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Test Report No.: RF170927N027-5



Certificate # 2951.01

## TEST REPORT

Applicant:	DEI Sales, Inc., dba Polk Audio
Address:	1 Viper Way Vista, California 92801, USA

Manufacturer or Supplier	DEI Sales, Inc., dba Polk Audio
Address	1 Viper Way Vista, California 92801, USA
Product:	Home Theater Sound Bar System
Brand Name:	Polk
System Model	COMMAND SYS US-CAN
Test Model	COMMAND SOUND BAR
Additional Model & Model Difference	N/A
Date of tests:	Nov. 11, 2017 ~ Dec. 08, 2017

the tests have been carried out according to the requirements of the following standard:

FCC Part 15, Subpart C, Section 15.249

**CONCLUSION: The submitted sample was found to COMPLY with the test requirement**

Tested by Harry Li Project Engineer / EMC Department	Approved by Glyn He Supervisor / EMC Department

Date: Mar. 28, 2018

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification



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EUT BY THE LAB .....** **30**



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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF170927N027-5	Original release	Mar. 28, 2018



## 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.249)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
§15.203	Antenna Requirement	PASS	No antenna connector is used
§15.207 (a)	Conducted Emission	PASS	Compliant
§15.205	Restricted Band of Operation	PASS	Compliant
§15.209 §15.249(a)	Radiated Emission	PASS	Compliant
§15.215(c)	20dB Bandwidth Test	PASS	Compliant

## 2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.70dB
Radiated emissions	9KHz ~ 30MHz	2.90dB
	30MHz ~ 1GHz	3.83dB
	1GHz ~ 18GHz	4.93dB
	18GHz ~ 40GHz	4.80dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$ .



### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Home Theater Sound Bar System
SYSTEM MODEL NO.	COMMAND SYS US-CAN
TEST MODEL	COMMAND SOUND BAR
ADDITIONAL MODEL	N/A
FCC ID	WLQAM9642TX
NOMINAL VOLTAGE	DC 19V from Adapter
MODULATION TECHNOLOGY	GFSK
OPERATING FREQUENCY	5740~5845MHz
ANTENNA TYPE	PCB Antenna, 2.85dBi Gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

**NOTE:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions, but only the worst case was shown in test report.
3. Please refer to the EUT photo document (Reference No.: 170927N027) for detailed product photo.
4. This device contains two parts, one is soundbar, Model number is "COMMAND SOUND BAR"; another one is subwoofer, Model number is "COMMAND SUBWOOFER".
5. This product has multiple RF functions, such as listed below:

PRODUCT	MODEL	RF FUNCTION
Home Theater Sound Bar System	SOUNDBAR	1, BT2.1+EDR 2, WIFI 2.4GHz 3, WIFI 5GHz(Band 1~4) 4, 5.8GHz Wireless
	SUBWOOFER	5.8GHz Wireless

6. This device has two antennas, but can't transmit simultaneously.



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7. The EUT(COMMAND SUBWOOFER) was supply the following cable:

AC CABLE	
<b>BRAND:</b>	N/A
<b>CABLE:</b>	AC Cable: Unshielded, detachable, 1.80m

8. The EUT (COMMAND SOUND BAR) can be powered by adapter as list as attach.

ADAPTER	
<b>BRAND:</b>	Polk
<b>MODEL:</b>	TNUA1903003
<b>INPUT:</b>	AC 100-240V, 50/60Hz, 1.65A
<b>OUTPUT:</b>	DC 19V/3.0A
<b>CABLE:</b>	DC Cable: Unshielded, Non-detachable, 1.78m; AC Cable: Unshielded, detachable, 1.50m



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### 3.2 DESCRIPTION OF TEST MODES

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and packet type. The worst case was found when the EUT was positioned on X axis for radiated emission. The EUT was tested under the following mode.

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	BW	
A	√	√	√	√	Power by Adapter

Where RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

RE≥1G: Radiated Emission above 1GHz

BW: 20db bandwidth

**NOTE:** No need to concern of Conducted Emission due to the EUT is powered by battery.

Following channel(s) was (were) selected for the test as listed below.

TESTED CHANNEL	TESTED FREQUENCY
Low	5740 MHz
Middle	5790 MHz
High	5845 MHz

Note: The more detailed channel, please refer to the product specifications

### CHANNEL LIST:

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
1	<b>5740</b>	11	5790	21	5837
2	5745	12	5795	22	5839
3	5750	<b>13</b>	<b>5800</b>	23	5840
4	5755	14	5805	<b>24</b>	<b>5845</b>
5	5760	15	5810	Total 24 Channels	
6	5765	16	5815		
7	5770	17	5820		
8	5775	18	5825		
9	5780	19	5830		
10	5785	20	5835		

### TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE	25deg. C, 55%RH	DC 19V From Adapter	Hardy Leng
BW	25deg. C, 55%RH	DC 19V From Adapter	Robert Cheng
PLC	25deg. C, 55%RH	DC 19V From Adapter	Xue Wang



### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C, Section 15.249**

**ANSI C63.10-2013**

All test items have been performed and recorded as per the above standards.

### 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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook	DELL	E6420	9H12FS1	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.8m; DC Line: Unshielded, Detachable 1.8m;



## 4. TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

**NOTE:** 1. The lower limit shall apply at the transition frequencies.

1. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
2. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Apr. 05,17	Apr. 04,18
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Mar. 06,17	Mar. 05,18
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Apr. 05,17	Apr. 04,18
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Jan. 04,17	Jan. 03,18
Test software	ADT	ADT_Cond_V7.3.7	N/A	N/A	N/A

**NOTE:**

1. The test was performed in shielded room 553.
2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRT/CHINA and NIM/CHINA.



#### 4.1.3 TEST PROCEDURES

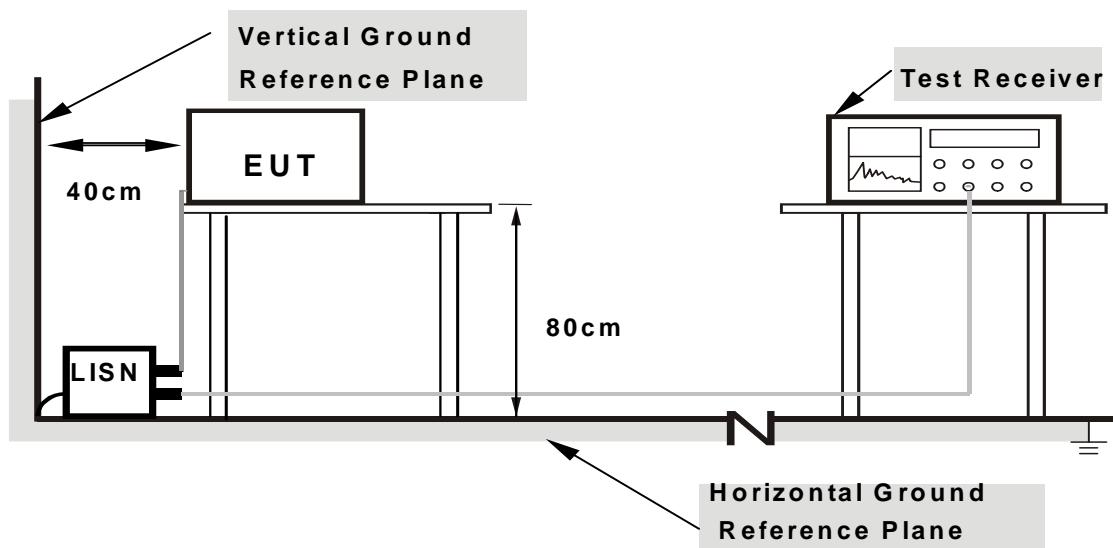
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.1.5 TEST SETUP



**Note:**

1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.1.6 EUT OPERATING CONDITIONS

- Turned on the power and connected of all equipment.
- EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

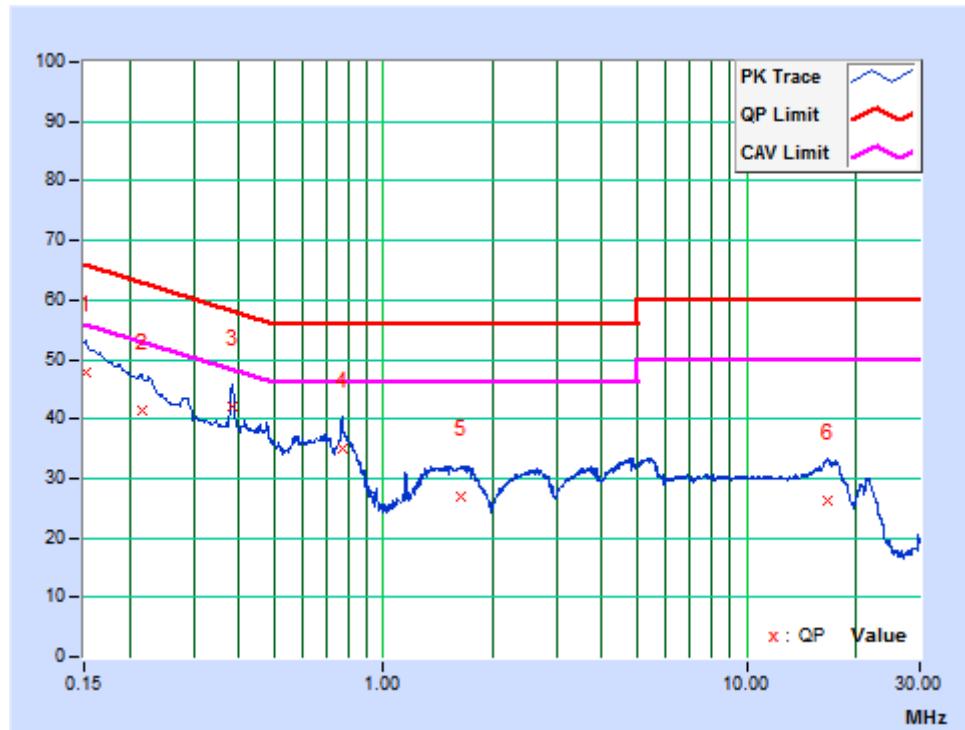
#### 4.1.7 TEST RESULTS

PHASE		Line		6dB BANDWIDTH		9kHz	
-------	--	------	--	---------------	--	------	--

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15225	10.22	37.45	16.98	47.67	27.20	65.88	55.88	-18.21	-28.68
2	0.21573	10.22	31.10	15.18	41.32	25.40	62.98	52.98	-21.66	-27.58
3	0.38362	10.22	31.75	30.08	41.97	40.30	58.20	48.20	-16.23	-7.90
4	0.77023	10.23	24.75	19.39	34.98	29.62	56.00	46.00	-21.02	-16.38
5	1.62604	10.22	16.75	7.49	26.97	17.71	56.00	46.00	-29.03	-28.29
6	16.72800	10.25	15.94	6.03	26.19	16.28	60.00	50.00	-33.81	-33.72

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



PHASE	Neutral	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.01	37.35	17.44	47.36	27.45	66.00	56.00	-18.64	-28.55
2	<b>0.38362</b>	<b>10.02</b>	<b>33.95</b>	<b>31.82</b>	<b>43.97</b>	<b>41.84</b>	<b>58.20</b>	<b>48.20</b>	<b>-14.23</b>	<b>-6.36</b>
3	0.76875	10.02	26.30	22.56	36.32	32.58	56.00	46.00	-19.68	-13.42
4	1.15125	10.02	19.06	15.12	29.08	25.14	56.00	46.00	-26.92	-20.86
5	5.52750	10.02	17.82	6.23	27.84	16.25	60.00	50.00	-32.16	-33.75
6	17.78100	10.14	16.77	6.94	26.91	17.08	60.00	50.00	-33.09	-32.92

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

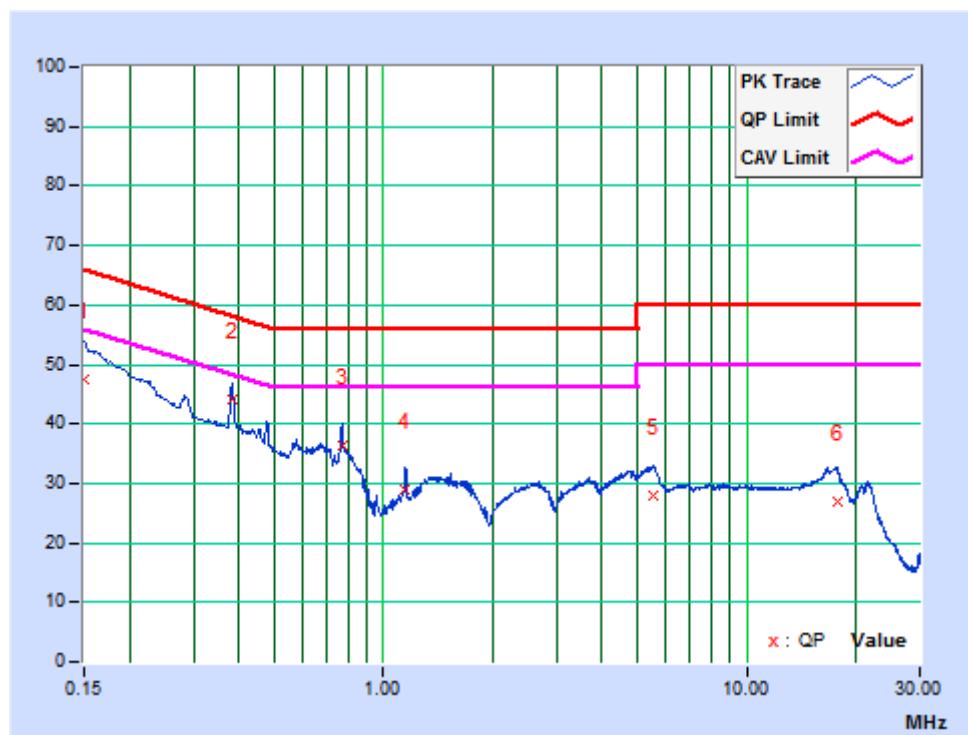
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

3. The emission levels of other frequencies were very low against the limit.

4. Margin value = Emission level - Limit value

5. Correction factor = Insertion loss + Cable loss

6. Emission Level = Correction Factor + Reading Value.





## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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 §15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field strength of fundamental (milli-volts/meter)	Field strength of harmonics (micro-volts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

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 (dBuV/m) = 20 log 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.



#### 4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Mar. 12,17	Mar. 11,18
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	Nov. 04,17	Nov. 03,18
Bilog Antenna (30MHz~1GHz)	Teseq	CBL 6111D	30643	Jul. 12, 17	Jul. 11, 18
Loop antenna (9KHz ~30MHz)	Daze	ZN30900A	0708	Mar. 12,17	Mar. 11,18
Amplifier (9KHz-1GHz)	SONOMA	310D	186955	Mar. 04,17	Mar. 03, 18
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 18,17	May 17,18
GPS Generator+Antenna	TOJOIN	GNSS-5000A	E1-010119	Aug. 08, 17	Aug. 07, 18
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Mar. 12,17	Mar. 11,18
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
Horn Antenna (18GHz-40GHz)	SCHWARZBEC K	BBHA 9170	BBHA9170242	Mar. 15,17	Mar. 14,18
Broadband Preamplifier (1GHz-18GHz)	SCHWARZBEC K	BBV9718	305	Mar. 09,17	Mar. 08,18
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,17	Nov. 03,18
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug. 08,17	Aug. 07,18
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A	N/A

**NOTE:**

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 749762.



#### 4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
- g. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

#### NOTE:

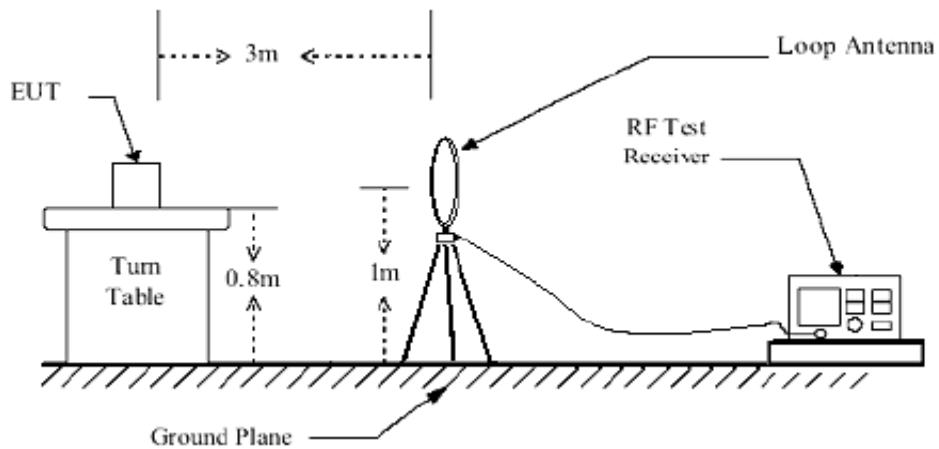
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

#### 4.2.4 DEVIATION FROM TEST STANDARD

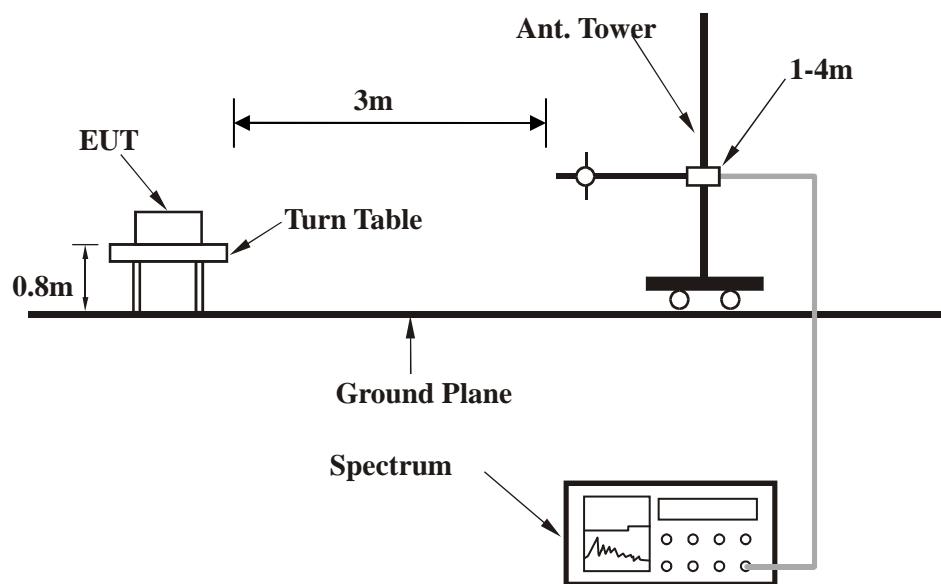
No deviation.

#### 4.2.5 TEST SETUP

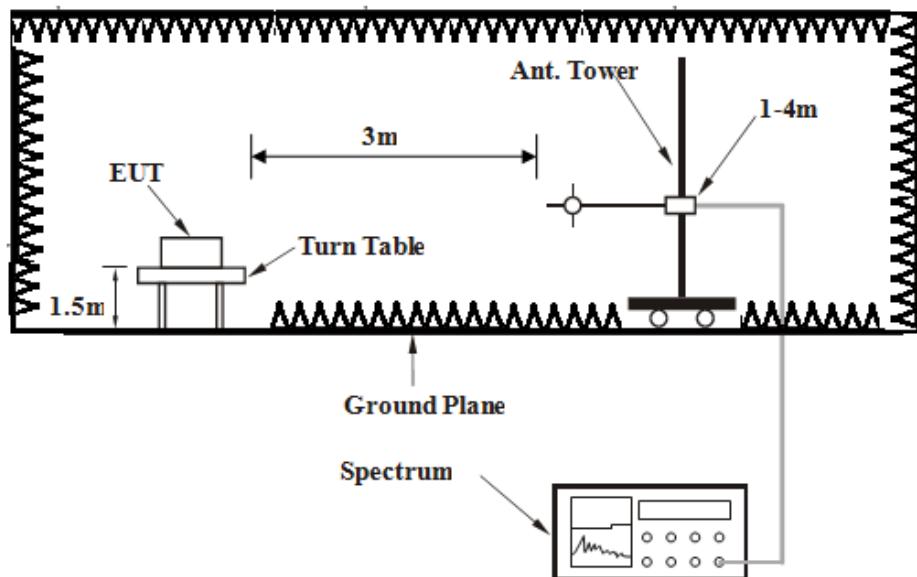
##### Below 30MHz test setup



##### Below 1GHz test setup



### Above 1GHz test setup



**Note:** For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.2.6 EUT OPERATING CONDITIONS

- c) Turned on the power of all equipment.
- d) EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.



#### 4.2.7 TEST RESULTS

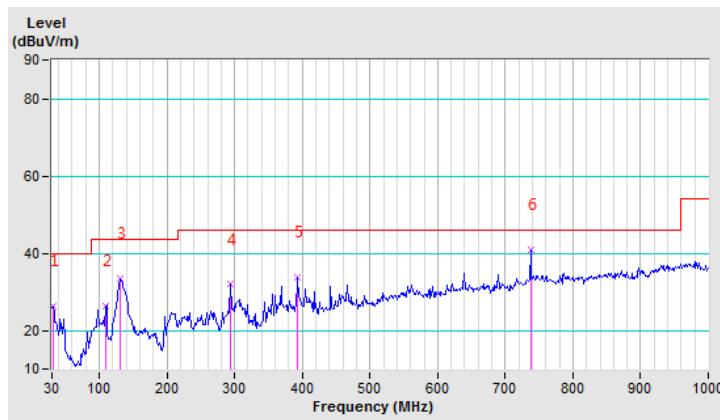
##### BELOW 1GHz WORST-CASE DATA

CHANNEL	TX Middle Channel	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.55	26.41 QP	40.00	-13.59	1.00 H	201	33.54	-7.13
2	109.28	26.31 QP	43.50	-17.19	1.00 H	43	39.26	-12.95
3	131.04	33.40 QP	43.50	-10.10	1.00 H	153	45.70	-12.30
4	294.26	31.94 QP	46.00	-14.06	1.00 H	294	40.40	-8.46
5	393.75	33.86 QP	46.00	-12.14	1.00 H	352	38.17	-4.31
6	737.29	40.80 QP	46.00	-5.20	1.00 H	1	36.12	4.68

##### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.





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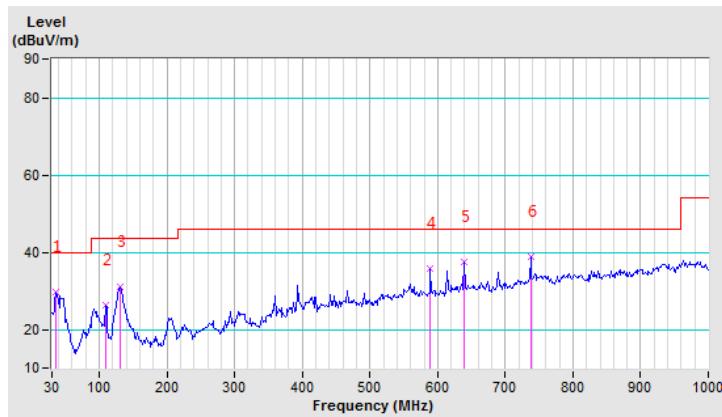
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CHANNEL	TX Middle Channel	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	36.22	29.59 QP	40.00	-10.41	2.00 V	233	39.18	-9.59
2	109.28	26.43 QP	43.50	-17.07	2.00 V	192	39.38	-12.95
3	131.04	30.96 QP	43.50	-12.54	2.00 V	75	43.26	-12.30
4	589.62	35.81 QP	46.00	-10.19	2.00 V	283	35.03	0.78
5	639.36	37.49 QP	46.00	-8.51	2.00 V	62	35.30	2.19
6	737.29	38.84 QP	46.00	-7.16	2.00 V	100	34.16	4.68

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.





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**ABOVE 1GHz WORST-CASE DATA:**

<b>CHANNEL</b>	TX Low Channel	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5740.00	99.10 PK			1.20 H	155	91.49	7.61
2	5740.00	77.17 AV			1.20 H	155	69.56	7.61
3	11480.00	51.11 PK	74.00	-22.89	1.00 H	45	32.70	18.41
4	11480.00	29.18 AV	54.00	-24.82	1.00 H	45	10.77	18.41
5	17220.00	59.68 PK	74.00	-14.32	1.45 H	50	32.75	26.93
6	17220.00	37.75 AV	54.00	-16.25	1.45 H	50	10.82	26.93

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5740.00	101.53 PK			1.00 V	215	93.92	7.61
2	5740.00	79.60 AV			1.00 V	215	71.99	7.61
3	11480.00	48.69 PK	74.00	-25.31	1.20 V	49	30.28	18.41
4	11480.00	26.76 AV	54.00	-27.24	1.20 V	49	8.35	18.41
5	17220.00	57.49 PK	74.00	-16.51	1.94 V	72	30.56	26.93
6	17220.00	35.56 AV	54.00	-18.44	1.94 V	72	8.63	26.93

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.



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CHANNEL	TX Middle Channel	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5790.00	99.85 PK			2.01 H	85	92.06	7.79
2	5790.00	77.92 AV			2.01 H	85	70.13	7.79
3	11580.00	51.48 PK	74.00	-22.52	1.00 H	190	33.01	18.47
4	11580.00	29.55 AV	54.00	-24.45	1.00 H	190	11.08	18.47
5	17370.00	59.06 PK	74.00	-14.94	1.66 H	217	32.35	26.71
6	17370.00	37.13 AV	54.00	-16.87	1.66 H	217	10.42	26.71

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5790.00	101.55 PK			1.60 V	48	93.76	7.79
2	5790.00	79.62 AV			1.60 V	48	71.83	7.79
3	11580.00	48.26 PK	74.00	-25.74	1.50 V	82	29.79	18.47
4	11580.00	26.33 AV	54.00	-27.67	1.50 V	82	7.86	18.47
5	17370.00	57.62 PK	74.00	-16.38	1.66 V	12	30.91	26.71
6	17370.00	35.69 AV	54.00	-18.31	1.66 V	12	8.98	26.71

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.



CHANNEL	TX High Channel	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5845.00	98.96 PK			1.22 H	145	90.99	7.97
2	5845.00	77.03 AV			1.22 H	145	69.06	7.97
3	11690.00	51.25 PK	74.00	-22.75	1.60 H	145	32.65	18.60
4	11690.00	29.32 AV	54.00	-24.68	1.60 H	145	10.72	18.60
5	17535.00	58.84 PK	74.00	-15.16	1.00 H	320	32.28	26.56
6	17535.00	36.91 AV	54.00	-17.09	1.00 H	320	10.35	26.56
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5845.00	102.01 PK			3.55 V	48	94.04	7.97
2	5845.00	80.08 AV			3.55 V	48	72.11	7.97
3	11690.00	47.62 PK	74.00	-26.38	1.00 V	190	29.02	18.60
4	11690.00	25.69 AV	54.00	-28.31	1.00 V	190	7.09	18.60
5	17535.00	56.99 PK	74.00	-17.01	1.80 V	143	30.43	26.56
6	17535.00	35.06 AV	54.00	-18.94	1.80 V	143	8.50	26.56

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.



## 4.3 20dB BANDWIDTH MEASUREMENT

### 4.3.1 LIMITS OF 20dB BANDWIDTH MEASUREMENT

According to FCC 15.215(c), must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

### 4.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	May 19,17	May 18,18
Power Sensor	Keysight	U2021XA	MY55060018	May 19,17	May 18,18
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 13, 17	Oct.12, 18
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05,17	Sep. 04,18
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 04,17	Nov. 03,18
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 04,17	Nov. 03,18
Signal Generator	Agilent	N5183A	MY50140980	Nov. 04,17	Nov. 03,18
Agile Signal Generator	Agilent	8645A	Agilent	Aug.08, 17	Aug.07, 18
Spectrum Analyzer	Keysight	N9020A	MY55400499	Apr. 10,17	Apr. 09,18
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Dec.05, 17	Dec. 04, 18
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug.08, 17	Aug.07, 18
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A	N/A

#### NOTE:

1. The test was performed in RF Oven room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

### 4.3.3 TEST PROCEDURE

- a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
- d. Repeat above procedures until all frequencies measured were complete.



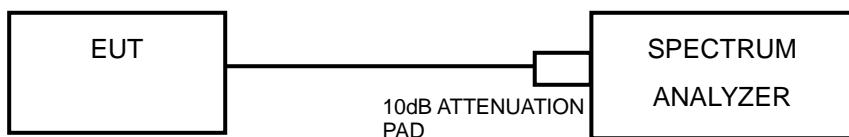
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#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.3.5 TEST SETUP



#### 4.3.6 EUT OPERATING CONDITIONS

- Turned on the power of all equipment.
- EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

#### 4.3.7 TEST RESULTS

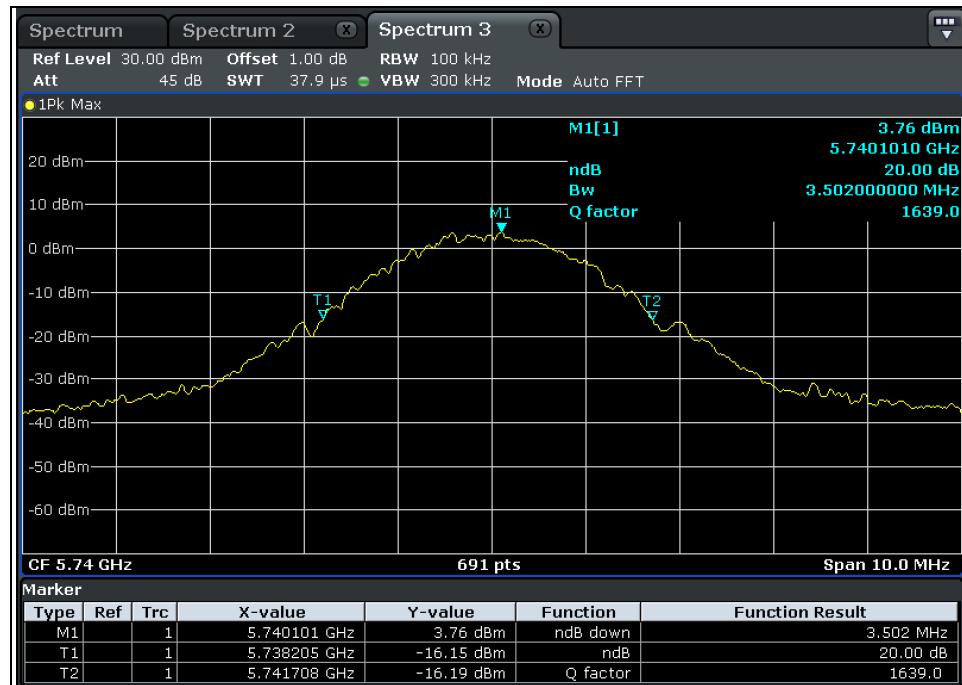
CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	5740	3.502
Middle	5790	3.560
High	5845	3.632



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### Test Data: Low channel



### Test Data: Middle channel

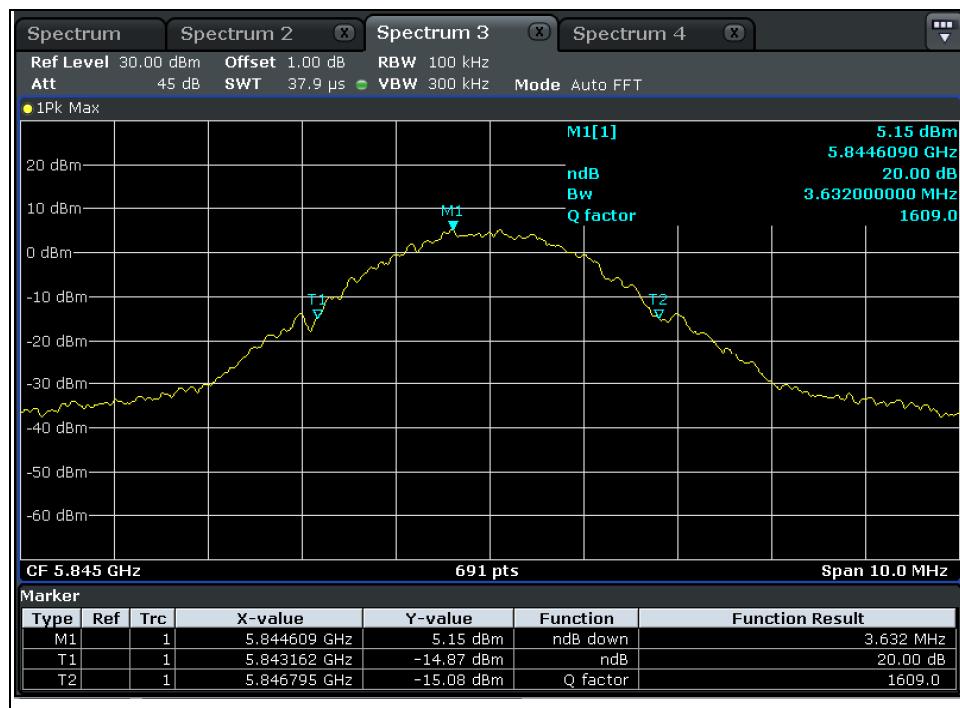




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**Test Data: High channel**





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## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



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## 6. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---