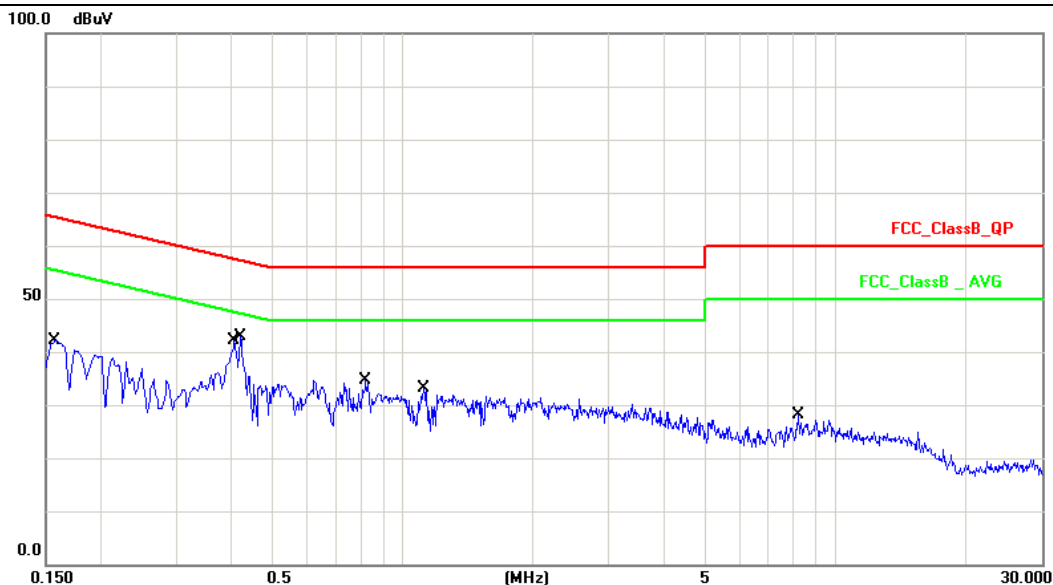


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1620	10.13	31.26	41.39	65.36	-23.97	QP
2	0.1620	10.13	18.22	28.35	55.36	-27.01	AVG
3	0.4180	10.15	36.61	46.76	57.49	-10.73	QP
4	0.4180	10.15	27.95	38.10	47.49	-9.39	AVG
5	0.8340	10.15	25.96	36.11	56.00	-19.89	QP
6	0.8340	10.15	14.29	24.44	46.00	-21.56	AVG
7	1.2620	10.16	25.34	35.50	56.00	-20.50	QP
8	1.2620	10.16	17.48	27.64	46.00	-18.36	AVG
9	1.5900	10.17	24.24	34.41	56.00	-21.59	QP
10	1.5900	10.17	16.40	26.57	46.00	-19.43	AVG
11	11.1220	10.31	12.68	22.99	60.00	-37.01	QP
12	11.1220	10.31	4.72	15.03	50.00	-34.97	AVG

Note: Measurement Level = Reading Level + Correct Factor



Test Mode :	Mode 1: Normal Operation		
AC Power :	AC 120V/60Hz	Phase :	NEUTRAL
Equipment :		Model No :	LSD4RF379-02D0
Temperature :	26°C	Humidity :	60%
Pressure(mbar) :	1002	Date :	2014/12/17



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1580	10.13	30.11	40.24	65.56	-25.32	QP
2	0.1580	10.13	14.03	24.16	55.56	-31.40	AVG
3	0.4100	10.15	28.83	38.98	57.65	-18.67	QP
4	0.4100	10.15	17.17	27.32	47.65	-20.33	AVG
5	0.4220	10.15	28.41	38.56	57.41	-18.85	QP
6	0.4220	10.15	15.09	25.24	47.41	-22.17	AVG
7	0.8220	10.16	18.06	28.22	56.00	-27.78	QP
8	0.8220	10.16	7.62	17.78	46.00	-28.22	AVG
9	1.1220	10.18	15.31	25.49	56.00	-30.51	QP
10	1.1220	10.18	5.41	15.59	46.00	-30.41	AVG
11	8.2260	10.26	9.09	19.35	60.00	-40.65	QP
12	8.2260	10.26	3.22	13.48	50.00	-36.52	AVG

Note: Measurement Level = Reading Level + Correct Factor

Test engineer: Dean



4. Test of Radiated Emission

4.1 Test Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

A. FCC Part 15 Subpart C Paragraph 15.249(a) Limit

Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)
902~928	50mV/m (94dB μ V/m)	500 μ V/m (54dB μ V/m)	3
2400~2483.5	50mV/m (94dB μ V/m)	500 μ V/m (54dB μ V/m)	3
5725~5875	50mV/m (94dB μ V/m)	500 μ V/m (54dB μ V/m)	3

Note: 1. RF Field Strength (dBuV) = 20 log RF Voltage (μ V)

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

B. Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency range (MHz)	Field Strength		Field Strength Limitation at 3m Measurement Dist	
	μ V/m	Dist	(μ V/m)	(dBuV/m)
0.009 - 0.490	2400/F(KHz)	300m	10000* 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 - 1.705	2400/F(KHz)	30m	100* 2400/F(KHz)	20log 2400/F(KHz) + 40
1.705 - 30.00	30	30m	100*30	20log 30 + 40
30.0 - 88.0	100	3m	100	20log 100
88.0 - 216.0	150	3m	150	20log 150
216.0 - 960.0	200	3m	200	20log 200
Above 960.0	500	3m	500	20log 500

Note: 1. RF Voltage (dBuV) = 20 log RF Voltage (μ V)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

4. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz. As to 1G-40G, the final emission level got using PK and AV detector.

5. Alternative switch power supply board provided to the EUT. After pre-scan, the worse case was recorded.



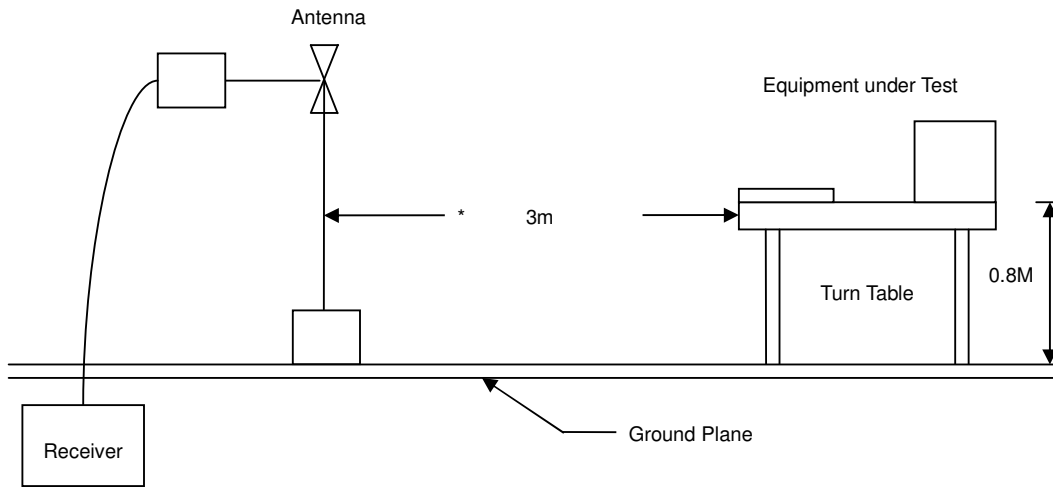
4.2 Test Procedures

- 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.

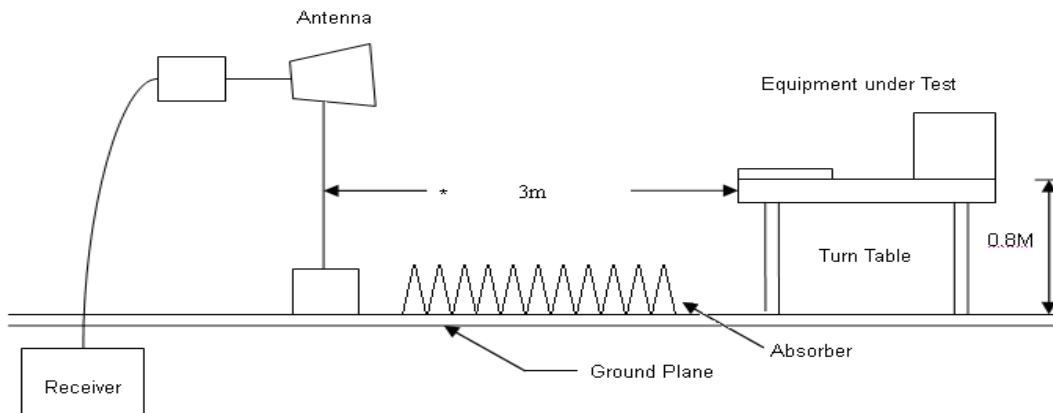


4.3 Typical Test Setup

Below 1GHz Test Setup



Above 1GHz Test Setup



**4.4 Measurement equipment**

Instrument	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
EMI Test Receiver	R&S	ESCI	100563	2014.02.10	2015.02.09
H64 Preamplifier	HP	8447F	3113A05582	2014.03.24	2015.03.23
Preamplifier	Agilent	8449B	3008A02342	2014.03.24	2015.03.23
Ultra Broadband Antenna	R&S	HL562	100362	2014.08.05	2015.08.04
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2014.05.24	2015.05.23
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	9170-348	2014.11.04	2015.11.03
Spectrum Analyzer	R&S	FSP40	100324	2014.03.23	2015.03.24
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-002	2014.03.31	2015.03.30



4.5 Test Result and Data

A . Fundamental & Harmonics Radiated Emission Data

Test Date : 2014-12-15
Temperature : 23°C
Humidity : 65%
Atmospheric Pressure : 1020 hPa

Fundamental Frequency: 2440 MHz

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2440.000	-3.82	102.38	98.56	-15.44	114.000	PEAK
2	2440.000	-3.82	88.32	84.50	-9.5	94.000	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2440.000	-3.82	93.89	90.07	-23.93	114.000	PEAK
2	2440.000	-3.82	86.29	82.47	-11.53	94.000	AVG

**B. General Radiated Emission Data****Transmitter****Under 1GHz**

Site : EMC Lab AC 102	Time : 2014-12-15
Limit : FCC_CLASS_B_03M_QP	
Test mode: Normal link	Probe : VERTICAL/ HORIZONTAL

Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
48.4299	-19.16	36.36	17.20	40.00	-22.80	V	QP
198.7800	-19.14	26.65	7.51	43.50	-35.99	V	QP
408.3000	-16.09	26.35	10.26	46.00	-35.74	V	QP
665.3500	-11.06	26.51	15.45	46.00	-30.55	V	QP
110.5100	-20.32	30.12	9.80	43.50	-33.70	H	QP
288.0199	-19.03	29.09	10.06	46.00	-35.94	H	QP
473.2900	-14.13	28.23	14.10	46.00	-31.90	H	QP
670.2000	-11.09	28.19	17.10	46.00	-28.90	H	QP

Note:

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

**Above 1GHz**

Site : EMC Lab AC 102	Time : 2014-12-15
Limit : FCC_CLASS_B_03M_QP	
Test mode: Transmit by 2412MHz	Probe : VERTICAL/ HORIZONTAL

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Antenna Pole (V/H)
1	4879.000	4.07	52.36	56.43	-17.57	74	PEAK	H
2	4879.000	4.07	46.94	51.01	-2.99	54	AVG	H
1	4879.000	4.07	50.08	54.15	-19.85	74	PEAK	V
2	4879.000	4.07	47.29	51.36	-2.64	54	AVG	V

Note:

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



5. 20dB Bandwidth Measurement Data

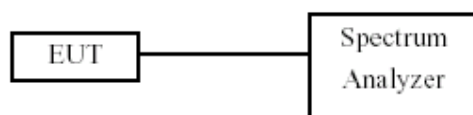
5.1 Test Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

5.2 Test Procedures

- The transmitter output was connected to the spectrum analyzer.
- Set RBW of spectrum analyzer to 100 KHz and VBW to 300 KHz.
- The 20 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.

5.3 Test Setup Layout

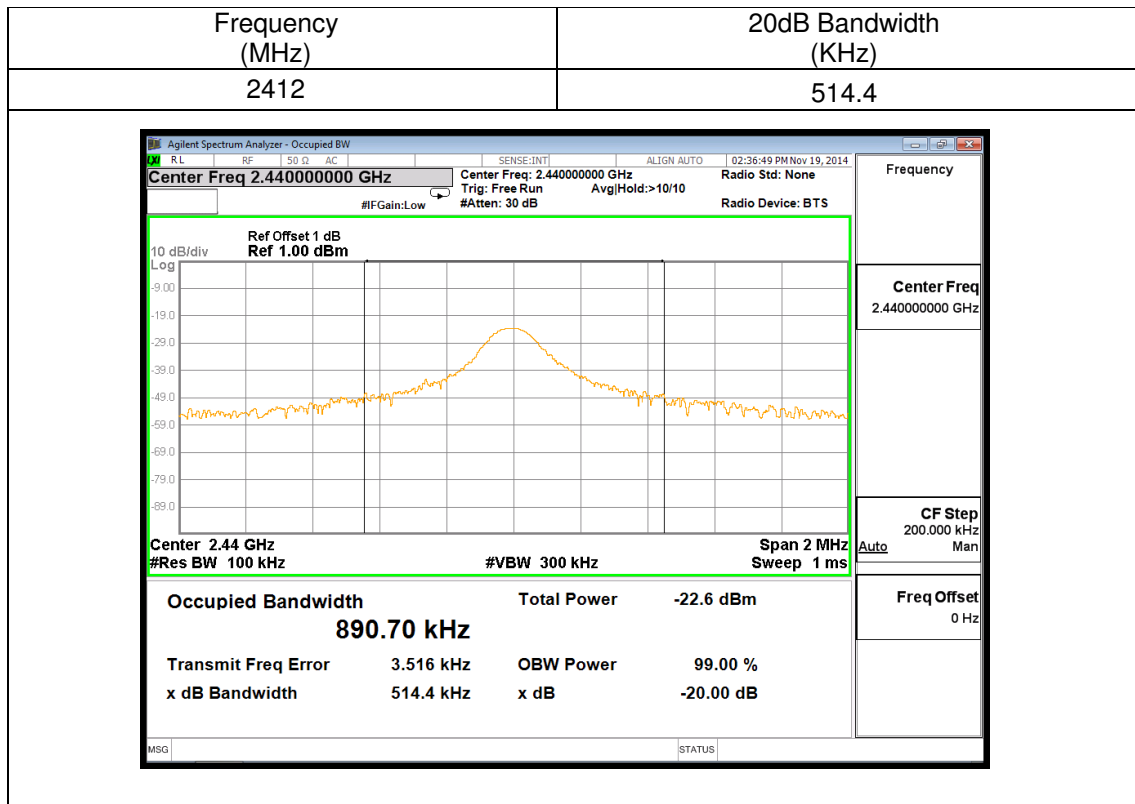


5.4 Measurement equipment

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	FSP40	R&S	100324	2014.03.23	2015.03.24



5.5 Test Result and Data





6. Band Edges Measurement

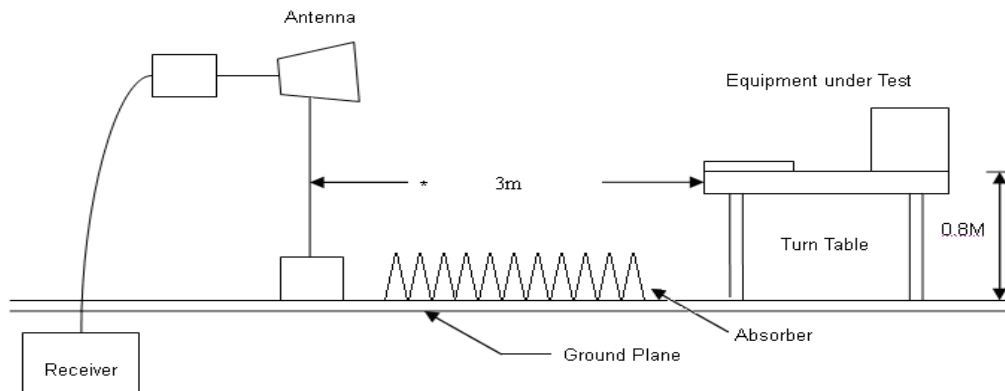
6.1 Test Limit

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

6.2 Test Procedure

- 1.The EUT is placed on a turntable, which is 0.8m above the ground plane.
- 2.The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3.EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4.Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - (a)PEAK: RBW=VBW=1MHz / Sweep=AUTO
 - (b)AVERAGE: RBW=1MHz / VBW=510Hz / Sweep=AUTO
- 5.Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

6.3 Test Setup Layout





6.4 List of Measuring Equipment Used

Instrument	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
EMI Test Receiver	ESCI	R&S	101183	2014.02.10	2015.02.09
H64 Amplifier	8447F	HP	3113A05582	2014.03.24	2015.03.23
Preamplifier	8449B	Agilent	3008A02342	2014.03.24	2015.03.23
Ultra Broadband Antenna	HL562	R&S	100363	2014.08.05	2015.08.04
Broad-Band Horn Antenna	BBHA9120D	Schwarzbeck	9120D-619	2014.05.24	2015.05.23
Spectrum Analyzer	FSP40	R&S	100324	2014.03.23	2015.03.24
Temperature/ Humidity Meter	ZC1-11	Zhicheng	CEP-TH-002	2014.03.31	2015.03.30

6.5 Restrict band emission Measurement Data

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2400.000	-4.18	47.37	43.19	-30.81	74	PEAK
2	2400.000	-4.18	46.14	41.96	-12.04	54	AVG
3	2483.500	-4.12	43.72	39.6	-34.4	74	PEAK
4	2483.500	-4.12	42.35	38.23	-15.77	54	AVG

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2400.000	-4.18	38.42	34.24	-39.76	74	PEAK
2	2400.000	-4.18	37.07	32.89	-21.11	54	AVG
3	2483.500	-4.12	39.61	35.49	-38.51	74	PEAK
4	2483.500	-4.12	37.68	33.56	-20.44	54	AVG



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.