

FCC PART 15.249
EMI MEASUREMENT AND TEST REPORT
For

GOLD FINGERS TECHNOLOGY CO.,LTD

Room 1403, 14F, Binhai Building B, xinghua road, central of Bao'an district, Shenzhen,P,R,China

FCC ID: 2ABE2-BTS02

December 06, 2013

This Report Concerns: Original Report	Equipment Type: Bluetooth Speaker
Test Engineer:	Jade Yang <i>Jade Yang</i>
Report No.:	PTS201305019F-2
Receive EUT Date/Test Date:	November 29 , 2013/ November 29 - December 06, 2013
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1. GENERAL INFORMATION

1.1. Report information

- 1.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that PTS approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that PTS in any way guarantees the later performance of the product/equipment.
- 1.1.2. The sample/s mentioned in this report is/are supplied by Applicant, PTS therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.
- 1.1.3. Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through PTS, unless the applicant has authorized PTS in writing to do so.

Test Facility -

The test site used to collect the radiated data is located on the address of Keyway Testing Technology Co., Ltd.

(FCC Registered Test Site Number: 370994) on

Building 1, Baishun Industrial Zone, Zhangmotou Town, Dongguan, Guangdong, China

The Test Site is constructed and calibrated to meet the FCC requirements.

1.2. 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 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.18\text{dB}$
2	RF power, conducted	$\pm 0.17\text{dB}$
3	Spurious emissions, conducted	$\pm 0.22\text{dB}$
4	All emissions, radiated (<1G)	$\pm 4.66\text{dB}$
5	All emissions, radiated (>1G)	$\pm 4.86\text{dB}$
6	Temperature	$\pm 0.5^\circ\text{C}$
7	Humidity	$\pm 2\%$

2. PRODUCT DESCRIPTION

2.1. EUT Description

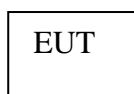
Description	: Bluetooth Speaker
Applicant	: GOLD FINGERS TECHNOLOGY CO.,LTD Room 1403, 14F, Binhai Building B, xinghua road, central of Bao'an district, Shenzhen,P,R,China
Manufacturer	: GOLD FINGERS TECHNOLOGY CO.,LTD Room 1403, 14F, Binhai Building B, xinghua road, central of Bao'an district, Shenzhen,P,R,China
Model Number	: BTS02,BTS02-C
Modulation type	: GFSK
Antenna gain	: 0dBi
Frequency	: 2402-2480MHz
Number of Channels	: 79 Channels
Bluetooth version	: 2.1
Power Supply	: Transmitting:DC 3.7V By battery (The new battery is used during the measurement) charging: DC 5V By Adapter

The series products, model name: BTS02,BTS02-C have the same circuit diagram,PCB layout, software, RF Module, Features and functionality. The differences are the model name, so, we select BLUETOOTH SPEAKER BTS02 to test.

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		

2.2. Block Diagram of EUT Configuration

Radiated emissions test



Conducted Emission test

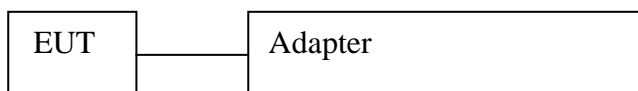


Figure 1 EUT Setup

2.3. Support Equipment List

Name	Model No	S/N	Manufacturer	Used (Y/N)
AC/DC Adapter	CYSK05-05010 0	N/A	Yu Long	Y

2.4. Test Conditions

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-25
Humidity (%RH)	25-75	50-63
Barometric pressure (mbar)	860-1060	950-1000

3. TEST RESULTS SUMMARY

FCC 15 Subpart C, Paragraph 15.249:2012

FCC Rules	Description of Test	Result
Section 15.207	Conducted Emission	Compliant
Section 15.249(a)	The fundamental field strength and the harmonics	Compliant
Section 15.209 Section 15.249(d)	Radiated Emission	Compliant
Section 15.249(d)	Band Edge	Compliant
Section 15.203	Antenna Requirement	Compliant
Section 15.249	20dB Bandwidth	Compliant

Remark: "N/A" means "Not applicable".

Statement: All testing was performed using the test procedures found in ANSI C63.4-2003.

Modifications

No modification was made.

4. TEST EQUIPMENT USED

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	May 9,13	May 9,14
Bilog Antenna	ETS-LINDGREN	3142D	00135452	May 20,13	May 20,14
Active Loop Antenna	EMTES	EM15	BSL011	May 20,13	May 20,14
Spectrum Analyzer	Agilent	8593E	3911A04271	May 9,13	May 9,14
3m Semi-anechoic Chamber	ETS-LINDGREN	966	KW01	May 20,13	May 20,14
Signal Amplifier	SONOMA	310	187303	May 9,13	May 9,14
RF Cable	IMRO	IMRO-400	966 Cable	May 9,13	May 9,14
MULTI-DEVICE Controller	ETS-LINDGREN	2090	126913	N/A	N/A
Antenna Holder	ETS-LINDGREN	2070B	00109601	N/A	N/A
LISN	EMCO	3816/2	00052765	May 26,13	May 26,14
LISN	EMCO	3816/2SH	00052766	May 26,13	May 26,14
Transient Limiter	Agilent	11947A	3107A03668	May 26,13	May 26,14
Test cable	N/A	C-06-C03	N/A	May 31,13	May 31,14
50ohm Termination	SHX	TF2-3G-A	08122902	May 26,13	May 26,14
Horn Antenna	DAZE	ZN30701	11003	May 11,13	May 11,14
Horn Antenna	SCHWARZBECK	BBHA9170	9170-068	May 11,13	May 11,14
Spectrum Analyzer	Agilent	8593E	3911A04271	May 9,13	May 9,14
Spectrum Analyzer	Agilent	E4408B	MY44211125	May 9,13	May 9,14
Spectrum Analyzer	Rohde&Schwarz	FSP	100394	May 9,13	May 9,14
Signal Amplifier	DAZE	ZN3380C	11001	May 9,13	May 9,14
Signal Amplifier	Agilent	8449B	3008A00251	May 9,13	May 9,14
High Pass filter	Micro	HPM50111	324216	May 9,13	May 9,14
Power Meter	R&S	NRVS	101824	May 9,13	May 9,14
RF Cable	IMRO	IMRO-400	966 Cable 1#	May 9,13	May 9,14
Antenna Holder	ETS-LINDGREN	2070B	00109601	N/A	N/A



5. ANTENNA REQUIREMENT

5.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

5.2. Antenna Connected Construction

According to § 15.203, An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The antenna used in this product is PCB antenna. The antenna is permanently attached. Refer to the product photo.

5.3. Result

Compliance

6. CONDUCTED POWER LINE TEST

6.1. Test Equipment

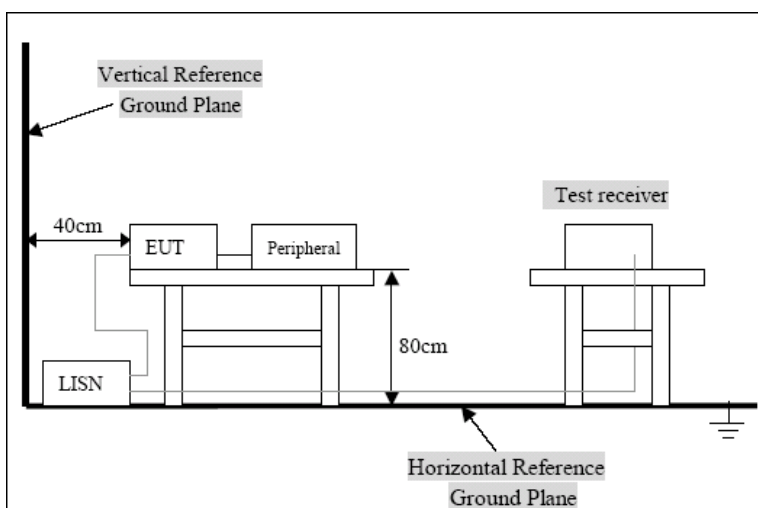
Please refer to section 4 this report.

6.2. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uh coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uh coupling impedance with 50ohm termination.

Both sides of A.C. Line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ASIN C63.4:2003 on conducted measurement. Conducted emissions were measured over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

6.3. Test Setup



For the actual test configuration, please refer to the related items-Photos of testing

6.4. Conducted Power line Emission Limits

FCC Part 15 Paragraph 15.207 (dBuV)		
Frequency Range (MHZ)	Class A QP/AV	Class B QP/AV
0.15-0.5	79/66	65-56/56-46
0.5-5.0	73/60	56-46
5.0-3.0	73/60	60-50

Note: In the above table, the tighter limit applies at the band edges.

6.5. Conducted Power Line Test Result

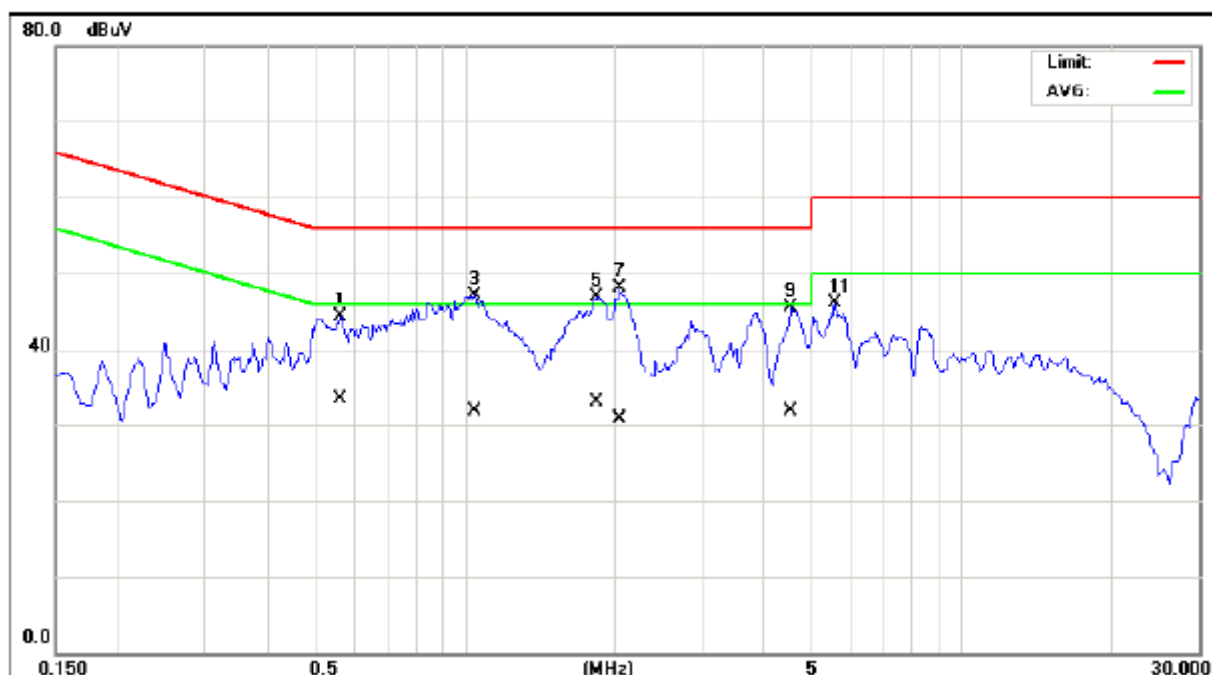
PASS

Link Mode

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.56	Line	44.29	33.33	56.00	46.00	-11.71	(QP)
1.04	Line	47.13	31.64	56.00	46.00	-8.87	(QP)
1.84	Line	46.92	32.96	56.00	46.00	-9.08	(QP)
2.04	Line	48.01	30.66	56.00	46.00	-7.99	(QP)
4.54	Line	45.44	31.63	56.00	46.00	-10.56	(QP)
5.57	Line	46.10	*	60.00	50.00	-13.90	(QP)

Remark

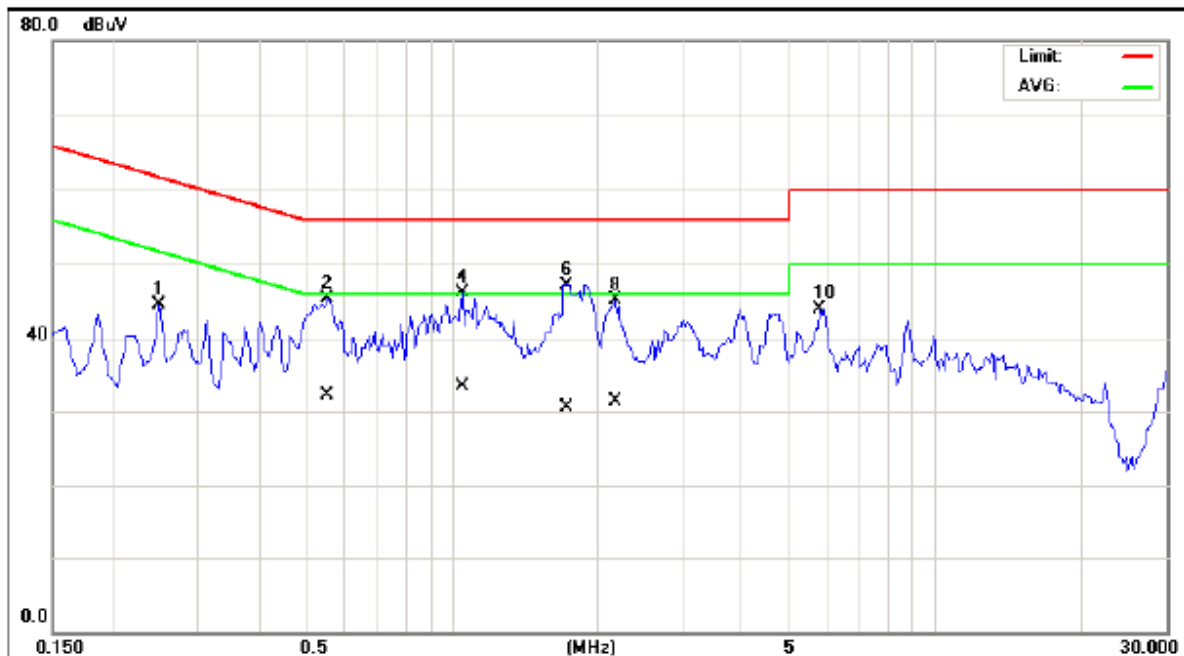
- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz: SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz - Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10KHz,VBW=10KHz, Swp. Time =0.3 sec./MHz -
- (2) All readings are QP Mode value unless otherwise stated AVG in column of "Note". If the 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 QP Mode was measured, but AVG Mode didn't perform - In this case, a " * " marked in AVG Mode column of Interference Voltage Measured -
- (3) Measuring frequency range from 150KHz to 30MHz -



Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.25	Neutral	44.44	*	61.79	51.79	-17.35	(QP)
0.56	Neutral	45.32	32.08	56.00	46.00	-10.68	(QP)
1.05	Neutral	46.03	33.29	56.00	46.00	-9.97	(QP)
1.73	Neutral	47.20	30.50	56.00	46.00	-8.80	(QP)
2.12	Neutral	45.01	31.31	56.00	46.00	-10.99	(QP)
5.76	Neutral	44.00	*	60.00	50.00	-16.00	(QP)

Remark

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz; SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz - Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10KHz,VBW=10KHz, Swp. Time =0.3 sec./MHz -
- (2) All readings are QP Mode value unless otherwise stated AVG in column of Note. If the 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 QP Mode was measured, but AVG Mode didn't perform - In this case, a " * " marked in AVG Mode column of Interference Voltage Measured -
- (3) Measuring frequency range from 150KHz to 30MHz -



7. RADIATED EMISSION TEST

7.1. Test Equipment

Please refer to section 4 this report.

7.2. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level.

Calibrated Loop antenna is used as receiving antenna for frequencies below 30MHz, Calibrated Bilog antenna is used as receiving antenna for frequencies between 30 MHz and 1 GHz, Calibrated Horn antenna is used as receiving antenna for frequencies above 1000MHz. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver is set at 9kHz in below 30MHz. and set at 120kHz in 30-1000MHz, and 1MHz in above 1000MHz.

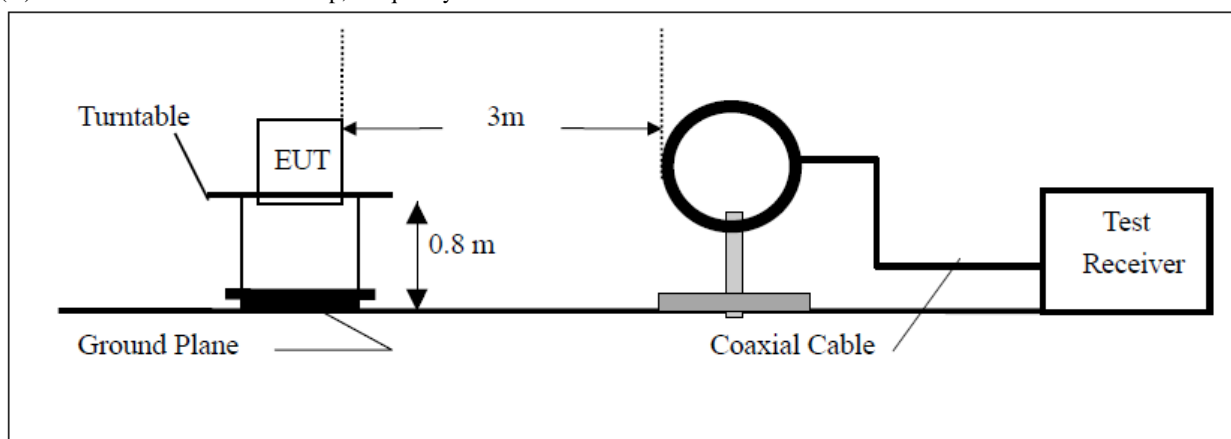
The frequency range from 9kHz to 25GHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Peak detector and Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

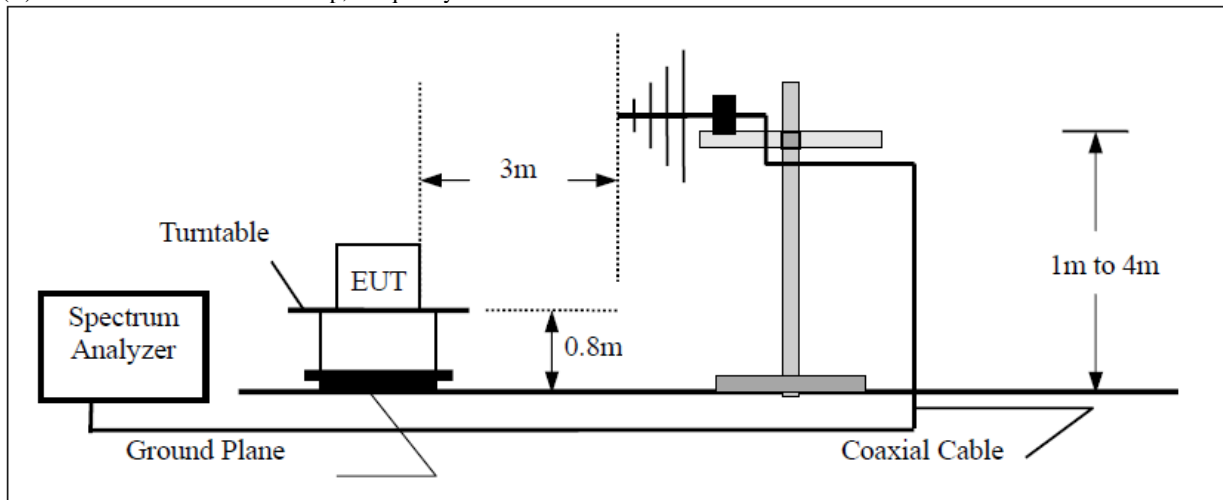
Through three orthogonal axes to determine which attitude and equipment arrangement produces the highest emission relative to the limit. And X direction is worst mode

7.3. Radiated Test Setup

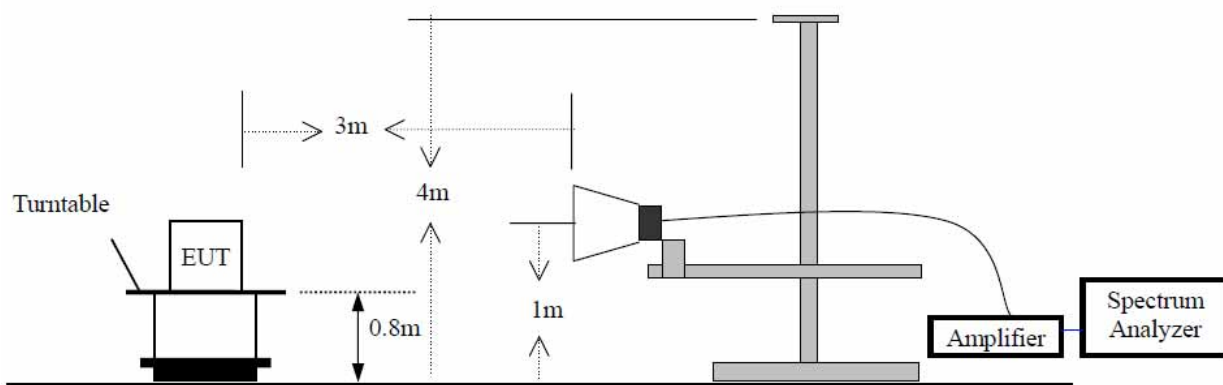
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



7.4. Radiated Emission Limit

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

A. Fundamental and Harmonics Radiated Emissions 15.249(a) Limit

Fundamental Frequency (MHZ)	Field as trength of Fundamental(3m)			Field as trength of Harmonics(3m)		
	mV/m	dBuV/m		uV/m	dBuV/m	
902-928	50	94(AV)	114(Peak)	500	54(AV)	74(Peak)
2400-2483.5	50	94(AV)	114(Peak)	500	54(AV)	74(Peak)

Note: (1) RF Voltage (dBuV)=20 log Voltage(uV)

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

(3) The emission limit in this paragraph os based on measurement instrumentation employing an average detector.Measurement using instrumentation with a peak detector function,corresponding to 20dB above the maximum permitted average limit.

B. Spurious Radiated Emissions.

Frequency (MHz)	Limit			The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dB μ V/m)	Measurement distance (m)	
0.009 - 0.490	2400/F(kHz)	/	300	
0.490 - 1.705	24000/F(kHz)	/	30	
1.705-30	30	29.5	30	
30 - 88	100	40	3	
88 - 216	150	43.5	3	
216 - 960	200	46	3	
Above 960	500	54	3	

Note: (1) RF Voltage (dBuV)=20 log Voltage(uV)

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

(3) Distaqnce refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

7.5. Radiated Emission Test Result

Pass

A. Fundamental Radiated Emissions Data

CH Low

Freq. (MHz)	Read Level (dBuV) AV	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission (dBuV/m) AV	HORIZ/ VERT	Limits (dBuV/m) AV	Margin (dB)
2402	66.23	26.81	4.76	28.85	68.95	VERT	94	-25.05
2402	72.38	26.81	4.76	28.85	75.1	HORIZ	94	-21.61
Freq. (MHz)	Read Level (dBuV) PK	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission (dBuV/m) /PK	HORIZ/ VERT	Limits (dBuV/m) PK	Margin (dB)
2402	89.67	26.81	4.76	28.85	92.39	VERT	114	-18.9
2402	95.15	26.81	4.76	28.85	97.87	HORIZ	114	-16.13

CH Middle

Freq. (MHz)	Read Level (dBuV) AV	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission (dBuV/m) AV	HORIZ/ VERT	Limits (dBuV/m) AV	Margin (dB)
2441	66.13	26.74	4.74	28.83	68.78	VERT	94	-25.22
2441	72.96	26.74	4.74	28.83	75.61	HORIZ	94	-18.39
Freq. (MHz)	Read Level (dBuV) PK	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission (dBuV/m) PK	HORIZ/ VERT	Limits (dBuV/m) PK	Margin (dB)
2441	89.87	26.74	4.74	28.83	92.52	VERT	114	-21.48
2441	96.18	26.74	4.74	28.83	98.83	HORIZ	114	-15.17

CH High

Freq. (MHz)	Read Level (dBuV) AV	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission (dBuV/m) AV	HORIZ/ VERT	Limits (dBuV/m) AV	Margin (dB)
2480	64.82	26.84	4.8	28.66	67.8	VERT	94	-26.2
2480	72.97	26.84	4.8	28.66	75.95	HORIZ	94	-18.05
Freq. (MHz)	Read Level (dBuV) PK	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission (dBuV/m) /PK	HORIZ/ VERT	Limits (dBuV/m) PK	Margin (dB)
2480	89.59	26.84	4.8	28.66	92.57	VERT	114	-21.43
2480	96.4	26.84	4.8	28.66	99.38	HORIZ	114	-14.62

Remark:

Final Emission = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor

B. General Radiated Emissions Data

For below 9kHz-30MHz Spurious

Freq. (MHz)	Emission(dBuV/m) PK / AV	Limits(dBuV/m) PK / AV	Margin (dB)
-	-	-	-
-	-	-	-

Note:

Emissions attenuated more than 20 dB below the permissible value are not reported.

For 30M-1000MHz Spurious

$$\text{Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

Transmitting

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
34.85	V	42.45	-10.68	31.77	40.00	- 8.23	QP
95.48	V	53.18	-17.28	35.90	43.50	- 7.60	QP
117.30	V	53.04	-17.95	35.09	43.50	- 8.41	QP
163.38	V	51.49	-16.34	35.15	43.50	- 8.35	QP
211.88	V	44.05	-13.96	30.09	43.50	- 13.41	QP
228.85	V	47.86	-13.20	34.66	46.00	- 11.34	QP

Remark :

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

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
90.63	H	51.91	-17.49	34.42	40.00	- 5.58	QP
112.45	H	51.96	-17.60	34.36	43.50	- 9.14	QP
151.25	H	51.94	-17.05	34.89	43.50	- 8.61	QP
192.48	H	48.62	-15.01	33.61	43.50	- 9.89	QP
216.73	H	47.41	-13.64	33.77	46.00	- 12.23	QP
260.38	H	44.12	-11.94	32.18	46.00	- 13.82	QP

Remark :

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



For 1000MHz-25000MHz Spurious

CH Low

Freq. (MHz)	Emission(dBuV/m) AV/PK	HORIZ/ VERT	Limits(dBuV/m) AV/PK	Margin (dB)
4804	41.11/56.83	VERT	54.0/74.0	-12.89/-17.17
7206	41.4/55.37		54.0/74.0	-12.6/-18.63
9608	40.56/54.84		54.0/74.0	-13.44/-19.16
4804	42.5/57.89	HORIZ	54.0/74.0	--11.5/-16.11
7206	41.66/56.94		54.0/74.0	-12.34/-17.06
9608	41.53/56.79		54.0/74.0	-12.47/-17.21

CH Middle

Freq. (MHz)	Emission(dBuV/m) AV/PK	HORIZ/ VERT	Limits(dBuV/m) AV/PK	Margin (dB)
4882	43.51/55.94	VERT	54.0/74.0	-10.49/-18.06
7323	42/55.78		54.0/74.0	-12/-18.22
9764	42.4/56.81		54.0/74.0	-11.6/-17.19
4882	43.81/58	HORIZ	54.0/74.0	-10.19/-16
7323	43.13/56.87		54.0/74.0	-10.87/-17.13
9764	42.51/56.45		54.0/74.0	-11.49/-17.55

CH High

Freq. (MHz)	Emission(dBuV/m) AV/PK	HORIZ/ VERT	Limits(dBuV/m) AV/PK	Margin (dB)
4960	42.01/57.67	VERT	54.0/74.0	-11.99/-16.33
7440	41.56/57.01		54.0/74.0	-12.44/-16.99
9920	41.84/56.36		54.0/74.0	-12.16/-17.64
4960	45.02/58.15	HORIZ	54.0/74.0	-8.98/-15.85
7440	43.83/57.47		54.0/74.0	-10.17/-16.53
9920	43.17/56.78		54.0/74.0	-10.83/-17.22

Note:

1. The average measurement was not performed when the peak measured data under the limit of average detection.
2. Emissions attenuated more than 20 dB below the permissible value are not reported.

8. BAND EDGE

8.1. Test Equipment

Please refer to Section 4 this report.

8.2. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated measurement. The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz respectively.

8.3. Band Edge FCC 15.249(d) Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

8.4. Band Edge Test Result

Pass

ALL of the restriction bands were tested, and only the data of worst case was exhibited.

CH Low

Freq. (MHz)	Emission(dBuV/m) AV/PK	HORIZ/ VERT	Limits(dBuV/m) AV/PK	Margin (dB)
2390	39.16/48.88	VERT	54.0/74.0	-14.84/-25.12
2400	49.45/65.42		54.0/74.0	-4.55/-8.58
2390	37.55/45.94	HORIZ	54.0/74.0	-16.45/-28.06
2400	48.71/64.99		54.0/74.0	-5.29/-9.01

CH High

Freq. (MHz)	Emission(dBuV/m) AV/PK	HORIZ/ VERT	Limits(dBuV/m) AV/PK	Margin (dB)
2483.5	44.06/52.72	VERT	54.0/74.0	-9.94/-21.28
2500.00	39.61/52.06		54.0/74.0	-14.39/-21.94
2483.5	43.07/52.2	HORIZ	54.0/74.0	-10.93/-21.8
2500.00	38.88/50.52		54.0/74.0	-15.12/-23.48

Remark:

- Factor = Antenna Factor + Cable Loss – Pre-amplifier.

9. 20-DB BANDWIDTH

9.1. Test Equipment

Please refer to Section 4 this report.

9.2. Test Procedure

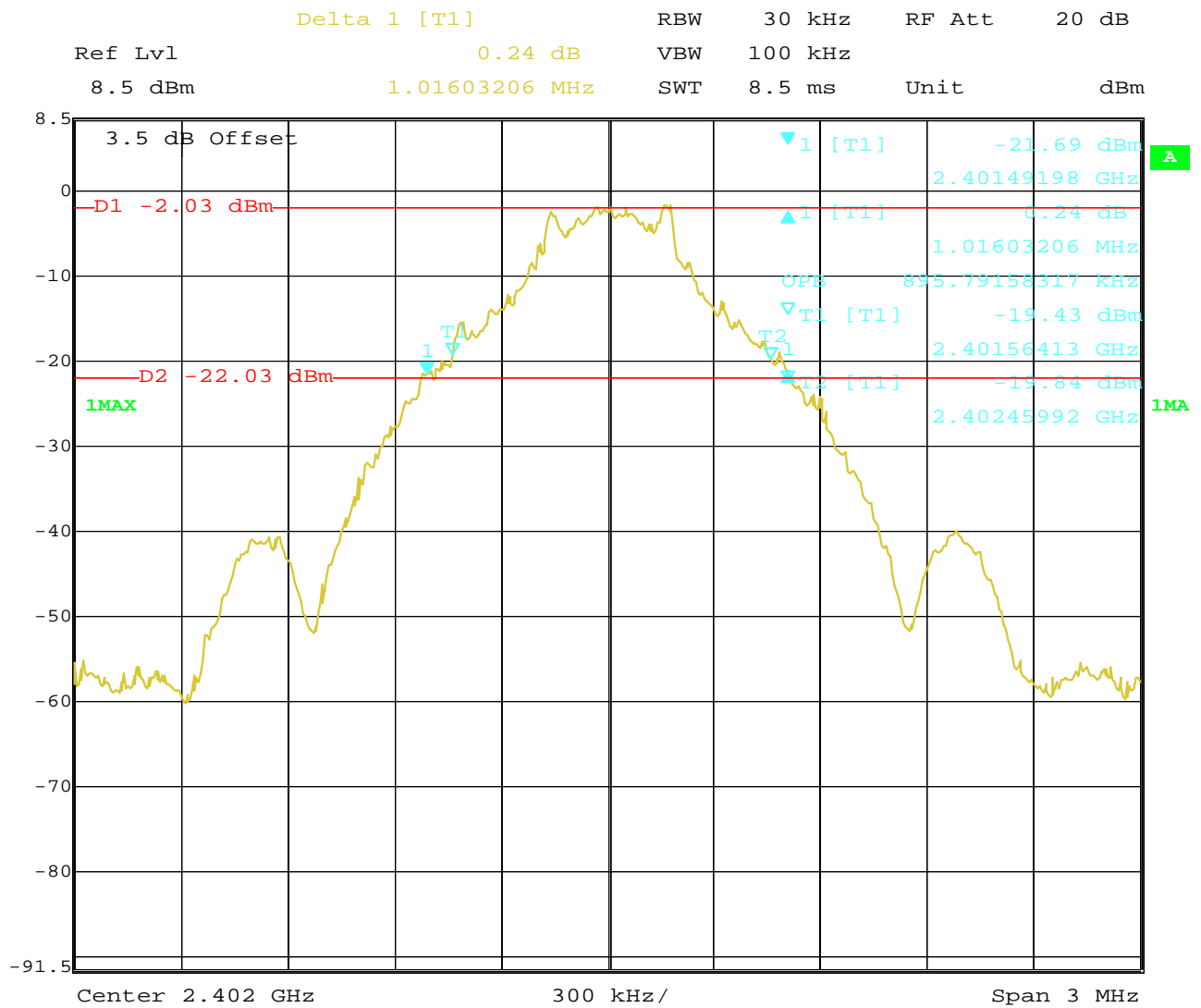
1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. The spectrum analyzer as RBW=30 KHz, VBW=100 KHz, Sweep=auto
4. Mark the peak frequency and -20dB (upper and lower) frequency.

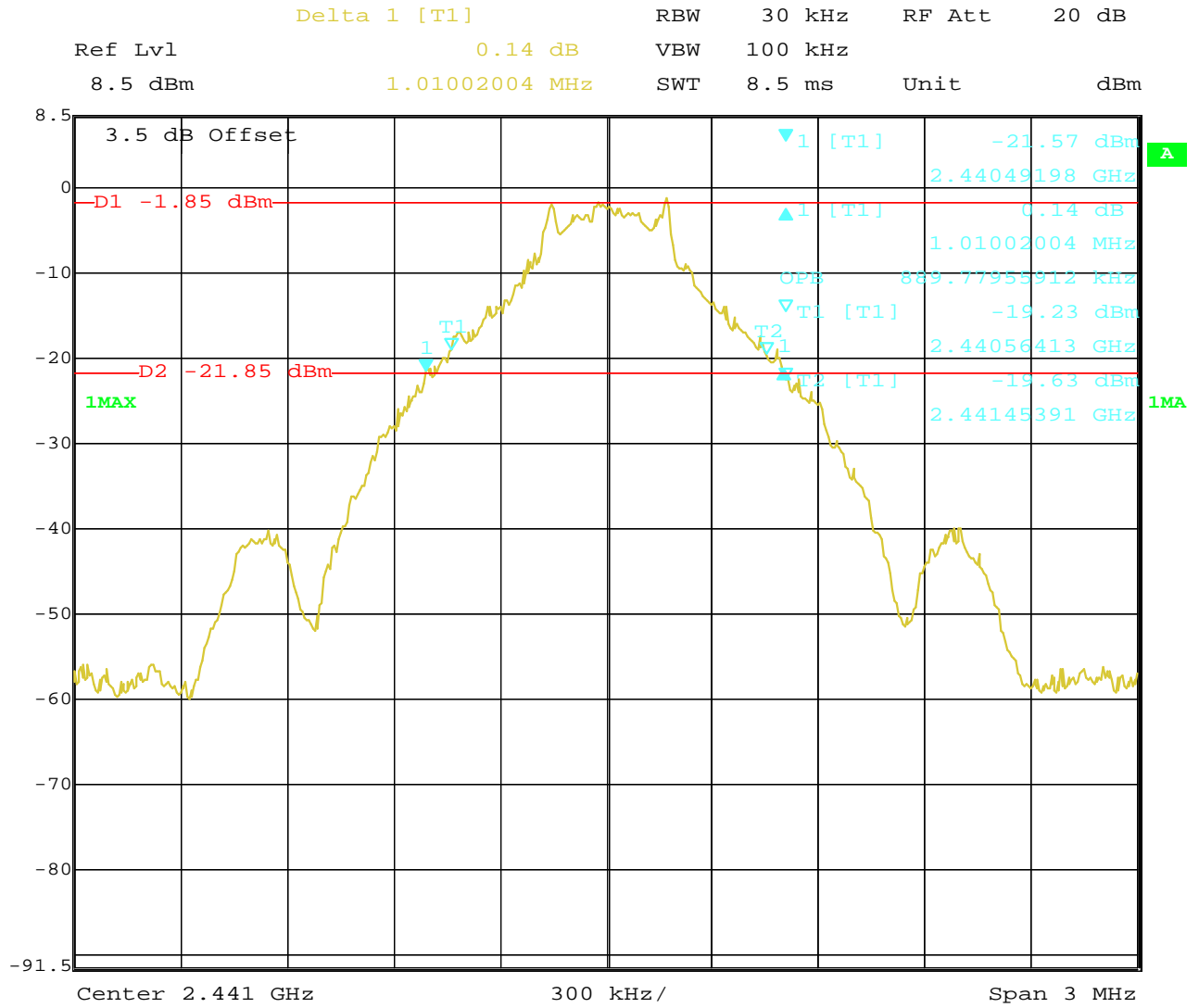
9.3. Limit

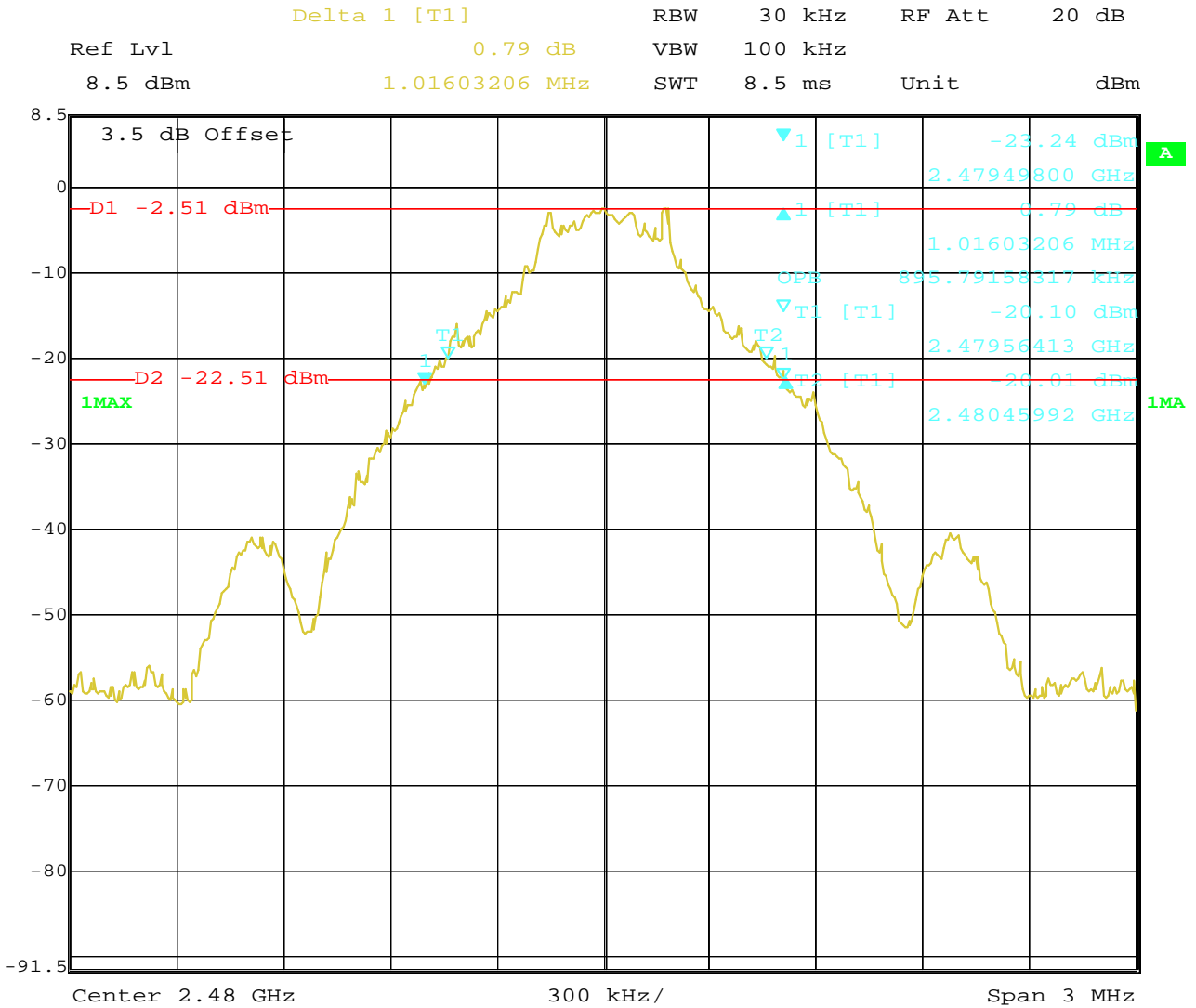
Please refer section 15.249

9.4. Test Result /Plots

Limit	Channel Frequency (MHz)	20dB Bandwidth (MHz)
/	2402	1.016
/	2441	1.010
/	2480	1.016







End Of The Report