



**Neutron Engineering Inc.**

# Bluetooth Radio Test Report

**FCC ID: TQYBSMS1268WA00**

This report concerns (check one) : ☒ Original Grant ☐ Class II Change

**Issued Date** : Mar. 05, 2012

**Project No.** : 1111012A

**Equipment** : Doggy Radio

**Model Name** : ORG

**Applicant** : JAZZ HIPSTER CORPORATION

**Address** : 2F, No.512, Yuan-San Road, Chung-Ho  
City, Taipei Hsien, Taiwan.

**Tested by:** Neutron Engineering Inc. EMC Laboratory

**Date of Receipt:** Jan. 06, 2012

**Date of Test:** Jan. 06, 2012 ~ Feb. 16, 2012

**Testing Engineer:** Rush Kao  
(Rush Kao)

**Technical Manager:** Jeff Yang  
(Jeff Yang)

**Authorized Signatory:** Andy Chiu  
(Andy Chiu)

**Neutron Engineering Inc.**

B1, No. 37, Lane 365, YangGuang St.,  
NeiHu District 114, Taipei, Taiwan.

TEL: +886-2-2657-3299

FAX: +886-2-2657-3331





**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.**

**Neutron's** reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **Neutron** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **Neutron** issued reports.

**Neutron's** reports must not be used by the client to claim product endorsement by the authorities or any agency of the Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **Neutron-self**, extracts from the test report shall not be reproduced except in full with **Neutron's** authorized written approval.

**Neutron's** laboratory quality assurance procedures are in compliance with the **ISO Guide 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

**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.



<b>Table of Contents</b>	<b>Page</b>
<b>1 . CERTIFICATION</b>	<b>6</b>
<b>2 . SUMMARY OF TEST RESULTS</b>	<b>7</b>
2.1 TEST FACILITY	8
2.2 MEASUREMENT UNCERTAINTY	8
<b>3 . GENERAL INFORMATION</b>	<b>9</b>
3.1 GENERAL DESCRIPTION OF EUT	9
3.2 DESCRIPTION OF TEST MODES	11
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING	12
3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	13
3.5 DESCRIPTION OF SUPPORT UNITS	14
<b>4 . EMC EMISSION TEST</b>	<b>15</b>
4.1 CONDUCTED EMISSION MEASUREMENT	15
4.1.1 POWER LINE CONDUCTED EMISSION	15
4.1.2 MEASUREMENT INSTRUMENTS LIST	15
4.1.3 TEST PROCEDURE	16
4.1.4 DEVIATION FROM TEST STANDARD	16
4.1.5 TEST SETUP	16
4.1.6 EUT OPERATING CONDITIONS	17
4.1.7 TEST RESULTS	18
4.2 RADIATED EMISSION MEASUREMENT	20
4.2.1 RADIATED EMISSION LIMITS	20
4.2.2 MEASUREMENT INSTRUMENTS LIST AND SETTING	21
4.2.3 TEST PROCEDURE	22
4.2.4 DEVIATION FROM TEST STANDARD	22
4.2.5 TEST SETUP	23
4.2.6 EUT OPERATING CONDITIONS	23
4.2.7 TEST RESULTS-BETWEEN 30MHZ - 1000MHZ - TX	24
4.2.8 TEST RESULTS - ABOVE 1000MHZ - TX	26
4.2.9 TEST RESULTS-RESTRICTED BANDS REQUIREMENTS	50
<b>5 . NUMBER OF HOPPING CHANNEL</b>	<b>58</b>
5.1 APPLIED PROCEDURES / LIMIT	58
5.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING	58
5.1.2 TEST PROCEDURE	58
5.1.3 DEVIATION FROM STANDARD	58
5.1.4 TEST SETUP	58
5.1.5 EUT OPERATION CONDITIONS	58
5.1.6 TEST RESULTS	59



<b>Table of Contents</b>	<b>Page</b>
<b>6 . AVERAGE TIME OF OCCUPANCY</b>	<b>61</b>
6.1 APPLIED PROCEDURES / LIMIT	61
6.1.1 MEASUREMENT INSTRUMENTS LIST	61
6.1.2 TEST PROCEDURE	61
6.1.3 DEVIATION FROM STANDARD	61
6.1.4 TEST SETUP	62
6.1.5 EUT OPERATION CONDITIONS	62
6.1.6 TEST RESULTS	63
<b>7 . HOPPING CHANNEL SEPARATION MEASUREMENT &amp; BANDWITH TEST</b>	<b>75</b>
7.1 APPLIED PROCEDURES / LIMIT	75
7.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING	75
7.1.2 TEST PROCEDURE	75
7.1.3 DEVIATION FROM STANDARD	75
7.1.4 TEST SETUP	75
7.1.5 EUT OPERATION CONDITIONS	75
7.1.6 TEST RESULTS	76
<b>8 . PEAK OUTPUT POWER TEST</b>	<b>84</b>
8.1 APPLIED PROCEDURES / LIMIT	84
8.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING	84
8.1.2 TEST PROCEDURE	84
8.1.3 DEVIATION FROM STANDARD	84
8.1.4 TEST SETUP	84
8.1.5 EUT OPERATION CONDITIONS	84
8.1.6 TEST RESULTS	85
<b>9 . ANTENNA CONDUCTED SPURIOUS EMISSION</b>	<b>89</b>
9.1 APPLIED PROCEDURES / LIMIT	89
9.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING	89
9.1.2 TEST PROCEDURE	89
9.1.3 DEVIATION FROM STANDARD	89
9.1.4 TEST SETUP	90
9.1.5 EUT OPERATION CONDITIONS	90
9.1.6 TEST RESULTS	91
<b>10 . RF EXPOSURE TEST</b>	<b>99</b>
10.1 APPLIED PROCEDURES / LIMIT	99
10.1.1 MEASUREMENT INSTRUMENTS LIST	99
10.1.2 MPE CALCULATION METHOD	99
10.1.3 DEVIATION FROM STANDARD	100
10.1.4 TEST SETUP	100
10.1.5 EUT OPERATION CONDITIONS	100



Table of Contents	Page
11 . EUT TEST PHOTO	101



## **1. CERTIFICATION**

Equipment : Doggy Radio  
Brand Name : Sayers Studio  
Model Name : ORG  
Applicant : JAZZ HIPSTER CORPORATION  
Date of Test : Jan. 06, 2012 ~ Feb. 16, 2012  
Standards : FCC Part15, Subpart C: 2010 / ANCI C63.4: 2009

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-FCCP-1-1111012A) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).

**2. SUMMARY OF TEST RESULTS**

Test procedures according to the technical standards:

<b>FCC Part15, Subpart C: 2010</b>			
Standard Section	Test Item	Judgment	Remark
<b>15.207</b>	Conducted Emission	PASS	
<b>15.247 (c)</b>	Antenna conducted Spurious Emission	PASS	
<b>15.247 (a)(1)</b>	Hopping Channel Separation	PASS	
<b>15.247 (b)</b>	Peak Output Power	PASS	
<b>15.247 (c)</b>	Radiated Spurious Emission	PASS	
<b>15.247 (b)(1)</b>	Number of Hopping Frequency	PASS	
<b>15.247 (a)(1)</b>	Dwell Time	PASS	
<b>15.205</b>	Restricted Bands	PASS	
<b>15.203</b>	Antenna Requirement	PASS	
<b>1.1307 1.1310 2.1091 2.1093</b>	RF Exposure Compliance	PASS	

**NOTE:**

- (1) "N/A" denotes test is not applicable in this Test Report.
- (2) Portable device; SAR report is required.
- (3) Reference standerads is RSS-GEN 7.2.4
- (4) Reference standerads is RSS-GEN 7.2.5
- (5) Reference standerads is RSS-GEN 7.2.2
- (6) Reference standerads is RSS-GEN 7.1.2
- (7) Reference standerads is FCCP-102



## 2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

- C02:** (VCCI RN: C-3477; FCC RN: 614388; FCC DN: TW1054)  
1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)
- CB08:** (VCCI RN: G-91; FCC RN: 614388; FCC DN: TW1054;  
IC Assigned Code: 4428C-1)  
1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

## 2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95%**.

The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
C02	ANSI	150 kHz ~ 30 MHz	2.59	

B. Radiated Measurement :

Test Site	Item	Measurement Frequency Range	Uncertainty	NOTE
CB08	Radiated Emission at 3m	Horizontal Polarization	30 - 00MHz	3.35 dB
			200 - 1000MHz	.11 dB
			1 - 18GHz	3.97 dB
			18 - 40GHz	4.01 dB
	Vertical Polarization		30 - 200MHz	3.22 dB
			200 - 1000MHz	3.24 dB
			1 - 18GHz	4.05 dB
			18 - 40GHz	4.04 dB

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our  $U_{lab}$  values in CISPR 16-4-2 terminology.

Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called  $U_{CISPR}$ , as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz : 3.6 dB

Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz : 5.2 dB

It can be seen that our  $U_{lab}$  values are smaller than  $U_{CISPR}$ .





### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

Equipment	Doggy Radio
Brand Name	Sayers Studio
Model Name	ORG
OEM Brand/Model Name	N/A
Model Difference	N/A
Product Description	The EUT is a Doggy Radio.
	Operation Frequency: 2402~2480 MHz
	Modulation Type: FHSS(GFSK)
	Bit Rate of Transmitter: 1/3 Mbps
	Number Of Channel Please see Note 2.
	Antenna Designation: Please see Note 3.
	Antenna Gain(Peak) Please see Note 3.
	Maximum Peak Output Power: 1 Mbps: 4.87 dBm 3 Mbps: 3.86 dBm
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Power Source	DC Voltage supplied from Switching Power Supply.
Power Rating	Switching Power Supply: I/P: AC 100-240V 50/60Hz 1.2A MAX / O/P: DC 15V 2000mA
Products Covered	Please refer to the User's Manual
Connecting I/O Port(s)	1 * Switching Power Supply: S040EM1500200 1 * USB Cable 1 * Audio Cable
EUT Modification(s)	N/A



Note:

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

**2. Bluetooth:**

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

**3. Table for Filed Antenna**

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Dipole	I-PEX	2.71



### 3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly 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	Bluetooth / 1 Mbps / CH00, CH39, CH78
Mode 2	Bluetooth / 3 Mbps / CH00, CH39, CH78

For Conducted Test	
Final Test Mode	Description
Mode 1	Bluetooth / 1 Mbps / CH39

For Radiated Emission (30MHz – 1000MHz)	
Final Test Mode	Description
Mode 2	Bluetooth / 1 Mbps / CH39

For Radiated Emission (Above 1000MHz-Transmit)	
Final Test Mode	Description
Mode 2	Bluetooth / 1 Mbps / CH00, CH39, CH78
Mode 3	Bluetooth / 3 Mbps / CH00, CH39, CH78

For Radiated Emission (Above 1000MHz-Receive)	
Final Test Mode	Description
Mode 2	Bluetooth / 1 Mbps / CH39

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.



### 3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

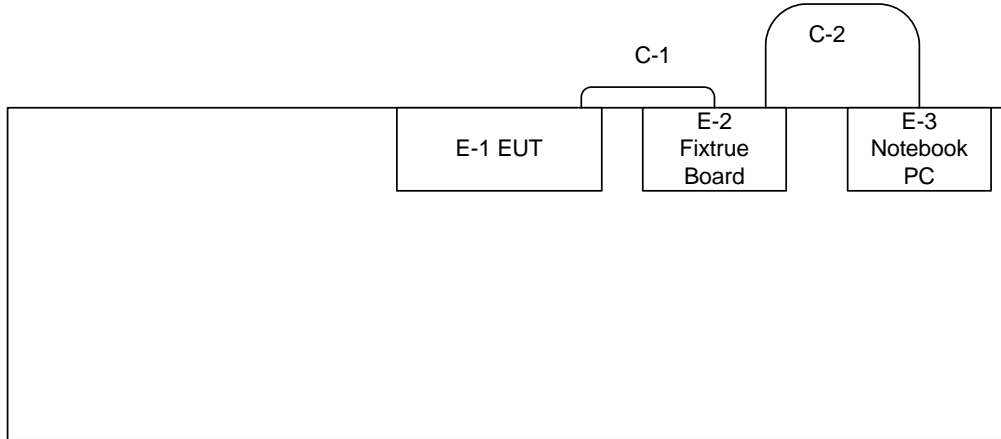
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS

Data Rate	1 Mbps		
Test software Version	Bluetooth test		
Frequency	2402 MHz	2441 MHz	2480 MHz
Power Parameters	63	63	63

Data Rate	3 Mbps		
Test software Version	Bluetooth test		
Frequency	2402 MHz	2441 MHz	2480 MHz
Power Parameters	120	120	120



### 3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



C-1 Data Cable  
C-2 Parallel Cable



### 3.5 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	Doggy Radio	Sayers Studio	ORG	TQYBSMS1268WA00	N/A	EUT
E-2	Fixture Board	N/A	N/A	N/A	N/A	
E-3	Notebook PC	DELL	D600	DOC	7T390 A03	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	0.2M	
C-2	NO	NO	1.5M	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) " ※ " denotes the support equipment by applicant.



#### 4. EMC EMISSION TEST

##### 4.1 CONDUCTED EMISSION MEASUREMENT

##### 4.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
- (3) The test result calculated as following:  
 Measurement Value = Reading Level + Correct Factor  
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)  
 Margin Level = Measurement Value – Limit Value

##### 4.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	00066528	Mar. 22, 2012
2	Test Cable	TIMES	CFD300-NL	130	Jun. 16, 2012
3	TWO-LINE -NETWORK	R&S	ENV216	101050	Jun. 06, 2012
4	EMI Test Receiver	R&S	ESCS 30	8333641017	Jul. 26, 2012

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

#### 4.1.3 TEST PROCEDURE

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

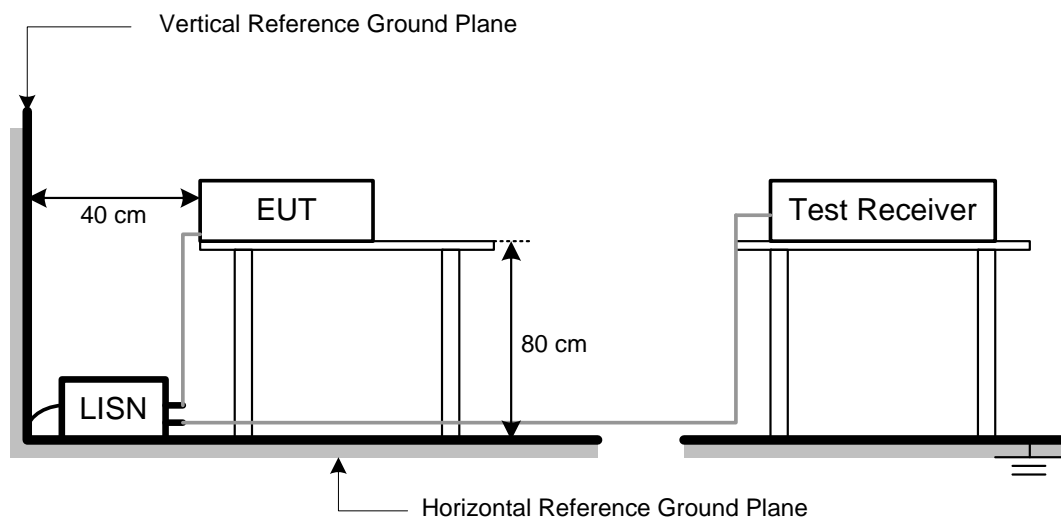
#### NOTE:

- Reading in which marked as Peak, QP or AVG means measurements by using are Quasi-Peak or Average Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.2 sec./ MHz.
- All readings are Peak Mode value unless otherwise stated QP or AVG in column of Note. If the Peak or QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only Peak or QP Mode was measured, but AVG Mode didn't perform.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP







#### **4.1.6 EUT OPERATING CONDITIONS**

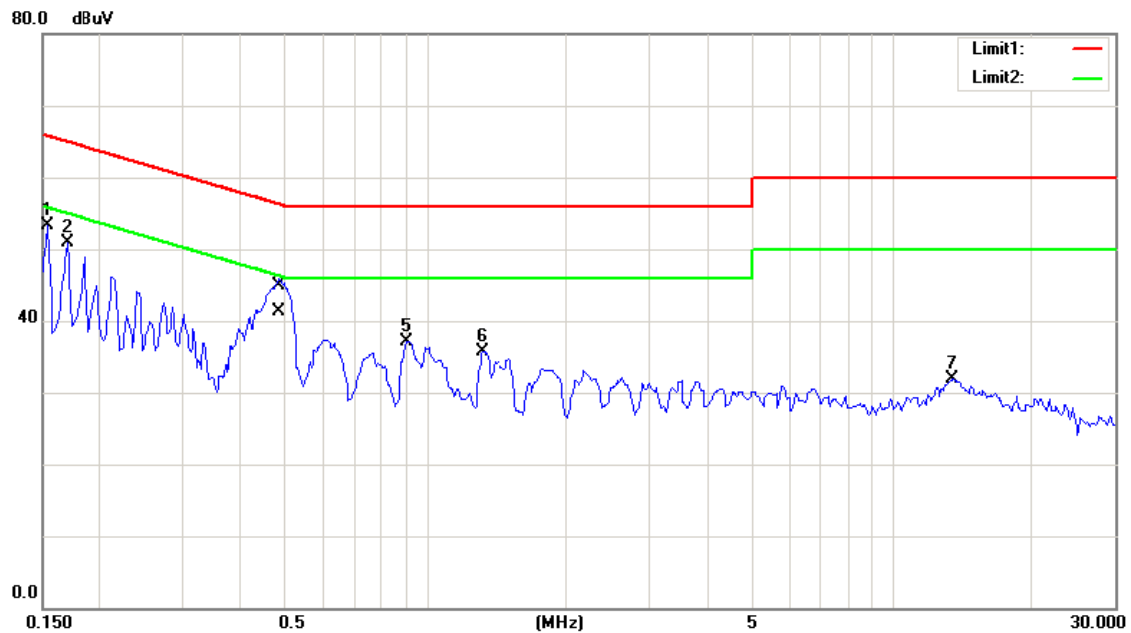
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



#### 4.1.7 TEST RESULTS

EUT :	Doggy Radio	Model Name :	ORG
Temperature :	24 °C	Relative Humidity :	46%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 1 Mbps / CH39		

#### Phase: Line

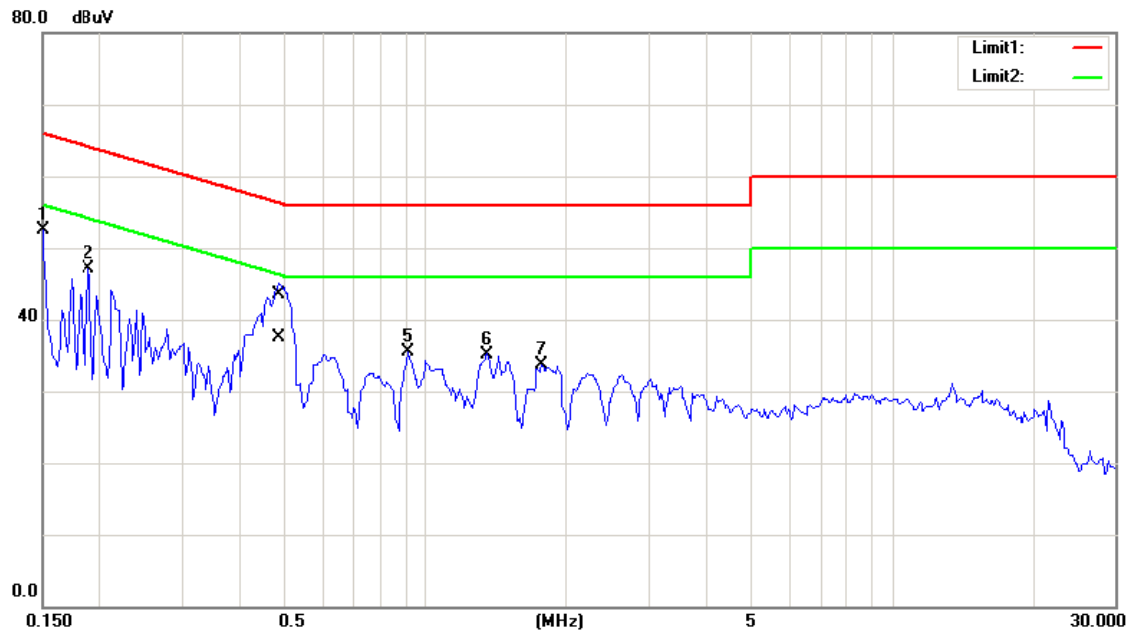


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1540	43.69	9.60	53.29	65.78	-12.49	peak	
2		0.1695	41.30	9.60	50.90	64.98	-14.08	peak	
3		0.4820	35.22	9.63	44.85	56.30	-11.45	QP	
4	*	0.4820	31.66	9.63	41.29	46.30	-5.01	AVG	
5		0.9040	27.54	9.61	37.15	56.00	-18.85	peak	
6		1.3180	26.04	9.62	35.66	56.00	-20.34	peak	
7		13.5367	22.12	9.86	31.98	60.00	-28.02	peak	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	24 °C	Relative Humidity :	46%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 1 Mbps / CH39		

**Phase: Neutral**



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1500	42.86	9.60	52.46	66.00	-13.54	peak	
2		0.1891	37.57	9.60	47.17	64.08	-16.91	peak	
3		0.4820	33.80	9.62	43.42	56.30	-12.88	QP	
4	*	0.4820	27.90	9.62	37.52	46.30	-8.78	AVG	
5		0.9117	25.95	9.60	35.55	56.00	-20.45	peak	
6		1.3453	25.58	9.62	35.20	56.00	-20.80	peak	
7		1.7750	24.15	9.64	33.79	56.00	-22.21	peak	



## 4.2 RADIATED EMISSION MEASUREMENT

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

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolt/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

### LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15B.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).
- (4) The test result calculated as following:  
 Measurement Value = Reading Level + Correct Factor  
 Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain(if use)  
 Margin Level = Measurement Value – Limit Value



#### 4.2.2 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 16, 2012
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-325	Dec. 15, 2012
3	Microwave Pre-amplifier	Agilent	8449B	3008A01714	Apr. 18, 2012
4	Microflex Cable	N/A	N/A	1m	May. 18, 2012
5	Microflex Cable	AISI	S104-SMAP-1	10m	Aug. 21, 2012
6	Microflex Cable	N/A	N/A	3m	Aug. 21, 2012
7	Test Cable	N/A	LMR-400	966_12m	Jun. 16, 2012
8	Test Cable	N/A	LMR-400	966_3m	Jun. 16, 2012
9	Pre-Amplifier	EMC	EMC-330	980001	Jun. 02, 2012
10	Log-Bicon Antenna	Schwarzbeck	VULB9168-352	9168-352	Jun. 20, 2012

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
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	100KHz / 100KHz for peak

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



#### **4.2.3 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 3 meter open area test site. 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. EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- g. For the actual test configuration, please refer to the related Item –EUT Test Photos.
- h. The testing follows the guidelines in ANSI C63.4: 2009 and FCC Public Notice DA 00-705 Measurement Guidelines. In case the emission is fail due to the used RBW / VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

#### **NOTE: (30-1000MHz)**

- a. Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode with Detector BW=120 kHz; SPA setting in RBW=120 kHz, VBW =120 kHz, Swp. Time = 0.3 sec./ MHz.
- b. 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.

#### **NOTE: (Above 1000MHz)**

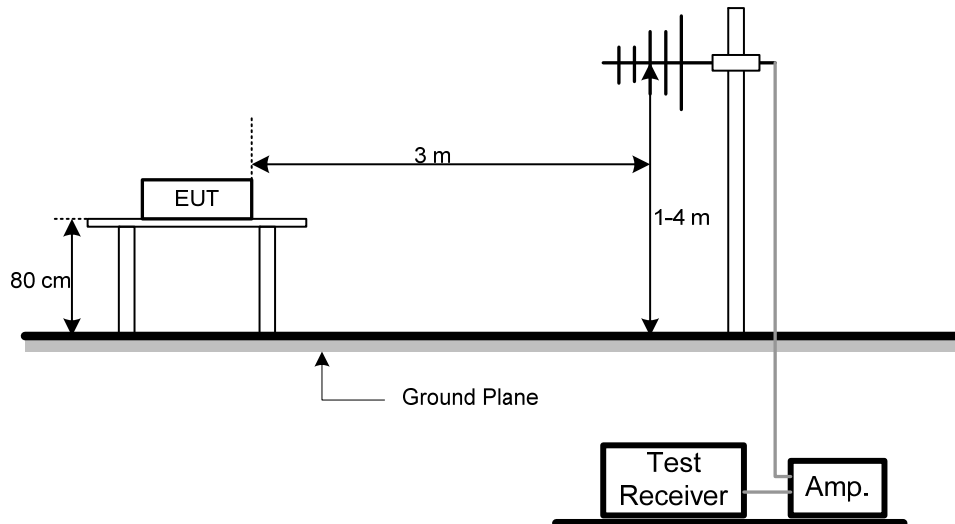
- a. Reading in which marked as Peak means measurements by using are Peak Mode with instrument setting in RBW= 1 MHz, VBW= 1 MHz, Swp. Time = Auto.  
Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW= 1 MHz, VBW= 10 Hz, Swp. Time = Auto.
- b. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform.

#### **4.2.4 DEVIATION FROM TEST STANDARD**

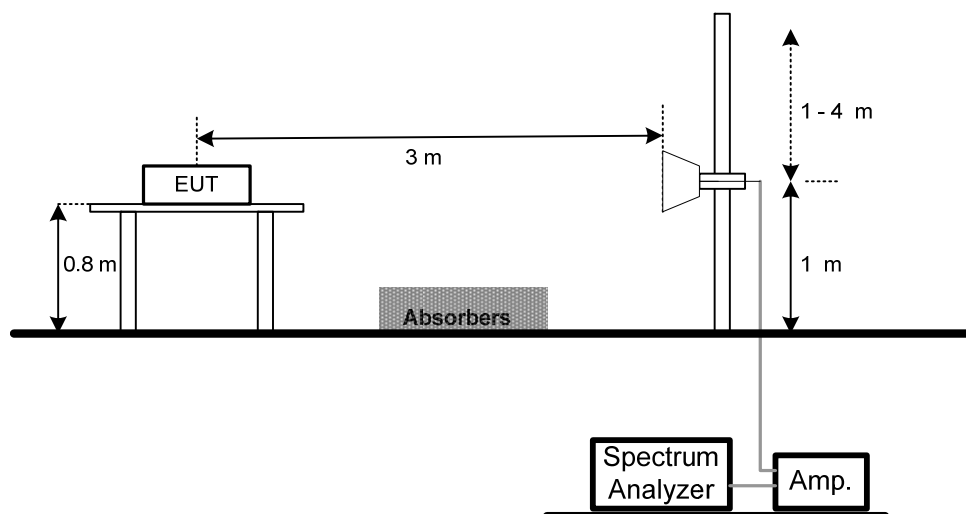
No deviation

#### 4.2.5 TEST SETUP

##### Radiated Emission Test Set-Up Frequency 30 - 1000MHz



##### Radiated Emission Test Set-Up Frequency Above 1 GHz



#### 4.2.6 EUT OPERATING CONDITIONS

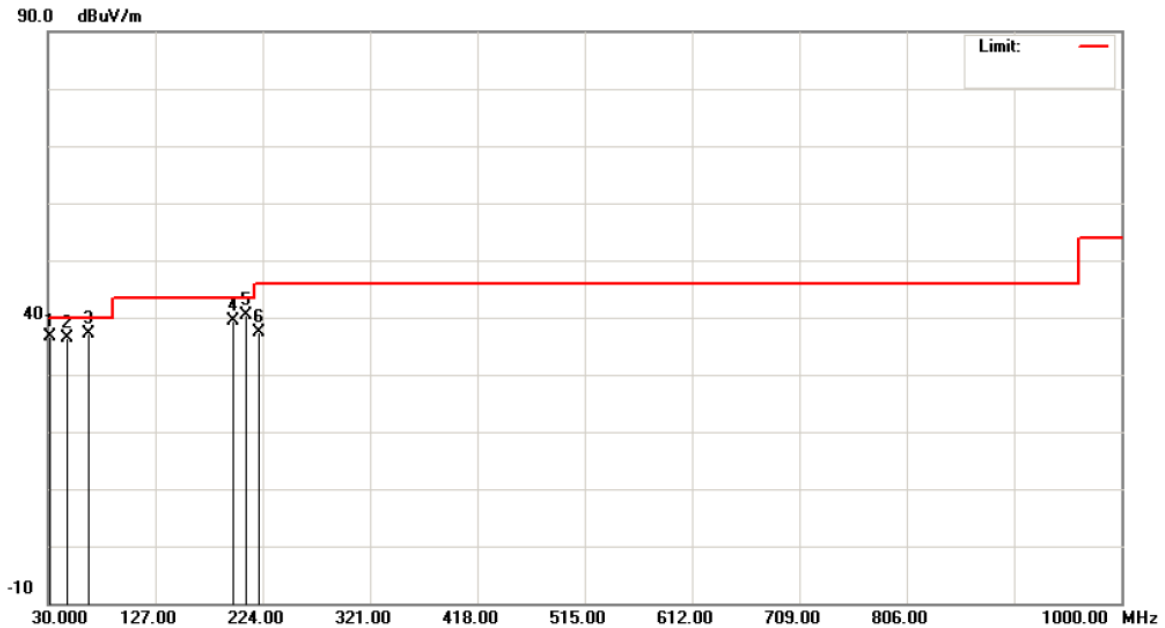
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



#### 4.2.7 TEST RESULTS-BETWEEN 30MHZ - 1000MHZ - TX

EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 1 Mbps / CH39		

**Polarization: Vertical**



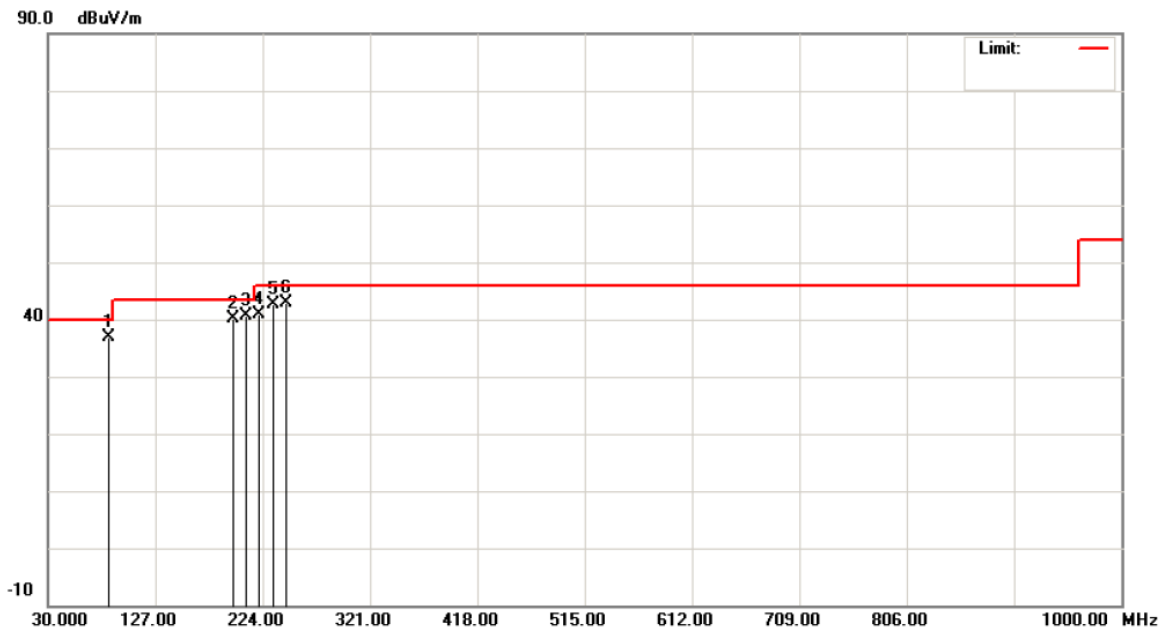
No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	31.9400	49.63	-13.05	36.58	40.00	-3.42	peak	
2	47.4598	48.68	-12.24	36.44	40.00	-3.56	peak	
3 *	66.8600	51.50	-14.49	37.01	40.00	-2.99	peak	
4	196.8398	55.63	-16.24	39.39	43.50	-4.11	peak	
5	208.4798	56.19	-15.89	40.30	43.50	-3.20	peak	
6	220.1199	52.72	-15.41	37.31	46.00	-8.69	peak	





EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 1 Mbps / CH39		

**Polarization: Horizontal**



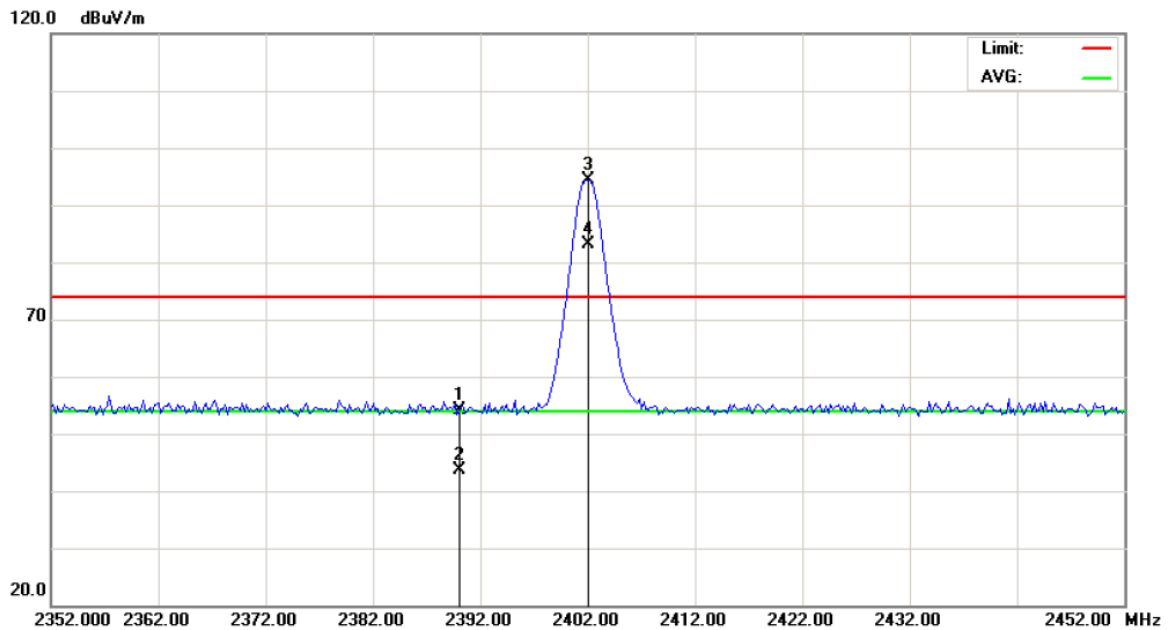
No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	84.3198	54.69	-17.70	36.99	40.00	-3.01	peak	
2	196.8398	56.26	-16.24	40.02	43.50	-3.48	peak	
3 *	208.4798	56.45	-15.89	40.56	43.50	-2.94	peak	
4	220.1199	56.18	-15.41	40.77	46.00	-5.23	peak	
5	233.6999	57.33	-14.79	42.54	46.00	-3.46	peak	
6	245.3399	57.01	-14.24	42.77	46.00	-3.23	peak	



#### 4.2.8 TEST RESULTS - ABOVE 1000MHZ - TX

EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH00		

**Polarization: Vertical**

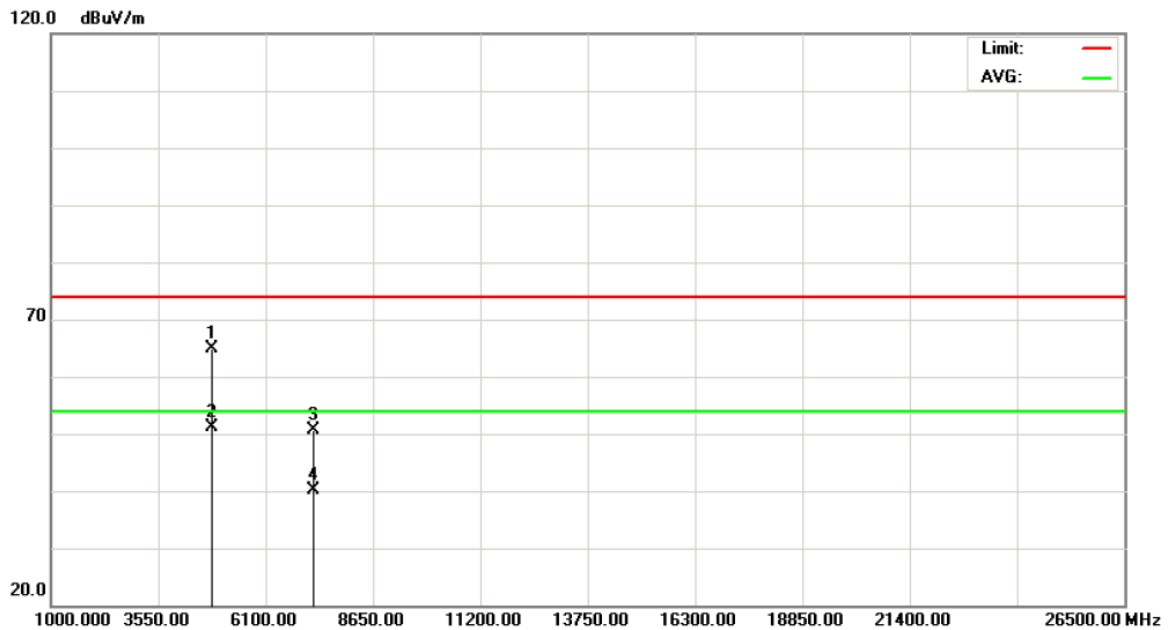


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	21.59	32.59	54.18	74.00	-19.82	peak	
2		2390.000	11.15	32.59	43.74	54.00	-10.26	AVG	
3	X	2402.000	61.71	32.64	94.35	74.00	20.35	peak	
4	*	2402.000	50.50	32.64	83.14	54.00	29.14	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH00		

**Polarization: Vertical**

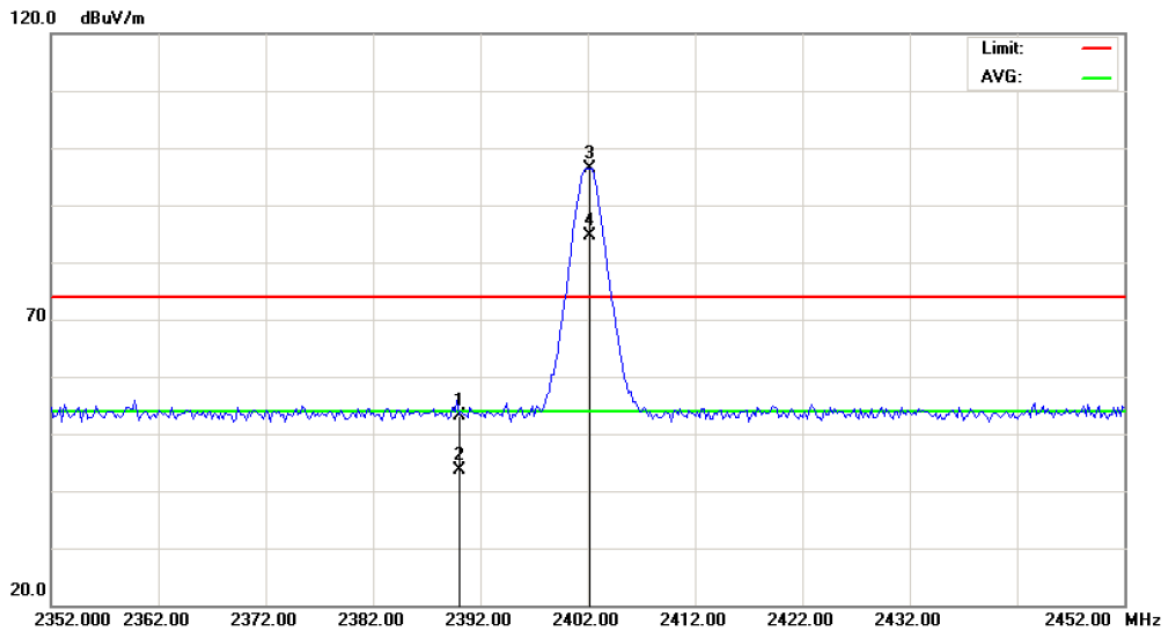


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4803.870	61.49	3.46	64.95	74.00	-9.05	peak	
2 *	4803.870	47.69	3.46	51.15	54.00	-2.85	AVG	
3	7205.690	40.63	9.95	50.58	74.00	-23.42	peak	
4	7205.690	30.13	9.95	40.08	54.00	-13.92	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH00		

**Polarization: Horizontal**

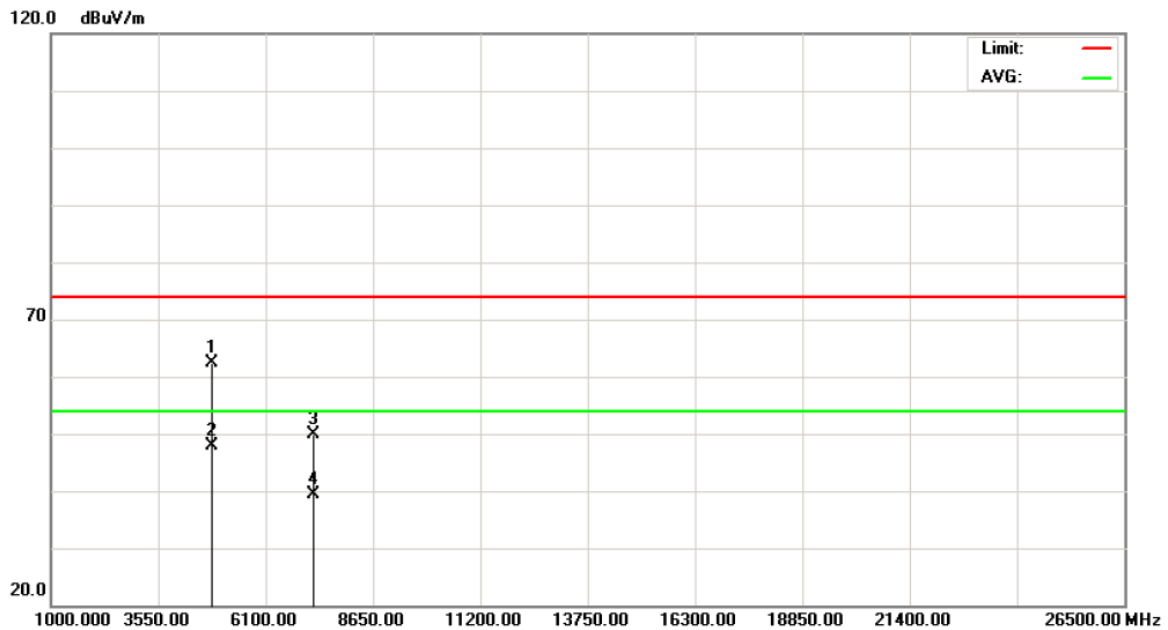


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	20.66	32.59	53.25	74.00	-20.75	peak	
2		2390.000	11.14	32.59	43.73	54.00	-10.27	AVG	
3	X	2402.200	63.84	32.64	96.48	74.00	22.48	peak	
4	*	2402.200	52.11	32.64	84.75	54.00	30.75	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH00		

**Polarization: Horizontal**

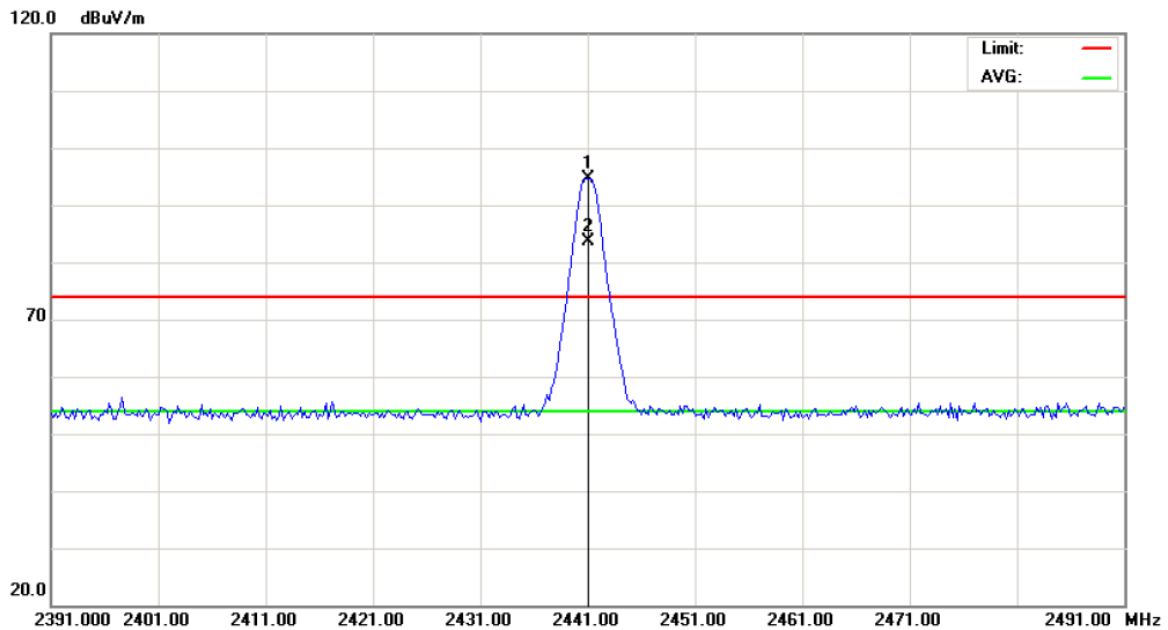


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4803.910	58.91	3.46	62.37	74.00	-11.63	peak	
2 *	4803.910	44.33	3.46	47.79	54.00	-6.21	AVG	
3	7205.920	40.03	9.95	49.98	74.00	-24.02	peak	
4	7205.920	29.31	9.95	39.26	54.00	-14.74	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH39		

**Polarization: Vertical**

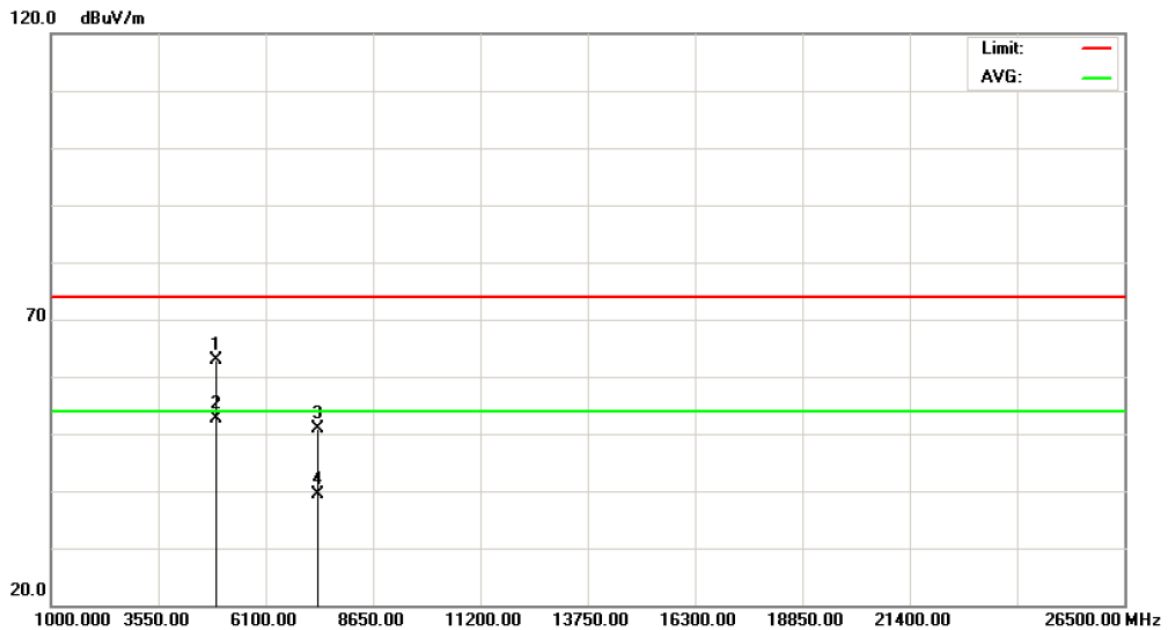


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2441.000	61.85	32.81	94.66	74.00	20.66	peak	
2	*	2441.000	50.76	32.81	83.57	54.00	29.57	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH39		

**Polarization: Vertical**

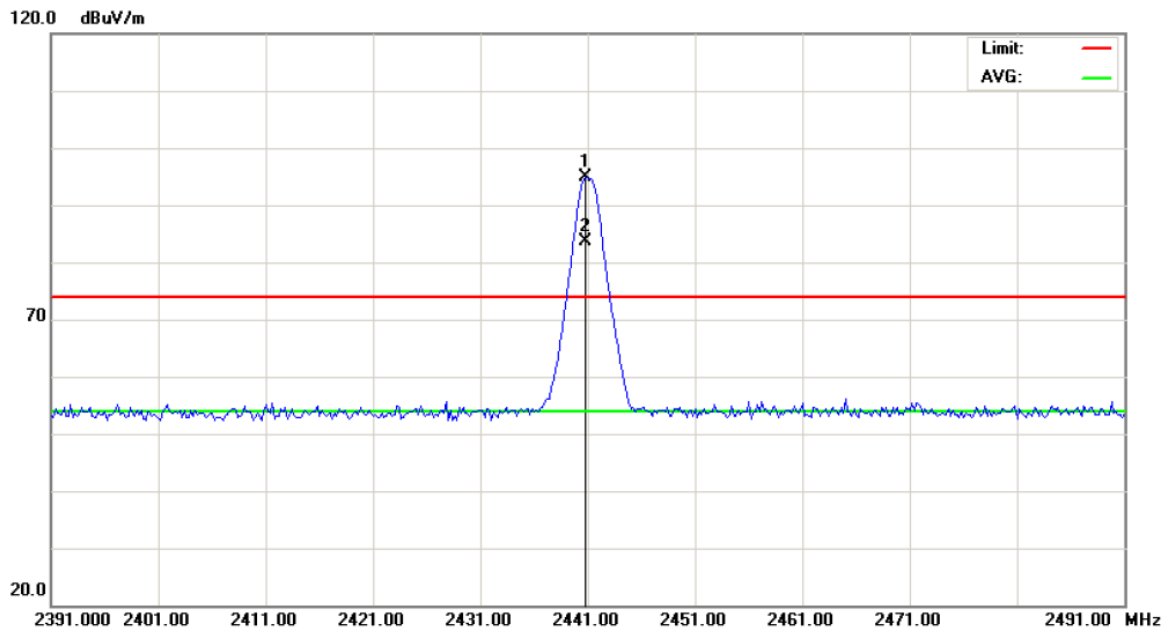


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4881.870	59.35	3.65	63.00	74.00	-11.00	peak	
2 *	4881.870	49.00	3.65	52.65	54.00	-1.35	AVG	
3	7323.070	40.71	10.11	50.82	74.00	-23.18	peak	
4	7323.070	29.20	10.11	39.31	54.00	-14.69	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH39		

**Polarization: Horizontal**



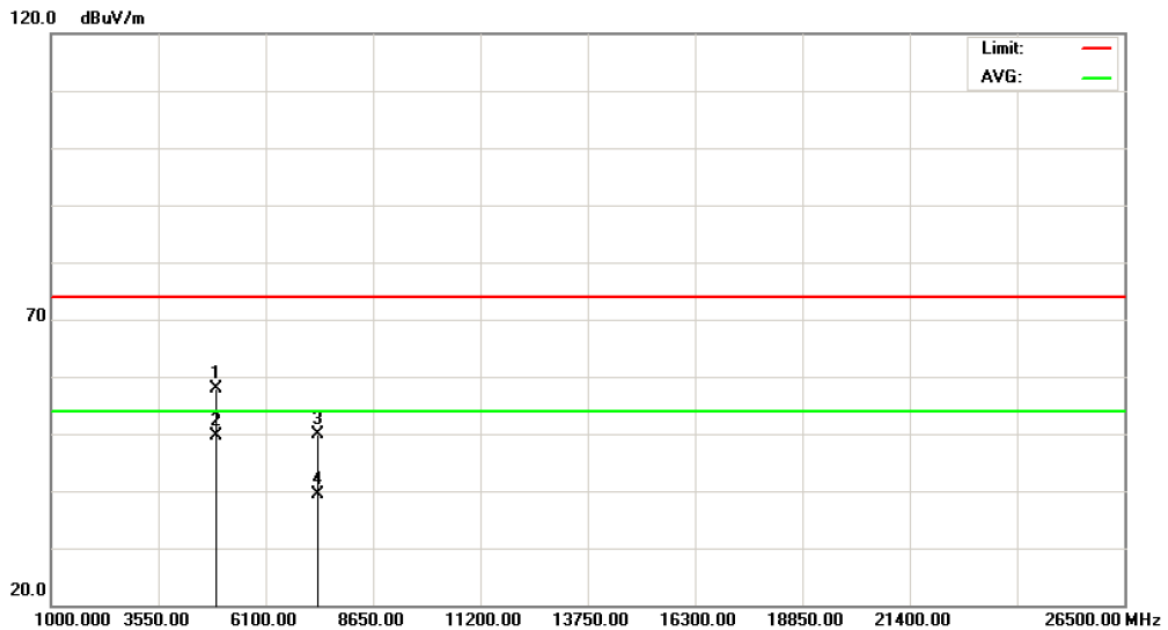
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2440.800	61.99	32.81	94.80	74.00	20.80	peak	
2	*	2440.800	50.73	32.81	83.54	54.00	29.54	AVG	





EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH39		

**Polarization: Horizontal**

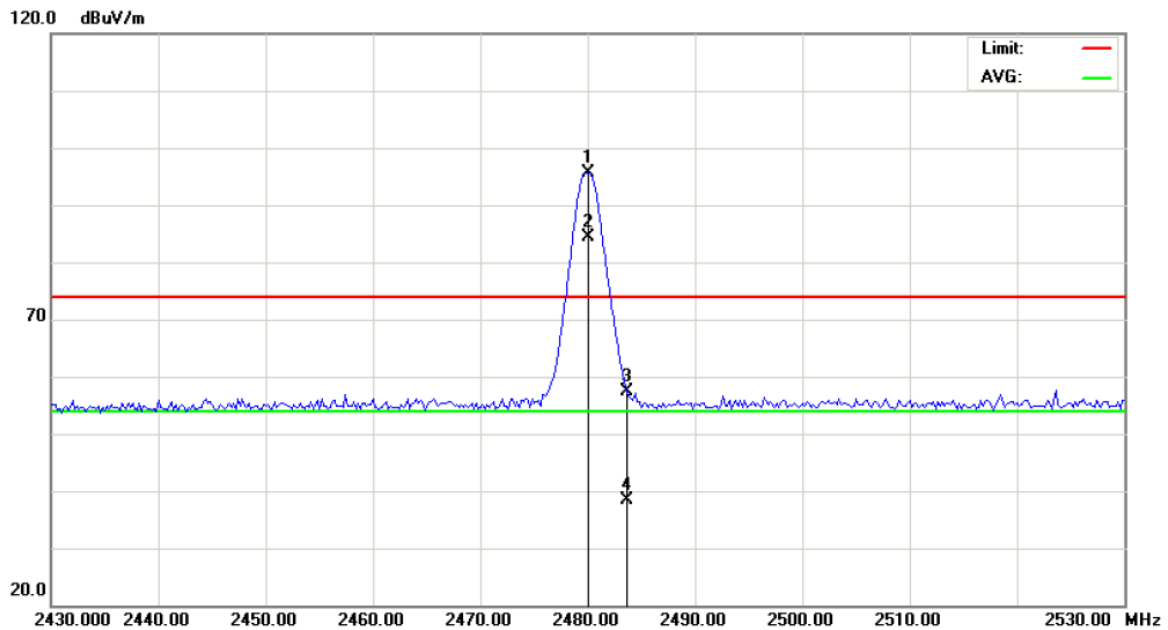


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4881.870	54.12	3.65	57.77	74.00	-16.23	peak	
2 *	4881.870	45.94	3.65	49.59	54.00	-4.41	AVG	
3	7323.080	39.72	10.11	49.83	74.00	-24.17	peak	
4	7323.080	29.16	10.11	39.27	54.00	-14.73	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH78		

**Polarization: Vertical**

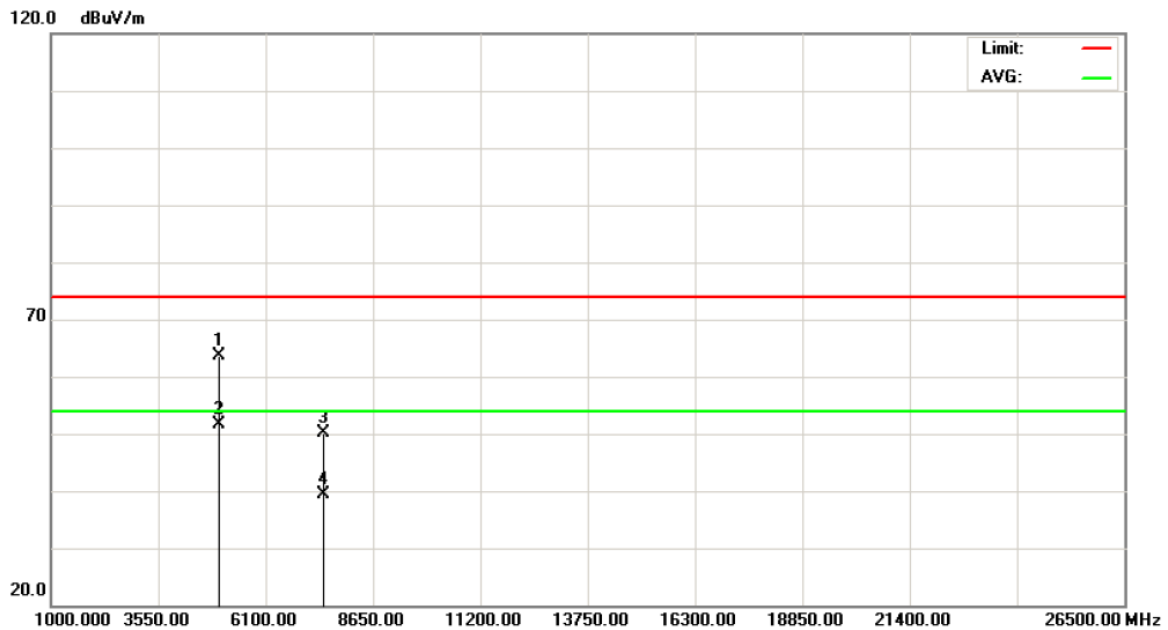


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2479.940	62.58	32.98	95.56	74.00	21.56	peak	
2	*	2479.940	51.42	32.98	84.40	54.00	30.40	AVG	
3		2483.500	24.50	33.00	57.50	74.00	-16.50	peak	
4		2483.500	5.43	33.00	38.43	54.00	-15.57	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH78		

**Polarization: Vertical**

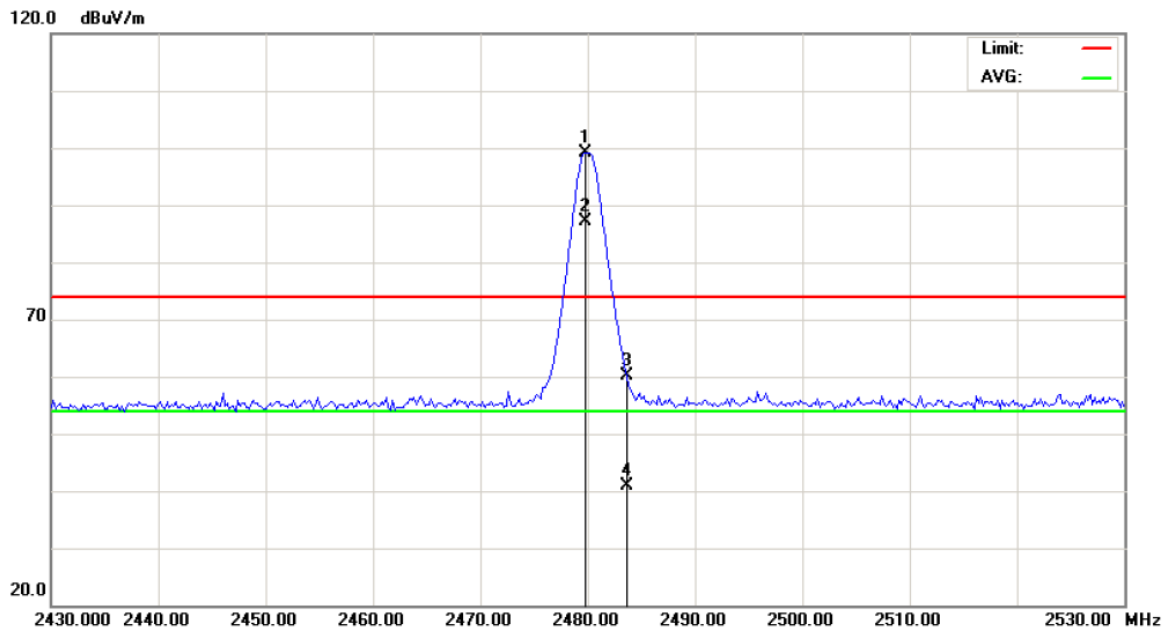


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4959.910	59.89	3.85	63.74	74.00	-10.26	peak	
2 *	4959.910	47.84	3.85	51.69	54.00	-2.31	AVG	
3	7440.110	39.91	10.27	50.18	74.00	-23.82	peak	
4	7440.110	29.11	10.27	39.38	54.00	-14.62	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH78		

**Polarization: Horizontal**

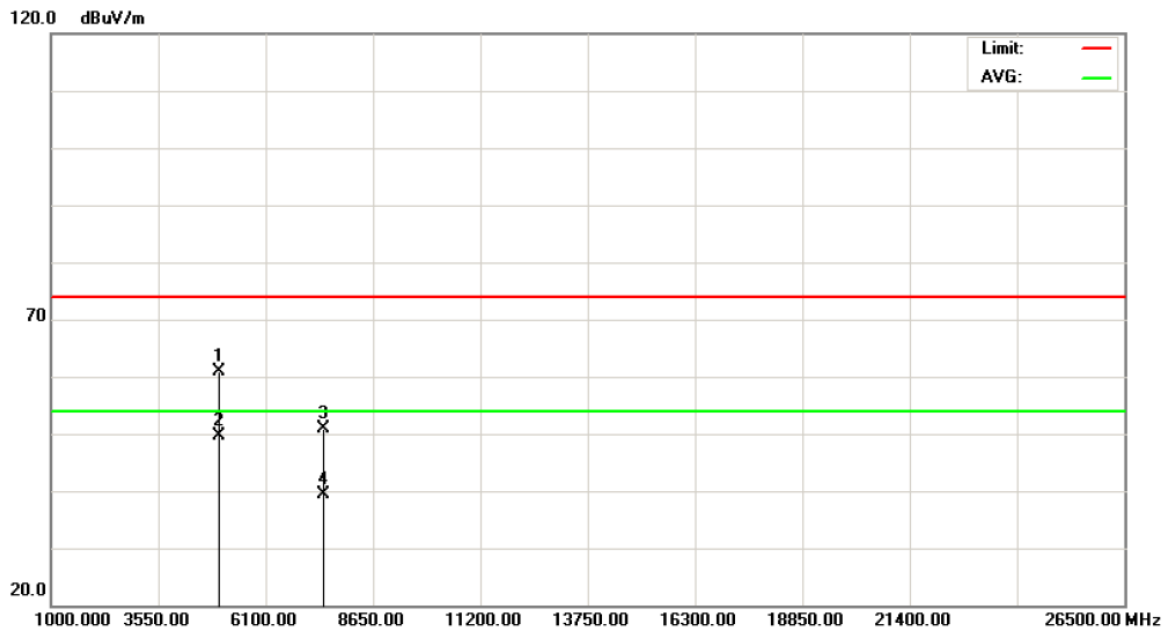


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2479.800	66.17	32.98	99.15	74.00	25.15	peak	
2	*	2479.800	54.15	32.98	87.13	54.00	33.13	AVG	
3		2483.500	27.10	33.00	60.10	74.00	-13.90	peak	
4		2483.500	7.80	33.00	40.80	54.00	-13.20	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH78		

**Polarization: Horizontal**

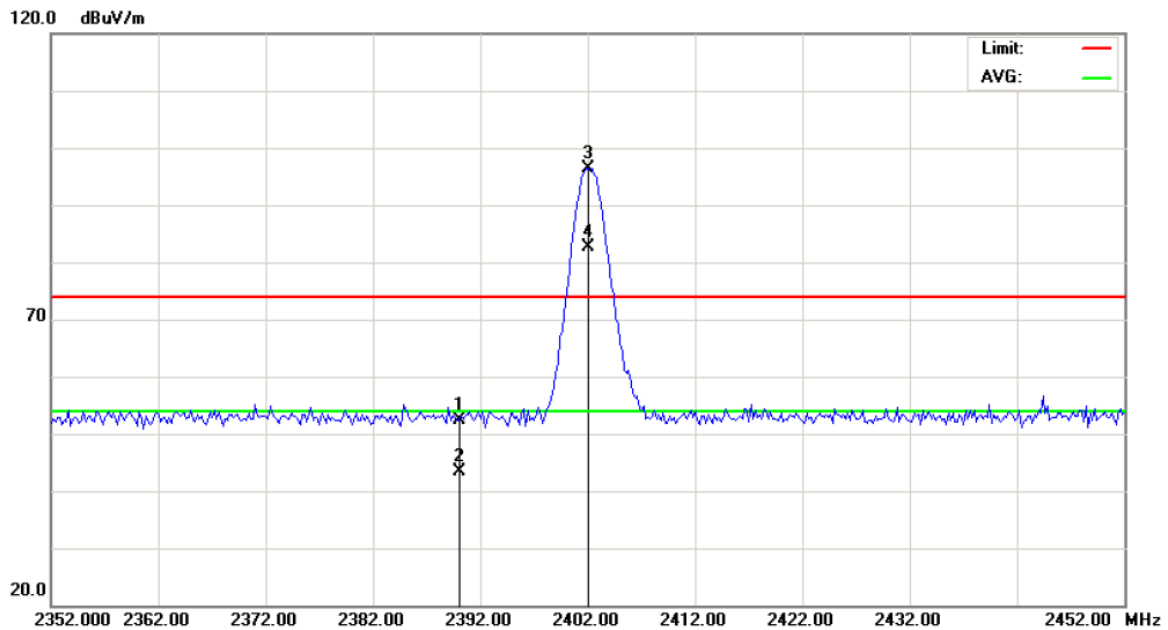


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4959.930	57.14	3.85	60.99	74.00	-13.01	peak	
2 *	4959.930	45.75	3.85	49.60	54.00	-4.40	AVG	
3	7439.930	40.69	10.27	50.96	74.00	-23.04	peak	
4	7439.930	29.09	10.27	39.36	54.00	-14.64	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH00		

**Polarization: Vertical**

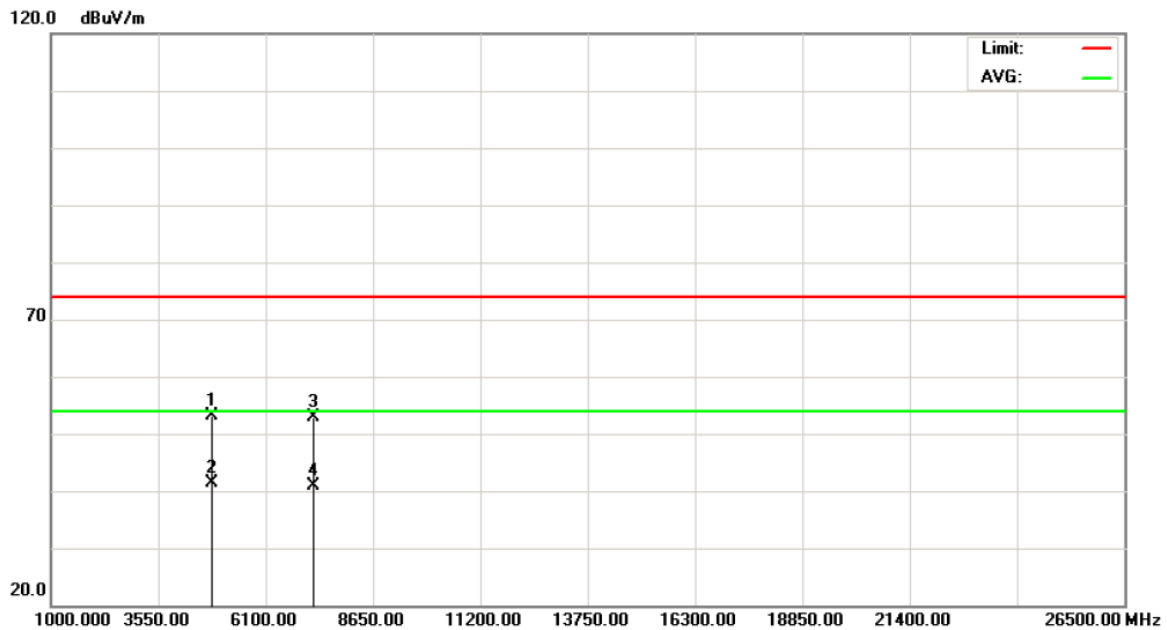


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	20.12	32.32	52.44	74.00	-21.56	peak	
2		2390.000	10.94	32.32	43.26	54.00	-10.74	AVG	
3	X	2402.000	63.98	32.38	96.36	74.00	22.36	peak	
4	*	2402.000	50.33	32.38	82.71	54.00	28.71	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH00		

**Polarization: Vertical**

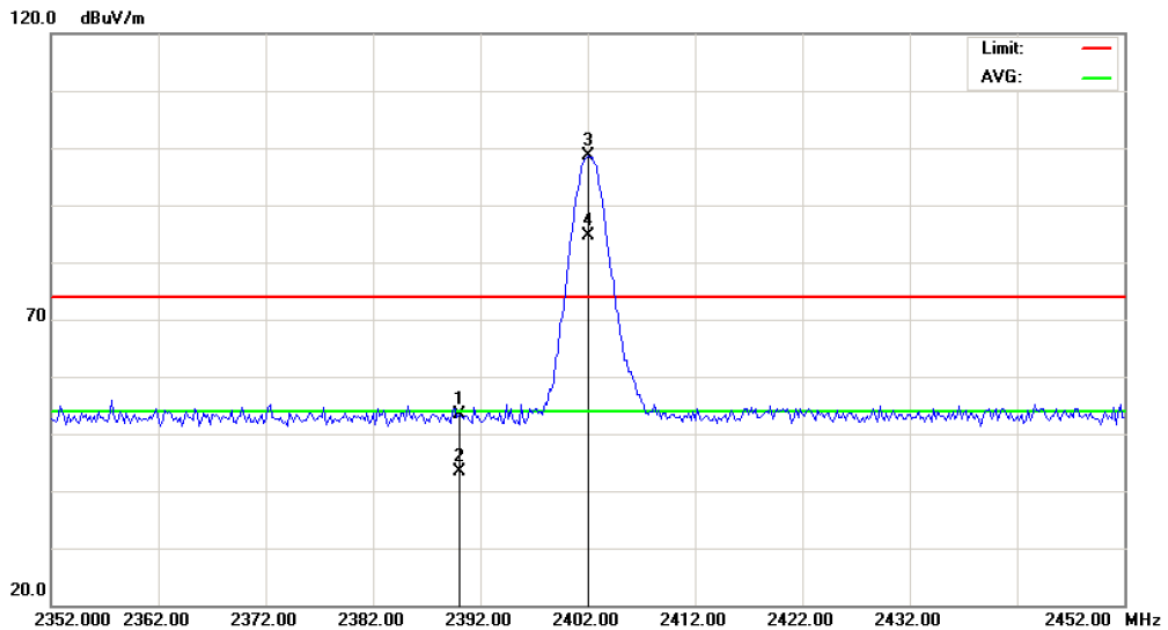


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4803.990	50.00	3.14	53.14	74.00	-20.86	peak	
2 *	4803.990	38.22	3.14	41.36	54.00	-12.64	AVG	
3	7206.060	42.49	10.39	52.88	74.00	-21.12	peak	
4	7206.060	30.46	10.39	40.85	54.00	-13.15	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH00		

**Polarization: Horizontal**



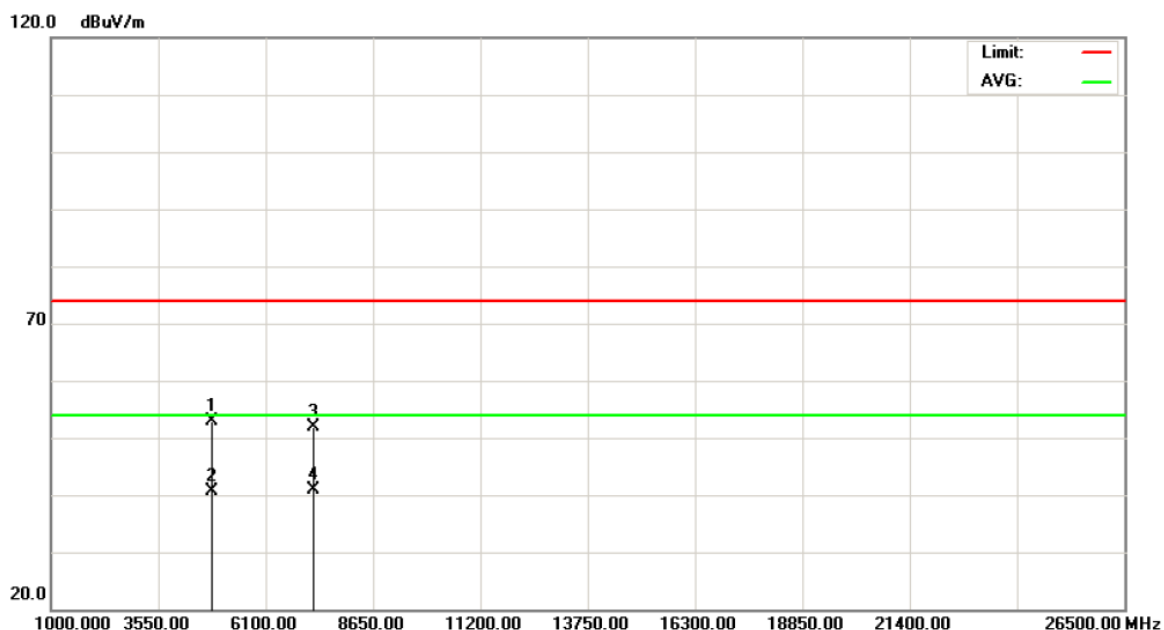
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	21.04	32.32	53.36	74.00	-20.64	peak	
2		2390.000	10.96	32.32	43.28	54.00	-10.72	AVG	
3	X	2402.000	66.17	32.38	98.55	74.00	24.55	peak	
4	*	2402.000	52.28	32.38	84.66	54.00	30.66	AVG	





EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH00		

**Polarization: Horizontal**

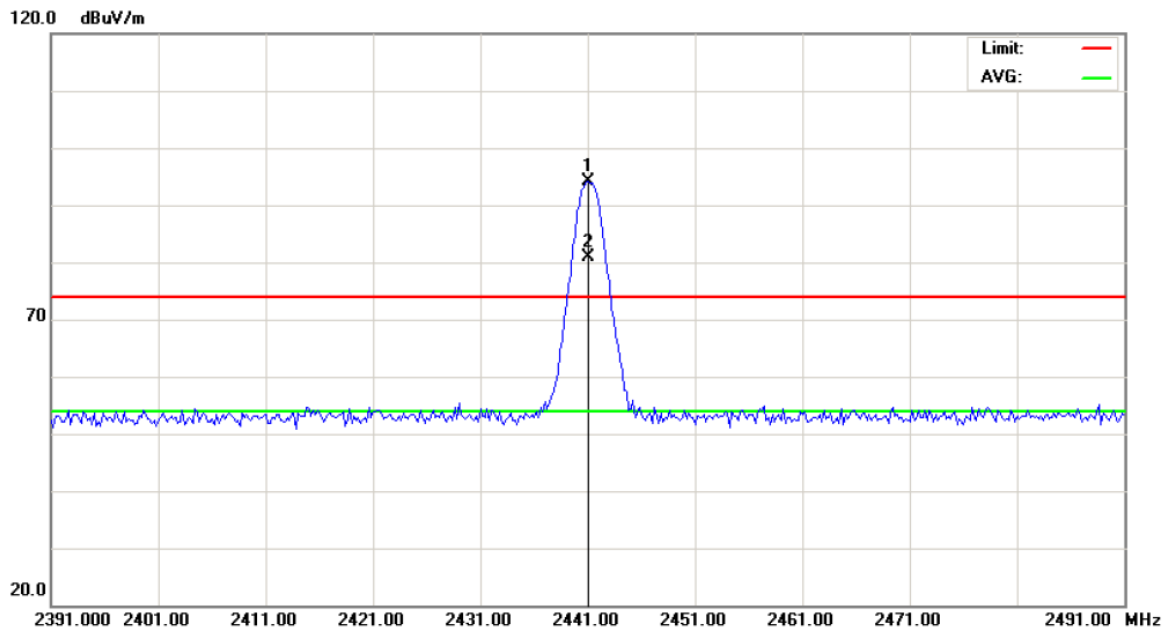


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4803.990	49.77	3.14	52.91	74.00	-21.09	peak	
2	4803.990	37.38	3.14	40.52	54.00	-13.48	AVG	
3	7206.050	41.41	10.39	51.80	74.00	-22.20	peak	
4 *	7206.050	30.44	10.39	40.83	54.00	-13.17	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH39		

**Polarization: Vertical**

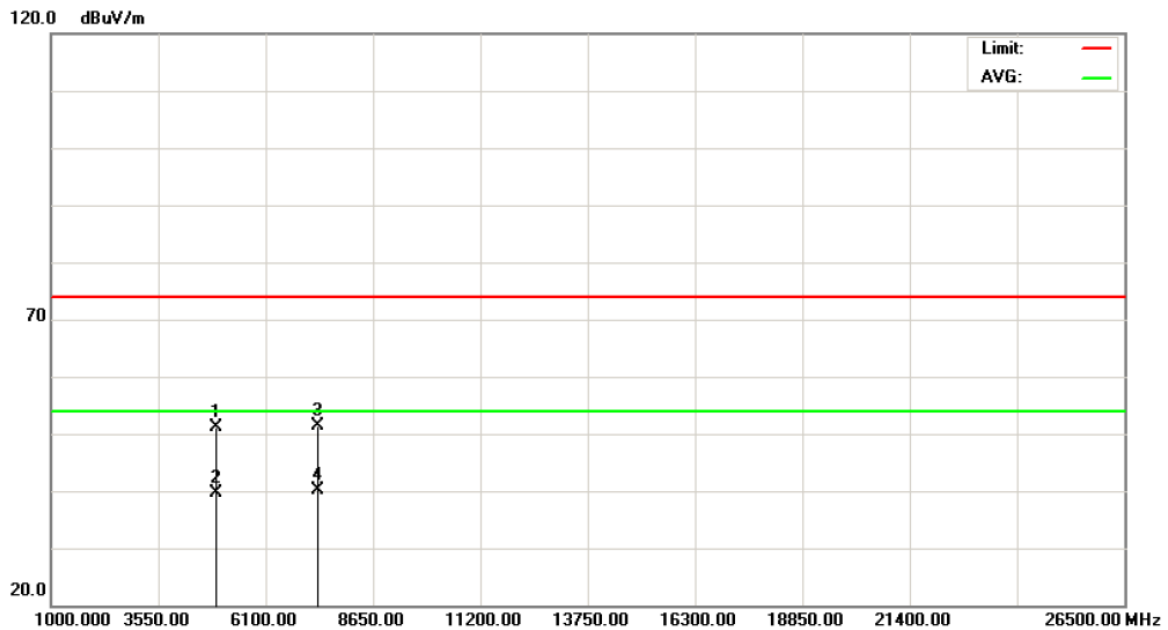


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2441.000	61.53	32.58	94.11	74.00	20.11	peak	
2	*	2441.000	48.32	32.58	80.90	54.00	26.90	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH39		

**Polarization: Vertical**

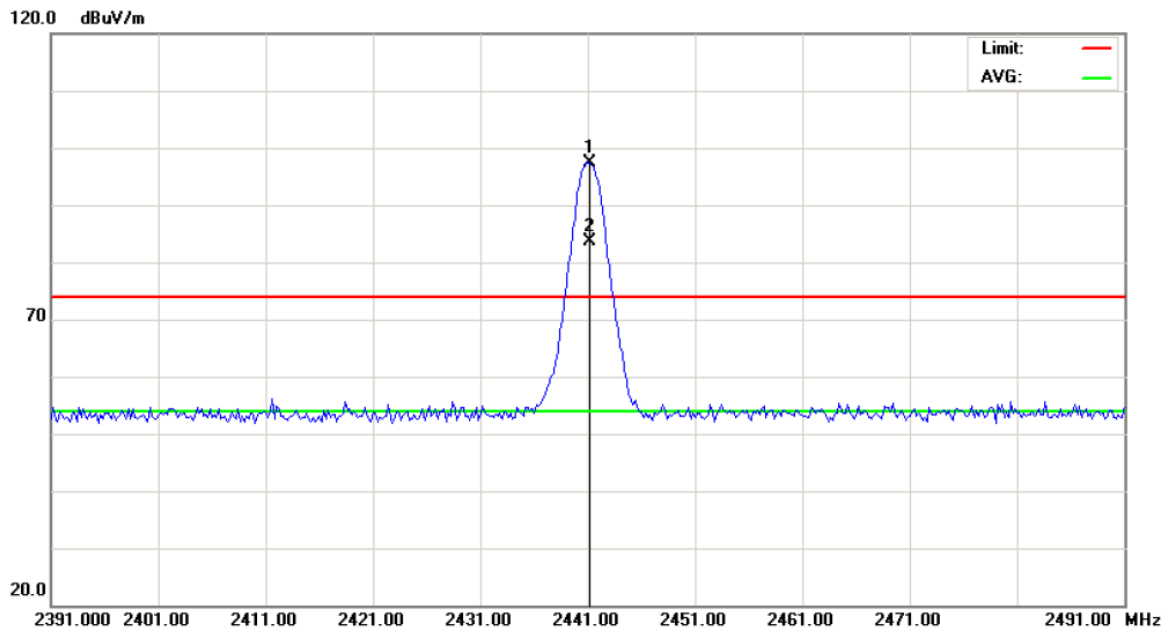


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4882.010	47.90	3.30	51.20	74.00	-22.80	peak	
2	4882.010	36.43	3.30	39.73	54.00	-14.27	AVG	
3	7322.960	40.79	10.57	51.36	74.00	-22.64	peak	
4 *	7322.960	29.59	10.57	40.16	54.00	-13.84	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH39		

**Polarization: Horizontal**

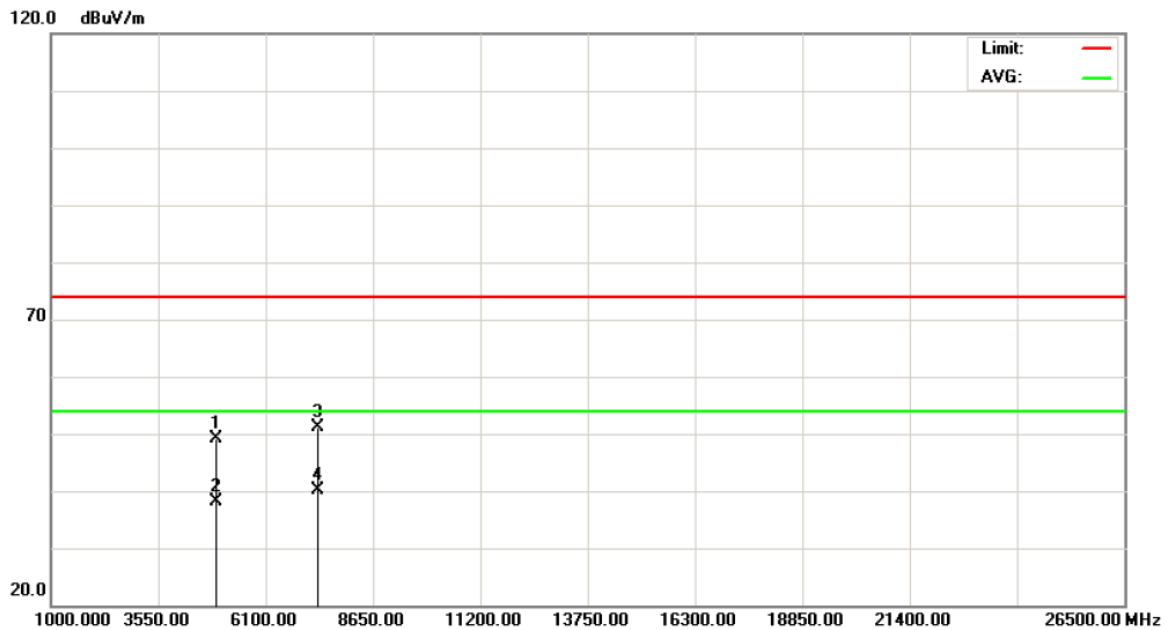


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2441.200	64.83	32.58	97.41	74.00	23.41	peak	
2	*	2441.200	50.94	32.58	83.52	54.00	29.52	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH39		

**Polarization: Horizontal**

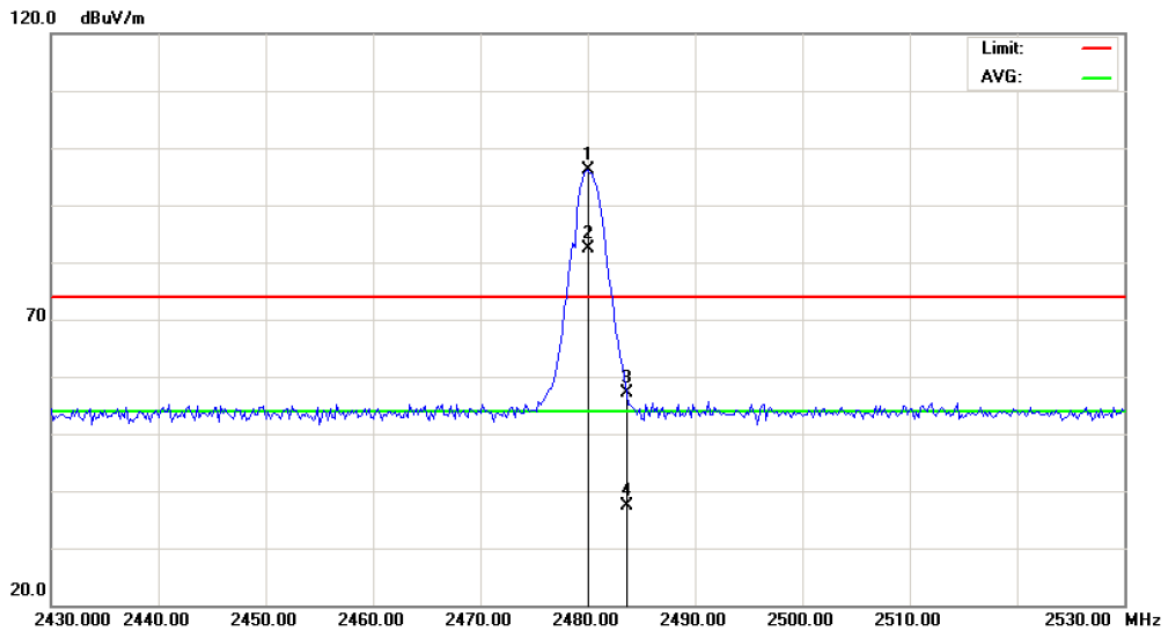


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4882.030	45.81	3.30	49.11	74.00	-24.89	peak	
2	4882.030	34.93	3.30	38.23	54.00	-15.77	AVG	
3	7322.990	40.62	10.57	51.19	74.00	-22.81	peak	
4 *	7322.990	29.59	10.57	40.16	54.00	-13.84	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH78		

**Polarization: Vertical**

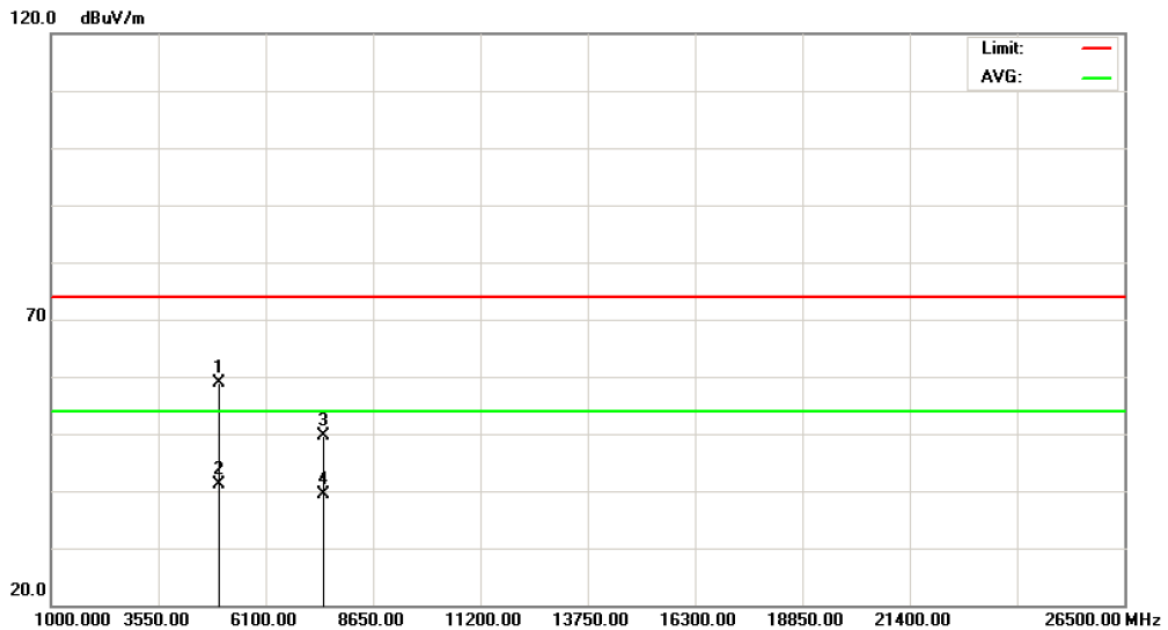


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2480.000	63.25	32.77	96.02	74.00	22.02	peak	
2	*	2480.000	49.54	32.77	82.31	54.00	28.31	AVG	
3		2483.500	24.46	32.79	57.25	74.00	-16.75	peak	
4		2483.500	4.56	32.79	37.35	54.00	-16.65	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH78		

**Polarization: Vertical**

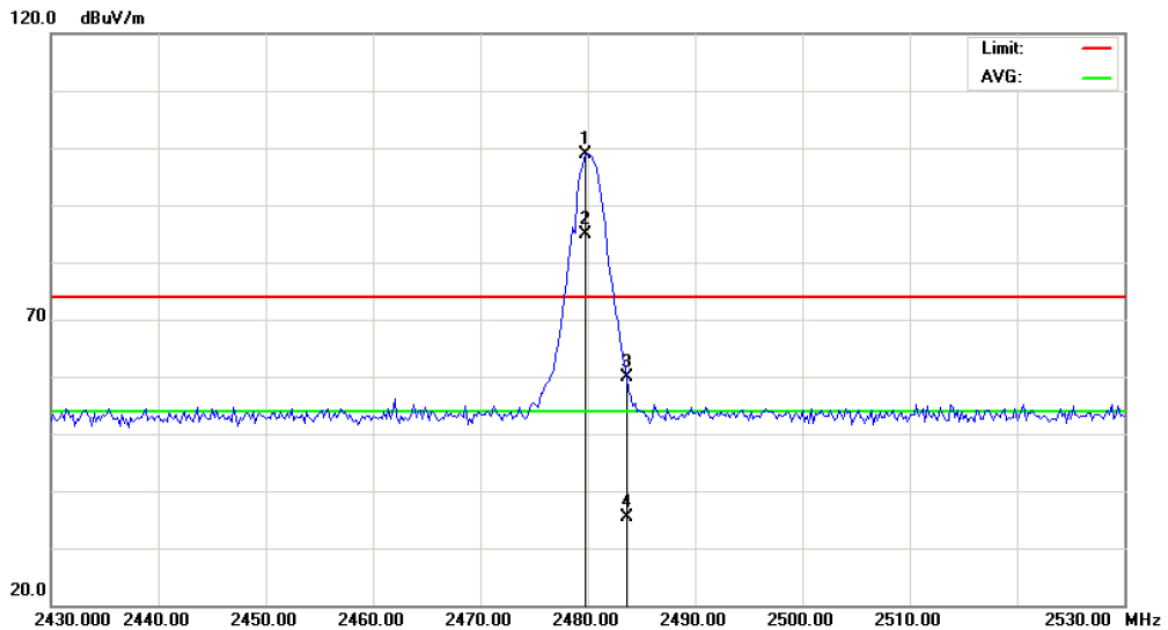


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4959.910	55.04	3.85	58.89	74.00	-15.11	peak	
2 *	4959.910	37.37	3.85	41.22	54.00	-12.78	AVG	
3	7440.080	39.27	10.27	49.54	74.00	-24.46	peak	
4	7440.080	29.01	10.27	39.28	54.00	-14.72	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH78		

**Polarization: Horizontal**



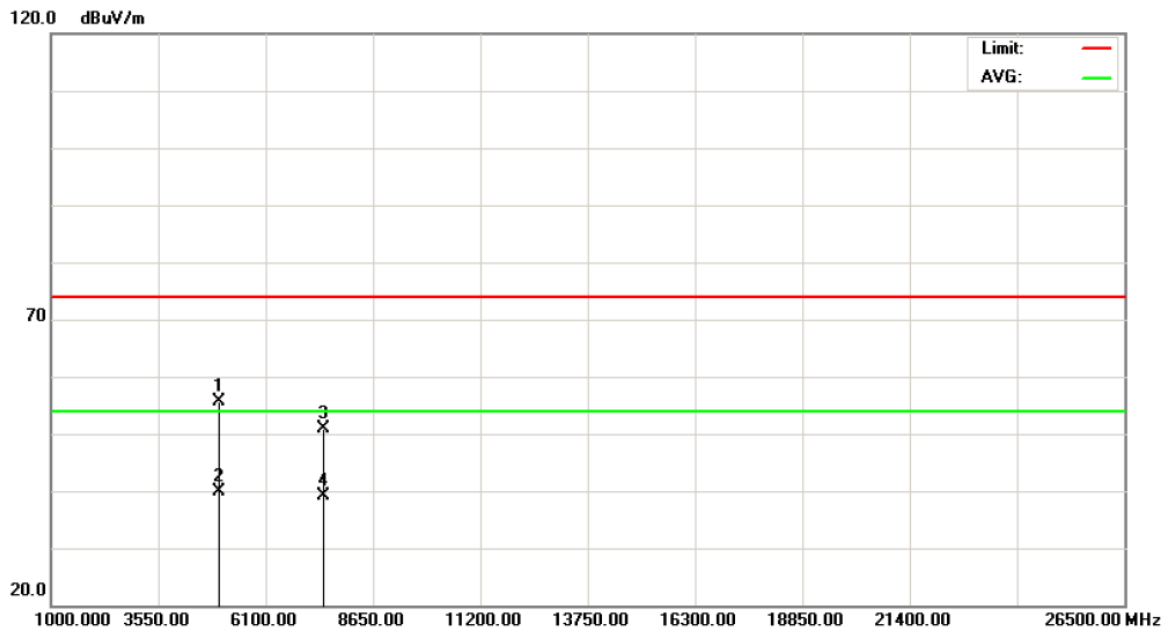
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2479.800	66.04	32.77	98.81	74.00	24.81	peak	
2	*	2479.800	52.01	32.77	84.78	54.00	30.78	AVG	
3		2483.500	27.04	32.79	59.83	74.00	-14.17	peak	
4		2483.500	2.60	32.79	35.39	54.00	-18.61	AVG	





EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH78		

**Polarization: Horizontal**



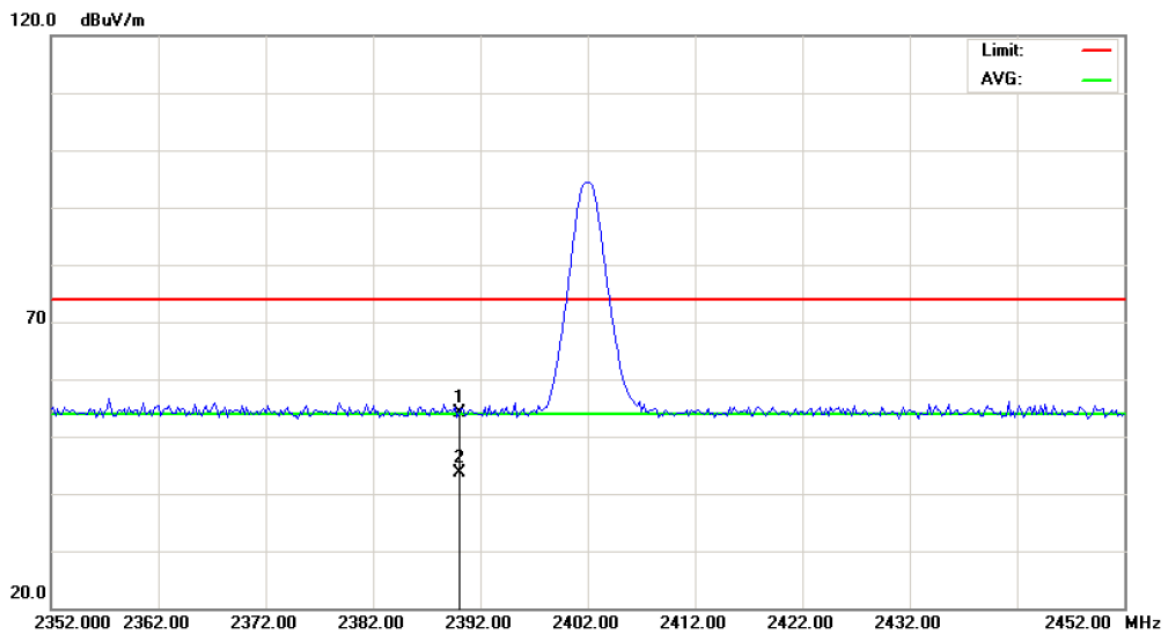
No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4959.810	51.88	3.85	55.73	74.00	-18.27	peak	
2 *	4959.810	36.14	3.85	39.99	54.00	-14.01	AVG	
3	7439.920	40.65	10.27	50.92	74.00	-23.08	peak	
4	7439.920	28.93	10.27	39.20	54.00	-14.80	AVG	



#### 4.2.9 TEST RESULTS-Restricted Bands Requirements

EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26° C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH00		
Note :	The transmitter was setup to transmit at the lowest channel and the field strength was measured at 2310-2390 MHz.		

#### Polarization: Vertical

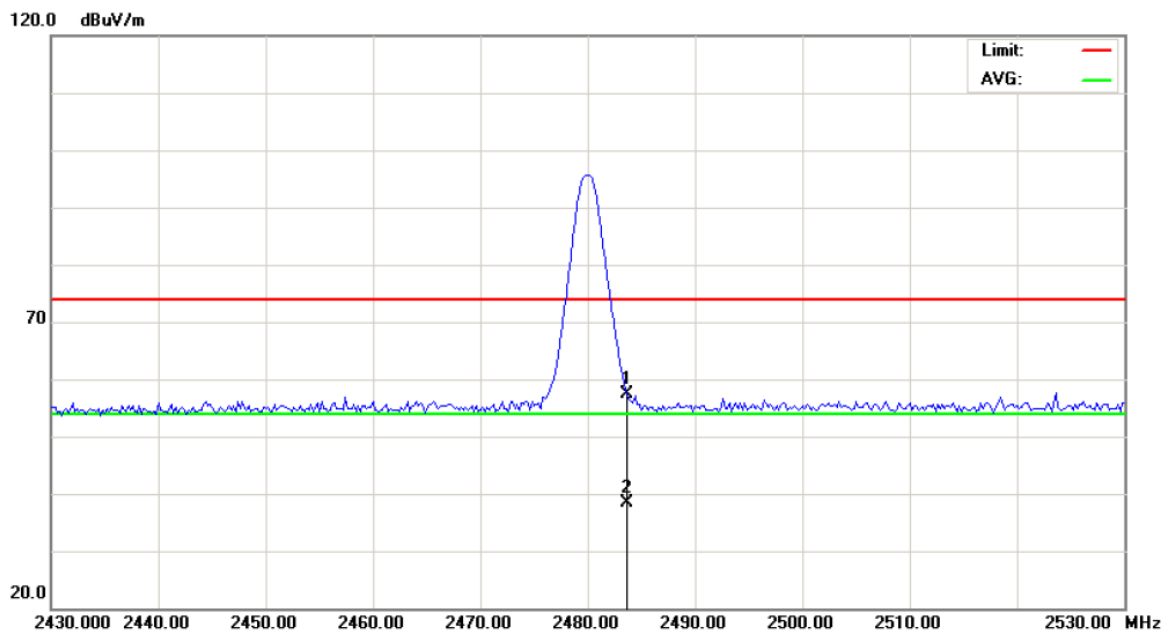


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	2390.000	21.59	32.59	54.18	74.00	-19.82	peak	
2 *	2390.000	11.15	32.59	43.74	54.00	-10.26	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26° C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH78		
Note :	The transmitter was setup to transmit at the highest channel and the field strength was measured at 2483.5-2500 MHz.		

**Polarization: Vertical**

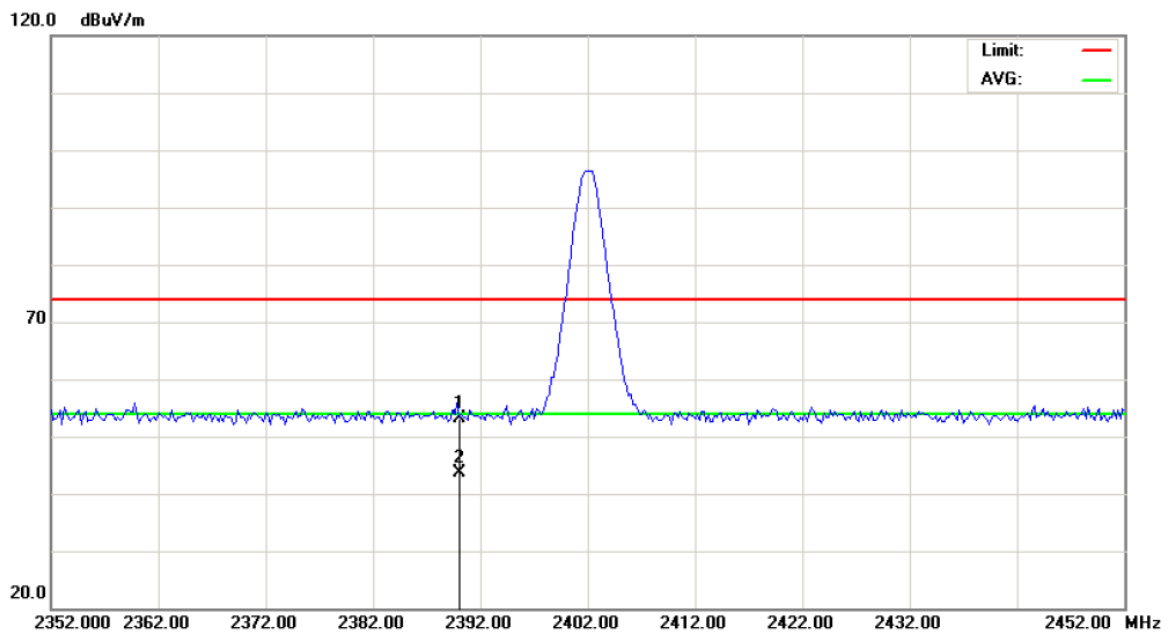


No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2483.500	24.50	33.00	57.50	74.00	-16.50	peak	
2 *	2483.500	5.43	33.00	38.43	54.00	-15.57	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26° C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH00		
Note :	The transmitter was setup to transmit at the lowest channel and the field strength was measured at 2310-2390 MHz.		

**Polarization: Horizontal**

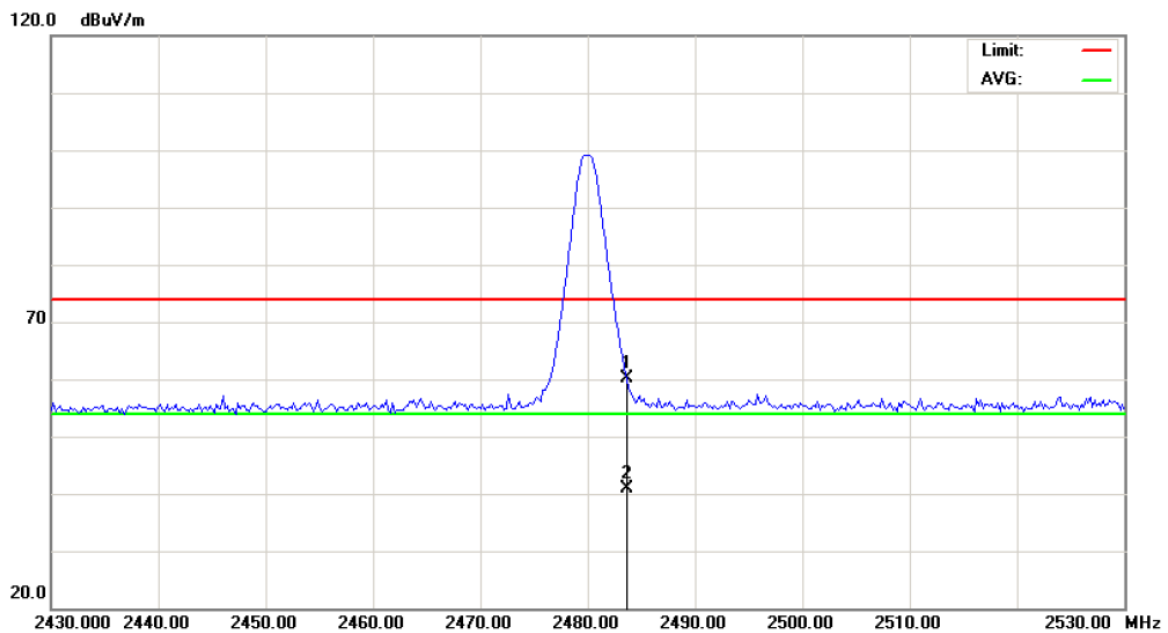


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector Comment
1		2390.000	20.66	32.59	53.25	74.00	-20.75	peak
2	*	2390.000	11.14	32.59	43.73	54.00	-10.27	AVG



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26° C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 1 Mbps / CH78		
Note :	The transmitter was setup to transmit at the highest channel and the field strength was measured at 2483.5-2500 MHz.		

**Polarization: Horizontal**

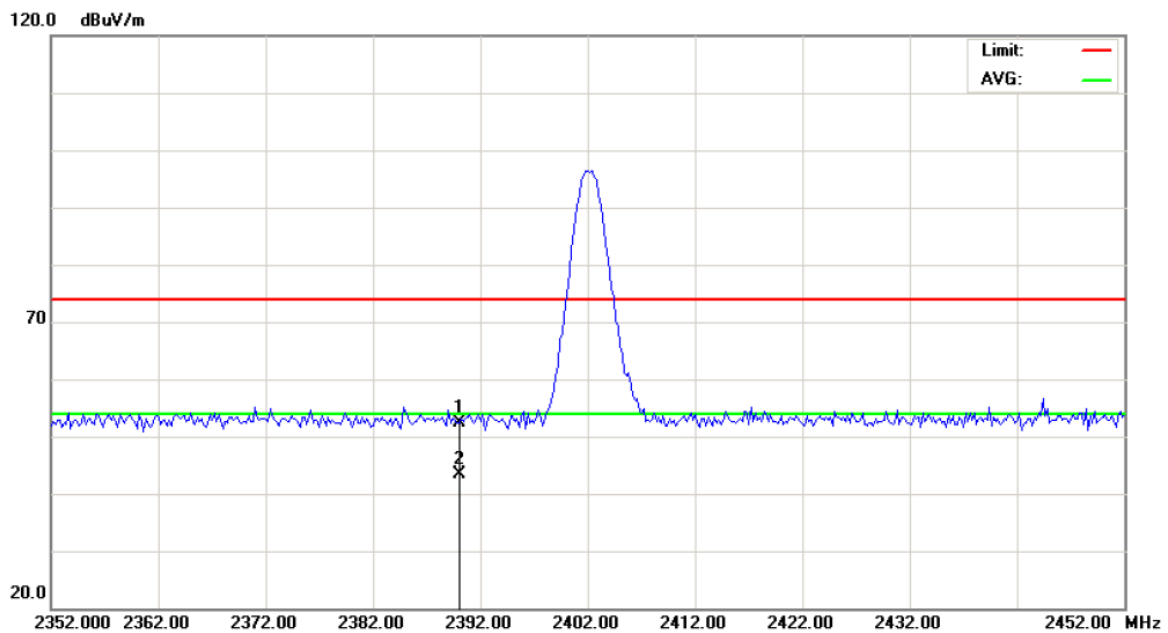


No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2483.500	27.10	33.00	60.10	74.00	-13.90	peak	
2 *	2483.500	7.80	33.00	40.80	54.00	-13.20	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26° C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH00		
Note :	The transmitter was setup to transmit at the lowest channel and the field strength was measured at 2310-2390 MHz.		

**Polarization: Vertical**

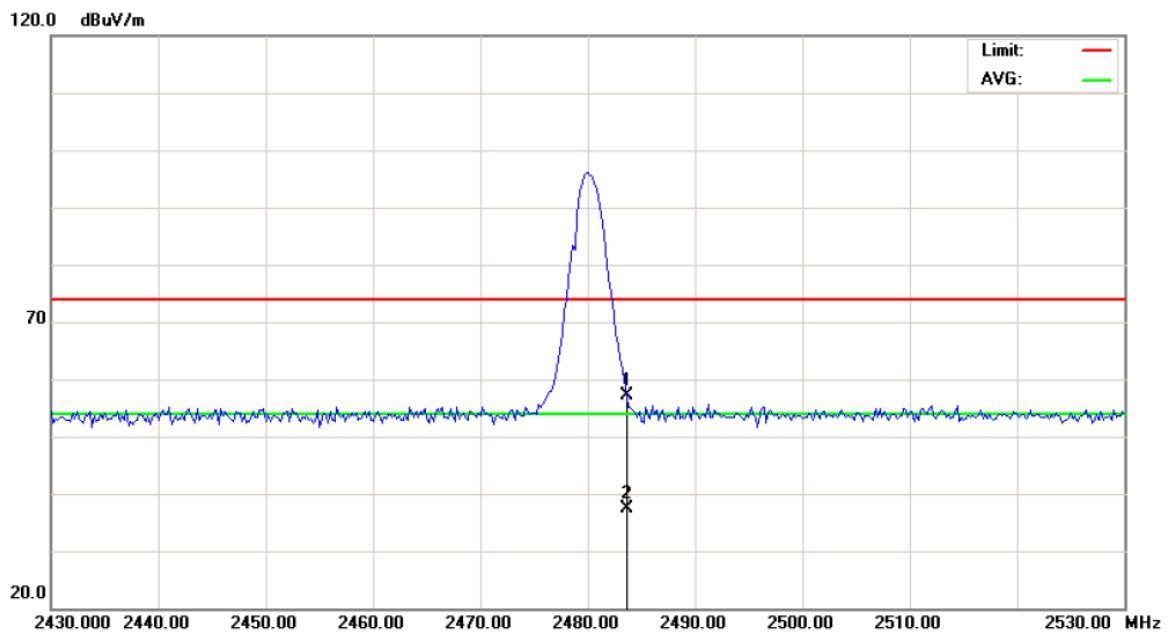


No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.000	20.12	32.32	52.44	74.00	-21.56	peak	
2 *	2390.000	10.94	32.32	43.26	54.00	-10.74	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH78		
Note :	The transmitter was setup to transmit at the highest channel and the field strength was measured at 2483.5-2500 MHz.		

**Polarization: Vertical**

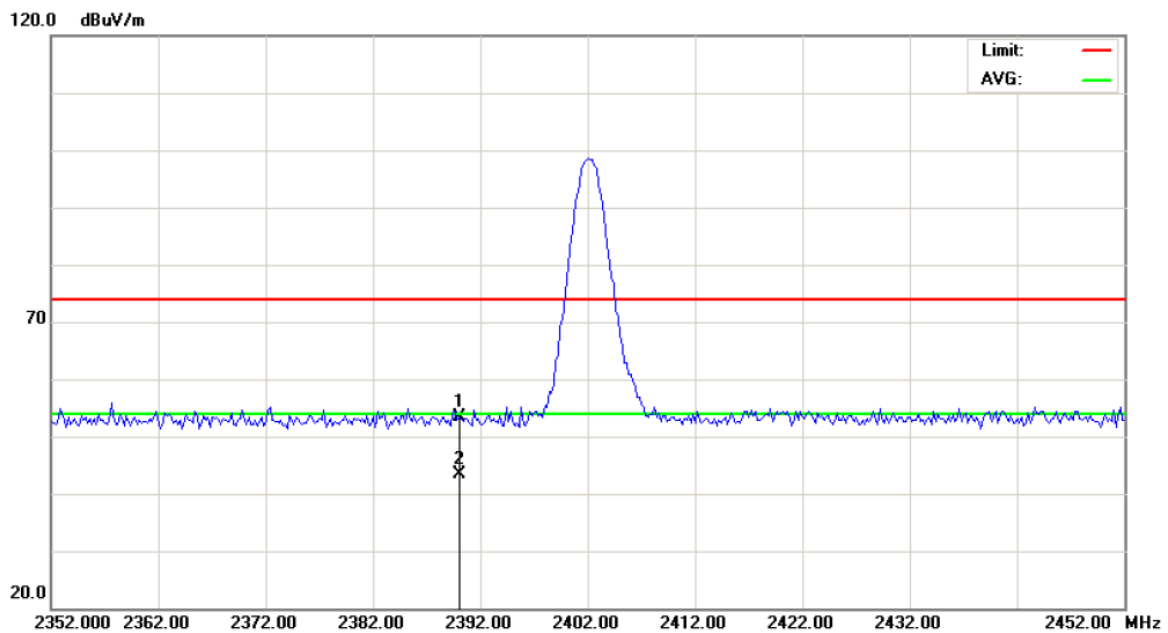


No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2483.500	24.46	32.79	57.25	74.00	-16.75	peak	
2 *	2483.500	4.56	32.79	37.35	54.00	-16.65	AVG	



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26° C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH00		
Note :	The transmitter was setup to transmit at the lowest channel and the field strength was measured at 2310-2390 MHz.		

**Polarization: Horizontal**



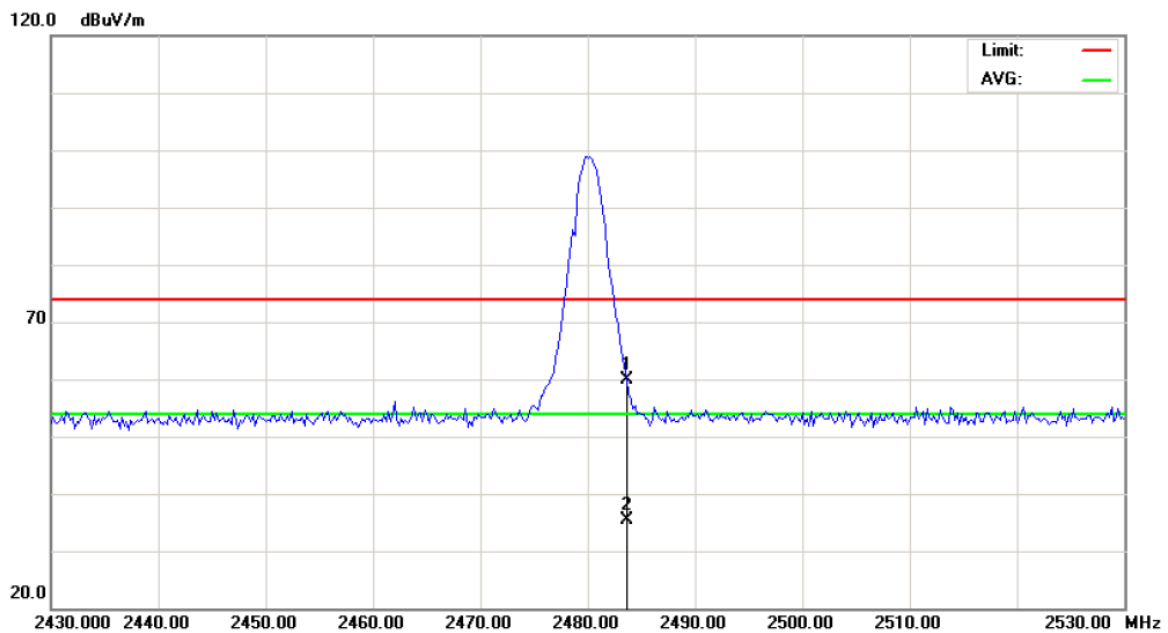
No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	2390.000	21.04	32.32	53.36	74.00	-20.64	peak	
2 *	2390.000	10.96	32.32	43.28	54.00	-10.72	AVG	





EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26° C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode :	Bluetooth / 3 Mbps / CH78		
Note :	The transmitter was setup to transmit at the highest channel and the field strength was measured at 2483.5-2500 MHz.		

**Polarization: Horizontal**



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	2483.500	27.04	32.79	59.83	74.00	-14.17	peak	
2		2483.500	2.60	32.79	35.39	54.00	-18.61	AVG	

**5. NUMBER OF HOPPING CHANNEL****5.1 APPLIED PROCEDURES / LIMIT**

FCC Part15 (15.247) , Subpart C: 2010			
Section	Test Item	Frequency Range (MHz)	Result
15.247 (a)(1)(ii)	Number of Hopping Channel	2400-2483.5	PASS

**5.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 16, 2012

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

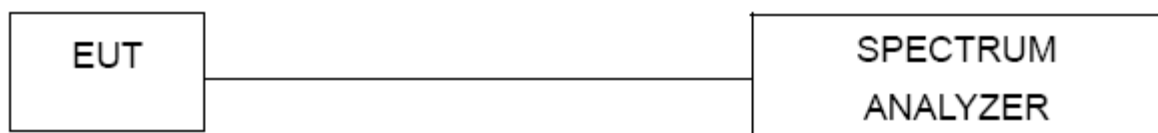
Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RB	100 kHz
VB	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

**5.1.2 TEST PROCEDURE**

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

**5.1.3 DEVIATION FROM STANDARD**

No deviation.

**5.1.4 TEST SETUP****5.1.5 EUT OPERATION CONDITIONS**

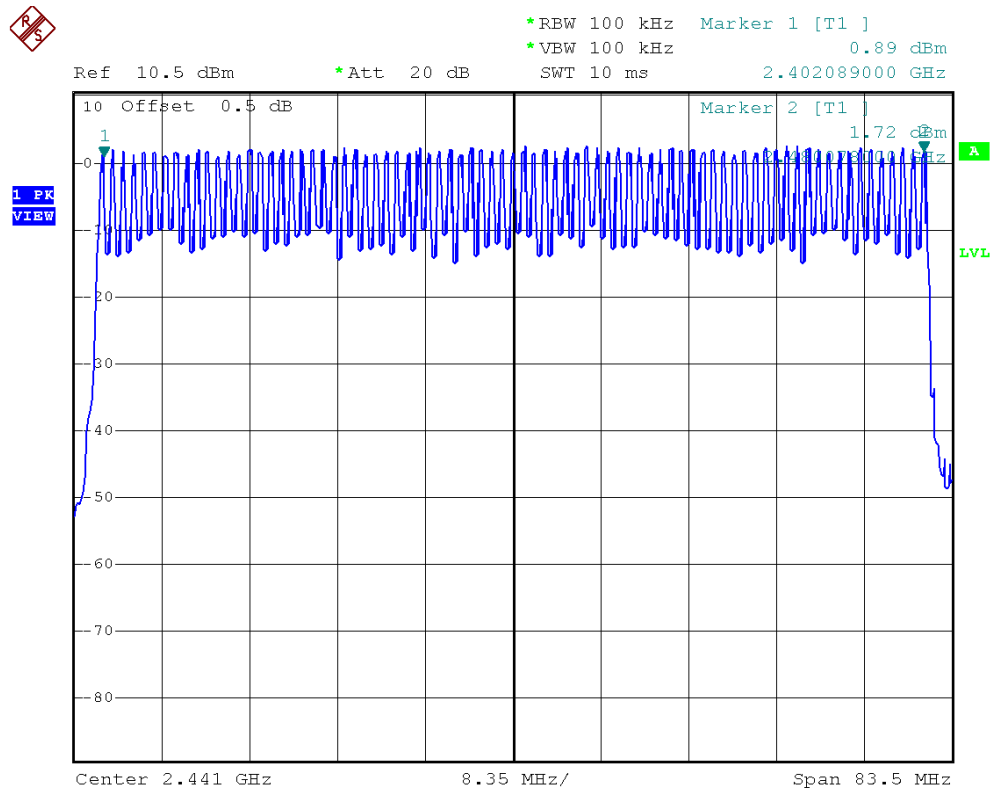
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



### 5.1.6 TEST RESULTS

EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 1 Mbps		

Number of Hopping Channel	79
---------------------------	----





EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 3 Mbps		

Number of Hopping Channel	79
---------------------------	----



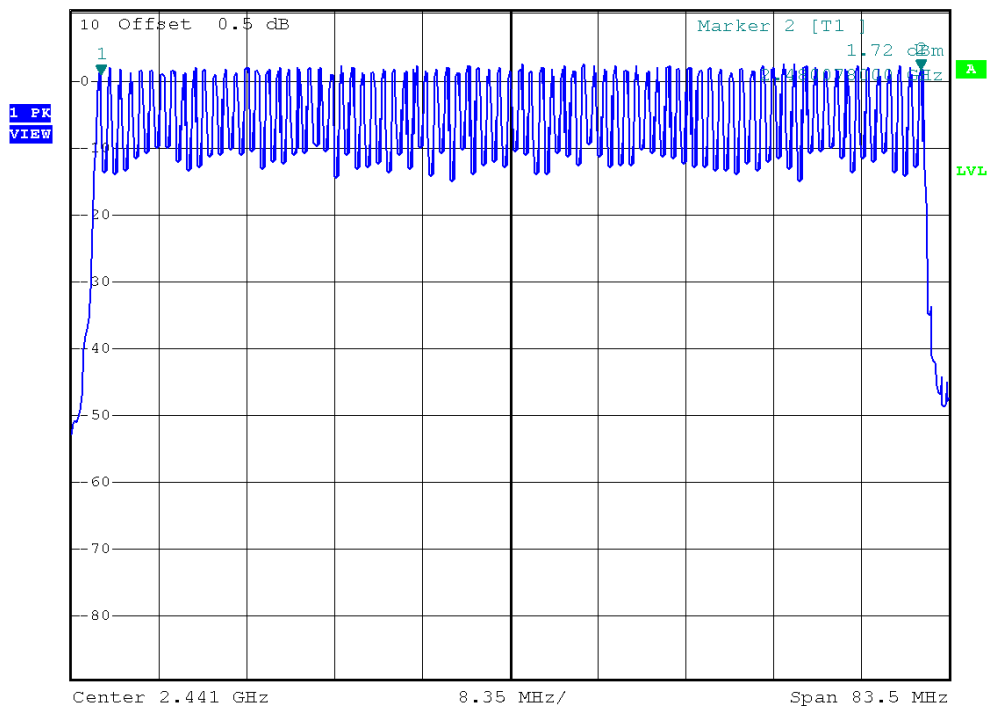
\*RBW 100 kHz Marker 1 [T1]  
\*VBW 100 kHz 0.89 dBm  
SWT 10 ms 2.402089000 GHz

Ref 10.5 dBm

\*Att 20 dB

SWT 10 ms

2.402089000 GHz





## 6. AVERAGE TIME OF OCCUPANCY

### 6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C: 2010				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)(ii)	Average Time of Occupancy	$\leq 0.4$ sec (a 30 second period)	2400-2483.5	PASS

#### 6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 16, 2012

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

#### 6.1.2 TEST PROCEDURE

- The transmitter output (antenna port) was connected to the spectrum analyser
- Set RBW of spectrum analyzer to 100kHz and VBW to 100kHz.
- Use a video trigger with the trigger level set to enable triggering only on full pulses.
- Sweep Time is more than once pulse time.
- Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- Measure the maximum time duration of one single pulse.
- Set the EUT for DH5, DH3 and DH1 packet transmitting.
- Measure the maximum time duration of one single pulse.
- DH5 Packet permit maximum  $1600 / 79 / 6 = 3.37$  hops per second in each channel (5 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times  $3.37 \times 31.6 = 106.6$  within 31.6 seconds.
- DH3 Packet permit maximum  $1600 / 79 / 4 = 5.06$  hops per second in each channel (3 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times  $5.06 \times 31.6 = 160$  within 31.6 seconds.
- DH1 Packet permit maximum  $1600 / 79 / 2 = 10.12$  hops per second in each channel (1 time slot RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times  $10.12 \times 31.6 = 320$  within 31.6 seconds.

#### 6.1.3 DEVIATION FROM STANDARD

No deviation.



#### **6.1.4 TEST SETUP**



#### **6.1.5 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

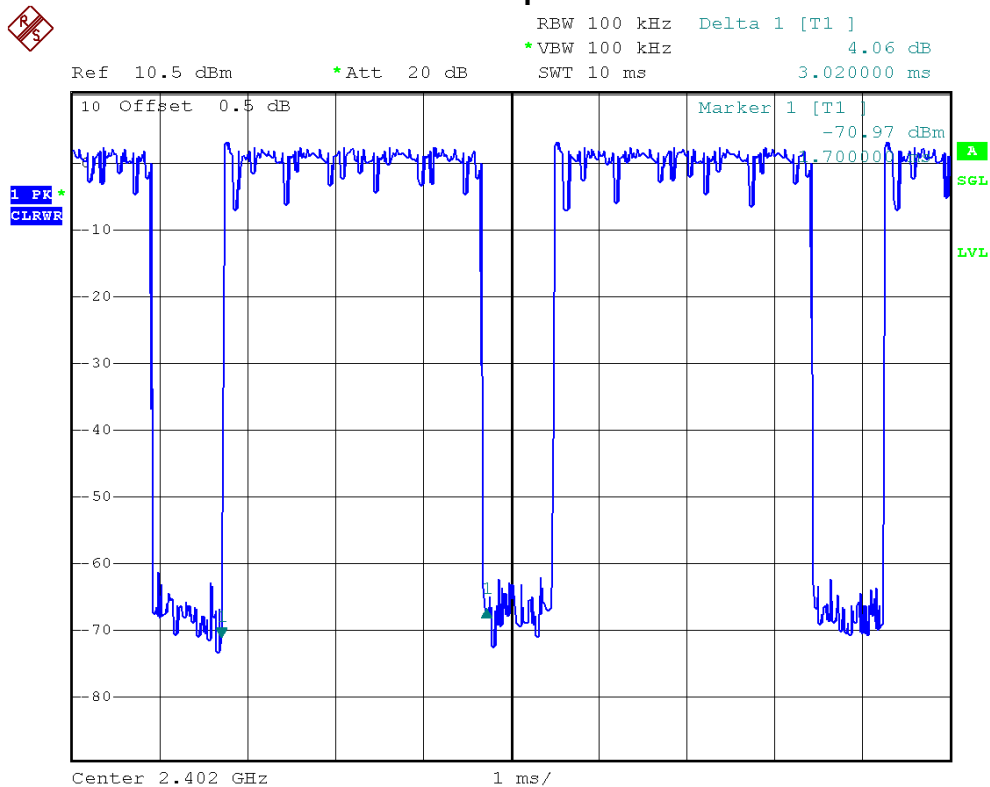


## 6.1.6 TEST RESULTS

EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26° C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 1 Mbps / CH00-DH5/DH3/DH1		

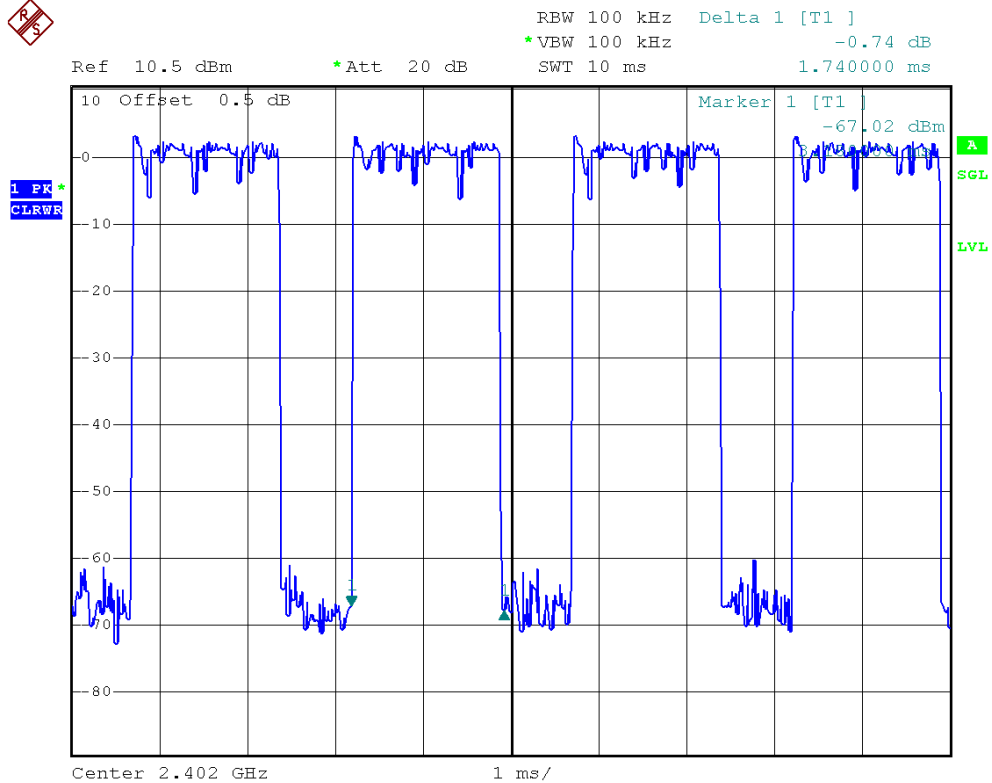
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH5	2402 MHz	3.0200	0.3221	0.4000
DH3	2402 MHz	1.7400	0.2784	0.4000
DH1	2402 MHz	0.4700	0.1504	0.4000

### Bluetooth / 1 Mbps / CH00-DH5

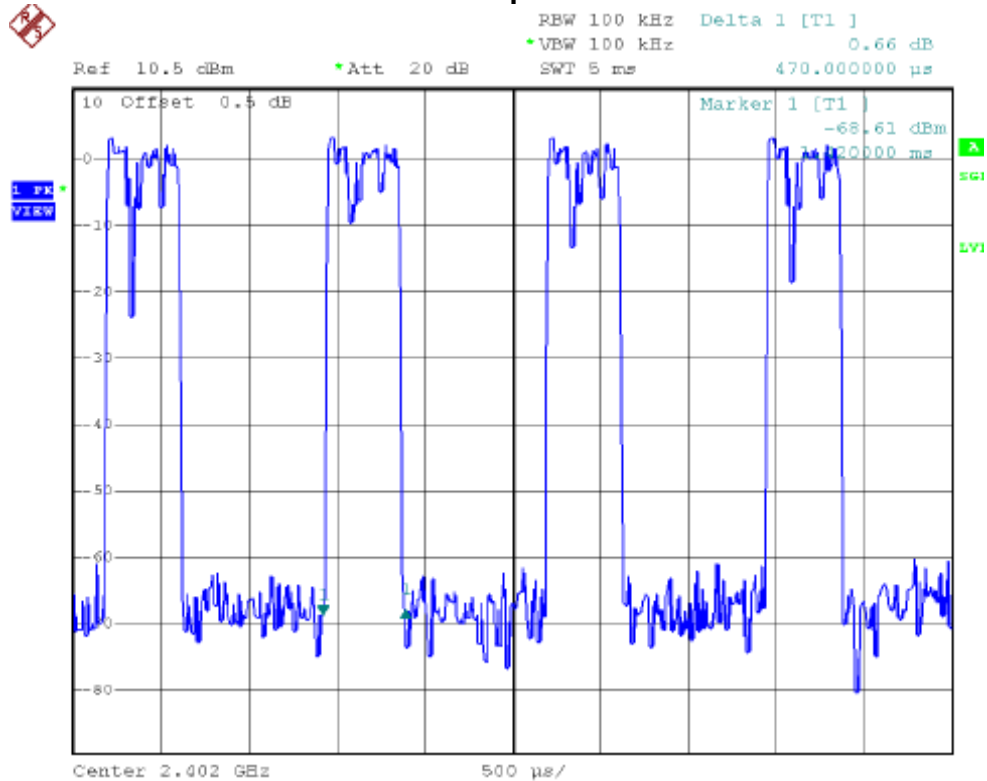




### Bluetooth / 1 Mbps / CH00-DH3



### Bluetooth / 1 Mbps / CH00-DH1



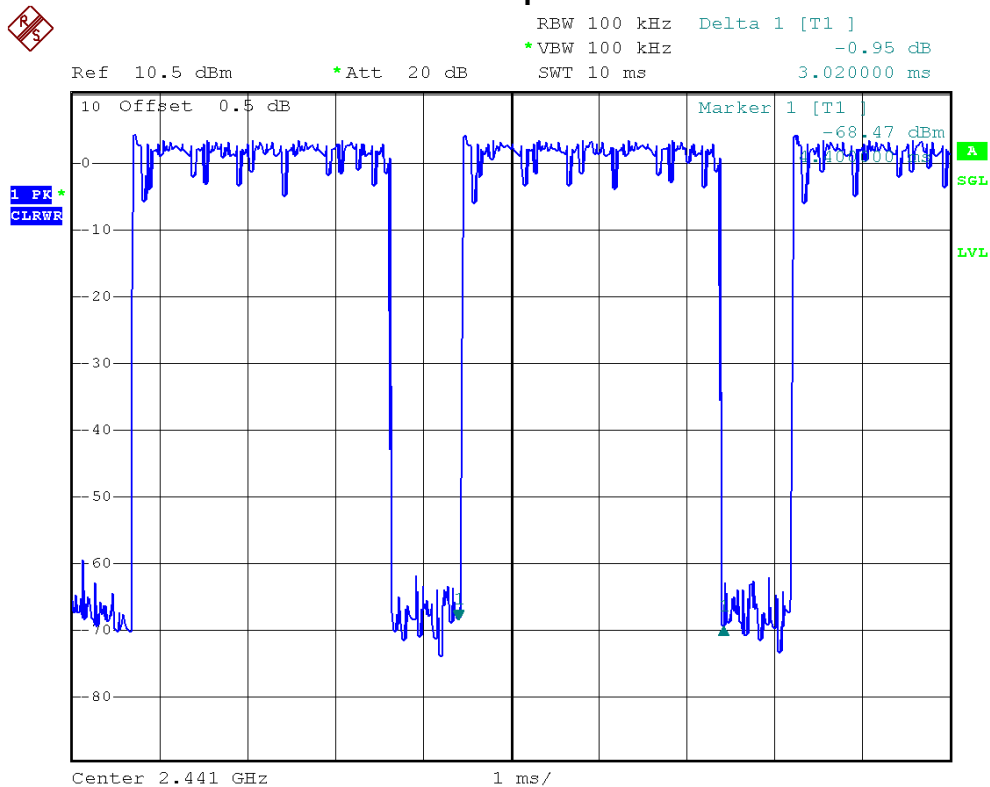




EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 1 Mbps / CH39-DH5/DH3/DH1		

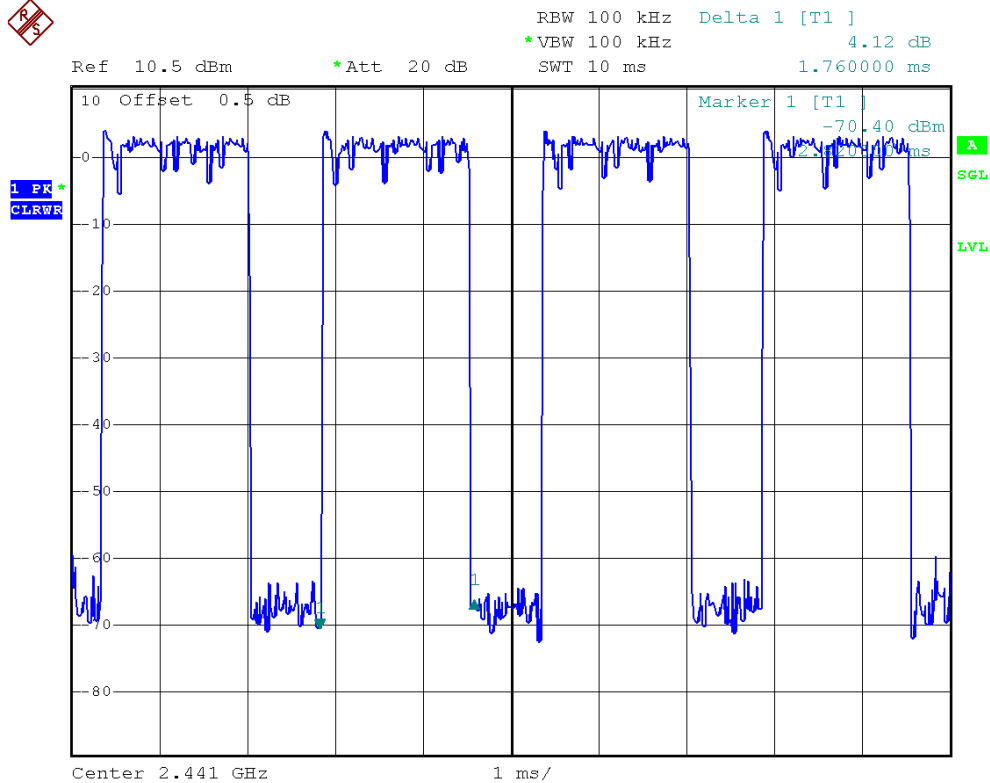
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH5	2441 MHz	3.0200	0.3221	0.4000
DH3	2441 MHz	1.7600	0.2816	0.4000
DH1	2441 MHz	0.4700	0.1504	0.4000

### Bluetooth / 1 Mbps / CH39-DH5

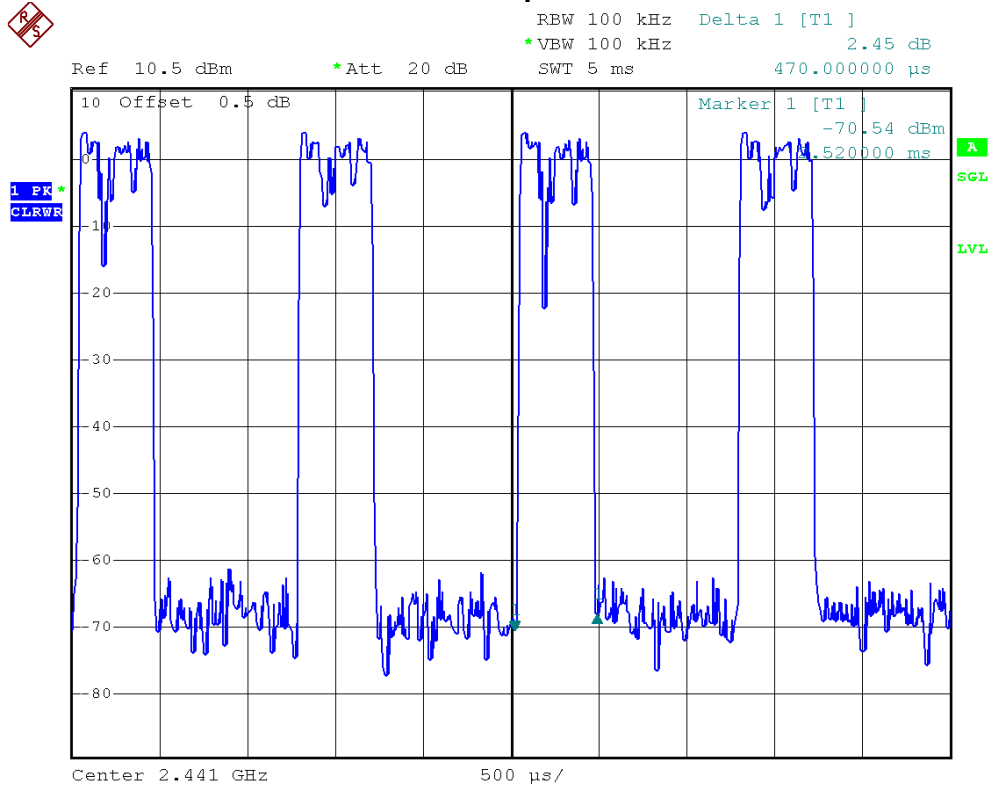




### Bluetooth / 1 Mbps / CH39-DH3



### Bluetooth / 1 Mbps / CH39-DH1

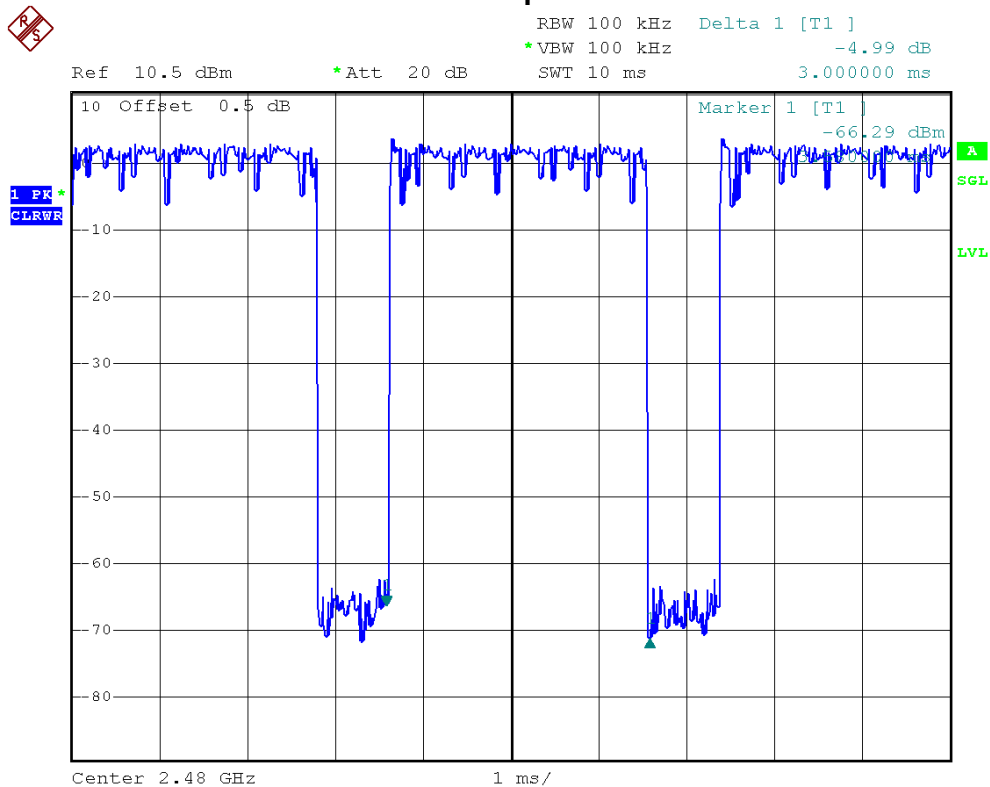




EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 1 Mbps / CH78-DH5/DH3/DH1		

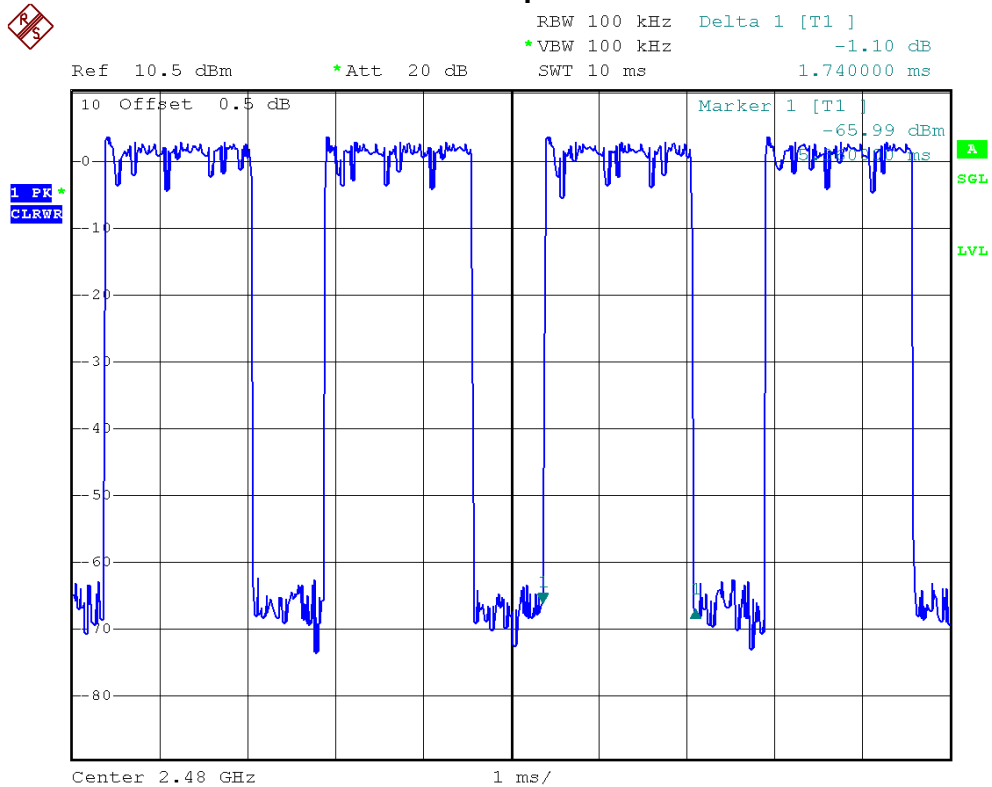
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH5	2480 MHz	3.0000	0.3200	0.4000
DH3	2480 MHz	1.7400	0.2784	0.4000
DH1	2480 MHz	0.4600	0.1472	0.4000

### Bluetooth / 1 Mbps / CH78-DH5

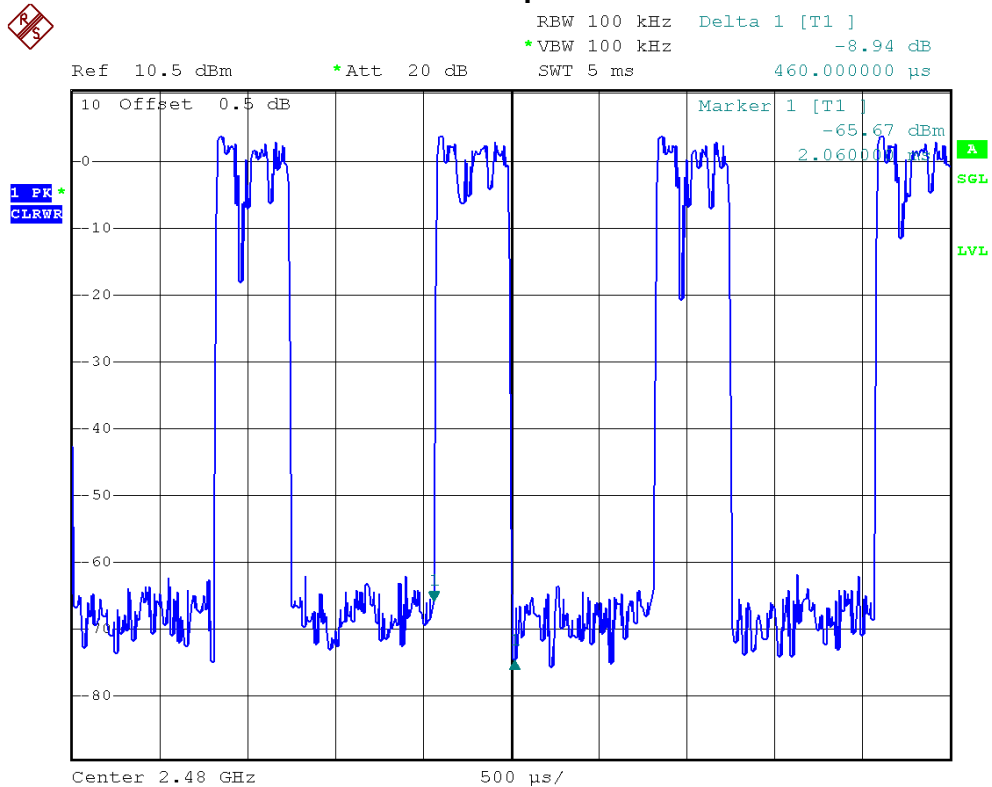




### Bluetooth / 1 Mbps / CH78-DH3



### Bluetooth / 1 Mbps / CH78-DH1

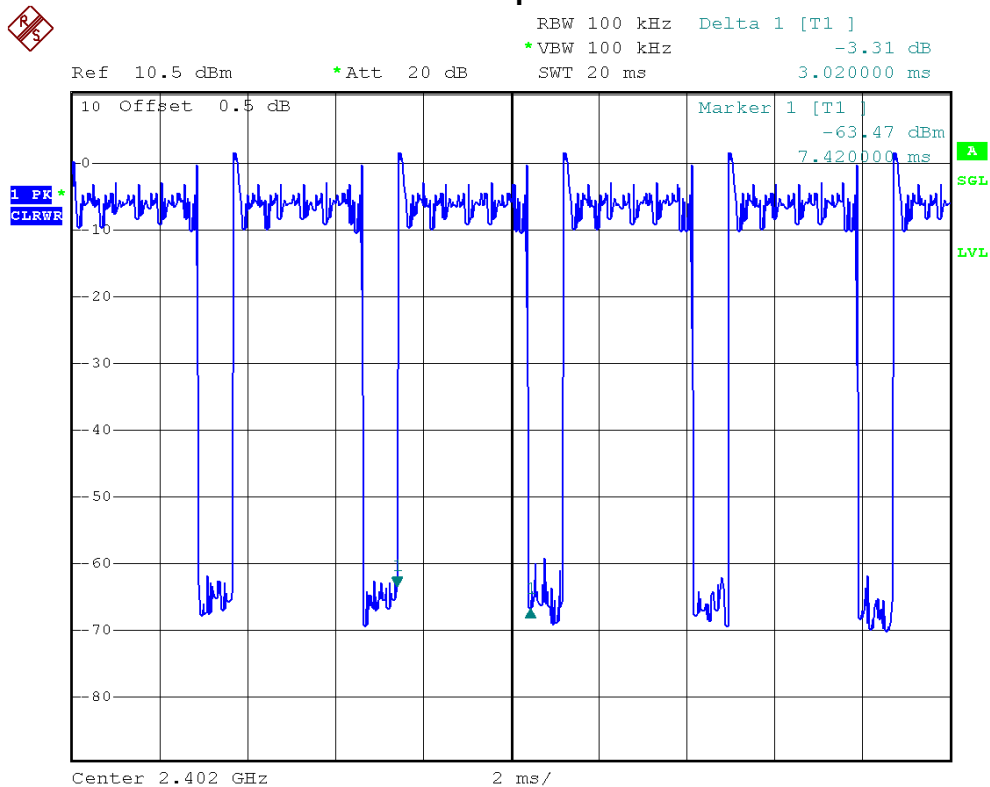




EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 3 Mbps / CH00-3DH5/3DH3/3DH1		

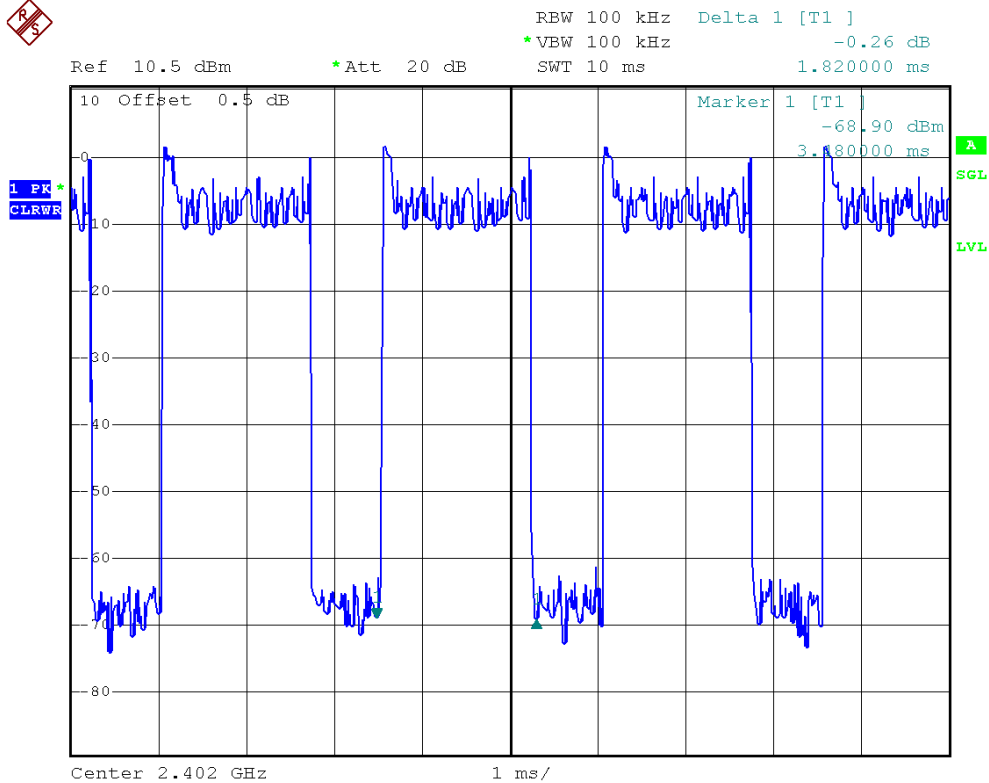
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
3DH5	2402 MHz	3.0200	0.3221	0.4000
3DH3	2402 MHz	1.8200	0.2912	0.4000
3DH1	2402 MHz	0.4800	0.1536	0.4000

### Bluetooth / 3 Mbps / CH00-3DH5

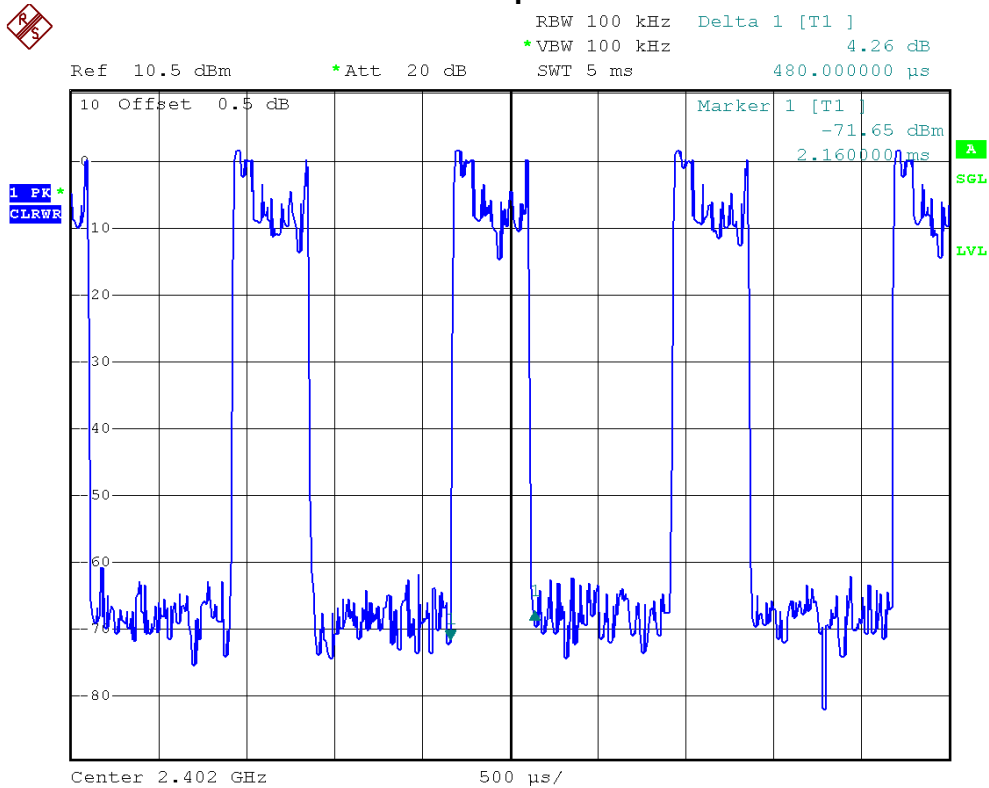




### Bluetooth / 3 Mbps / CH00-3DH3



### Bluetooth / 3 Mbps / CH00-3DH1

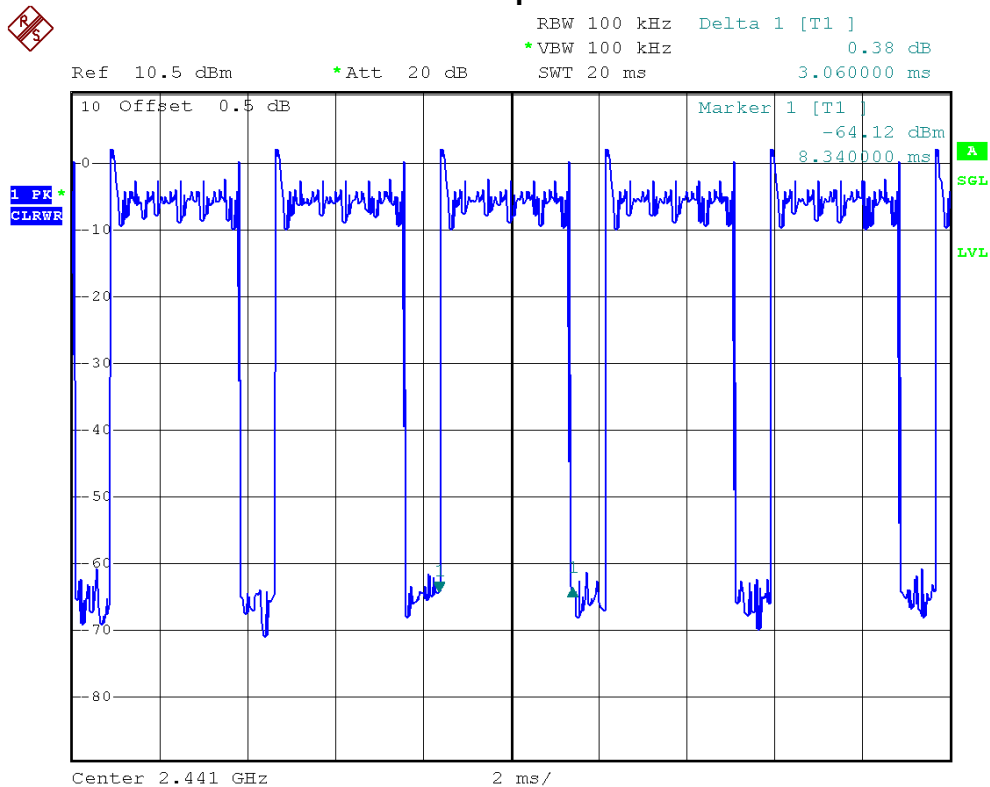




EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 3 Mbps / CH39-3DH5/3DH3/3DH1		

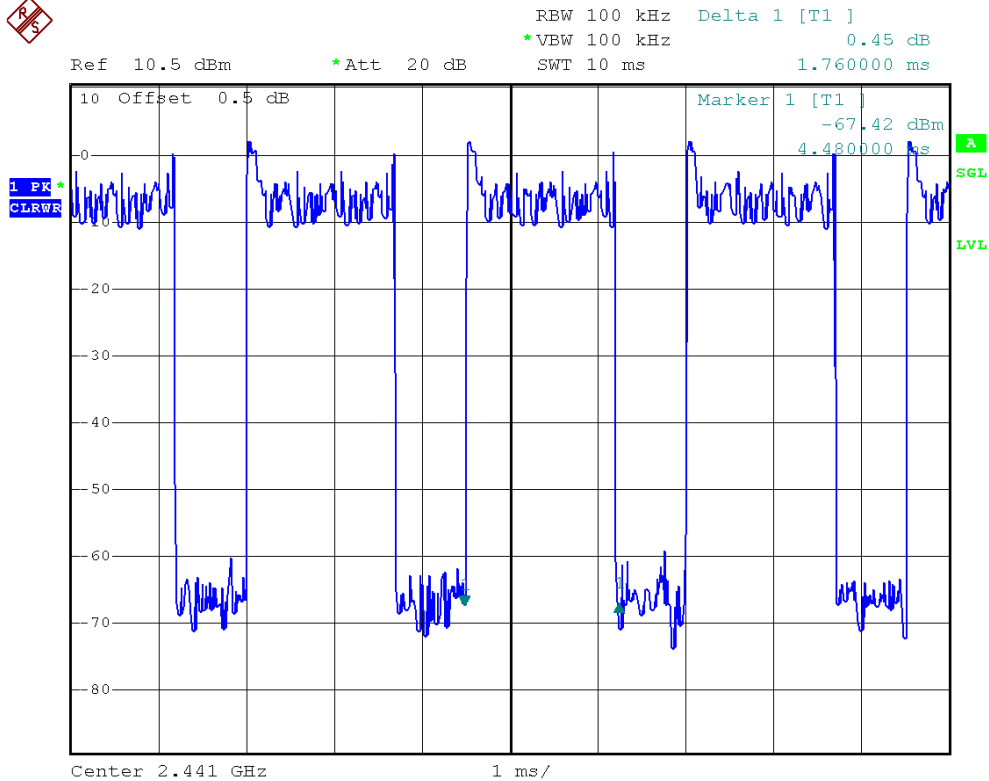
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
3DH5	2441 MHz	3.0600	0.3264	0.4000
3DH3	2441 MHz	1.7600	0.2816	0.4000
3DH1	2441 MHz	0.4700	0.1504	0.4000

### Bluetooth / 3 Mbps / CH39-3DH5

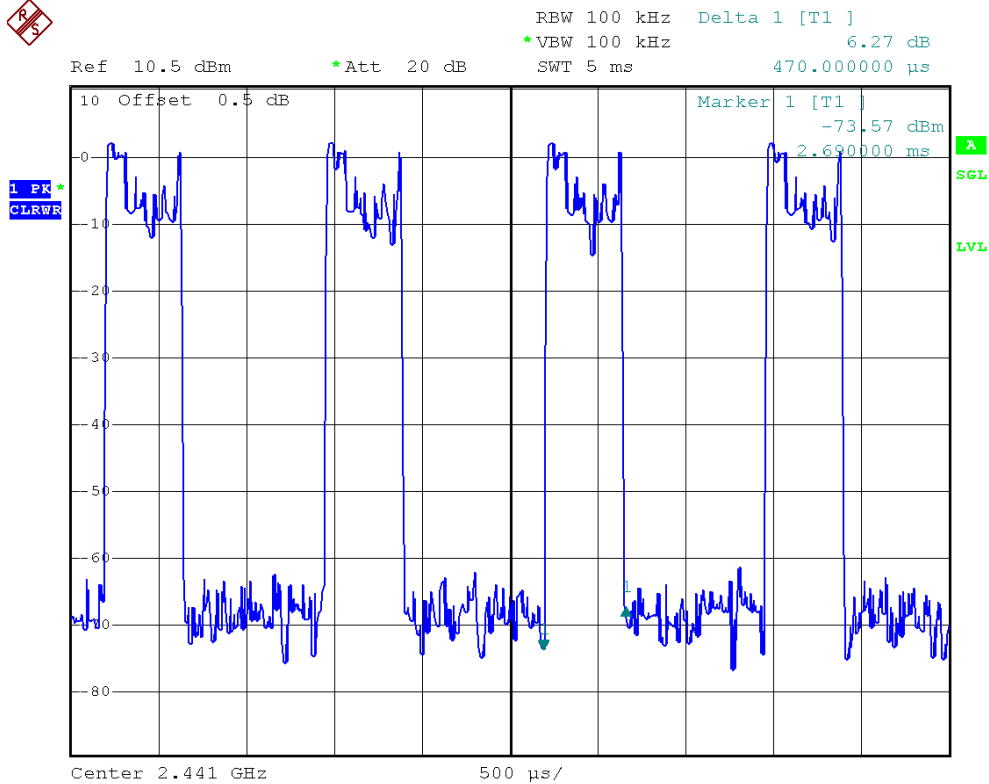




### Bluetooth / 3 Mbps / CH39-3DH3



### Bluetooth / 3 Mbps / CH39-3DH1



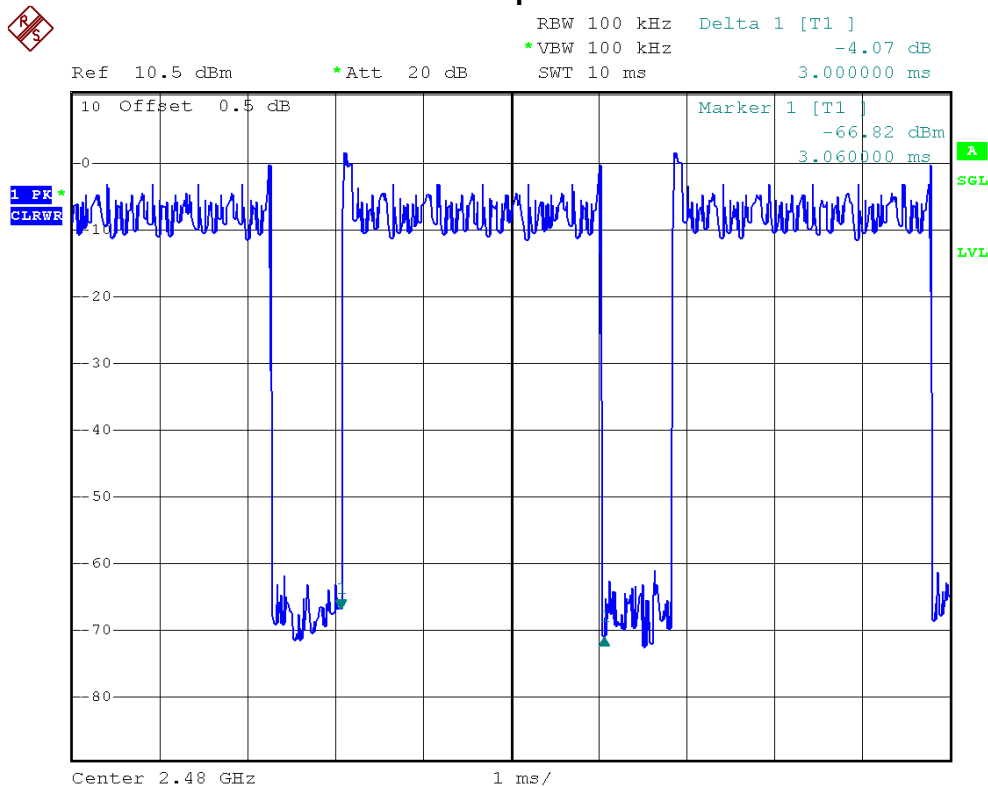




EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 3 Mbps / CH78-3DH5/3DH3/3DH1		

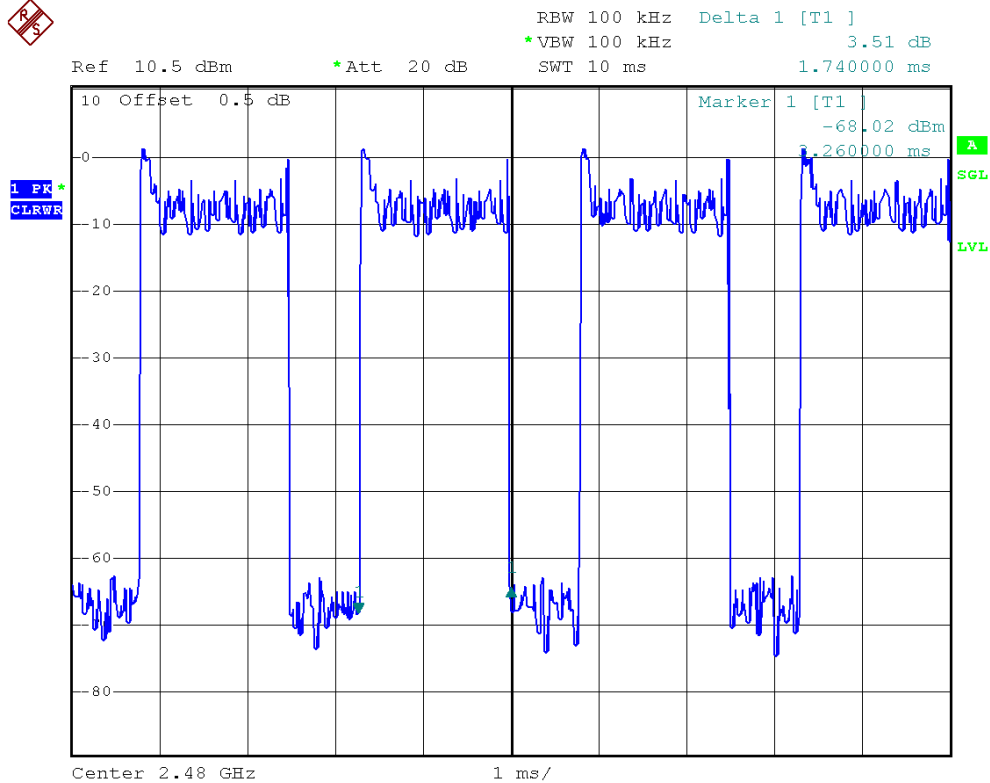
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
3DH5	2480 MHz	3.0000	0.3200	0.4000
3DH3	2480 MHz	1.7400	0.2784	0.4000
3DH1	2480 MHz	0.4700	0.1504	0.4000

### Bluetooth / 3 Mbps / CH78-3DH5

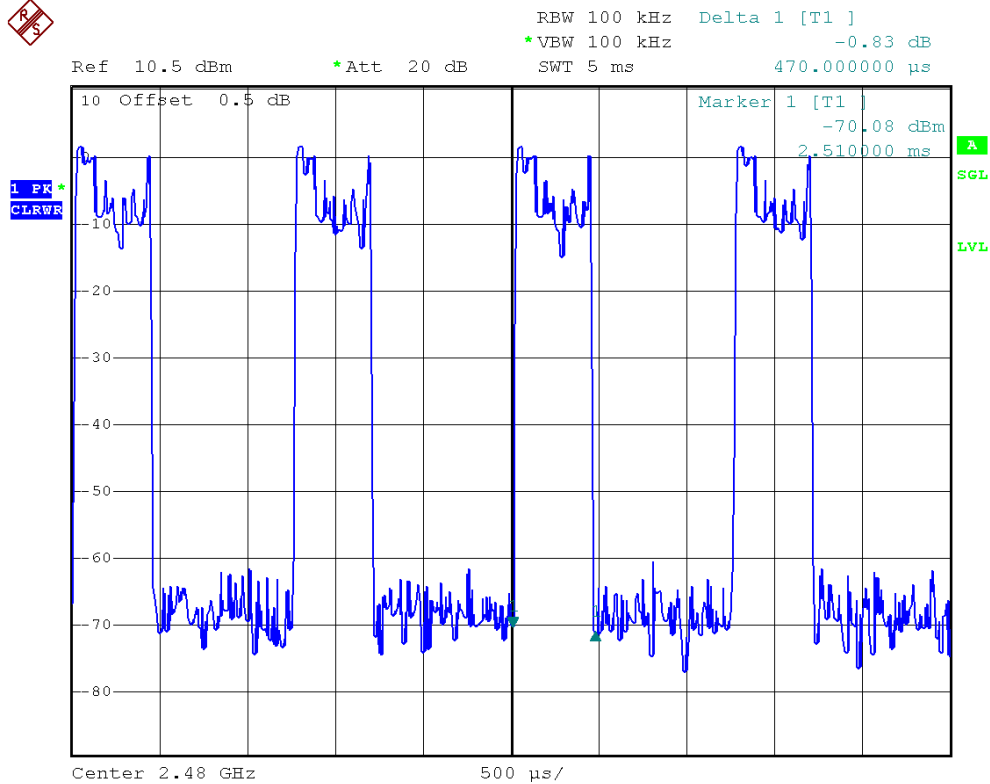




### Bluetooth / 3 Mbps / CH78-3DH3



### Bluetooth / 3 Mbps / CH78-3DH1



**7. HOPPING CHANNEL SEPARATION MEASUREMENT & BANDWITH TEST****7.1 APPLIED PROCEDURES / LIMIT**

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.

**7.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 16, 2012

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

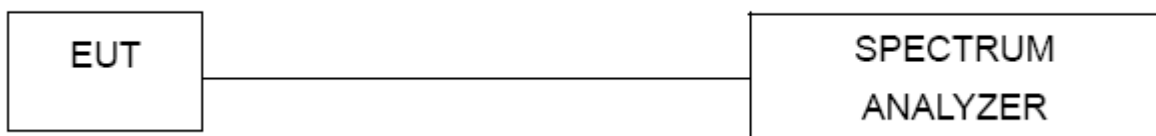
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 300 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

**7.1.2 TEST PROCEDURE**

- The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
- The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for 20 dB bandwidth measurement.
- The resolution bandwidth of 100 kHz and the video bandwidth of 300 kHz were utilised for channel separation measurement.

**7.1.3 DEVIATION FROM STANDARD**

No deviation.

**7.1.4 TEST SETUP****7.1.5 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

**7.1.6 TEST RESULTS**

EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 ° C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 1 Mbps / CH00, CH39, CH78		

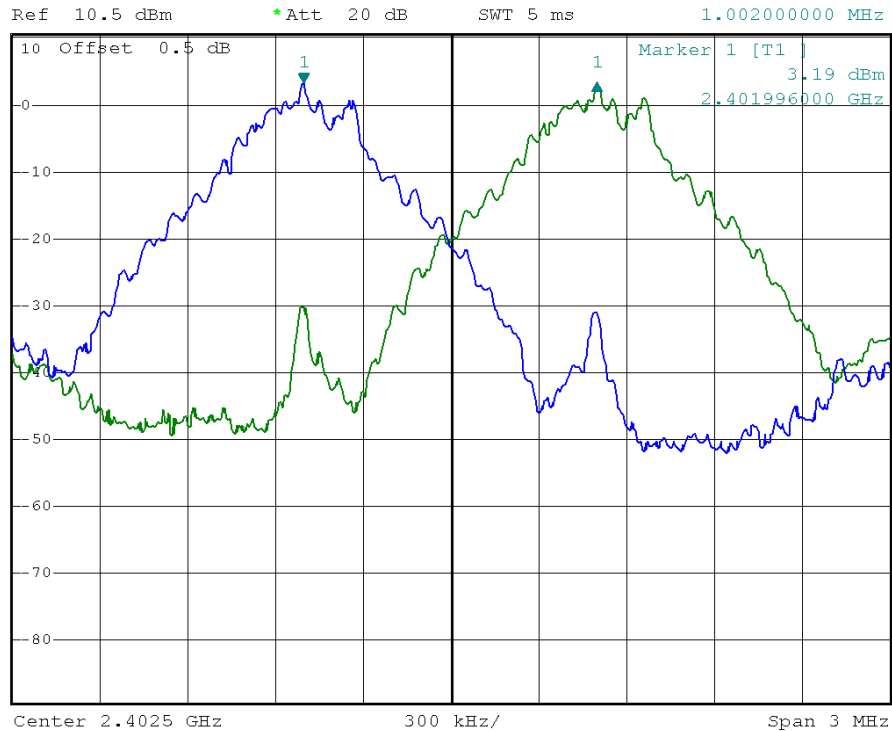
Frequency	Channel Separation (MHz)	99% Occupied BW (MHz)	20 dB Bandwidth (MHz)	Two-thirds of the 20 dB Bandwidth (MHz)	Result
2402 MHz	1.00	0.864	0.924	0.616	<b>PASS</b>
2441 MHz	1.00	0.858	0.936	0.624	<b>PASS</b>
2480 MHz	1.01	0.858	0.930	0.620	<b>PASS</b>

**Ch. Separation Limits: >25 KHz or >2/3 of 20dB bandwidth**

**Bluetooth / 1 Mbps / CH00-Channel Separation**



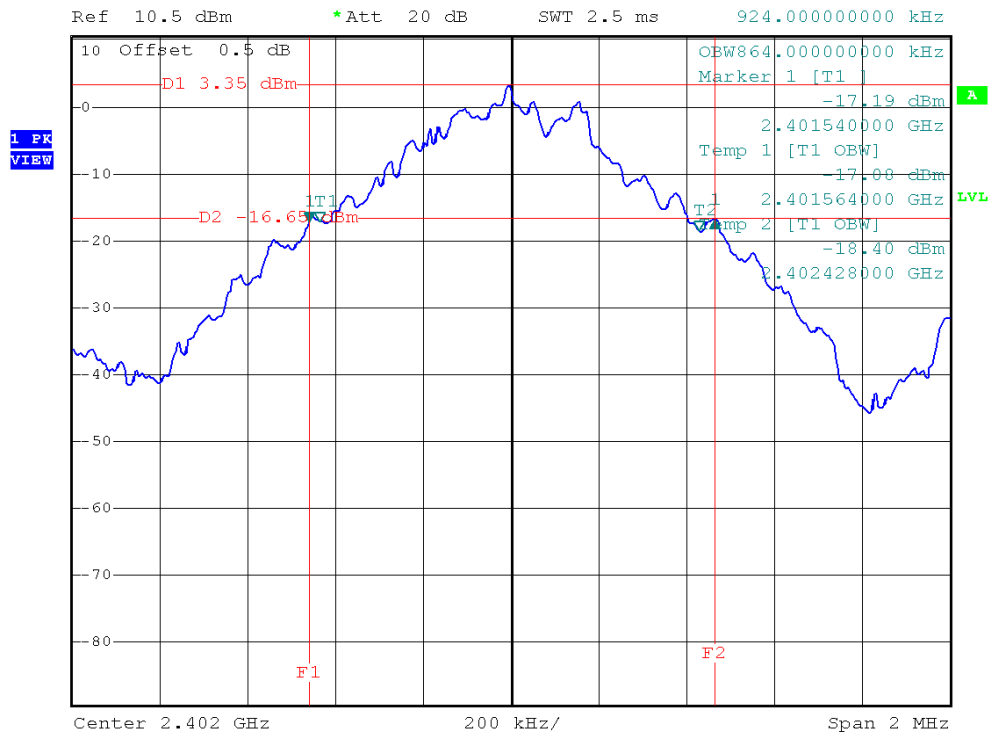
\*RBW 30 kHz Delta 1 [T3]  
\*VBW 100 kHz 0.16 dB  
SWT 5 ms 1.002000000 MHz



**Bluetooth / 1 Mbps / CH00- 20dB Bandwidth**



\*RBW 30 kHz Delta 1 [T1]  
\*VBW 300 kHz 0.34 dB  
SWT 2.5 ms 924.000000000 kHz





### Bluetooth / 1 Mbps / CH39-Channel Separation



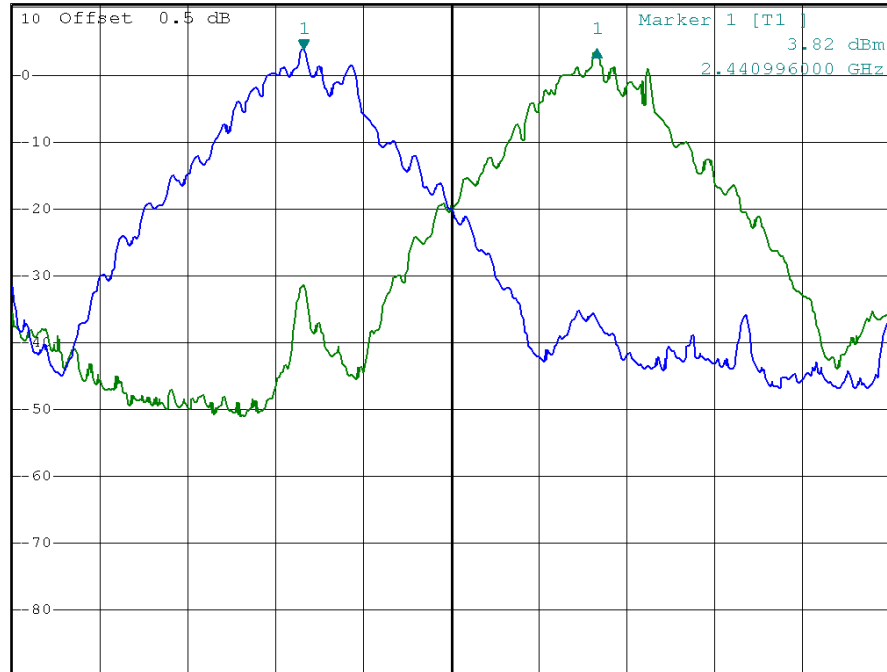
\*RBW 30 kHz Delta 1 [T3]  
\*VBW 100 kHz -0.04 dB  
SWT 5 ms 1.002003000 MHz

Ref 10.5 dBm

\*Att 20 dB

1 PK  
VIEW

3 PK  
VIEW



Center 2.4415 GHz

300 kHz/

Span 3 MHz

### Bluetooth / 1 Mbps / CH39- 20dB Bandwidth

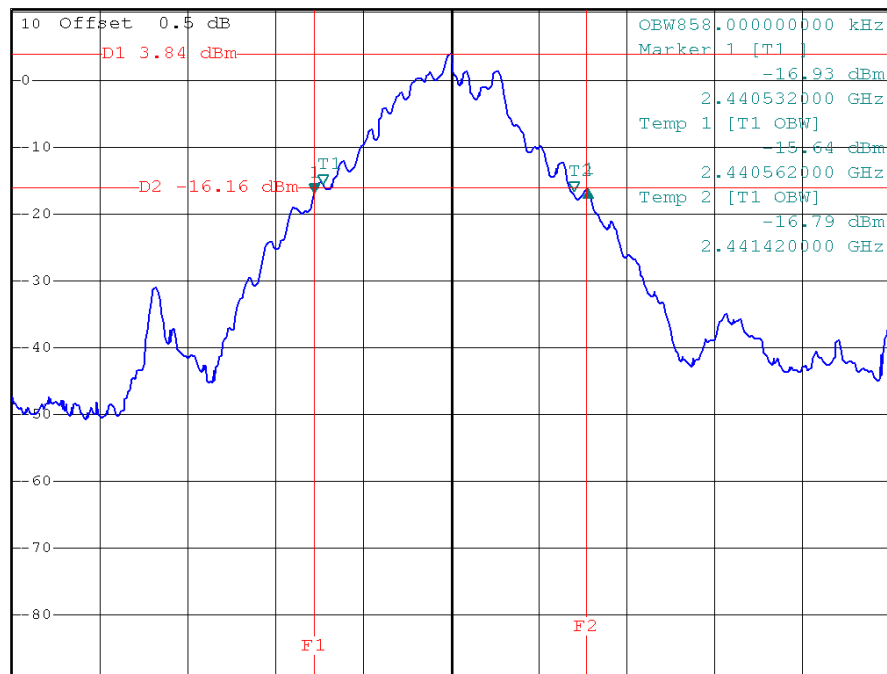


\*RBW 30 kHz Delta 1 [T1]  
\*VBW 300 kHz 0.45 dB  
SWT 5 ms 936.000000000 kHz

Ref 10.5 dBm

\*Att 20 dB

1 PK  
VIEW



Center 2.441 GHz

300 kHz/

Span 3 MHz



### Bluetooth / 1 Mbps / CH78-Channel Separation



\*RBW 30 kHz Delta 1 [T3 ]  
\*VBW 300 kHz -1.01 dB  
SWT 5 ms 1.014000000 MHz

Ref 10.5 dBm

\*Att 20 dB

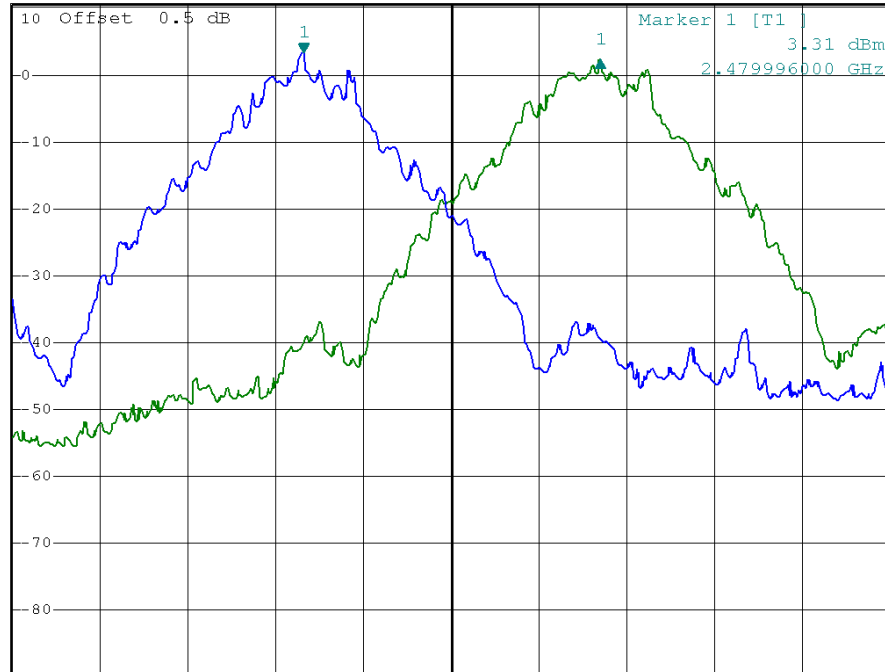
Marker 1 [T1 ]  
3.31 dBm  
2.479996000 GHz

1 PK  
VIEW

3 PK  
VIEW

A

LVL



Center 2.4805 GHz

300 kHz/

Span 3 MHz

### Bluetooth / 1 Mbps / CH78- 20dB Bandwidth



\*RBW 30 kHz Delta 1 [T1 ]  
\*VBW 300 kHz -0.09 dB  
SWT 5 ms 930.000000000 kHz

Ref 10.5 dBm

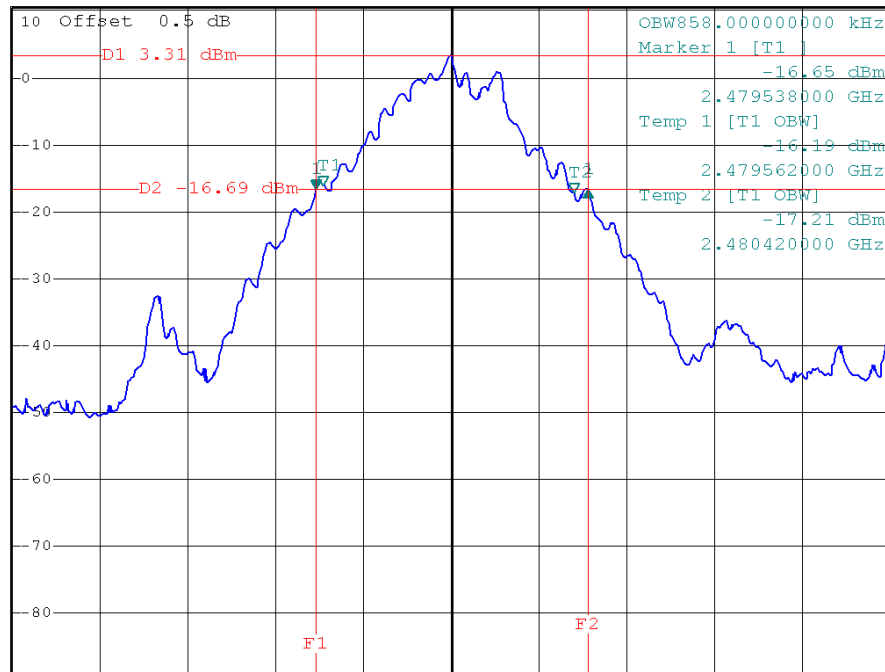
\*Att 20 dB

OBW858.000000000 kHz  
Marker 1 [T1 ]  
-16.65 dBm  
2.479538000 GHz  
Temp 1 [T1 OBW]  
-16.19 dBm  
2.479562000 GHz  
Temp 2 [T1 OBW]  
-17.21 dBm  
2.480420000 GHz

1 PK  
VIEW

A

LVL



Center 2.48 GHz

300 kHz/

Span 3 MHz



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 ° C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 3 Mbps / CH00, CH39, CH78		

Frequency	Channel Separation (MHz)	99% Occupied BW (MHz)	20 dB Bandwidth (MHz)	Two-thirds of the 20 dB Bandwidth (MHz)	Result
2402 MHz	1.00	1.164	1.260	0.840	<b>PASS</b>
2441 MHz	1.00	1.170	1.260	0.840	<b>PASS</b>
2480 MHz	1.00	1.164	1.266	0.844	<b>PASS</b>

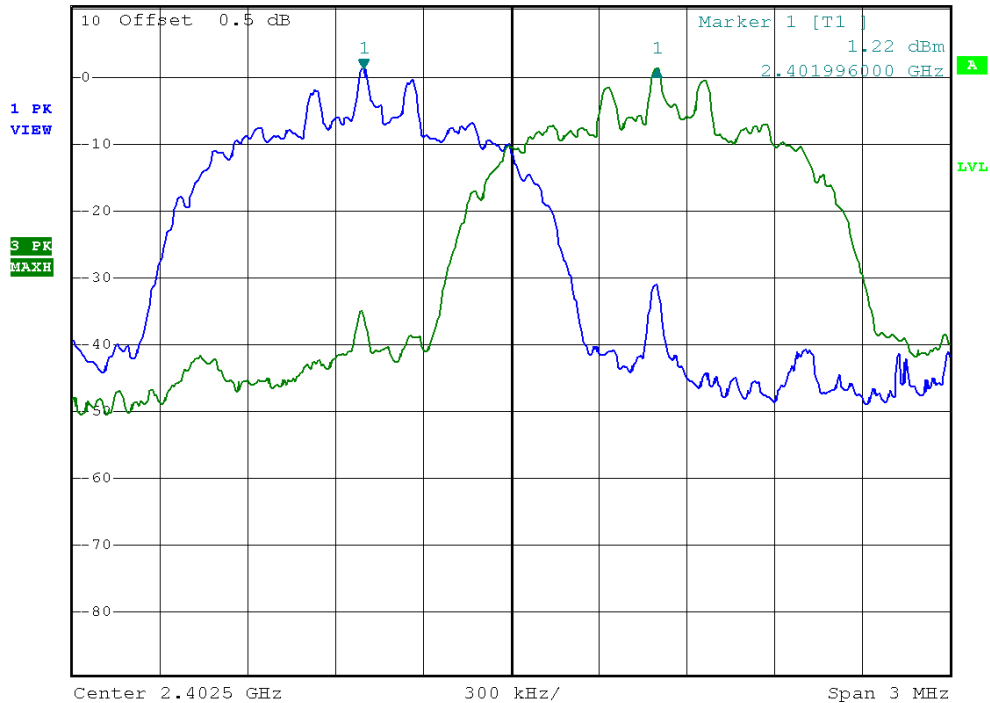
**Ch. Separation Limits: >25 KHz or >2/3 of 20dB bandwidth**



**Bluetooth / 3 Mbps / CH00-Channel Separation**



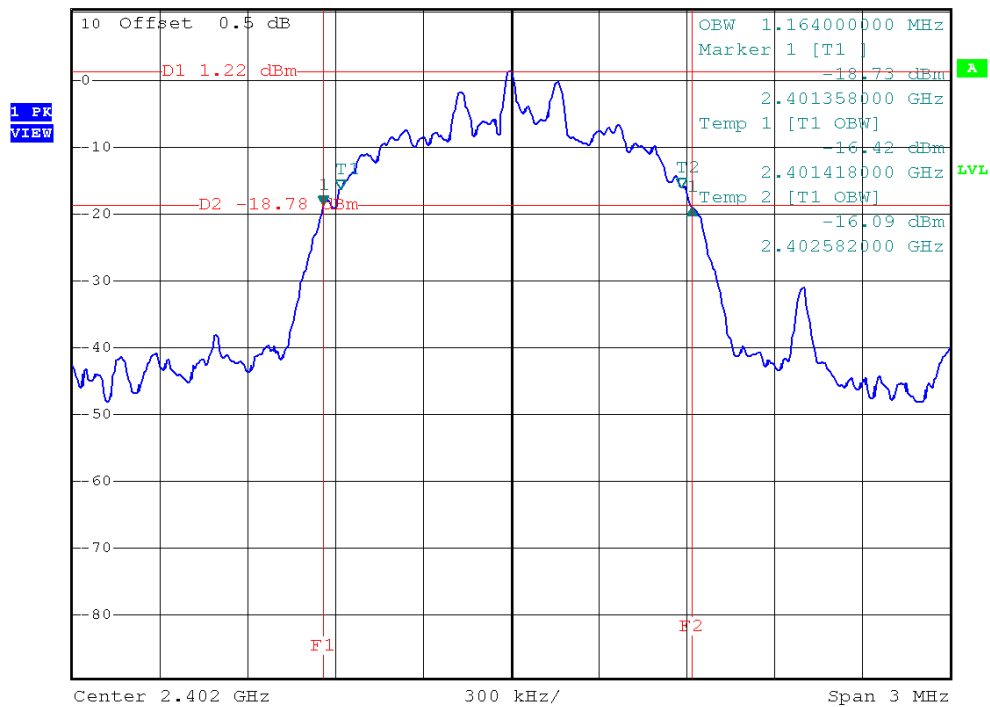
\*RBW 30 kHz Delta 1 [T3 ]  
\*VBW 100 kHz 0.09 dB  
Ref 10.5 dBm \*Att 20 dB SWT 5 ms 1.002000000 MHz



**Bluetooth / 3 Mbps / CH00- 20dB Bandwidth**

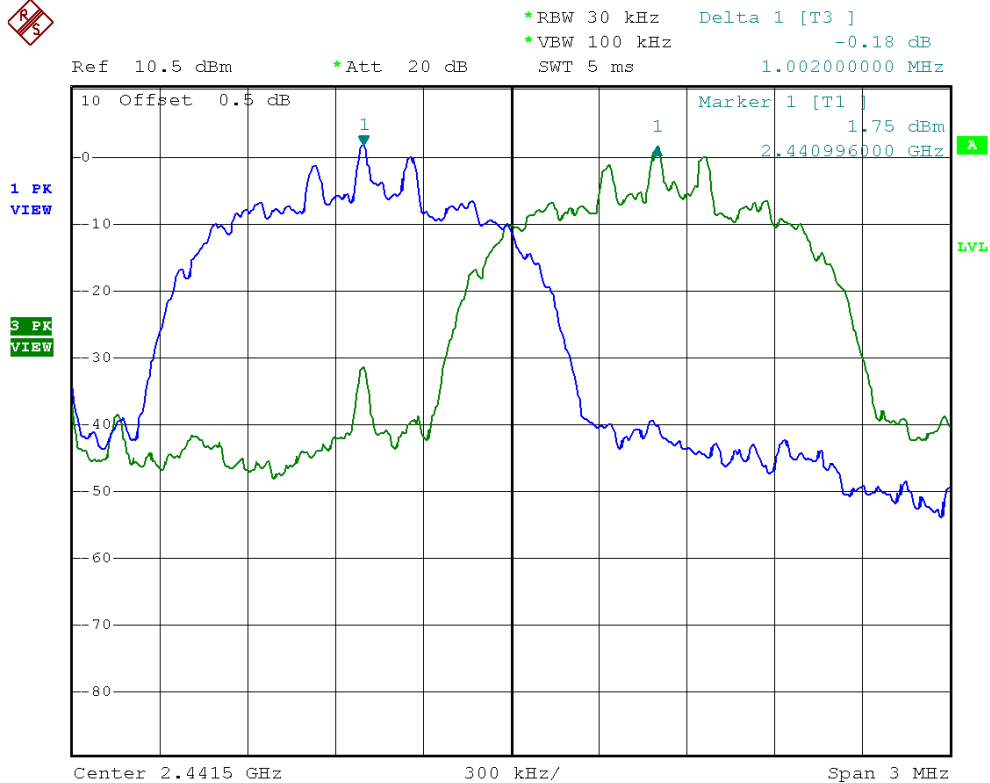


\*RBW 30 kHz Delta 1 [T1 ]  
\*VBW 300 kHz -0.29 dB  
Ref 10.5 dBm \*Att 20 dB SWT 5 ms 1.260000000 MHz

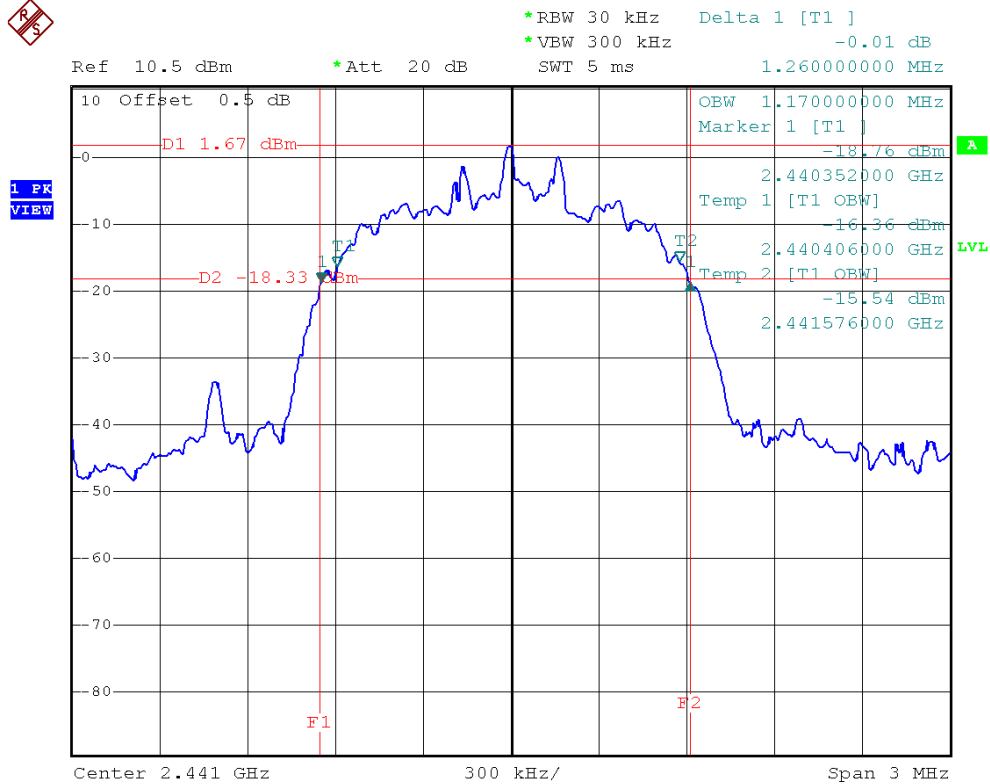




### Bluetooth / 3 Mbps / CH39-Channel Separation

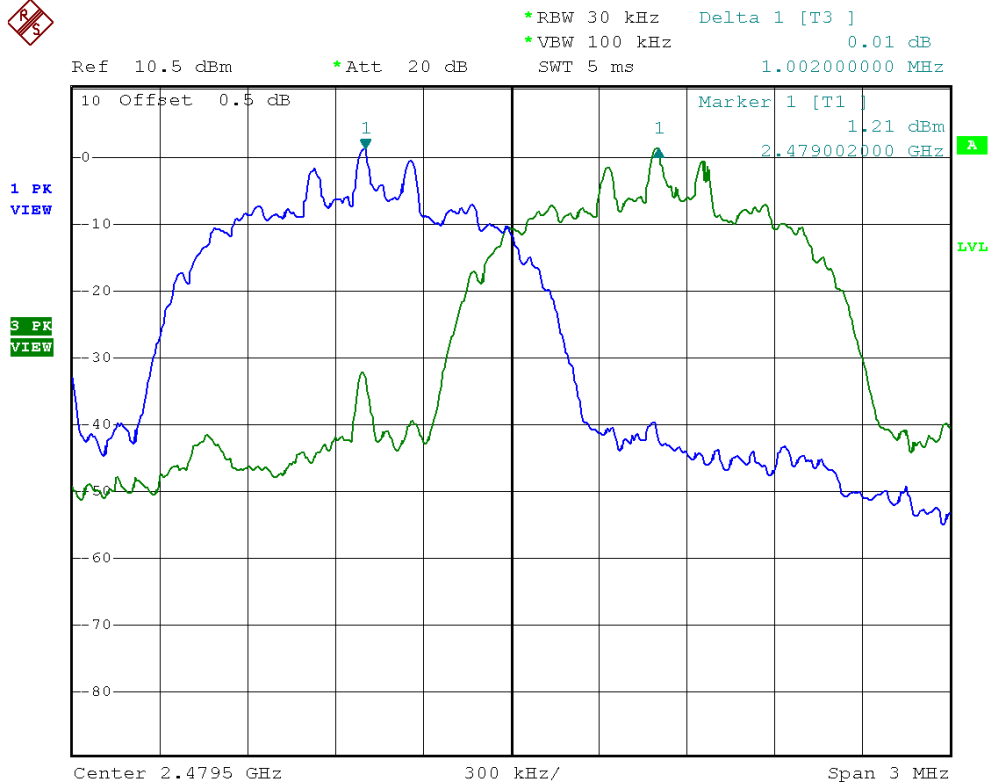


### Bluetooth / 3 Mbps / CH39- 20dB Bandwidth

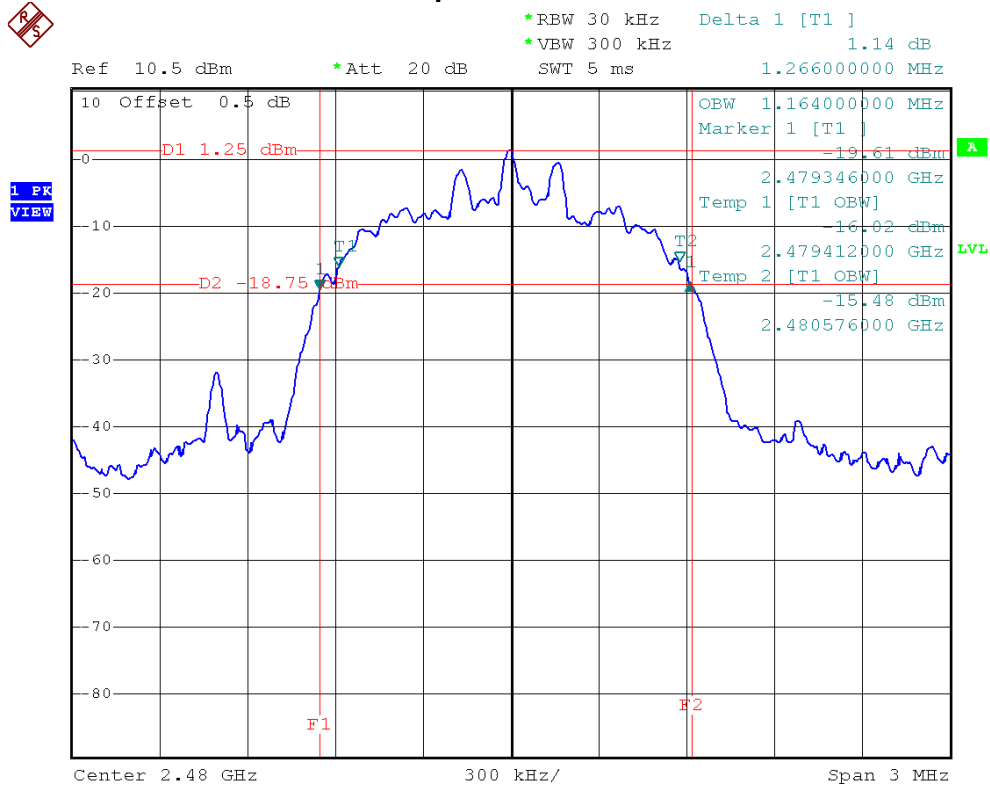




### Bluetooth / 3 Mbps / CH78-Channel Separation



### Bluetooth / 3 Mbps / CH78- 20dB Bandwidth





## 8. PEAK OUTPUT POWER TEST

### 8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C: 2010				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (b)(1)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

#### 8.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 16, 2012

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

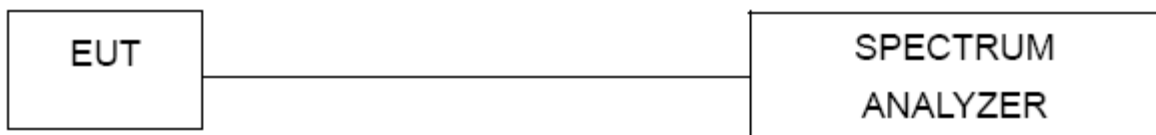
#### 8.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 3MHz, VBW= 3MHz, Sweep time = Auto.

#### 8.1.3 DEVIATION FROM STANDARD

No deviation.

#### 8.1.4 TEST SETUP



#### 8.1.5 EUT OPERATION CONDITIONS

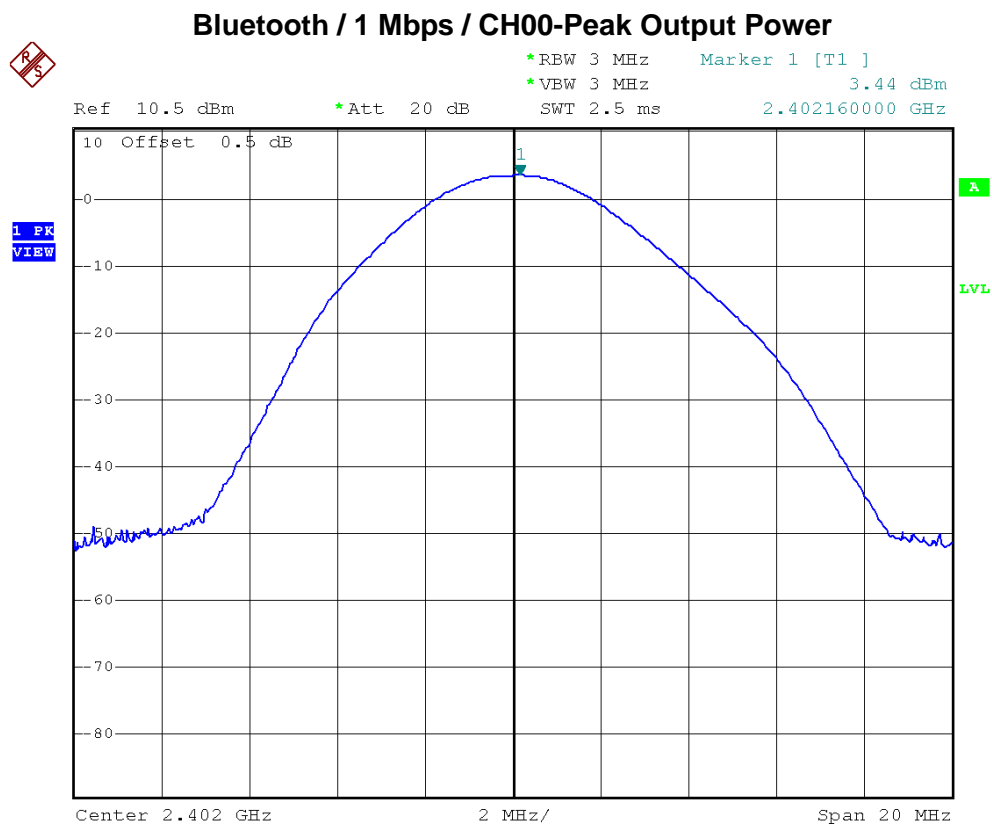
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



### 8.1.6 TEST RESULTS

EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 1 Mbps / CH00, CH39, CH78		

Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
2402	4.12	30	1
2441	4.87	30	1
2480	4.27	30	1



**Bluetooth / 1 Mbps / CH39-Peak Output Power**



\*RBW 3 MHz Marker 1 [T1 ]  
\*VBW 3 MHz 3.99 dBm  
SWT 2.5 ms 2.440800000 GHz

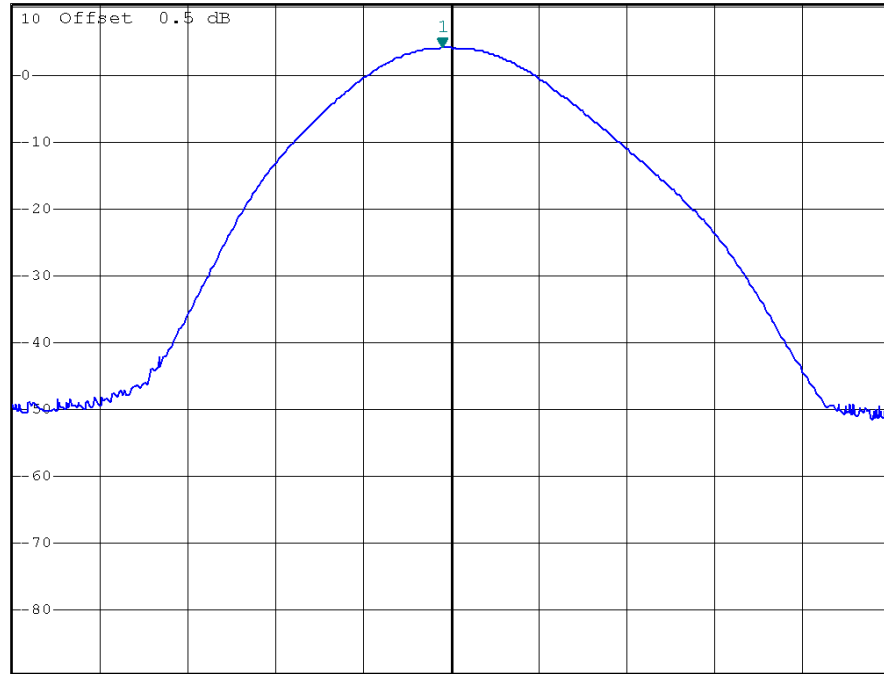
Ref 10.5 dBm

\*Att 20 dB

SWT 2.5 ms

2.440800000 GHz

1 PK  
VIEW



Center 2.441 GHz

2 MHz/

Span 20 MHz

**Bluetooth / 1 Mbps / CH78-Peak Output Power**



\*RBW 3 MHz Marker 1 [T1 ]  
\*VBW 3 MHz 3.49 dBm  
SWT 2.5 ms 2.479800000 GHz

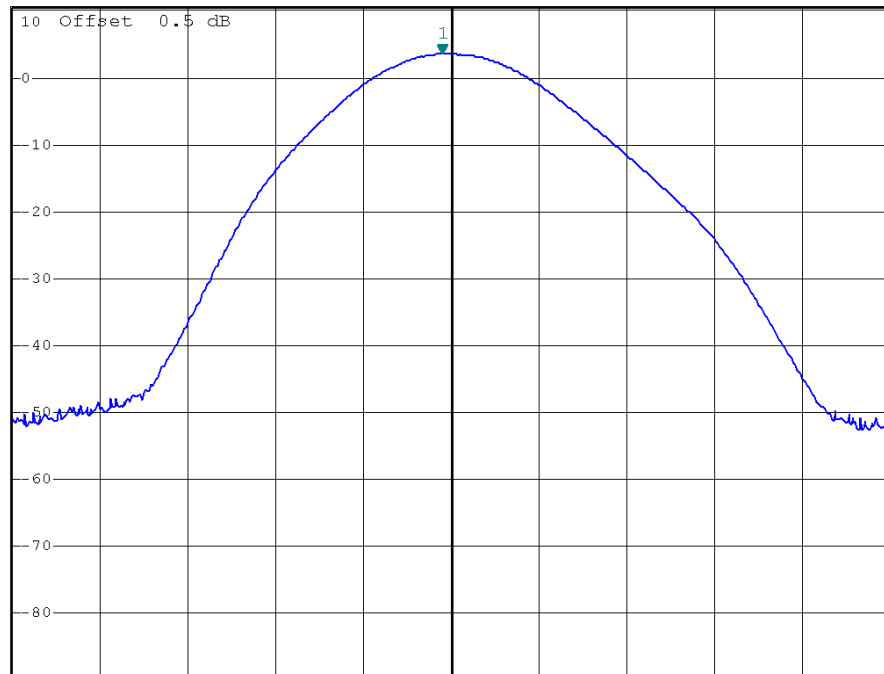
Ref 10.5 dBm

\*Att 20 dB

SWT 2.5 ms

2.479800000 GHz

1 PK  
VIEW



Center 2.48 GHz

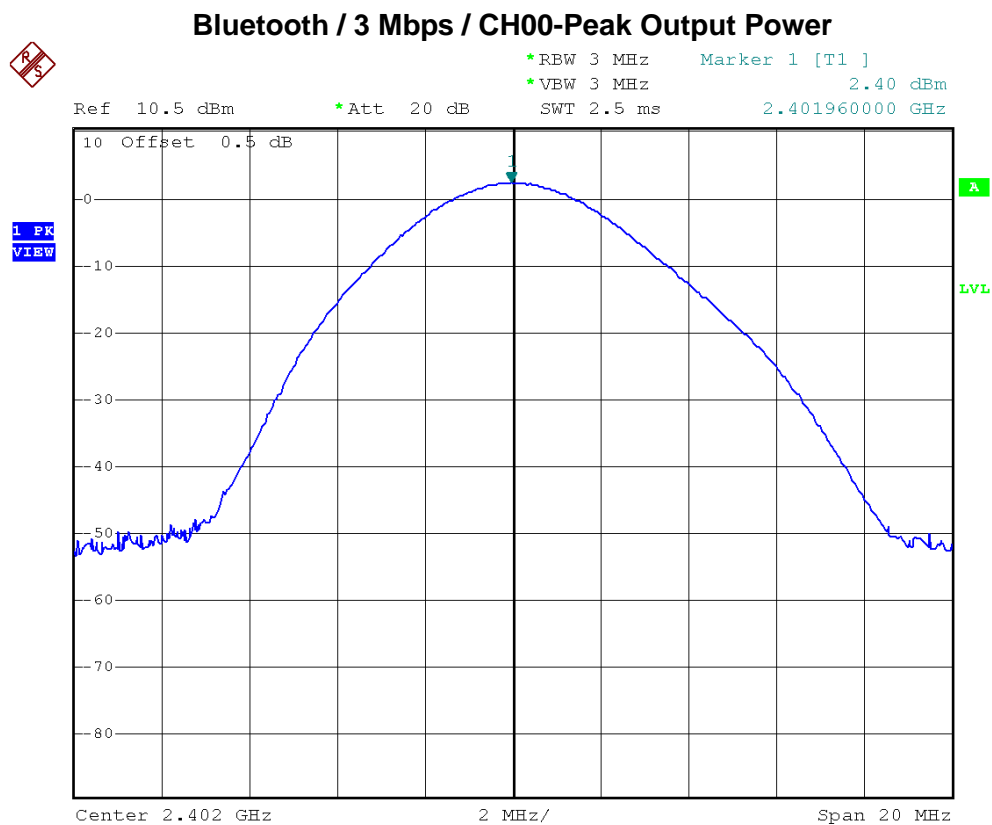
2 MHz/

Span 20 MHz



EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 3 Mbps / CH00, CH39, CH78		

Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
2402	3.38	30	1
2441	3.86	30	1
2480	3.31	30	1





### Bluetooth / 3 Mbps / CH39-Peak Output Power



\*RBW 3 MHz    Marker 1 [T1 ]  
\*VBW 3 MHz    2.87 dBm  
SWT 2.5 ms    2.440880000 GHz

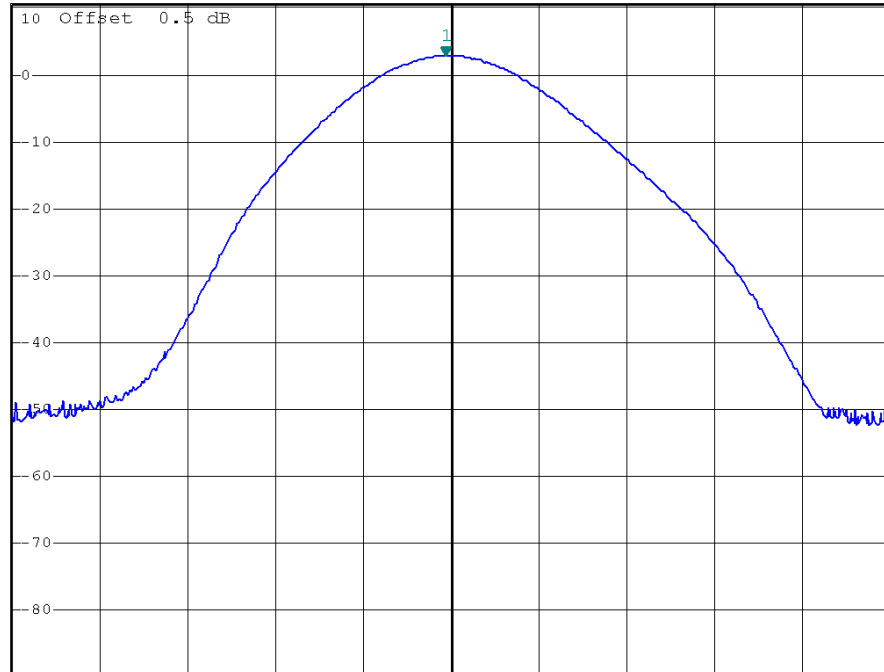
Ref 10.5 dBm

\*Att 20 dB

SWT 2.5 ms

2.440880000 GHz

1 PK  
VIEW



Center 2.441 GHz

2 MHz/

Span 20 MHz

### Bluetooth / 3 Mbps / CH78-Peak Output Power



\*RBW 3 MHz    Marker 1 [T1 ]  
\*VBW 3 MHz    2.23 dBm  
SWT 2.5 ms    2.480040000 GHz

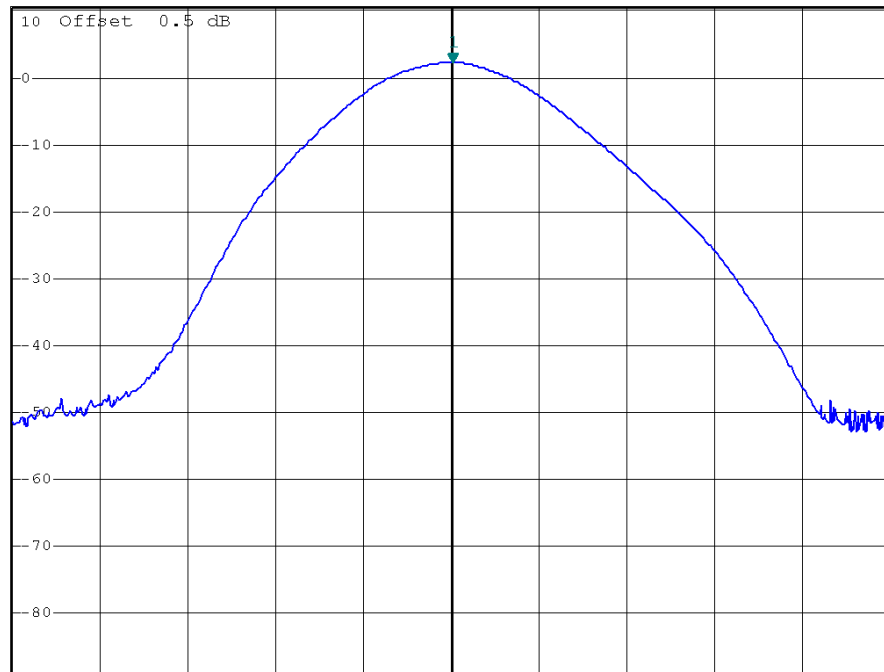
Ref 10.5 dBm

\*Att 20 dB

SWT 2.5 ms

2.480040000 GHz

1 PK  
VIEW



Center 2.48 GHz

2 MHz/

Span 20 MHz





## 9. ANTENNA CONDUCTED SPURIOUS EMISSION

### 9.1 APPLIED PROCEDURES / LIMIT

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

#### 9.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 16, 2012

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

The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	100 KHz /100 KHz for Peak

#### 9.1.2 TEST PROCEDURE

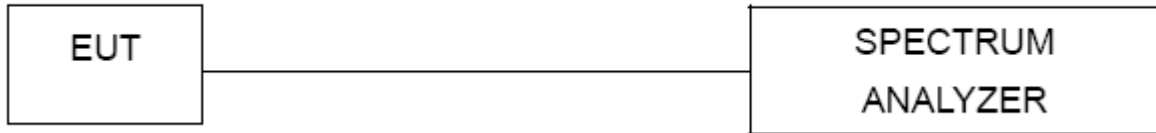
- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

#### 9.1.3 DEVIATION FROM STANDARD

No deviation.



#### **9.1.4 TEST SETUP**



#### **9.1.5 EUT OPERATION CONDITIONS**

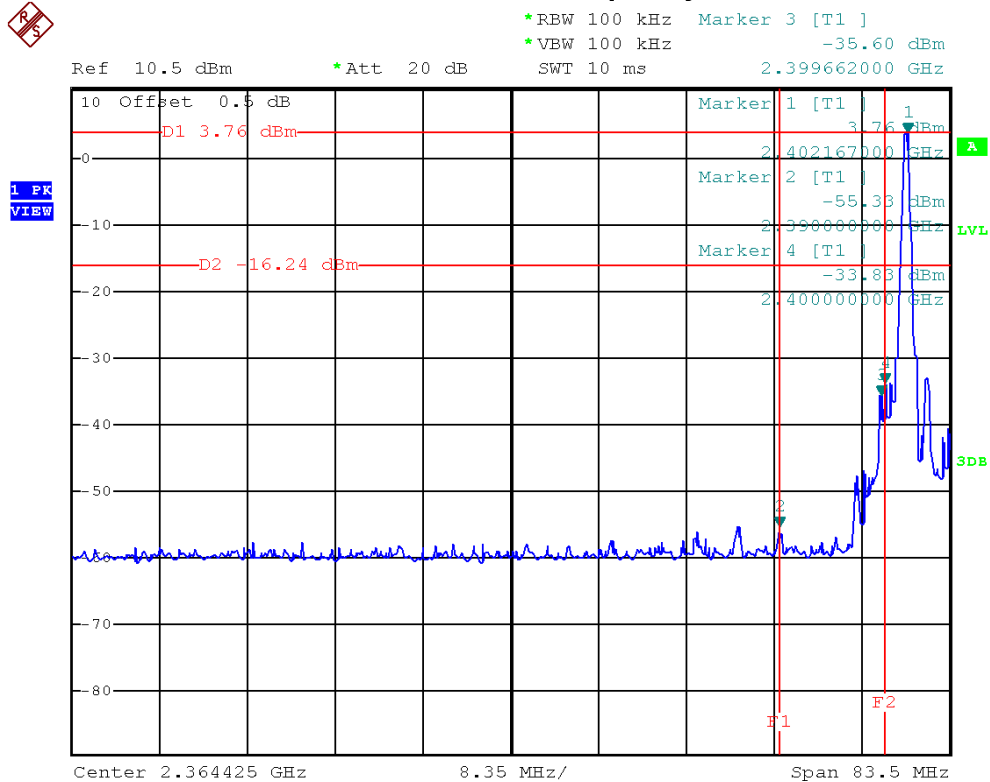
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

**9.1.6 TEST RESULTS**

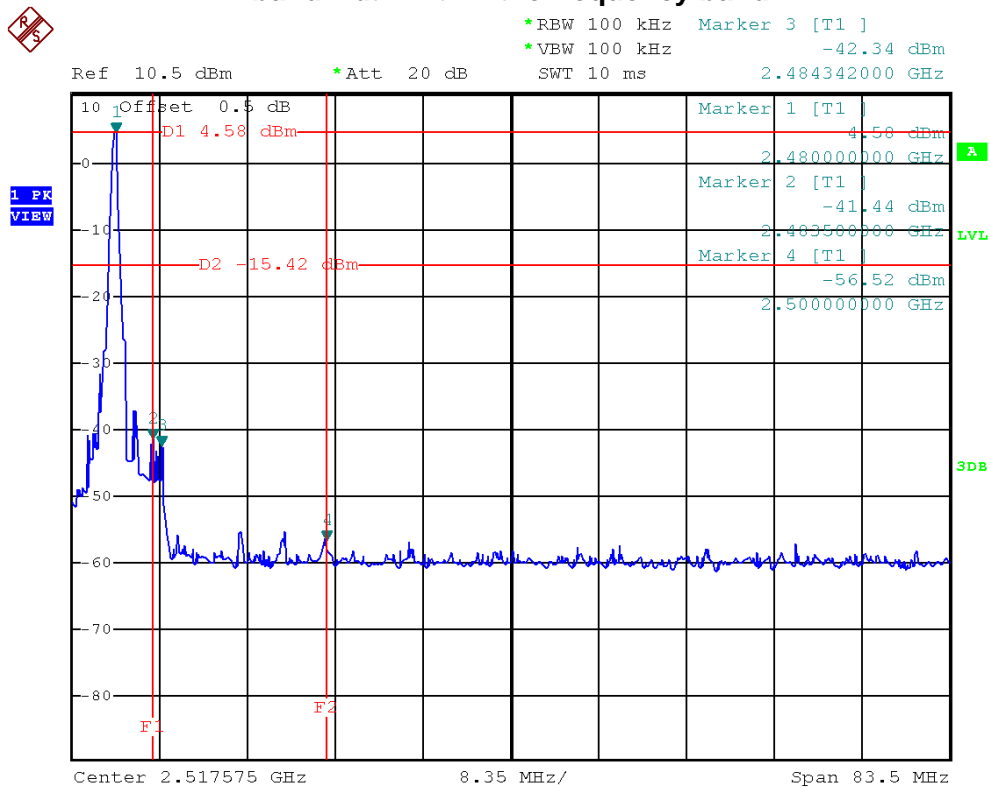
EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 ° C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 1 Mbps / CH00, CH39, CH78		

The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2399.662	-35.60	2484.342	-42.34
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			

**Bluetooth / 1 Mbps / CH00-The max. radio frequency power in any 100kHz bandwidth outside the frequency band**



**Bluetooth / 1 Mbps / CH78-The max. radio frequency power in any 100 kHz bandwidth within the frequency band**







### Bluetooth / 1 Mbps / CH78-10 Harmonic of the frequency



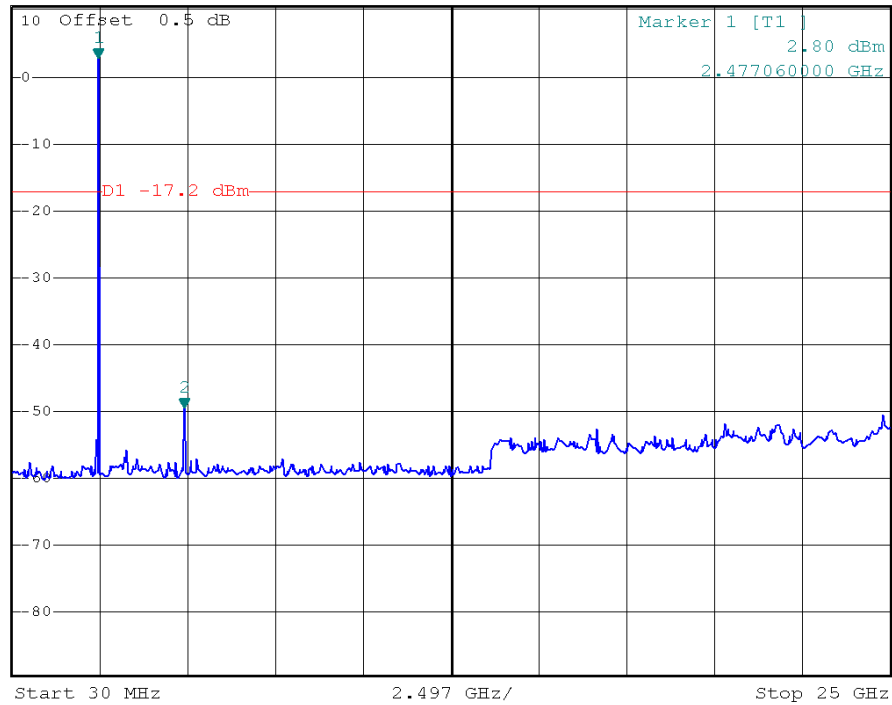
\*RBW 100 kHz Marker 2 [T1 ]  
\*VBW 100 kHz -49.55 dBm  
SWT 2.5 s 4.924120000 GHz

Ref 10.5 dBm

\*Att 20 dB

Marker 1 [T1 ]  
2.80 dBm  
2.477060000 GHz

1 PK  
VIEW

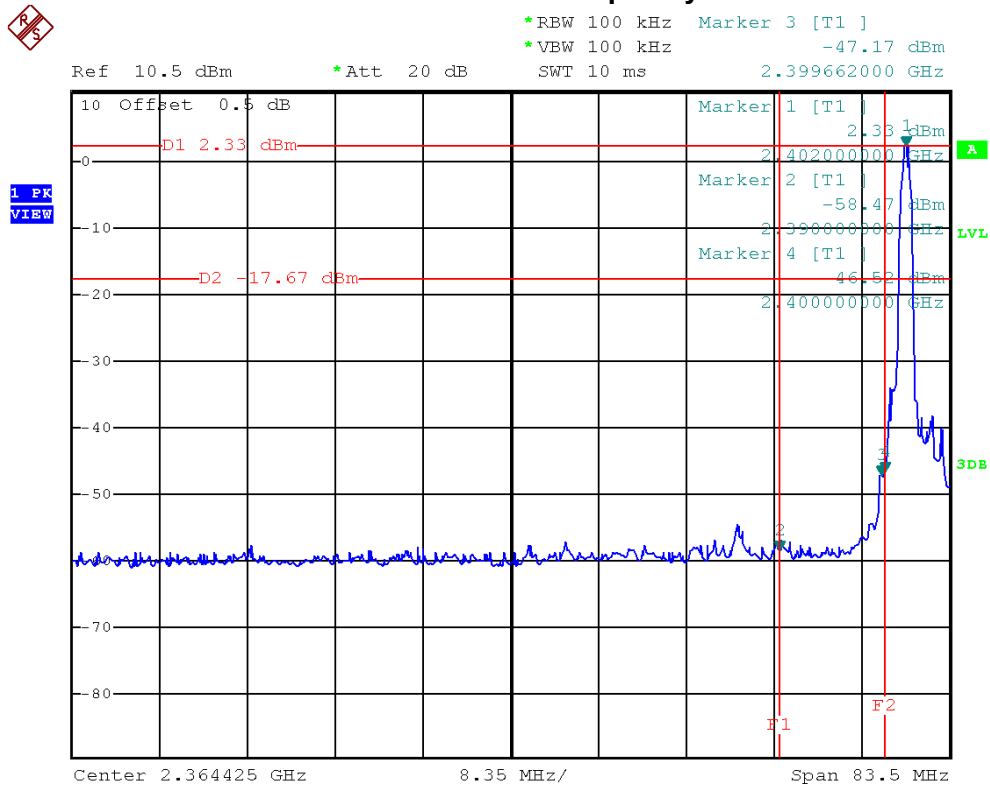




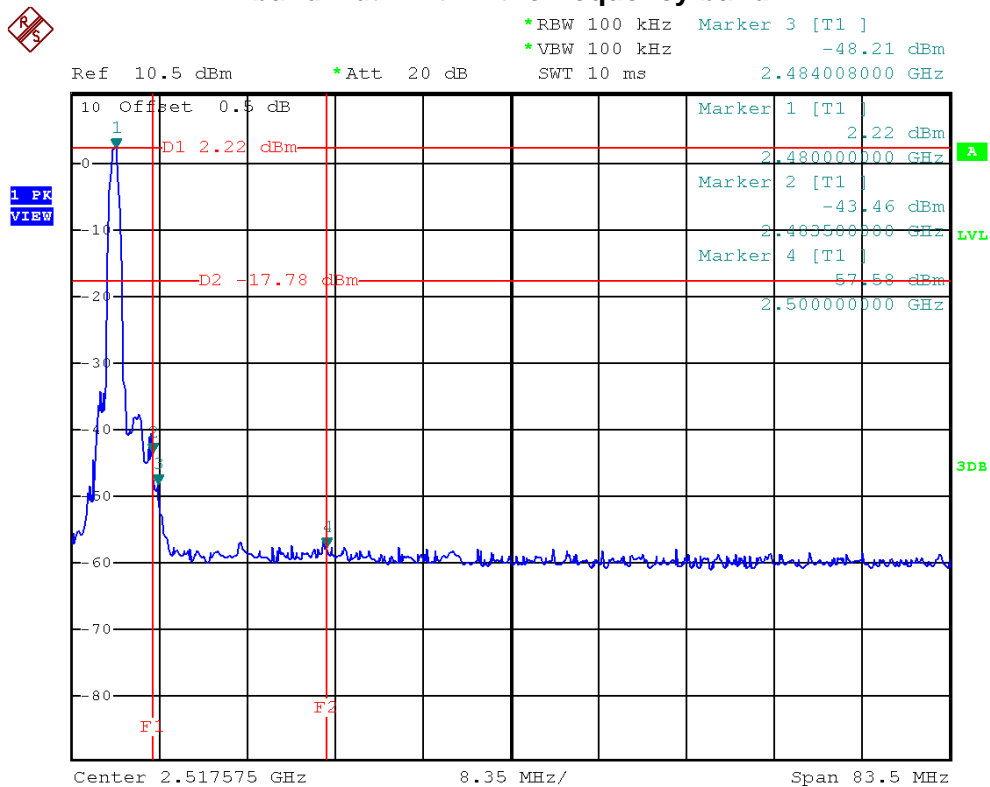
EUT :	Doggy Radio	Model Name :	ORG
Temperature :	26 ° C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	Bluetooth / 3 Mbps / CH00, CH39, CH78		

The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2399.662	-47.17	2484.008	-48.21
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			

**Bluetooth / 3 Mbps / CH00-The max. radio frequency power in any 100kHz bandwidth outside the frequency band**



**Bluetooth / 3 Mbps / CH78-The max. radio frequency power in any 100 kHz bandwidth within the frequency band**







### Bluetooth / 3 Mbps / CH00-10 Harmonic of the frequency



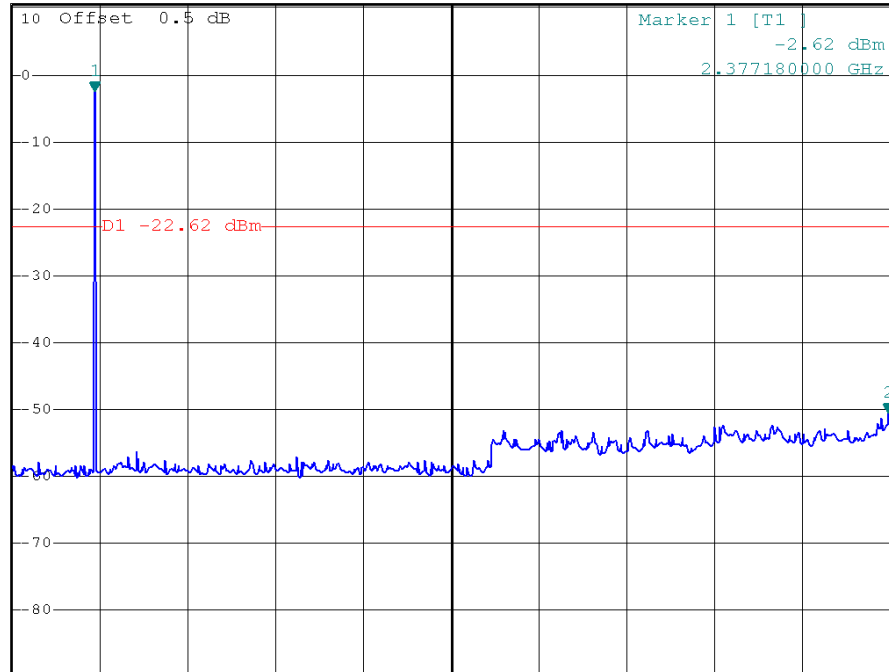
\*RBW 100 kHz Marker 2 [T1 ]  
\*VBW 100 kHz -50.59 dBm  
SWT 2.5 s 24.950060000 GHz

Ref 10.5 dBm

\*Att 20 dB

SWT 2.5 s 24.950060000 GHz

1 PK  
VIEW



### Bluetooth / 3 Mbps / CH39-10 Harmonic of the frequency



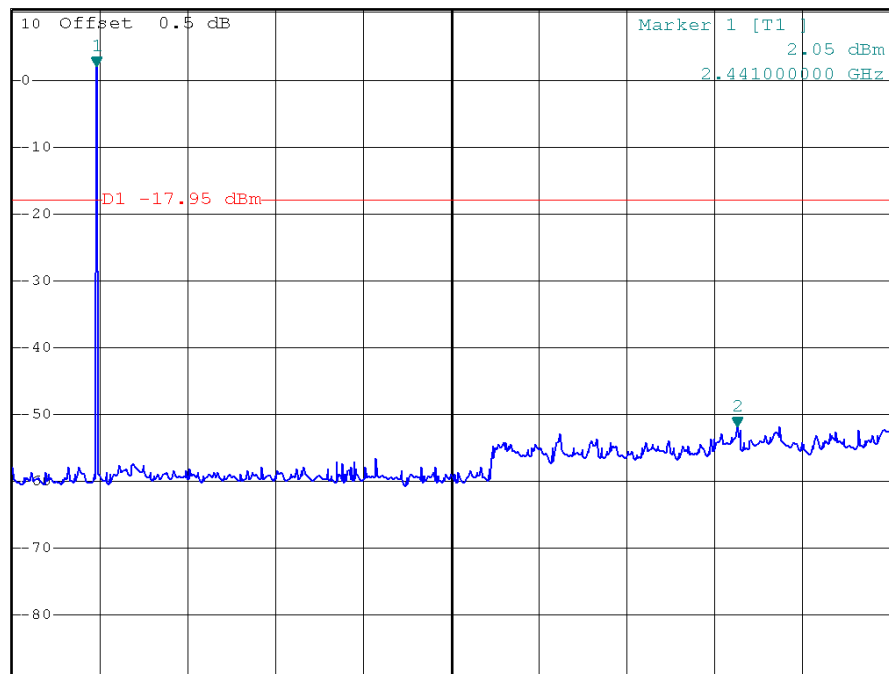
\*RBW 100 kHz Marker 2 [T1 ]  
\*VBW 100 kHz -51.77 dBm  
SWT 2.5 s 20.655220000 GHz

Ref 10.5 dBm

\*Att 20 dB

SWT 2.5 s 20.655220000 GHz

1 PK  
VIEW





### Bluetooth / 3 Mbps / CH78-10 Harmonic of the frequency



\*RBW 100 kHz Marker 2 [T1 ]  
\*VBW 100 kHz -51.20 dBm  
SWT 2.5 s 24.800240000 GHz

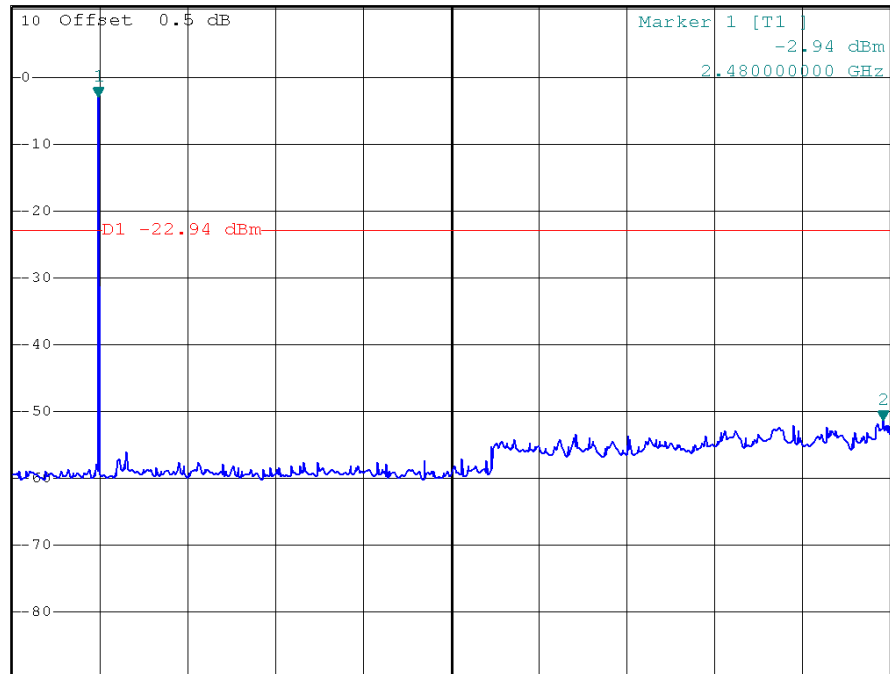
Ref 10.5 dBm

\*Att 20 dB

SWT 2.5 s

24.800240000 GHz

1 PK  
VIEW



Start 30 MHz

2.497 GHz/

Stop 25 GHz



## 10. RF EXPOSURE TEST

### 10.1 Applied procedures / limit

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; \*Plane-wave equivalent power density

### 10.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	Anritsu	ML2487A	6K00004714	Feb. 16, 2013
2	Power Meter Sensor	Anritsu	MA2491A	34138	Feb. 16, 2013

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

### 10.1.2 MPE CALCULATION METHOD

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

**E** = Electric field (V/m)

**P** = Peak RF output power (W)

**G** = EUT Antenna numeric gain (numeric)

**d** = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

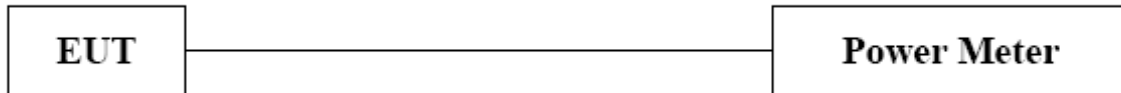
From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained



### **10.1.3 DEVIATION FROM STANDARD**

No deviation.

### **10.1.4 TEST SETUP**



### **10.1.5 EUT OPERATION CONDITIONS**

The power is too low, so no RF calculations are needed.