



China

## RF - TEST REPORT

Report Number : **64.790.12.00868.01-FCC** Date of Issue: 2012-06-29

Model : DD1T3, DD2T3

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Product Type : Transmitter

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FCC ID : OGT2011DD

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Applicant : XIN HUI A.A. ELECTRONICS & TOYS LTD

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Address : NO.12,CHAO XING ROAD,HUI CHENG TOWN,XIN HUI DISTRICT, 529100 JIANG MEN CITY,GUANG DONG PROVINCE, PEOPLE'S REPUBLIC OF CHINA

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Production Facility : XIN HUI A.A. ELECTRONICS & TOYS LTD

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Address : NO.12,CHAO XING ROAD,HUI CHENG TOWN,XIN HUI DISTRICT, 529100 JIANG MEN CITY,GUANG DONG PROVINCE, PEOPLE'S REPUBLIC OF CHINA

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Test Result :  Positive  Negative



Total pages including Appendices : 22

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## 1. DETAILS ABOUT THE TEST LABORATORY

### Details about the Test Laboratory

Company name: Neutron Engineering Inc.  
No.3.JinShaGang 1st Road,  
ShiXia, DaLang Town,  
DongGuan, China

Telephone: 86 769 83183000  
Fax: 86 769 83196000

January 24, 2005 File on  
Federal Communications Commission  
Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046

Registration Number: 319330



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## 2. DESCRIPTION OF THE EQUIPMENT UNDER TEST

Test Standards	
FCC Part 15 Subpart C (Edition: Oct 1, 2011)	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

Equipment	Transmitter	
Model Name.	DD1T3, DD2T3	
<b>Model Difference</b>	All models are identical in circuit design, PCB layout and component used but just different in software and appearance.	
<b>Product Description</b>	The EUT is a radio frequency remote controller.	
	Product Type	Low Power Communication Device
	Operation Frequency:	315MHz
	Modulation Type:	ASK
	Antenna Designation:	Printed antenna
	Output Power:	64.05dBuV/m @ 3m
	More details of EUT technical specification. Please refer to the User's Manual.	
<b>Power Source</b>	DC Voltage supplied from Battery	
<b>Power Rating</b>	DC 3V(size "AAA" x 2)	
Products Covered	N/A	

**Note:**

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



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### 3. SUMMARY OF TEST RESULTS

Technical Requirements				
Transmitter mode				
Test Condition		Test Result		
		Pass	Fail	N/A
15.205 Restricted bands		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.209 Radiated Emission		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.231 Periodic operation in the band 40.66 - 40.70 MHz and above 70 MHz.		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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## 4. GENERAL REMARKS

This submittal(s) (test report) is intended for

FCC ID:OGT2011DD

filing to comply with

- Section 15.205, 15.209, 15.231 of the FCC Part 15, Subpart C Rules. Tests have been carried out in accordance with FCC rules Part 15 Subpart C.

### 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.

Testing Start Date: 2012-05-12

Testing End Date: 2012-05-12

- JIANGSU TÜV PRODUCT SERVICE LTD. GUANGZHOU BRANCH-

Reviewed by:

Tested by:

Tony Liu

Celia Xiang



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## 5. DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was performed based 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.

For Radiated Test	
Final Test Mode	Description
	Continuous transmitting mode

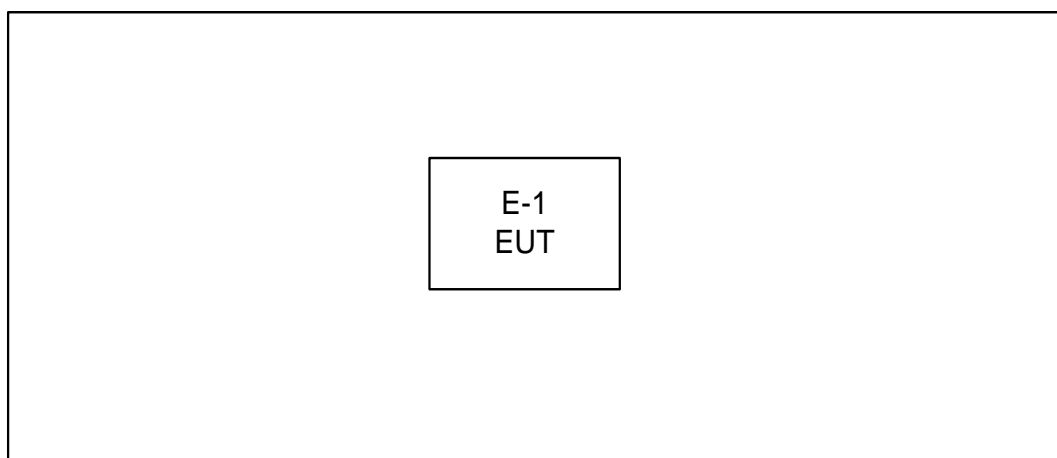
Note:

(1) The EUT used the new battery



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## 5.1 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED





## 6. TEST RESULTS

### 6.1 RADIATED EMISSION MEASUREMENT

#### 6.1.1 Radiated Emission Limits ( FCC 15.209 )

Frequencies (MHz)	Field Strength (micorvolts/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

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other 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 comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m)=20log Emission level (uV/m).

#### LIMITS OF RADIATED EMISSION MEASUREMENT ( FCC 15.209 )

FREQUENCY (MHz)	(dBuV/m) (at 3m)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

#### LIMITS OF RADIATED EMISSION MEASUREMENT (FCC Part 15.231b)

FCC Part15 (15.231b)		
Frequency	Field Strength	
Fundamental (315MHz)	6041.7uV/m	75.6dBuV/m
Harmonic	604.17uV/m	55.6dBuV/m



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## 6.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Jun .04.2012
2	Amplifier	HP	8447D	2944A09673	May.26.2012
3	Test Receiver	R&S	ESCI	100382	May.26.2012
4	Test Cable	N/A	C-01_CB03	N/A	Jul.01.2012
5	Controller	CT	SC100	N/A	N/A
6	Antenna	ETS	3115	00075789	May.26.2012
7	Amplifier	Agilent	8449B	3008A02274	May.26.2012
8	Spectrum	Agilent	E4408B	US39240143	Nov.26.2012
9	Test Cable	HUBER+SUHNER	C-45	N/A	May.04.2013
10	Controller	CT	SC100	N/A	N/A

Remark: " N/A" denotes No Model Name. / Serial No. and No Calibration specified.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (emission in restricted band)	1 MHz / 1 MHz for Peak, Average=PK-dycty cycle

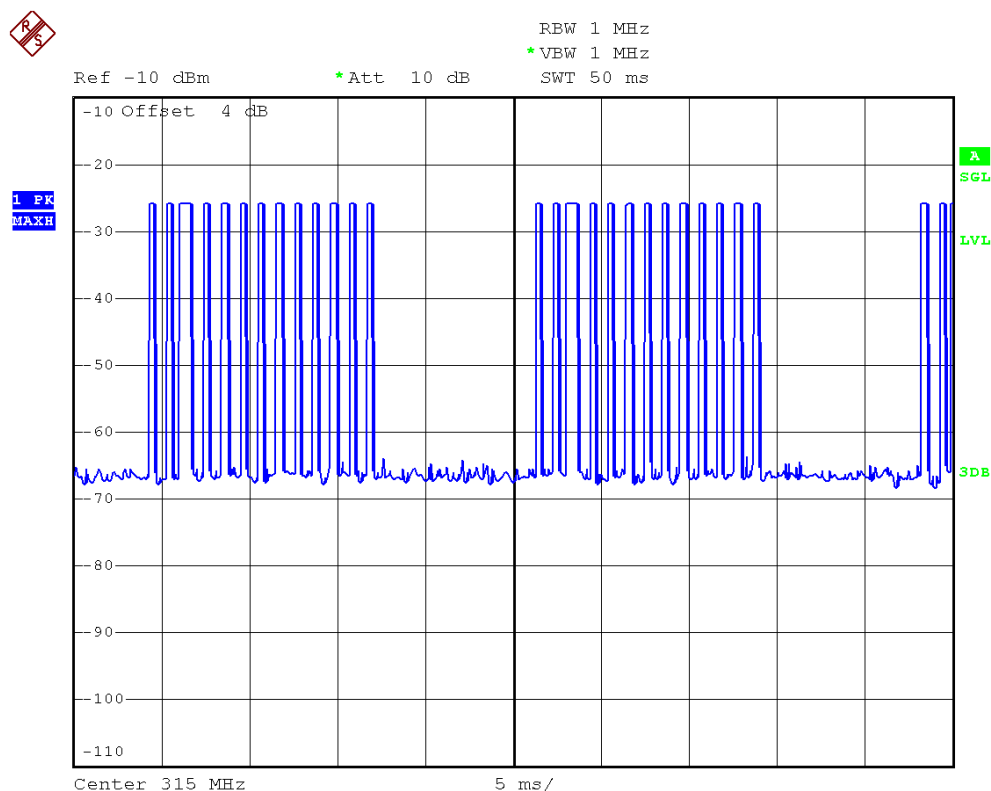
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

### 6.1.3 DUTY CYCLE

$$\text{DUTY CYCLE} = (0.46 \times 12 + 0.88 \times 1) / 21.98 = 0.29$$

$$\text{AVG} = \text{PEAK} + 20 \log(\text{DUTY CYCLE}) = \text{PEAK} - 10.75 \text{ dB}$$

**Total time(ON+OFF)= 21.98 msec ;**

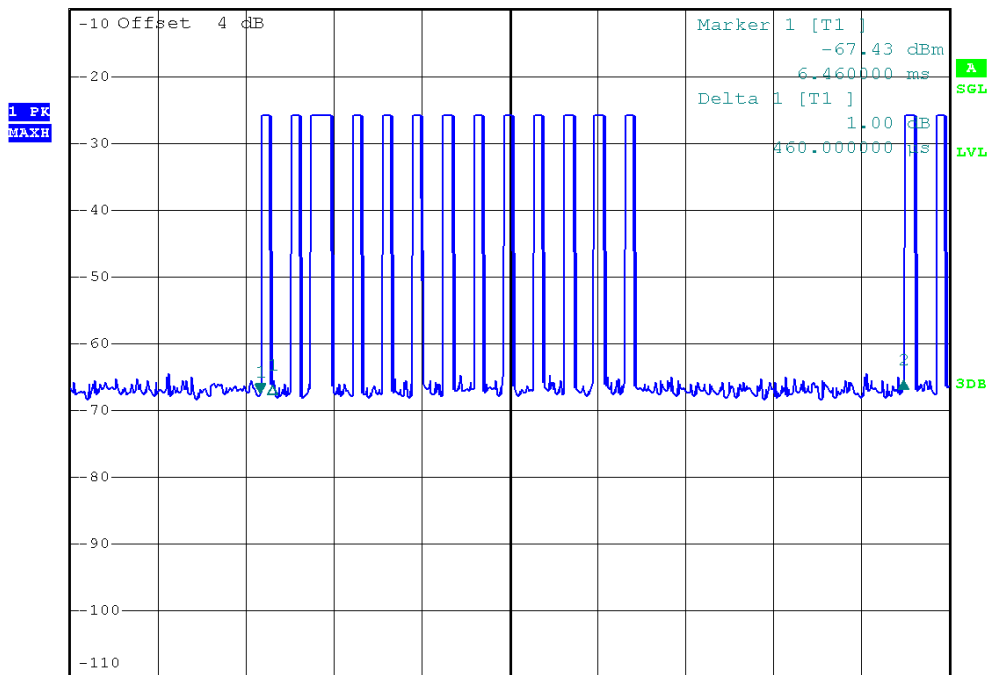




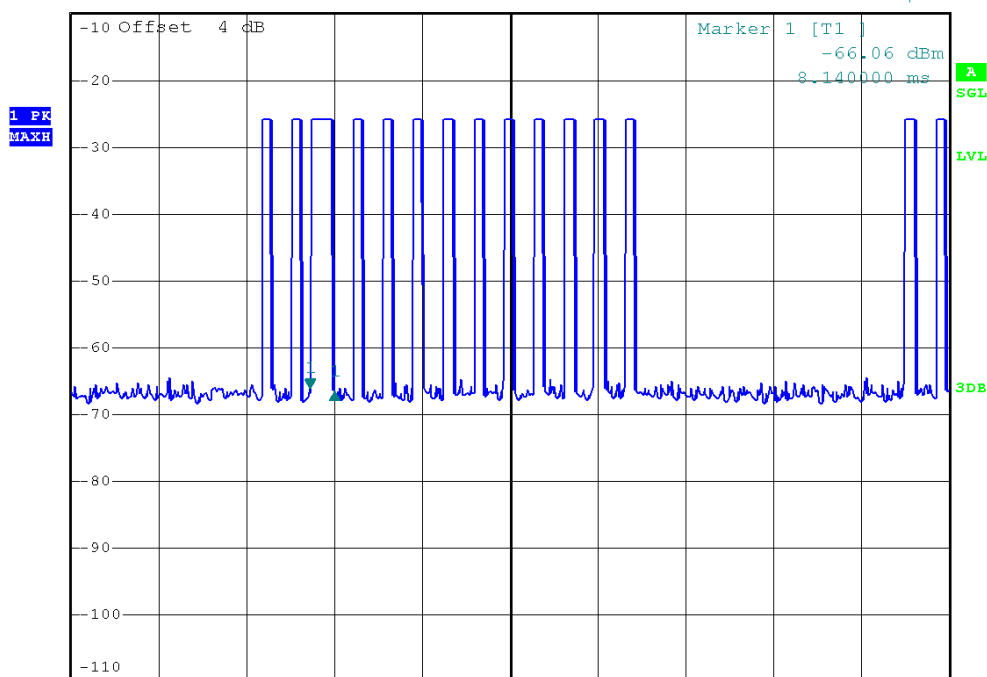
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Ref -10 dBm      \*Att 10 dB      RBW 1 MHz      Delta 2 [T1 ]      1.82 dB  
\*VBW 1 MHz      21.980000 ms  
SWT 30 ms



Ref -10 dBm      \*Att 10 dB      RBW 1 MHz      Delta 1 [T1 ]      -0.49 dB  
\*VBW 1 MHz      880.000000 μs  
SWT 30 ms





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#### **6.1.4 TEST PROCEDURE**

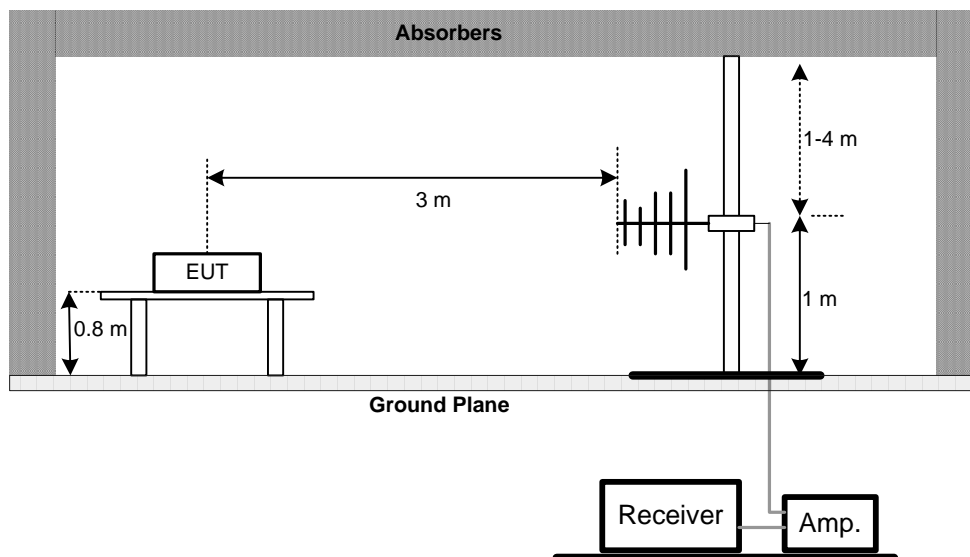
- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter semi-anechoic chamber. The table was 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.

#### **6.1.5 DEVIATION FROM TEST STANDARD**

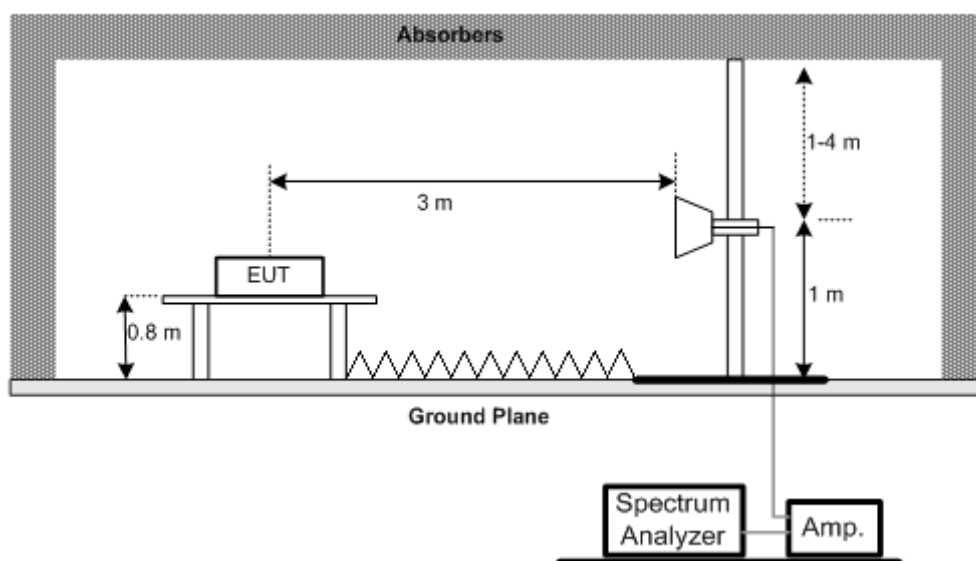
No deviation

### 6.1.6 TEST SETUP

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



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



### 6.1.7 EUT OPERATING CONDITIONS

Normal operation with continuous transmitting mode.



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**6.1.8 TEST RESULTS(BETWEEN 30 – 5000 MHz)**

EUT:	Transmitter	Model Name. :	DD1T3
Temperature:	28°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Power :	DC 3V
Test Mode :	Normal operation	EUT Position:	X axis

Freq. (MHz)	Ant. H/V	Reading (dBuV)	Corr. Factor (dB)	Measured (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
315	H	75.73	-11.68	64.05	95.6	-31.55	PK
315	H	-	-	53.3	75.6	-22.3	AV
630	H	40.45	-3.68	36.77	75.6	-38.83	PK
630	H	-	-	26.02	55.6	-29.58	AV
945	H	40.25	0.69	40.94	75.6	-34.66	PK
945	H	-	-	30.19	55.6	-25.41	AV
1260	H	55.27	-7.69	47.58	75.6	-28.02	PK
1260	H	-	-	36.83	55.6	-18.77	AV
1575	H	62	-5.54	56.46	75.6	-19.14	PK
1575	H	-	-	10.75	55.6	-44.85	AV
1890	H	54.67	-2.12	52.55	75.6	-23.05	PK
1890	H	-	-	41.8	55.6	-13.8	AV
2205	H	65.68	-1.22	64.46	75.6	-11.14	PK
2205	H	-	-	53.71	55.6	-1.89	AV
2835	H	53.35	-0.4	52.95	75.6	-22.65	PK
2835	H	-	-	42.2	55.6	-13.4	AV
315	V	61.18	-11.68	49.5	95.6	-46.1	PK
315	V	-	-	38.75	75.6	-36.85	AV
630	V	37.68	-3.68	34	75.6	-41.6	PK
630	V	-	-	23.25	55.6	-32.35	AV
945	V	34.97	0.69	35.66	75.6	-39.94	PK
945	V	-	-	24.91	55.6	-30.69	AV
1260	V	54.28	-7.69	46.59	75.6	-29.01	PK
1260	V	-	-	35.84	55.6	-19.76	AV
1575	V	56.16	-5.54	50.62	75.6	-24.98	PK
1575	V	-	-	39.87	55.6	-15.73	AV
1890	V	53.74	-2.12	51.62	75.6	-23.98	PK
1890	V	-	-	40.87	55.6	-14.73	AV
2205	V	58.48	-1.22	57.26	75.6	-18.34	PK
2205	V	-	-	46.51	55.6	-9.09	AV
2520	V	53.9	-1.58	52.32	75.6	-23.28	PK
2520	V	-	-	41.57	55.6	-14.03	AV



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EUT:	Transmitter	Model Name. :	DD1T3
Temperature:	28°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Power :	DC 3V
Test Mode :	Normal operation	EUT Position:	Y axis

Freq. (MHz)	Ant. H/V	Reading (dBuV)	Corr. Factor (dB)	Measured (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
315	H	73.62	-11.68	61.94	95.6	-33.66	PK
315	H	-	-	51.19	75.6	-24.41	AV
630	H	37.17	-3.68	33.49	75.6	-42.11	PK
630	H	-	-	22.74	55.6	-32.86	AV
945	H	37.45	0.69	38.14	75.6	-37.46	PK
945	H	-	-	27.39	55.6	-28.21	AV
1260	H	55.49	-7.69	47.8	75.6	-27.8	PK
1260	H	-	-	37.05	55.6	-18.55	AV
1575	H	55.84	-5.54	50.3	75.6	-25.3	PK
1575	H	-	-	10.75	55.6	-44.85	AV
1890	H	54.66	-2.12	52.54	75.6	-23.06	PK
1890	H	-	-	41.79	55.6	-13.81	AV
2205	H	59.8	-1.22	58.58	75.6	-17.02	PK
2205	H	-	-	47.83	55.6	-7.77	AV
2520	H	56.14	-1.58	54.56	75.6	-21.04	PK
2520	H	-	-	43.81	55.6	-11.79	AV
315	V	62.82	-11.68	51.14	95.6	-44.46	PK
315	V	-	-	40.39	75.6	-35.21	AV
630	V	37.36	-3.68	33.68	75.6	-41.92	PK
630	V	-	-	22.93	55.6	-32.67	AV
945	V	36.01	0.69	36.7	75.6	-38.9	PK
945	V	-	-	25.95	55.6	-29.65	AV
1260	V	56.89	-7.69	49.2	75.6	-26.4	PK
1260	V	-	-	38.45	55.6	-17.15	AV
1575	V	60.51	-5.54	54.97	75.6	-20.63	PK
1575	V	-	-	44.22	55.6	-11.38	AV
2205	V	61.82	-1.22	60.6	75.6	-15	PK
2205	V	-	-	49.85	55.6	-5.75	AV





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EUT:	Transmitter	Model Name. :	DD1T3
Temperature:	28°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Power :	DC 3V
Test Mode :	Normal operation	EUT Position:	Z axis

Freq. (MHz)	Ant. H/V	Reading (dBuV)	Corr. Factor (dB)	Measured (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
315	H	69.87	-11.68	58.19	95.6	-37.41	PK
315	H	-	-	47.44	75.6	-28.16	AV
630	H	43.74	-3.68	40.06	75.6	-35.54	PK
630	H	-	-	29.31	55.6	-26.29	AV
945	H	34.73	0.69	35.42	75.6	-40.18	PK
945	H	-	-	24.67	55.6	-30.93	AV
1260	H	55.91	-7.69	48.22	75.6	-27.38	PK
1260	H	-	-	37.47	55.6	-18.13	AV
1575	H	60.01	-5.54	54.47	75.6	-21.13	PK
1575	H	-	-	10.75	55.6	-44.85	AV
1890	H	53.79	-2.12	51.67	75.6	-23.93	PK
1890	H	-	-	40.92	55.6	-14.68	AV
2205	H	60.9	-1.22	59.68	75.6	-15.92	PK
2205	H	-	-	48.93	55.6	-6.67	AV
315	V	62.86	-11.68	51.18	95.6	-44.42	PK
315	V	-	-	40.43	75.6	-35.17	AV
630	V	33.26	-3.68	29.58	75.6	-46.02	PK
630	V	-	-	18.83	55.6	-36.77	AV
945	V	35.95	0.69	36.64	75.6	-38.96	PK
945	V	-	-	25.89	55.6	-29.71	AV
1260	V	53.27	-7.69	45.58	75.6	-30.02	PK
1260	V	-	-	34.83	55.6	-20.77	AV
1575	V	55.38	-5.54	49.84	75.6	-25.76	PK
1575	V	-	-	39.09	55.6	-16.51	AV
1890	V	51.81	-2.12	49.69	75.6	-25.91	PK
1890	V	-	-	38.94	55.6	-16.66	AV
2205	V	61.06	-1.22	59.84	75.6	-15.76	PK
2205	V	-	-	49.09	55.6	-6.51	AV



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Remark:

- (1) 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.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission .
- (4) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:  
"X" - denotes Laid on Table; "Y" - denotes Vertical Stand; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (8) The average value of fundamental frequency is:  
Average = Peak value + 20log(Duty cycle) , Final AV=PK-10.75



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## 6.2 BANDWIDTH TEST

### 6.2.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Test Receiver	R&S	ESCI	100382	May.26.2012

### 6.2.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting : RBW= 10KHz, VBW=10KHz, Sweep time = 5 ms.

### 6.2.3 DEVIATION FROM STANDARD

No deviation.

### 6.2.4 EUT OPERATION CONDITIONS

Normal operation with continuous transmitting mode.



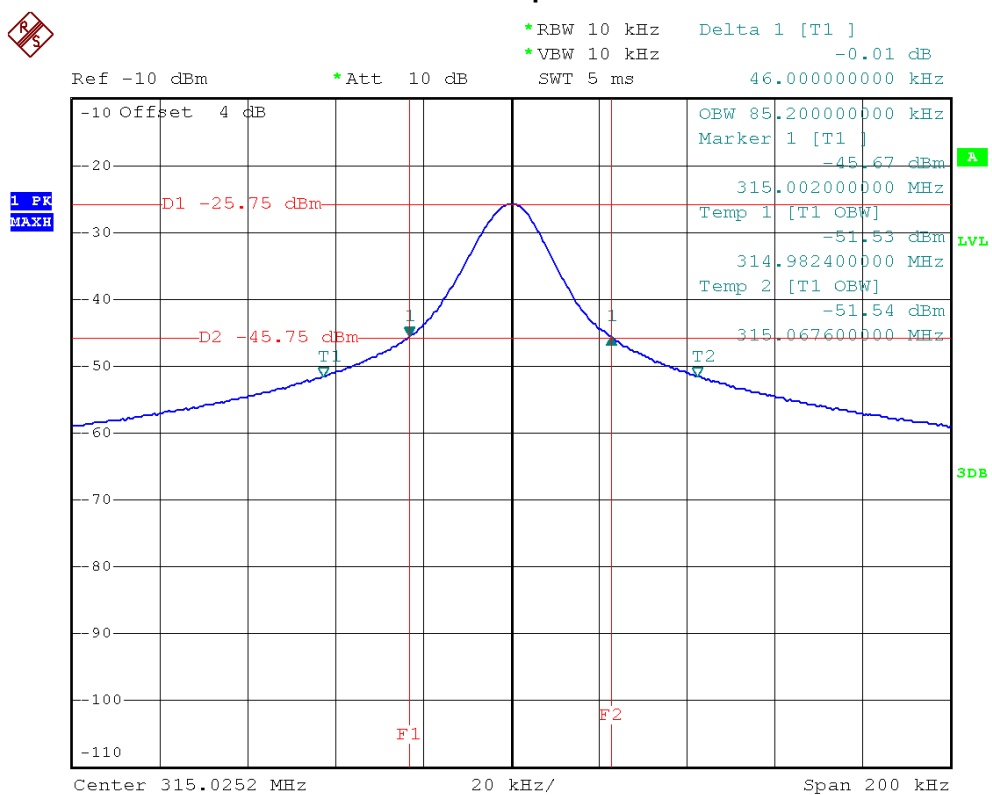
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### 6.2.5 TEST RESULTS

EUT:	Transmitter	Model Name. :	DD1T3
Temperature:	28°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Power :	DC 3V
Test Mode :	Normal operation		

Measured Bandwidth (MHz)	20 dB Bandwidth Limit(MHz)	Result
0.046	0.7875	Pass

#### Normal operation





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## 6.3 Release Time Test

### 6.3.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Test Receiver	R&S	ESCI	100382	May.26.2012

### 6.3.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting : RBW= 1MHz, VBW=1MHz, Sweep time = 5s.

### 6.3.3 DEVIATION FROM STANDARD

No deviation.

### 6.3.4 EUT OPERATION CONDITIONS

Press the button and release it immediately.



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### 6.3.5 TEST RESULTS

EUT:	Transmitter	Model Name. :	DD1T3
Temperature:	28°C	Relative Humidity:	60 %
Pressure:	1001 hPa	Test Power :	DC 3V
Test Mode :	Normal operation		

Test result: The release time is 660ms(less than 5s).

