Radio Test Report

FCC ID: TZ8PKG-RSE3
IC: 6385A-PKG-RSE3

This report concerns (check one): ■ **Original Grant** □ **Class II Change**

Issued Date	:	Oct. 29, 2013
Project No.	:	1309C280
Equipment	:	DVD ENTERTAINMENT SYSTEM
Model Name	:	PKG-RSE3DVD
Applicant	:	Evervictory Electronic Company Limited
Address	:	Chu Chi Management District, Hu Men Town, Dong-Guan City, Guang-Dong Province, P.R. China

Tested by: Neutron Engineering Inc. EMC Laboratory
Date of Receipt: Oct. 08, 2013
Date of Test: Oct. 08, 2013~ Oct. 28, 2013

Testing Engineer : David Mao
(David Mao)

Technical Manager : Leo Hung
(Leo Hung)

Authorized Signatory : Steven Lu
(Steven Lu)

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Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C**., or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
NEI-FICP-1-1309C280	Original Issue.	Oct. 29, 2013
-	-	-

1. CERTIFICATION

Equipment	:	DVD ENTERTAINMENT SYSTEM
Brand Name	:	Alpine
Model Name	:	PKG-RSE3DVD
Applicant	:	Evervictory Electronic Company Limited
Manufacturer	:	Evervictory Electronic Company Limited
Address	:	Chu Chi Management District, Hu Men Town, Dong-Guan City, Guang-Dong Province, P.R. China
Factory	:	Evervictory Electronic Company Limited
Address	:	Chu Chi Management District, Hu Men Town, Dong-Guan City, Guang-Dong Province, P.R. China
Date of Test	:	Oct. 08, 2013~ Oct. 28, 2013
Test Item	:	ENGINEERING SAMPLE
Standard(s)	:	FCC Part15, Subpart C (15.239)/ ANCI C63.4: 2009 Canada RSS-210:2010 RSS-GEN Issue 3, Dec 2010

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FICP-1-1309C280) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s): (Antenna to EUT distance is **3** m)

FCC Part15, Subpart C / Canada RSS-210					
Standard(s)		Test Item	Limit	Frequency Range (MHz)	Judgment
FCC	IC				
15.207	RSS-GEN Issue 3, Dec 2010 7.2.4	Conducted Emission	Class B	0.15 - 30	N/A
15.209	RSS-210, Issue 8, Annex 8, Section 8.5	Radiated Emission	Class B	30-1000	PASS
15.239	RSS-210, Issue 8, A2.8	Radiated Emission	250 μV/m (48dBμV/m) @ 3m	88~108	PASS

NOTE:
(1)"N/A" denotes test is not applicable in this test report.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-CB03** at the location of No.3,Jinshagang 1st Road, Shixia, Dalang Town, Dong Guan, China.523792
Neutron's test firm number for FCC: 319330
Neutron's test firm number for IC: 4428B-1

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U，(dB)	Note
DG-C02	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U，(dB)	Note
DG-CB03	CISPR	9KHz~30MHz	V	3.79	
		9KHz~30MHz	H	3.57	
		30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	
		1GHz~18GHz	V	3.12	
		1GHz~18GHz	H	3.68	
		18GHz~40GHz	V	4.15	
		18GHz~40GHz	H	4.14	

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	DVD ENTERTAINMENT SYSTEM
Trade Name	Alpine
Model Name.	PKG-RSE3DVD
Model Difference	N/A
Product Description	<table><tr><td>Operation Frequency</td><td>88.1~92.1MHz</td></tr><tr><td>Modulation Type</td><td>FM</td></tr><tr><td>Channel Separation</td><td>200 KHz</td></tr><tr><td>Antenna Designation</td><td>Internal antenna</td></tr><tr><td>Output Power</td><td>46.86 dBuV/m(Max.)</td></tr></table> More details of EUT technical specification, please refer to the User's Manual.
Power Source	Supplied from battery.
Power Rating	DC 12V
Connecting I/O Port(s)	Please refer to the User's Manual

Note:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the User's Manual.

2.

Channel List			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	**88.1**	12	90.3
02	88.3	13	90.5
03	88.5	14	90.7
04	88.7	15	90.9
05	88.9	16	91.1
06	89.1	17	91.3
07	89.3	18	91.5
08	89.5	19	91.7
09	89.7	20	91.9
10	89.9	**21**	**92.1**
11	90.1		

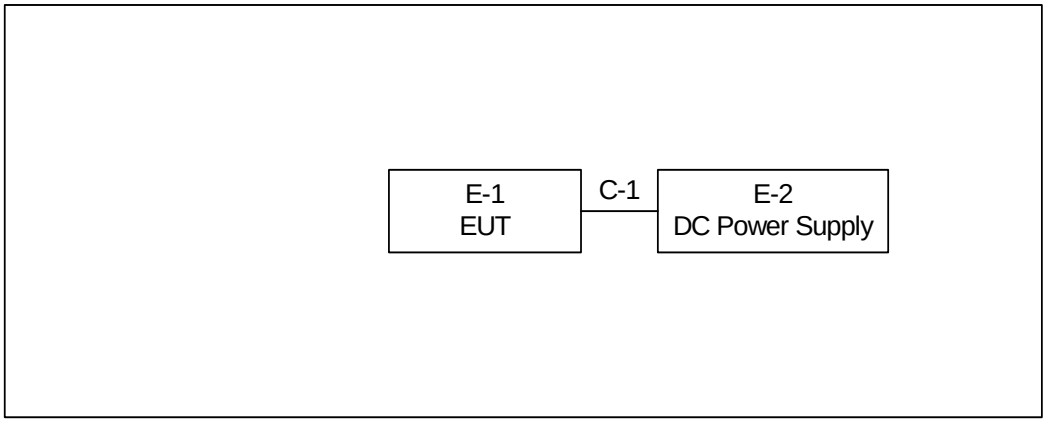
3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Test Mode	Description
Mode 1	CH01 (88.1MHz)
Mode 2	CH21 (92.1MHz)

Test Items	Mode	Channel
Field Strength of Fundamental Emissions 20dB Spectrum Bandwidth	CTX of X Axis	01/21
Radiated Emissions 9kHz~30MHz	CTX of X Axis	01/21
Radiated Emissions 30MHz~10th Harmonic	CTX of X Axis	01/21
Band Edge Emissions	CTX of X Axis	01/21

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



C-1 Power Cable

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	DVD ENTERTAINMENT SYSTEM	Alpine	PKG-RSE3DVD	VER	N/A	EUT
E-2	DC Power Supply	Lokc	DPS-3050	N/A	400003829	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	0.3m	

Note:

(1) For detachable type I/O cable should be specified the length in m in 『Length』 column

4. EMC EMISSION TEST

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 RADIATED EMISSION LIMITS (Frequency Range 9KHz-1000MHz)

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

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.

Notes:

(1) The tighter limit applies at the band edges.

(2) Emission level (dBuV/m)=20log Emission level (uV/m).

(3) A measuring distance of 3m is a primary used. However, either 3m or 10m (instead of 10m) distance my be allowed. If the distance is 3m, add 10dB to the QP-limit above. If the distance is 10m, subtract 10dB from the QP-limit above.

4.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Apr. 25, 2014
2	Amplifier	HP	8447D	2944A09673	Apr. 25, 2014
3	Test Receiver	R&S	ESCI	100382	Apr. 25, 2014
4	Test Cable	N/A	C-01_CB03	N/A	Jul. 02, 2014
5	Antenna	ETS	3115	00075789	Apr. 25, 2014
6	Amplifier	Agilent	8449B	3008A02274	Apr. 25, 2014
7	Spectrum	Agilent	E4408B	US39240143	Nov. 16, 2013
8	Test Cable	HUBER+SUHNER	C-45	N/A	Apr. 30, 2014
9	Controller	CT	SC100	N/A	N/A
10	Horn Antenna	EMCO	3115	9605-4803	Apr. 25, 2014
11	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Apr. 25, 2014
12	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Oct. 22, 2014

Remark: ”N/A” denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

4.1.3 TEST PROCEDURE

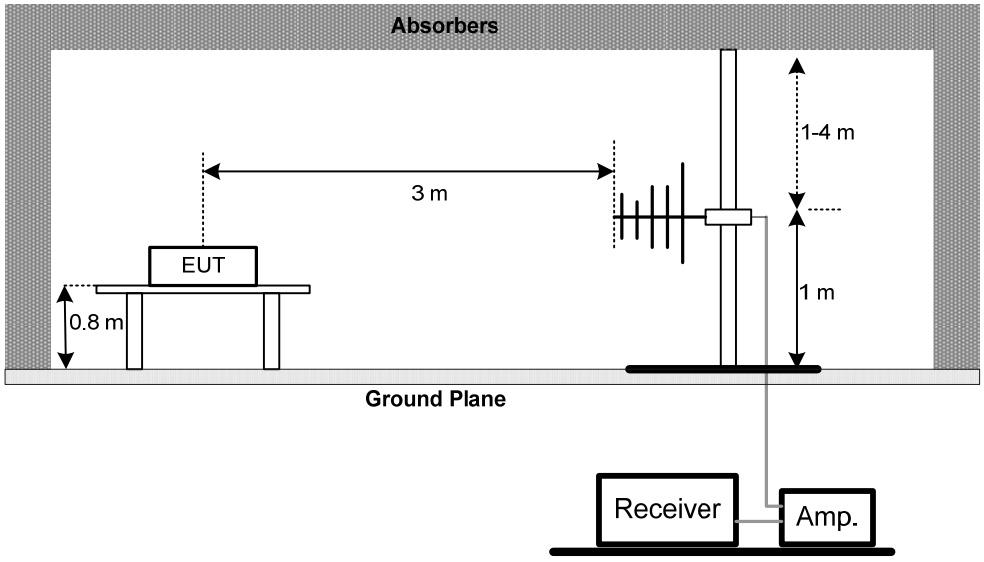
a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.4 DEVIATION FROM TEST STANDARD

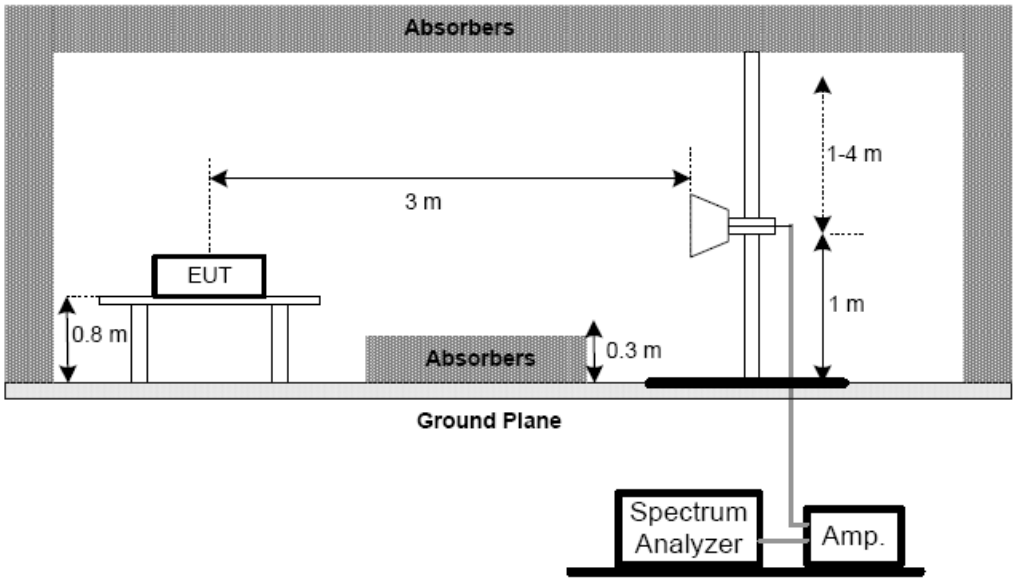
No deviation

4.1.5 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



4.1.6 EUT OPERATING CONDITIONS

(a) Only radiated testing was performed during the max. EMI emission evaluation. Conducted testing excepted because of the EUT is a battery operating device.

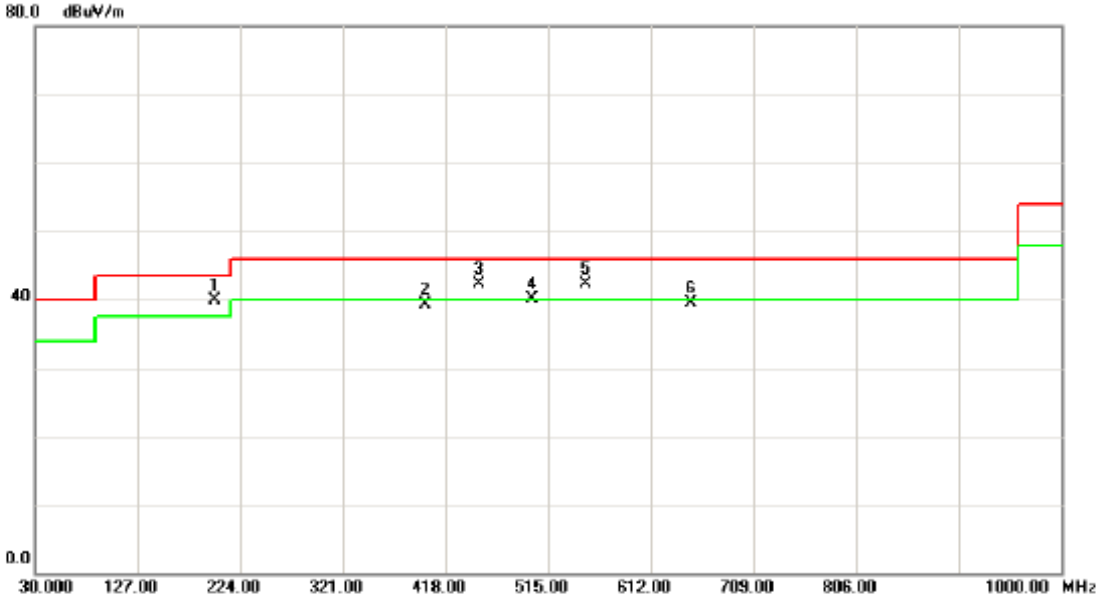
(b) The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

4.1.7 TEST RESULTS

Remark:

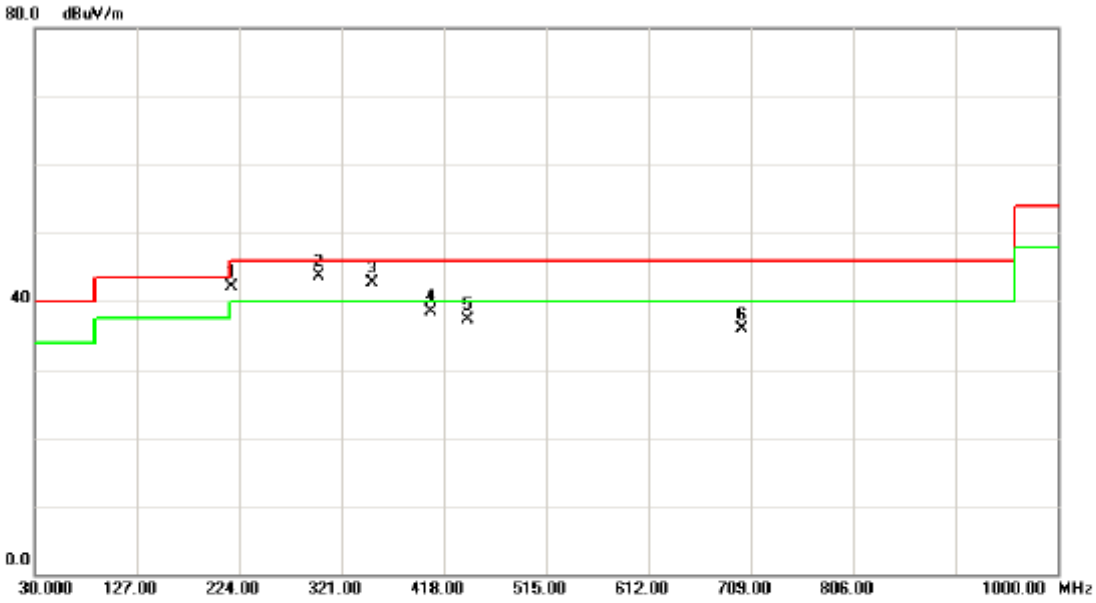
(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz.
(2) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform.
(3) Measuring frequency range from 30MHz to 1000MHz.
(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.

EUT:	DVD ENTERTAINMENT SYSTEM	Model Name:	PKG-RSE3DVD
Temperature:	25 ℃	Relative Humidity:	58 %
Test Voltage:	DC 12V	Phase:	Vertical
Test Mode:	CH01 (88.1MHz)		



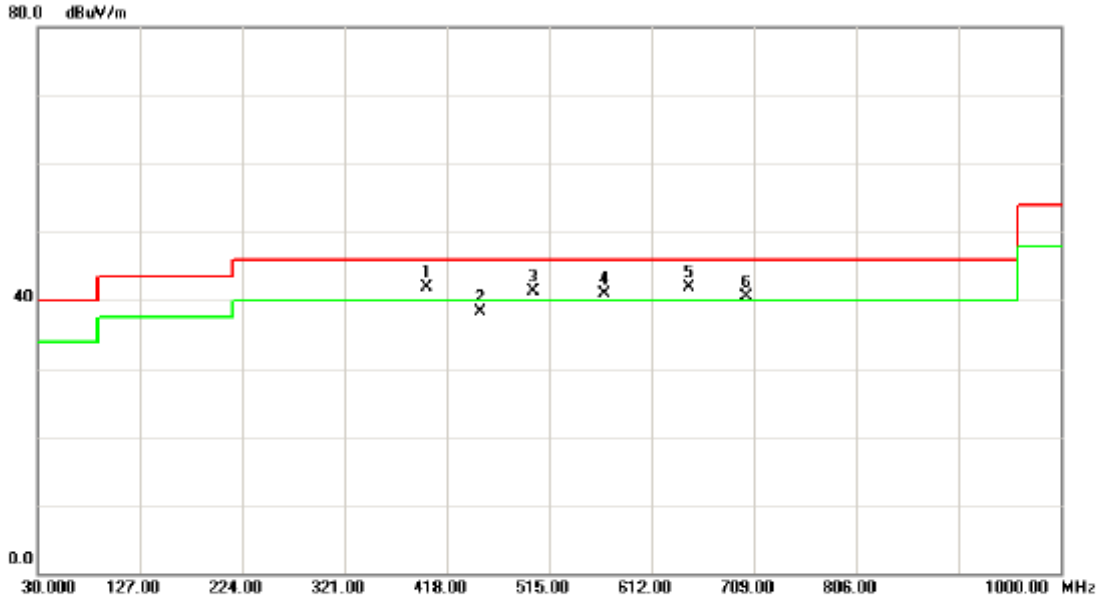
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	199.7500	54.99	-15.18	39.81	43.50	-3.69	peak	
2		399.5700	49.24	-9.89	39.35	46.00	-6.65	peak	
3	!	450.0100	51.18	-8.91	42.27	46.00	-3.73	peak	
4	!	500.4500	50.40	-10.31	40.09	46.00	-5.91	peak	
5	!	549.9200	49.91	-7.65	42.26	46.00	-3.74	peak	
6		649.8300	45.18	-5.58	39.60	46.00	-6.40	peak	

EUT:	DVD ENTERTAINMENT SYSTEM	Model Name:	PKG-RSE3DVD
Temperature:	25 ℃	Relative Humidity:	58 %
Test Voltage:	DC 12V	Phase:	Horizontal
Test Mode:	CH01 (88.1MHz)		



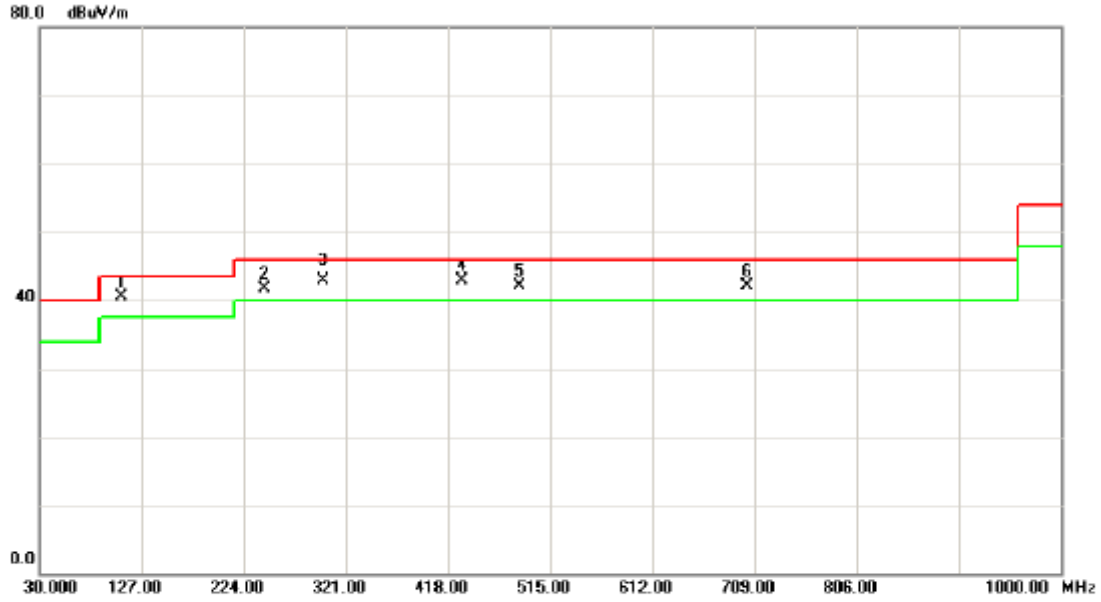
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	!	216.2400	57.15	-15.12	42.03	46.00	-3.97	peak	
2	*	299.6600	54.97	-11.27	43.70	46.00	-2.30	peak	
3	!	350.1000	54.13	-11.46	42.67	46.00	-3.33	peak	
4		405.3900	48.35	-9.78	38.57	46.00	-7.43	peak	
5		440.3100	46.44	-9.09	37.35	46.00	-8.65	peak	
6		700.2700	40.73	-4.81	35.92	46.00	-10.08	peak	

EUT:	DVD ENTERTAINMENT SYSTEM	Model Name:	PKG-RSE3DVD
Temperature:	25 ℃	Relative Humidity:	58 %
Test Voltage:	DC 12V	Phase:	Vertical
Test Mode:	CH21 (92.1MHz)		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	!	399.5700	51.73	-9.89	41.84	46.00	-4.16	peak	
2		450.0100	47.30	-8.91	38.39	46.00	-7.61	peak	
3	!	500.4500	51.58	-10.31	41.27	46.00	-4.73	peak	
4	!	567.3800	48.77	-7.81	40.96	46.00	-5.04	peak	
5	*	647.8900	47.63	-5.67	41.96	46.00	-4.04	peak	
6	!	702.2100	45.27	-4.81	40.46	46.00	-5.54	peak	

EUT:	DVD ENTERTAINMENT SYSTEM	Model Name:	PKG-RSE3DVD
Temperature:	25 ℃	Relative Humidity:	58 %
Test Voltage:	DC 12V	Phase:	Horizontal
Test Mode:	CH21 (92.1MHz)		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	107.6000	55.61	-15.10	40.51	43.50	-2.99	peak	
2	!	243.4000	56.64	-14.87	41.77	46.00	-4.23	peak	
3	!	299.6600	54.10	-11.27	42.83	46.00	-3.17	QP	
4	!	431.5800	52.10	-9.27	42.83	46.00	-3.17	peak	
5	!	485.9000	52.06	-9.93	42.13	46.00	-3.87	peak	
6	!	702.2100	47.01	-4.81	42.20	46.00	-3.80	peak	

4.2 FIELD STRENGTH OF FUNDAMENTAL AND BAND EDGE EMISSIONS MEASUREMENT

4.2.1 LIMITS OF FIELD STRENGTH OF FUNDAMENTAL AND BAND EDGE EMISSIONS MEASUREMENT

According to 15.239 the field strength of emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (dBuV/m)	
88 to 108	Peak	Average
	67.96	47.96

Band edge emissions outside of the frequency bands shown in below table.

Outside Frequency Band Edge	Limit (dBuV/m) at 3m
Below 88 MHz	40.0 (QP)
Above 108 MHz	43.5 (QP)

4.2.2 MEASURING INSTRUMENTS AND SETTING

Receiver Parameter	Setting
Center Frequency	Fundamental Frequency
RBW	120 KHz
Detector	AV or Peak

4.2.3 TEST PROCEDURE

The test procedure is the same as section 4.1.3.

4.2.4 TEST SETUP LAYOUT

This test setup layout is the same as that shown in section 4.2.5

4.2.5 TEST DEVIATION

There is no deviation with the original standard.

4.2.6 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

4.2.7 TEST RESULTS

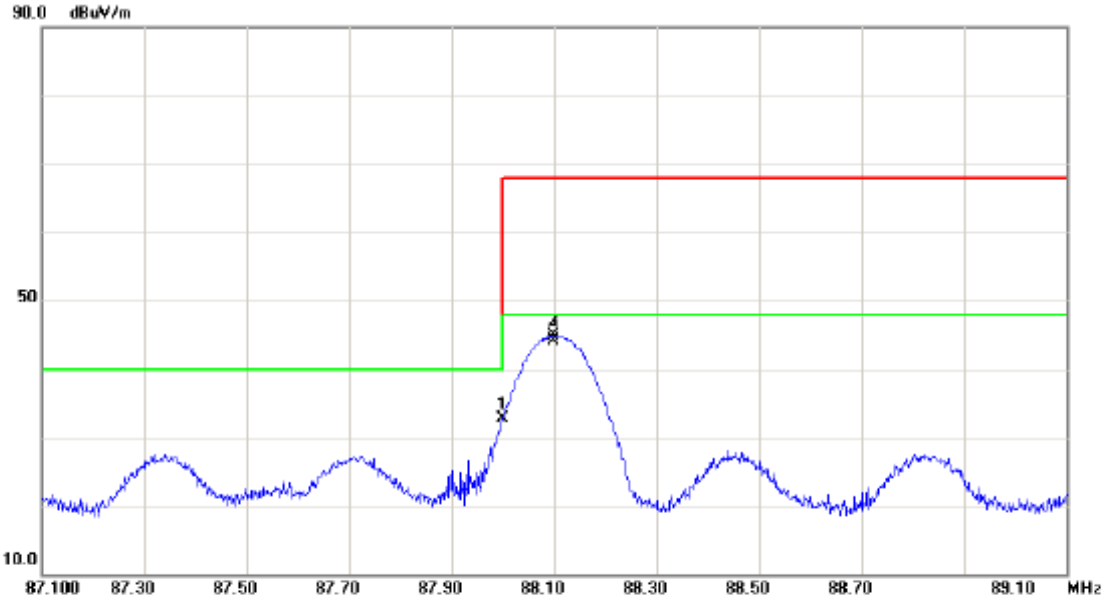
Remark:

(1) Spectrum Setting: 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦

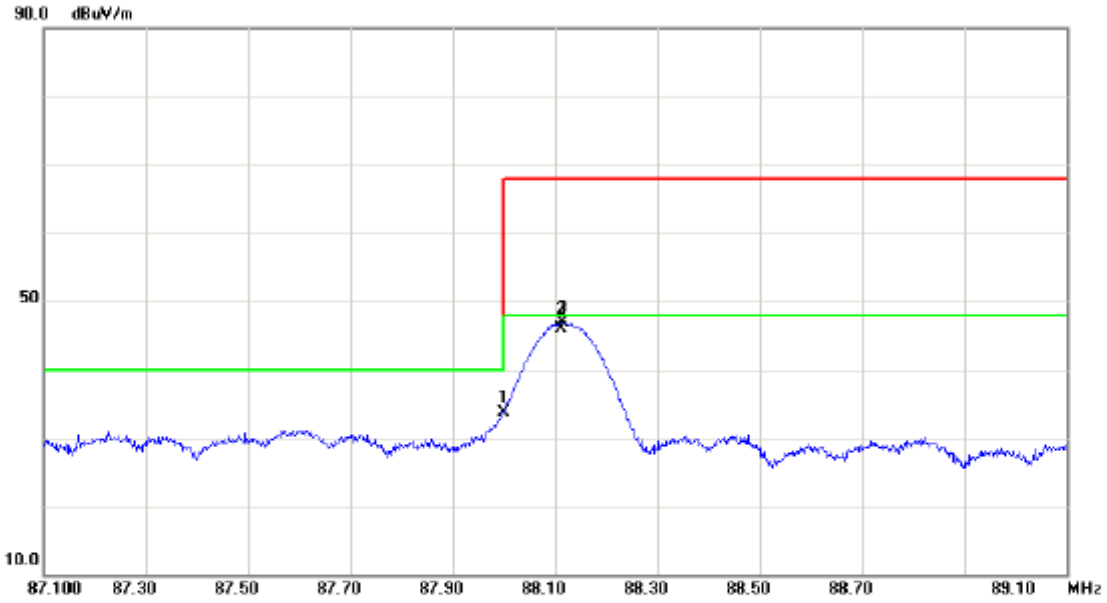
(3) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

EUT:	DVD ENTERTAINMENT SYSTEM	Model Name:	PKG-RSE3DVD
Temperature:	25 ℃	Relative Humidity:	58 %
Test Voltage:	DC 12V	Phase:	Vertical
Test Mode:	CH01 (88.1MHz)		



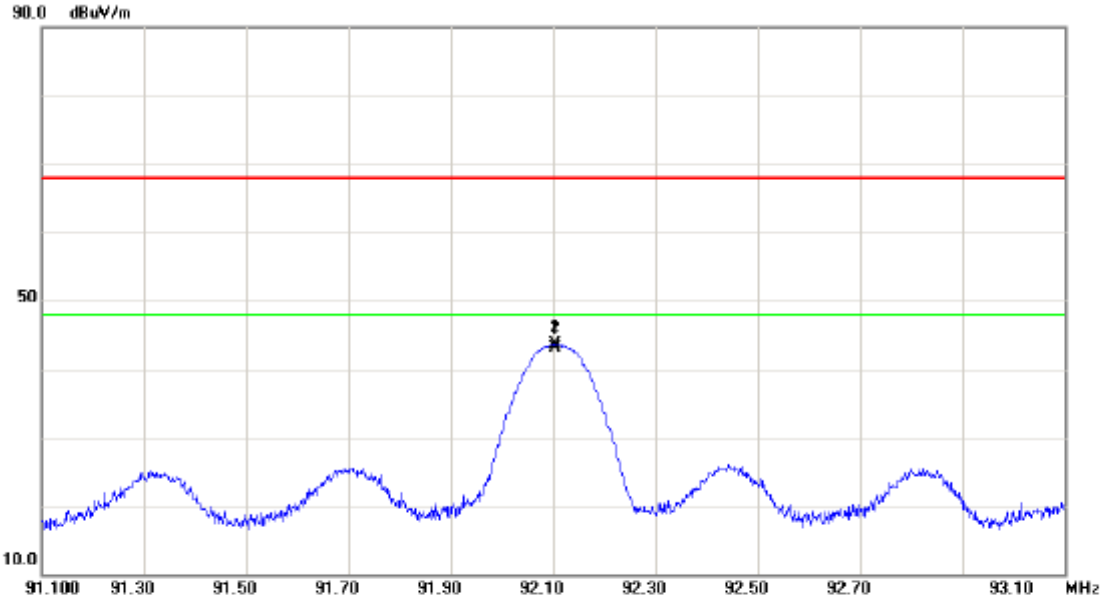
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		88.0000	50.65	-18.02	32.63	40.00	-7.37	peak	
2		88.0980	62.93	-18.03	44.90	68.00	-23.10	peak	
3	*	88.0980	62.05	-18.03	44.02	48.00	-3.98	AVG	

EUT:	DVD ENTERTAINMENT SYSTEM	Model Name:	PKG-RSE3DVD
Temperature:	25 ℃	Relative Humidity:	58 %
Test Voltage:	DC 12V	Phase:	Horizontal
Test Mode:	CH01 (88.1MHz)		



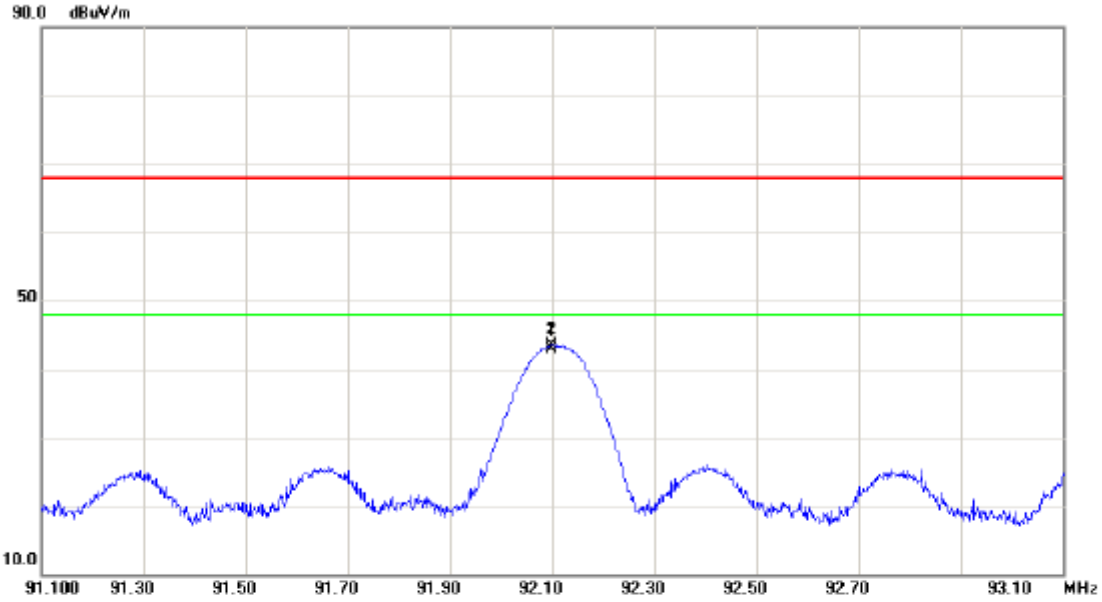
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		88.0000	51.65	-18.02	33.63	40.00	-6.37	peak	
2	*	88.1080	63.97	-18.03	45.94	48.00	-2.06	AVG	
3		88.1140	64.89	-18.03	46.86	68.00	-21.14	peak	

EUT:	DVD ENTERTAINMENT SYSTEM	Model Name:	PKG-RSE3DVD
Temperature:	25 ℃	Relative Humidity:	58 %
Test Voltage:	DC 12V	Phase:	Vertical
Test Mode:	CH21 (92.1MHz)		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		92.1040	61.38	-17.75	43.63	68.00	-24.37	peak	
2	*	92.1060	60.76	-17.75	43.01	48.00	-4.99	AVG	

EUT:	DVD ENTERTAINMENT SYSTEM	Model Name:	PKG-RSE3DVD
Temperature:	25 ℃	Relative Humidity:	58 %
Test Voltage:	DC 12V	Phase:	Horizontal
Test Mode:	CH21 (92.1MHz)		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		92.0980	61.34	-17.75	43.59	68.00	-24.41	peak	
2	*	92.0980	60.59	-17.75	42.84	48.00	-5.16	AVG	

5. BANDWIDTH REQUIREMENT

5.1 LIMITS OF EMISSION BAND MEASUREMENT

Emissions from the intentional radiator shall be confined within a band 200kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88 to 108MHz.

5.1.1 MEASUREMENT INSTRUMENTS LIST

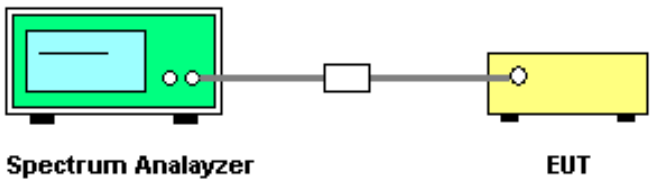
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP_40	100129	Sep. 09, 2009

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 20dB Bandwidth
RB	10 kHz
VB	30 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.1.2 TEST PROCEDURE

a. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
b. The resolution bandwidth of 10 kHz and the video bandwidth of 10 kHz were used.
c. Measured the spectrum width with power higher than 20dB below carrier.

5.1.3 TEST SETUP LAYOUT



5.1.4 TEST DEVIATION

There is no deviation with the original standard.

5.1.5 EUT OPERATION DURING TEST

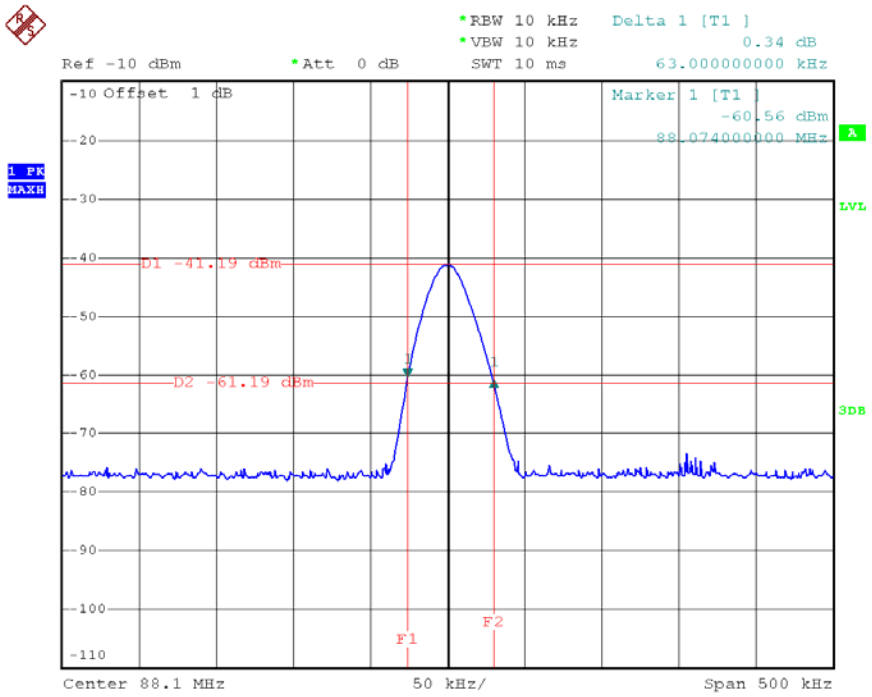
The EUT was programmed to be in continuously transmitting mode.

5.1.6 TEST RESULT OF 20dB SPECTRUM BANDWIDTH

EUT:	DVD ENTERTAINMENT SYSTEM	Model Name:	PKG-RSE3DVD
Temperature:	25°C	Relative Humidity:	58%
Test Voltage:	DC 12V		
Test Mode:	TRANSMITTER (Mono mode)		
Note:	CH01 (88.1MHz) / CH21 (92.1MHz)		

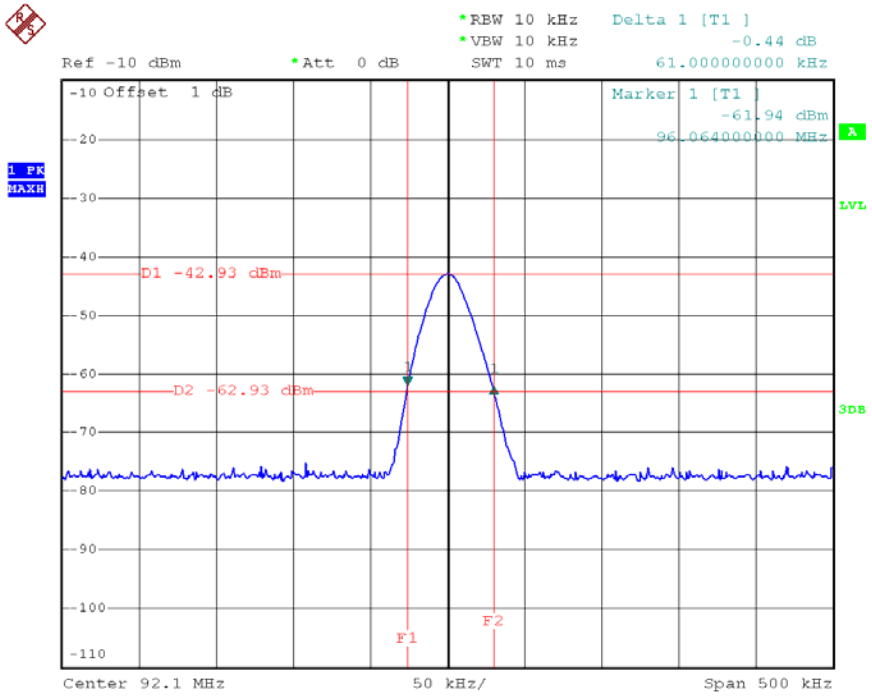
Channel	Frequency (MHz)	20dB Bandwidth (kHz)	Limits kHz (20dB Down)	Test Result
01	88.1	63.00	200.0000	PASS
21	92.1	61.00	200.0000	PASS

CH01_88.1MHz



Date: 31.OCT.2013 16:24:11

CH21_92.1MHz



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6. EUT TEST PHOTO

Radiated Measurement Photos