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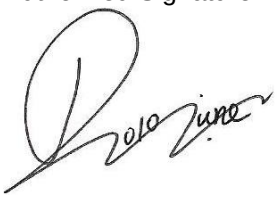
FCC REPORT

Application No:	GTSE100600086RF
Applicant:	SMART ASIA TECHNOLOGY CO., LTD.
Equipment Under Test (EUT)	
Name:	Wireless Mouse
Model No.	SM-9301
Operation Frequency:	2402MHz to 2480MHz
FCC ID:	YJQSM-9301
Standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2008
Date of Receipt:	08 June 2010
Date of Test:	09 June to 13 June,2010
Date of Issue:	13 June 2010
Test Result :	**PASS ***

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Lo
Laboratory Manager

2 Contents

3 Test Summary

Test Item	Section in CFR 47	Result
Antenna Requirement	15.203/15.247 (c)	Passed
Conducted Peak Output Power	15.247 (b)(1)	Passed
20dB Occupied Bandwidth	15.247 (a)(1)	Passed
Carrier Frequencies Separation	15.247 (a)(1)	Passed
Hopping Channel Number	15.247 (a)(1)	Passed
Dwell Time	15.247 (a)(1)	Passed
Pseudorandom Frequency Hopping Sequence	15.247(b)(4)&TCB Exclusion List	Passed
Radiated Emission	15.205/15.209	Passed

Remark:

Passed: The EUT complies with the essential requirements in the standard.

Failed: The EUT does not comply with the essential requirements in the standard.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

4 General Information

4.1 Client Information

Applicant:	SMART ASIA TECHNOLOGY CO., LTD.
Address of Applicant:	No.84-11,Kaiyuan Rd., Xinying City,Tainan County 730,Taiwan, R.O.C
Manufacturer/Factory:	N/A
Address of Manufacturer/Factory:	N/A

4.2 General Description of E.U.T.

Product Name:	Wireless Mouse
Item No.:	SM-9301
Operation Frequency:	2402MHz~2480MHz
Channel numbers:	79
Channel separation:	1MHz
Modulation type:	GFSK
Antenna Type:	Integral
Antenna gain:	2dBi
Power supply:	DC 3.0V (2* “AAA” Size battery)

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	21	2422MHz	41	2442MHz	61	2462MHz
2	2403MHz	22	2423MHz	42	2443MHz	62	2463MHz
3	2404MHz	23	2424MHz	43	2444MHz	63	2464MHz
4	2405MHz	24	2425MHz	44	2445MHz	64	2465MHz
5	2406MHz	25	2426MHz	45	2446MHz	65	2466MHz
6	2407MHz	26	2427MHz	46	2447MHz	66	2467MHz
7	2408MHz	27	2428MHz	47	2448MHz	67	2468MHz
8	2409MHz	28	2429MHz	48	2449MHz	68	2469MHz
9	2410MHz	29	2430MHz	49	2450MHz	69	2470MHz
10	2411MHz	30	2431MHz	50	2451MHz	70	2471MHz
11	2412MHz	31	2432MHz	51	2452MHz	71	2472MHz
12	2413MHz	32	2433MHz	52	2453MHz	72	2473MHz
13	2414MHz	33	2434MHz	53	2454MHz	73	2474MHz
14	2415MHz	34	2435MHz	54	2455MHz	74	2475MHz
15	2416MHz	35	2436MHz	55	2456MHz	75	2476MHz
16	2417MHz	36	2437MHz	56	2457MHz	76	2477MHz
17	2418MHz	37	2438MHz	57	2458MHz	77	2478MHz
18	2419MHz	38	2439MHz	58	2459MHz	78	2479MHz
19	2420MHz	39	2440MHz	59	2460MHz	79	2480MHz
20	2421MHz	40	2441MHz	60	2461MHz		

Note:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2402MHz
The middle channel	2441MHz
The Highest channel	2480MHz

4.3 E.U.T Operation mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	52 % RH
Atmospheric Pressure:	1008 mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with modulation.

4.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**
  CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.
- **VCCI**
  The 3m Semi-anechoic chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197 and C-2383 respectively.
  Date of Registration: September 29, 2008. Valid until September 28, 2011.
- **FCC – Registration No.: 556682**
  SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 556682, June 27, 2008.
- **Industry Canada (IC)**
  The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab
No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057
Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

4.6 Other Information Requested by the Customer

None.

4.7 Test Instruments list

RE in Chamber						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	16-06-2010	16-06-2011
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	19-03-2010	19-03-2011
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0028	18-06-2008	18-06-2011
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	05-11-2009	05-11-2010
6	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	23-06-2010	23-06-2011
7	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	10-11-2009	10-11-2010
8	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	10-11-2009	10-11-2010
9	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	SEL0080	13-07-2009	13-07-2010
10	Band filter	Amindeon	Asi 3314	SEL0094	23-06-2010	23-06-2011
11	Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	12-08-2009	12-08-2010

5 Test results and Measurement Data

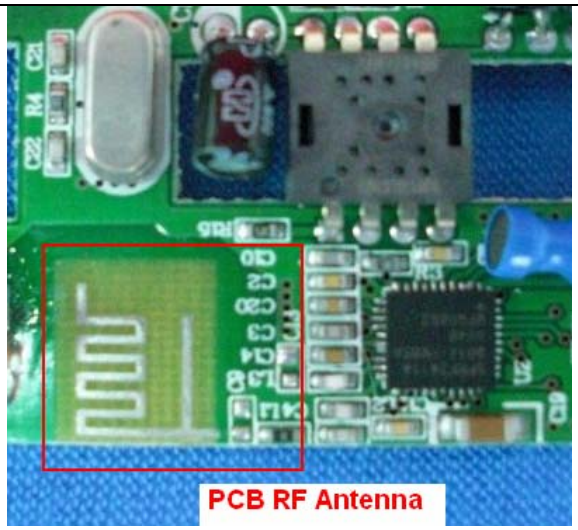
5.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203 /247(c)

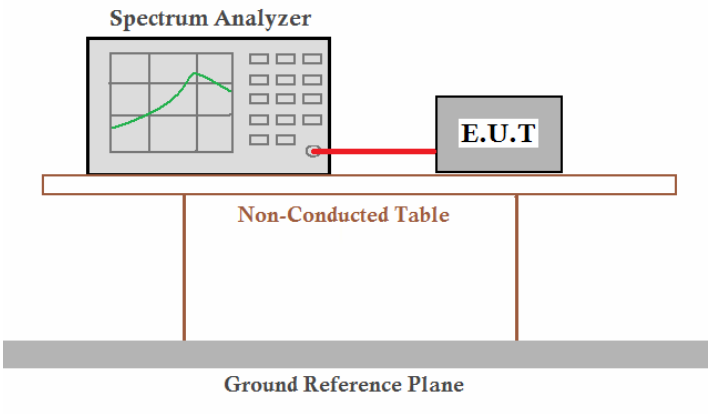
15.203 requirement:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer 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.
15.247(c) (1)(i) requirement:
(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

E.U.T Antenna:	

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 2.0dBi.



5.2 Conducted Peak Output Power

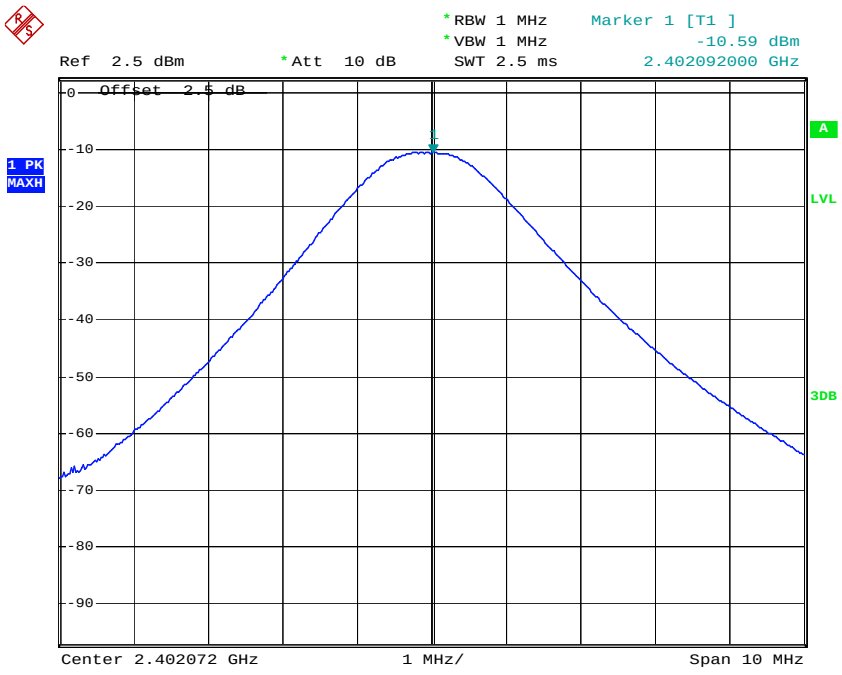
Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Receiver setup:	RBW=1MHz, VBW=1MHz, Detector=Peak
Limit:	21dBm
Test setup:	 *Remark:* *Offset the High-Frequency cable loss 2.5dB in the spectrum analyzer.*
Test Instruments:	Refer to section 4.7 for details
Test mode:	Non-hopping transmitting with modulation.
Test results:	Passed

Measurement Data

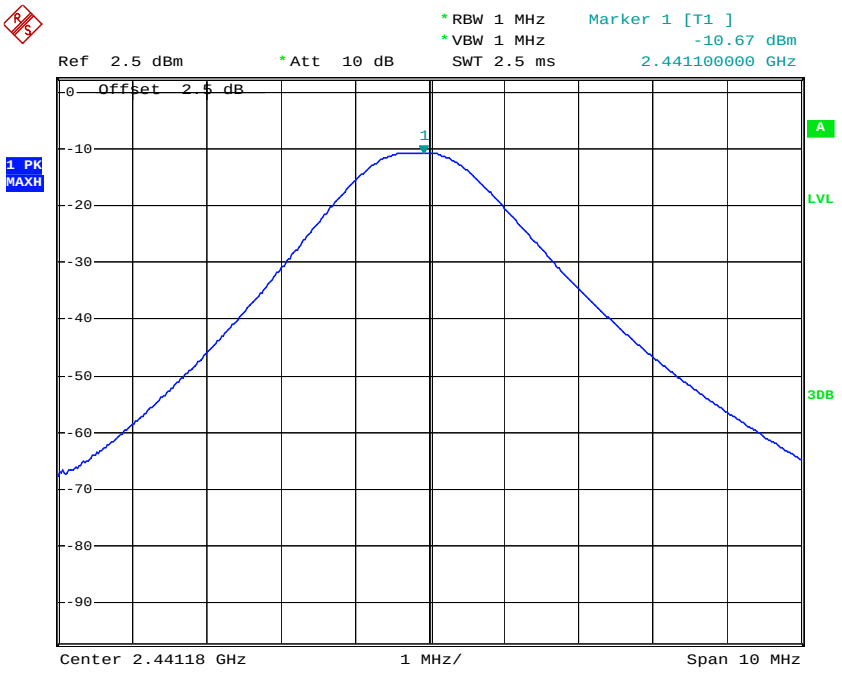
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	-10.59	21.00	Pass
Middle	-10.67	21.00	Pass
Highest	-8.93	21.00	Pass

Test plot as follows:

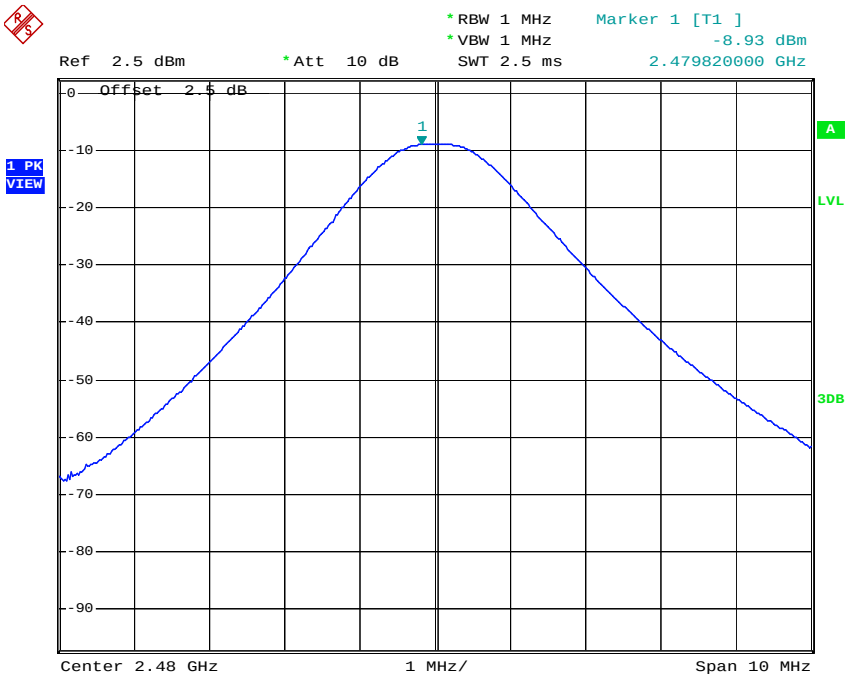
Test channel:	Lowest



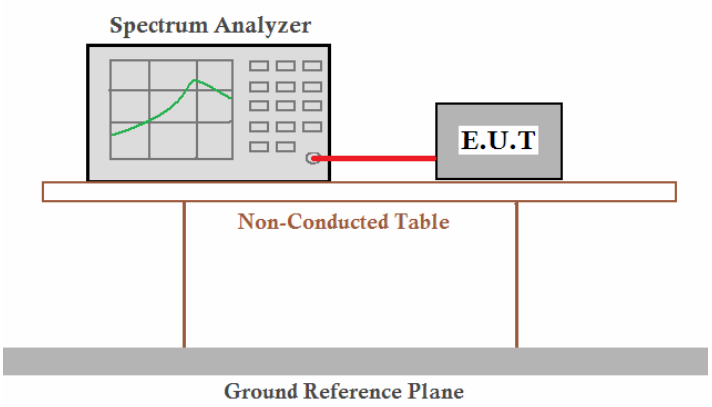
Test channel:	Middle



Test channel:	Highest



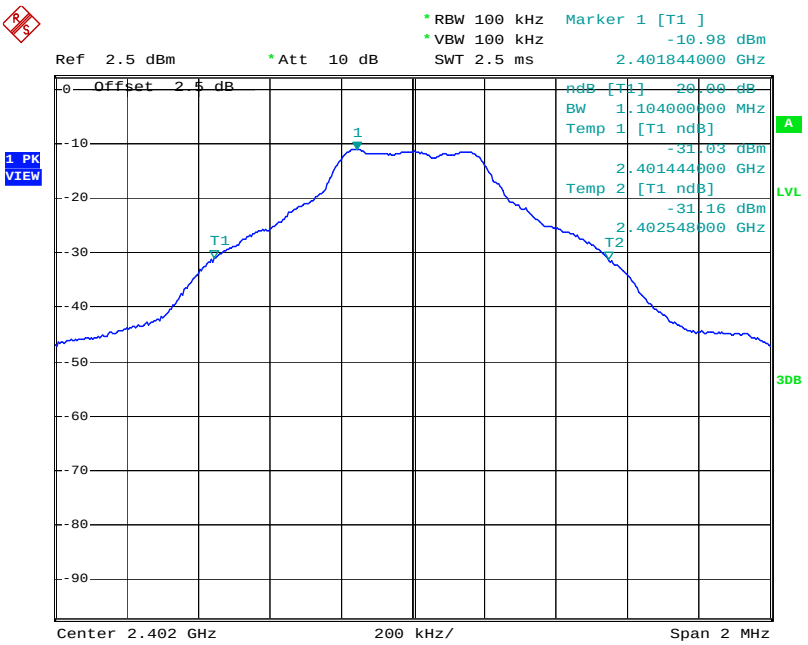
5.3 20dB Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Receiver setup:	RBW=30KHz, VBW=100KHz,detector=Peak
Limit:	NA
Test setup:	
Test Instruments:	Refer to section 4.7 for details
Test mode:	Transmitting mode
Test results:	Passed

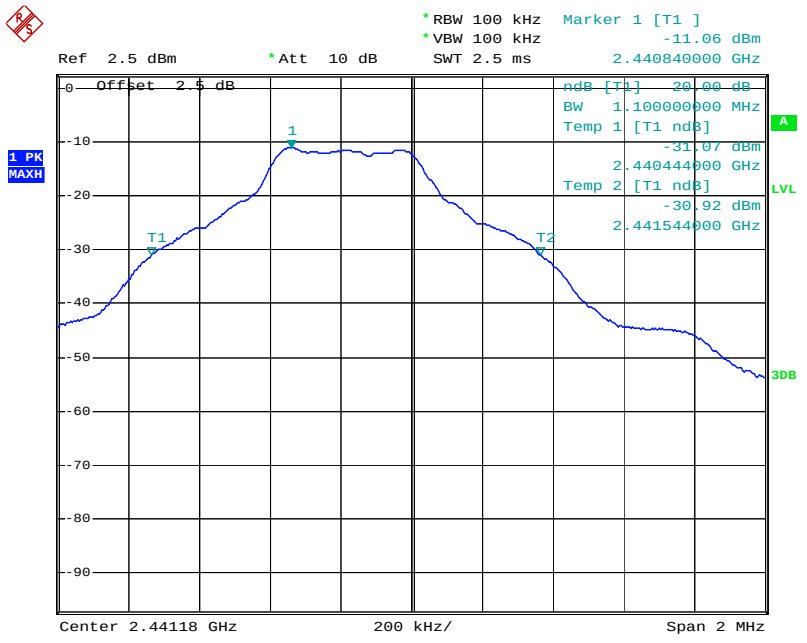
Measurement Data			
Test channel	Lowest	Middle	Highest
20dB Occupy Bandwidth (KHz)	1104	1100	1104

Test plot as follows:

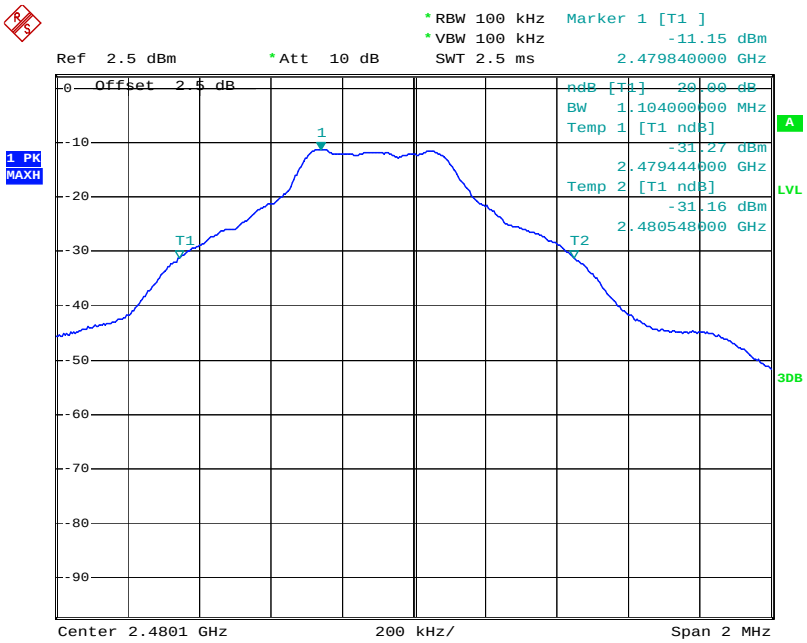
Test channel:	Lowest



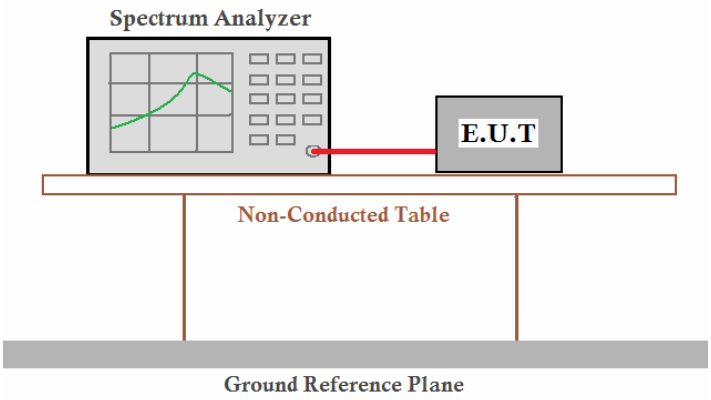
Test channel:	Middle



Test channel:	Highest



5.4 Carrier Frequencies Separation

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Receiver setup:	RBW=100KHz, VBW=300KHz, detector=Peak
Limit:	0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)
Test setup:	
Test Instruments:	Refer to section 4.7 for details
Test mode:	Hopping transmitting with modulation.
Test results:	Passed

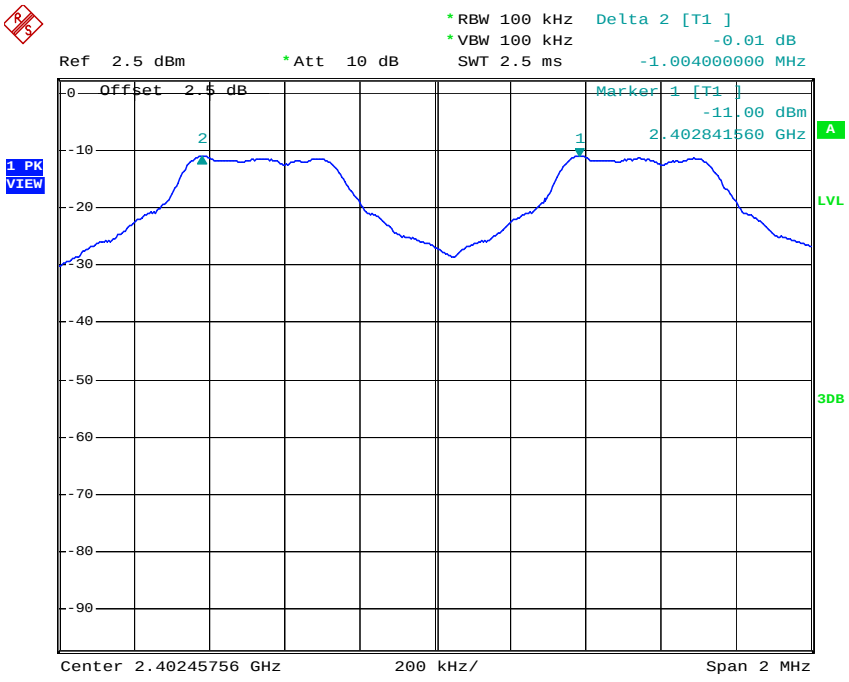
Measurement Data			
Test channel	Carrier Frequencies Separation (KHz)	Limit (KHz)	Result
Lowest	1004	736	Pass
Middle	1004	736	Pass
Highest	1004	736	Pass

Note: According to section 5.4,

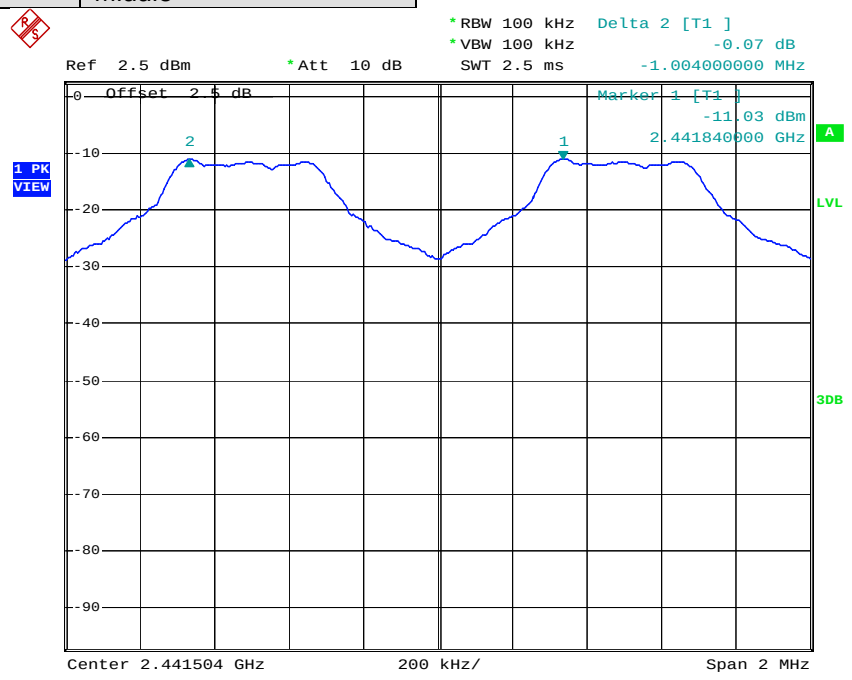
Mode	*20dB bandwidth (KHz) (worse case)*	*Limit (KHz) (Carrier Frequencies Separation)*
GFSK	*1104*	736

Test plot as follows:

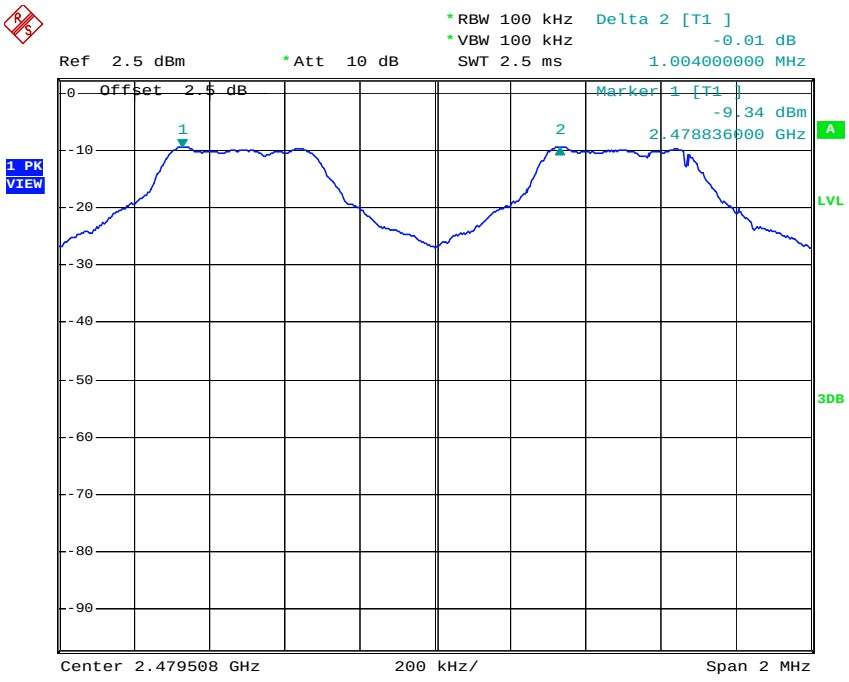
Test channel:	Lowest



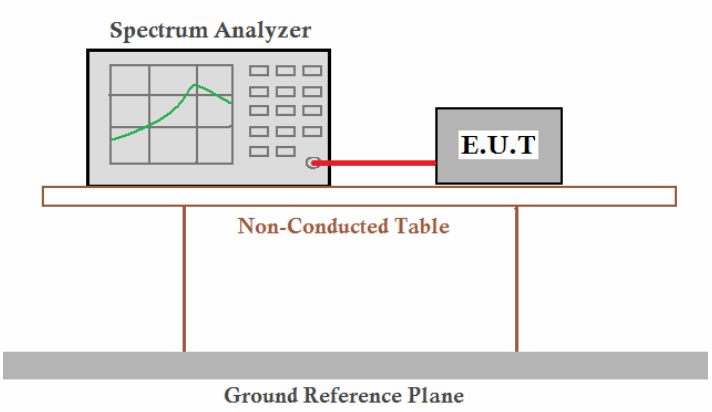
Test channel:	Middle



Test channel:	Highest

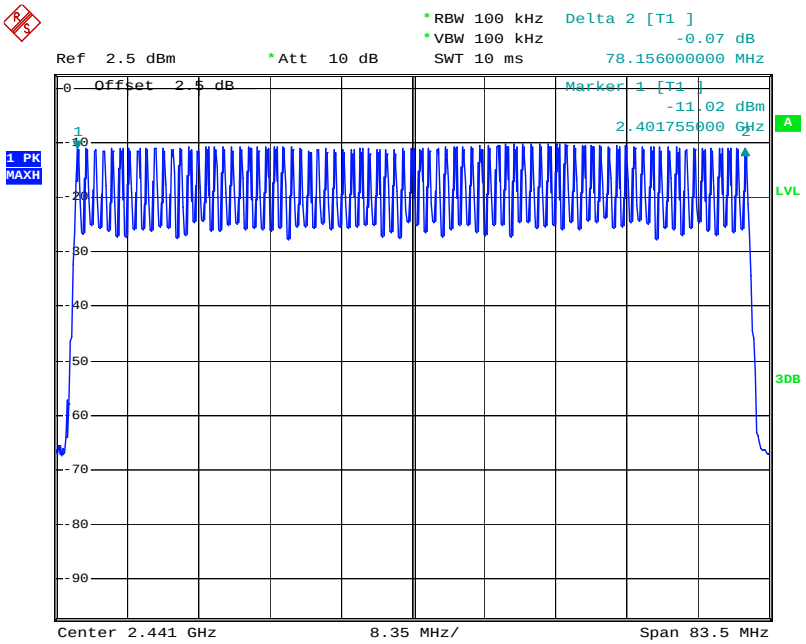


5.5 Hopping Channel Number

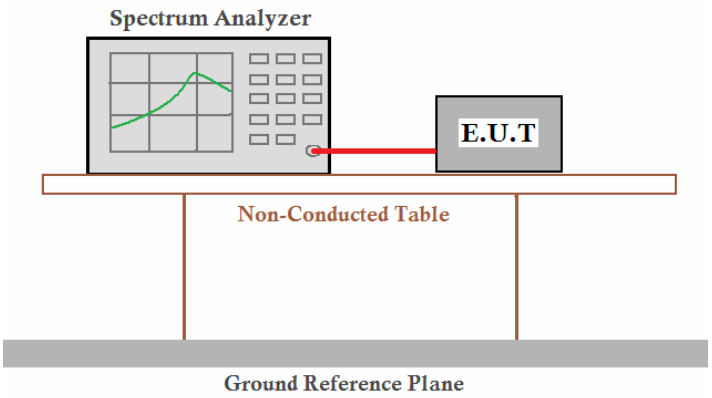
Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Receiver setup:	RBW=100KHz, VBW=300KHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak
Limit:	75channels
Test setup:	
Test Instruments:	Refer to section 4.7 for details
Test mode:	Hopping transmitting with modulation.
Test results:	Passed

Measurement Data	
Hopping channel numbers	79 channel

Test plot as follows



5.6 Dwell Time

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Receiver setup:	RBW=1MHz, VBW=1MHz, Span=0Hz, Detector=Peak
Limit:	0.4 Second
Test mode:	Hopping transmitting with modulation.
Test setup:	
Test Instruments:	Refer to section 4.7 for details
Test results:	Passed

Measurement Data

Mode	Packet	Dwell time (msecond)	Limit (second)
GFSK	DH1	128.0	0.4
	DH3	265.6	0.4
	DH5	309.3	0.4

Test Result:

The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s

The lowest channel (2402MHz), middle channel (2441MHz), highest channel (2480MHz) as blow

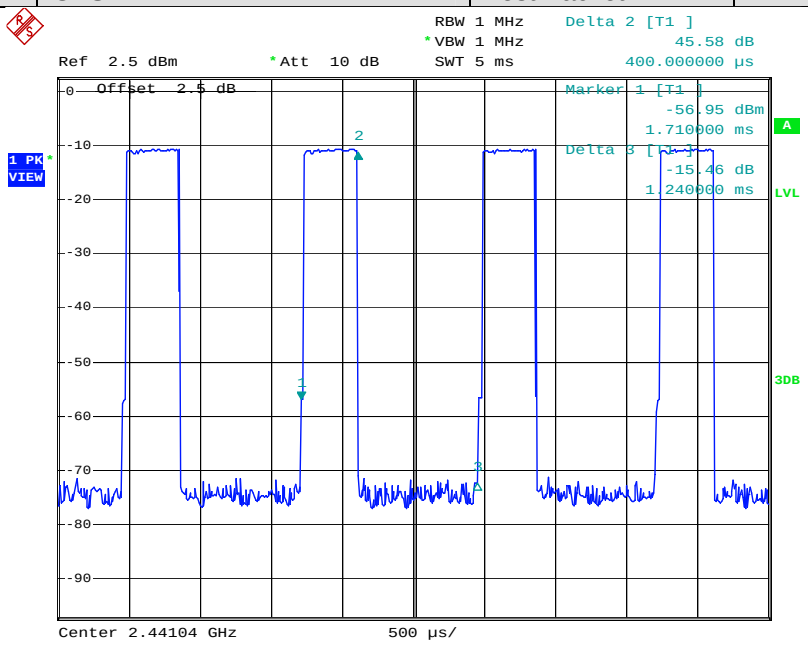
DH1 time slot=0.40(ms)*(1600/ (2*79))*31.6=128 ms

DH3 time slot=1.66(ms)*(1600/ (4*79))*31.6=265.6ms

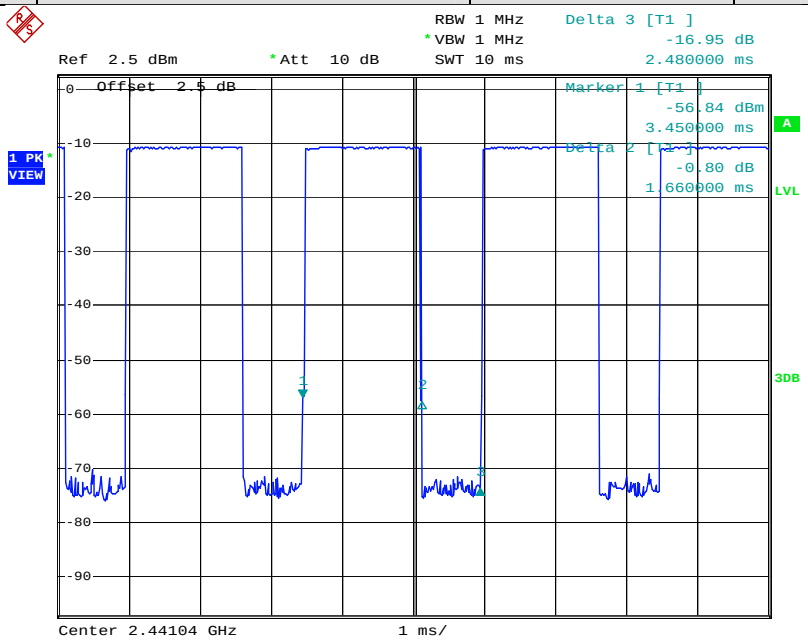
DH5 time slot=2.90(ms)*(1600/ (6*79))*31.6=309.3ms

Test plot as follows

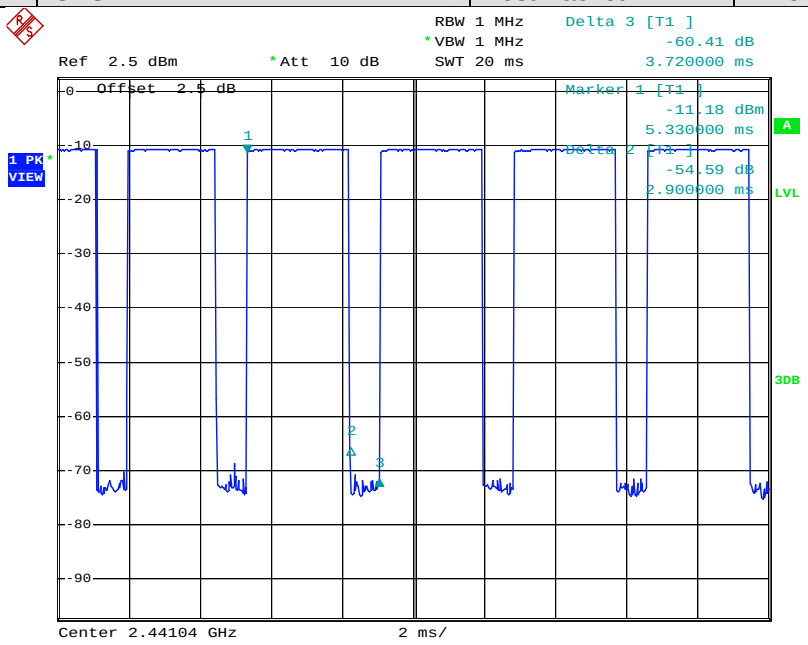
Test mode:	GFSK	Test Packet:	DH1



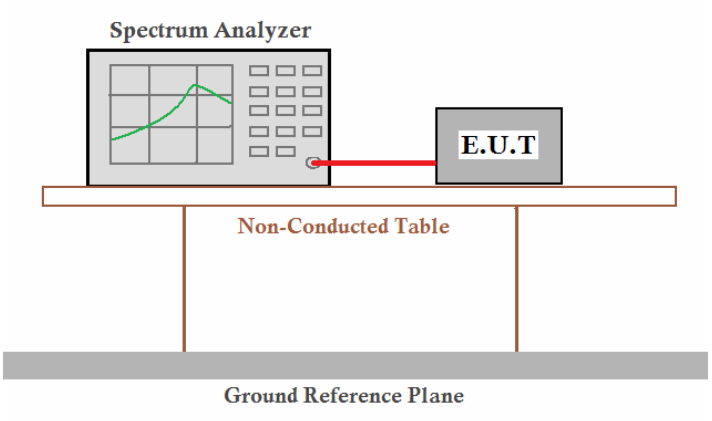
Test mode:	GFSK	Test Packet:	DH3



Test mode:	GFSK	Test Packet:	DH5

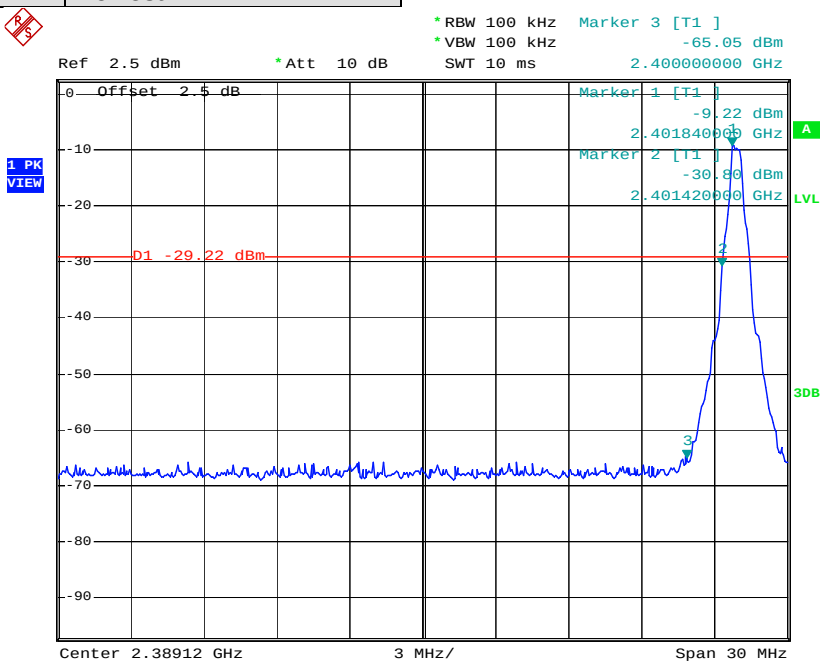


5.7 Band Edge

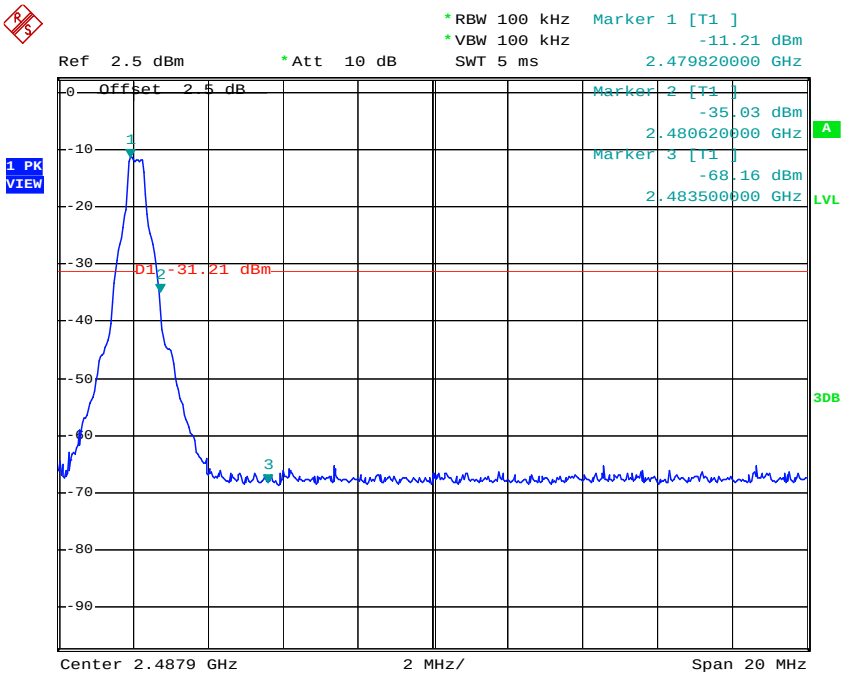
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Receiver setup:	RBW=100KHz, VBW=300KHz, Detector=Peak
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	 *Remark:* *Offset the High-Frequency cable loss 2.5dB in the spectrum analyzer.*
Test Instruments:	Refer to section 4.7 for details
Test mode:	Transmitting mode
Test results:	Passed

Test plot as follows:

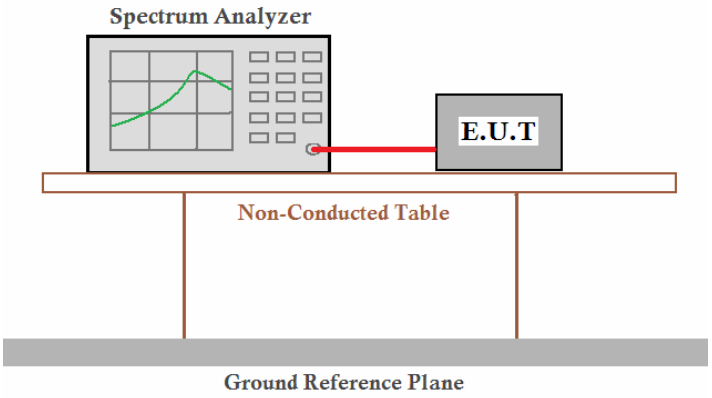
Test channel:	Lowest



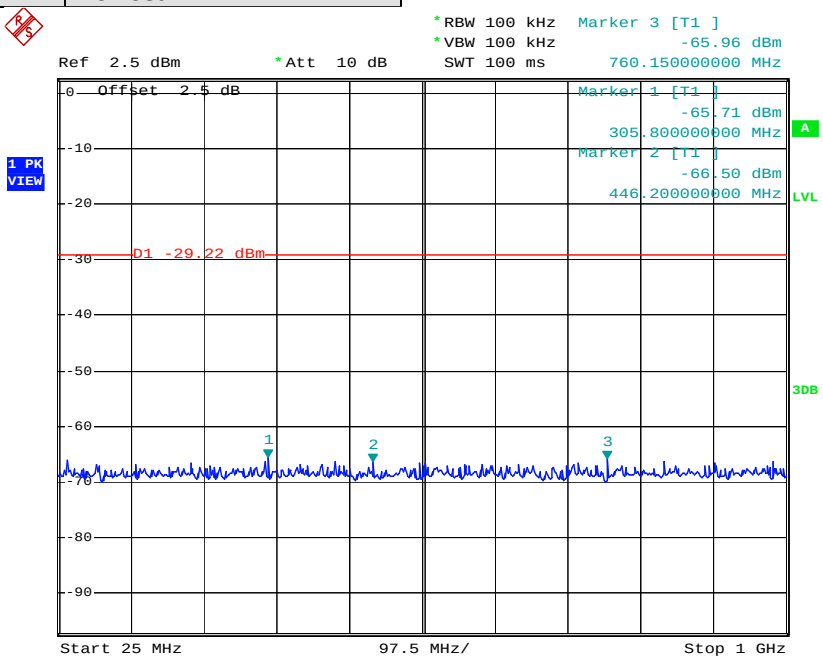
Test channel:	Highest

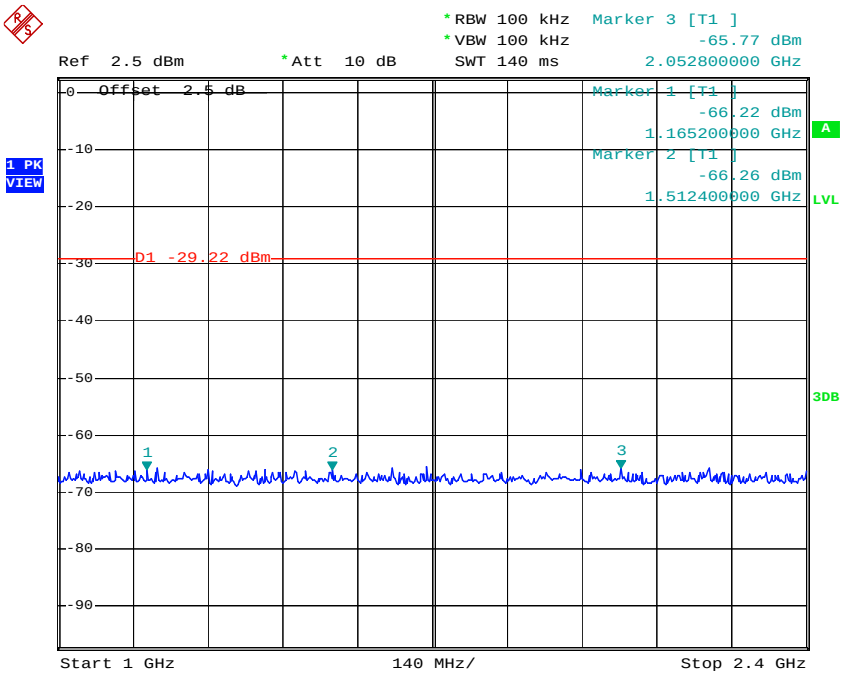


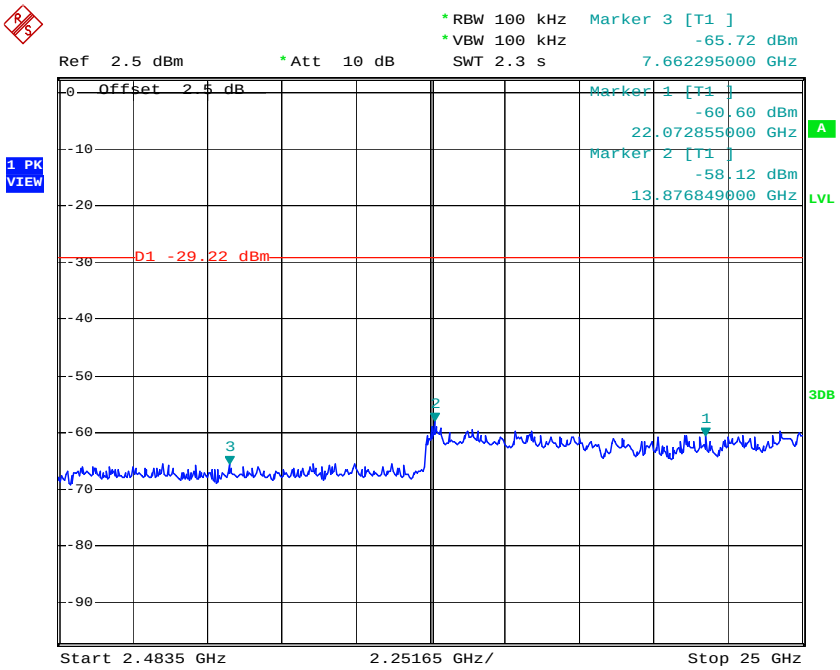
5.8 RF Antenna Conducted spurious emissions

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	 *Remark:* *Offset the High-Frequency cable loss 2.5dB in the spectrum analyzer.*
Test Instruments:	Refer to section 4.7 for details
Test results:	Passed

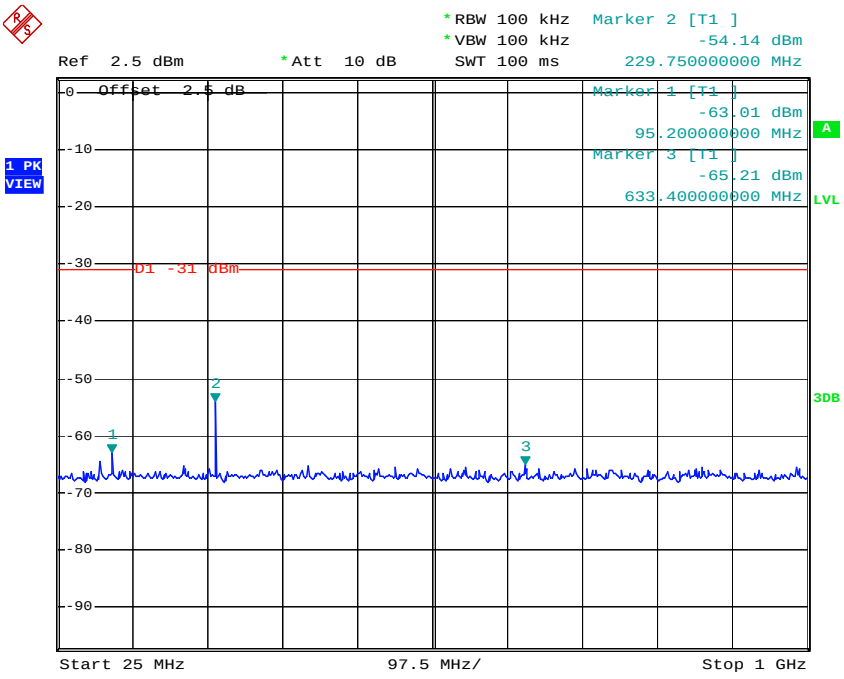
Test channel:	Lowest

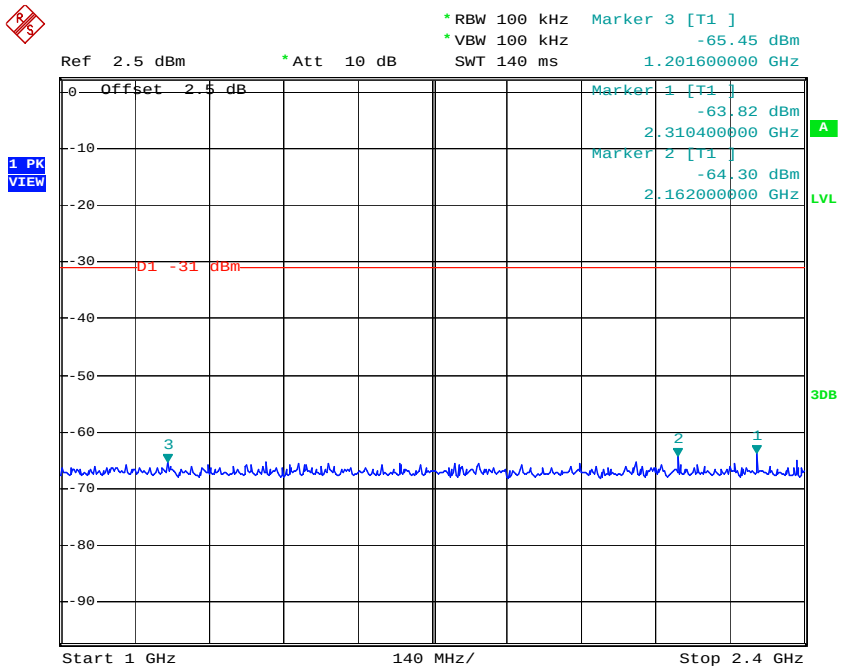


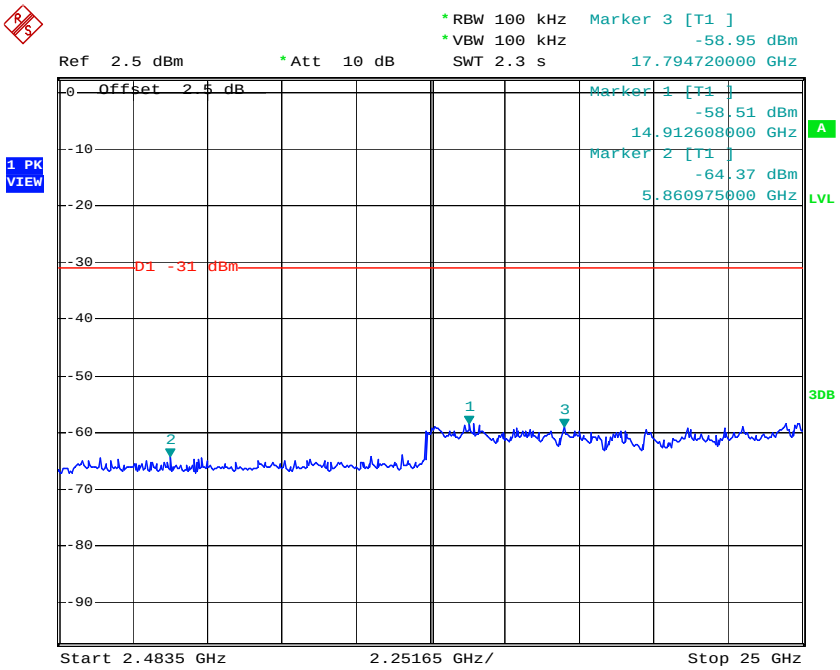



*RBW 100 kHz
*VBW 100 kHz
Marker 3 [T1]
-65.72 dBm
Ref 2.5 dBm
*Att 10 dB
SWT 2.3 s
7.662295000 GHz
Offset 2.5 dB
Marker 1 [T1]
-60.60 dBm
22.072855000 GHz
Marker 2 [T1]
-58.12 dBm
13.876849000 GHz
1 PK VIEW
A
LVL
3DB
D1 -29.22 dBm
Start 2.4835 GHz
2.25165 GHz/
Stop 25 GHz

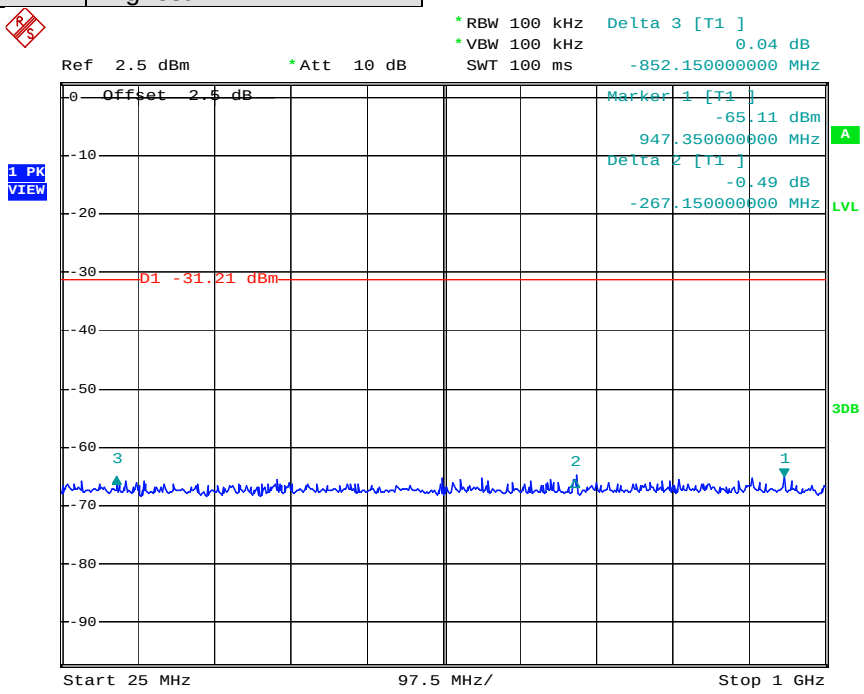
Test channel:	Middle

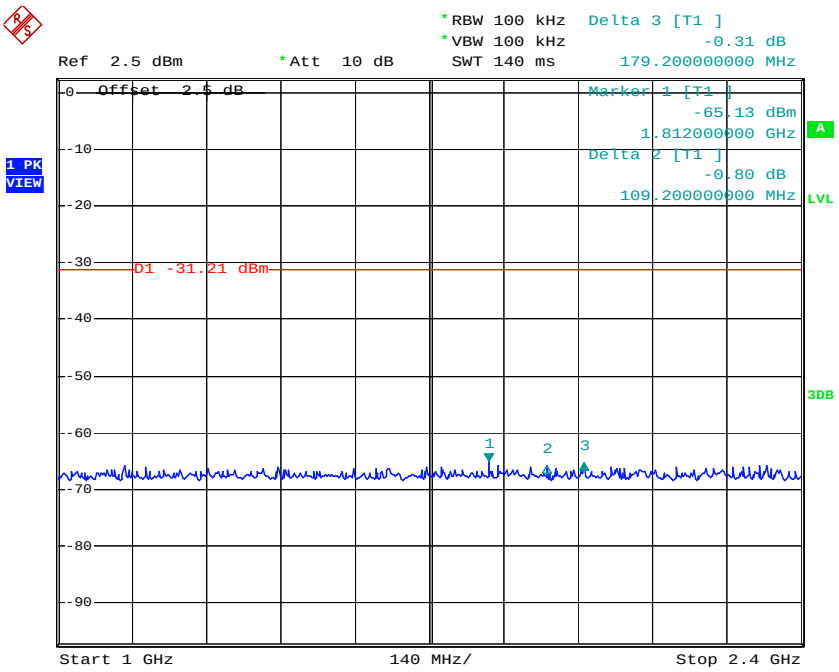


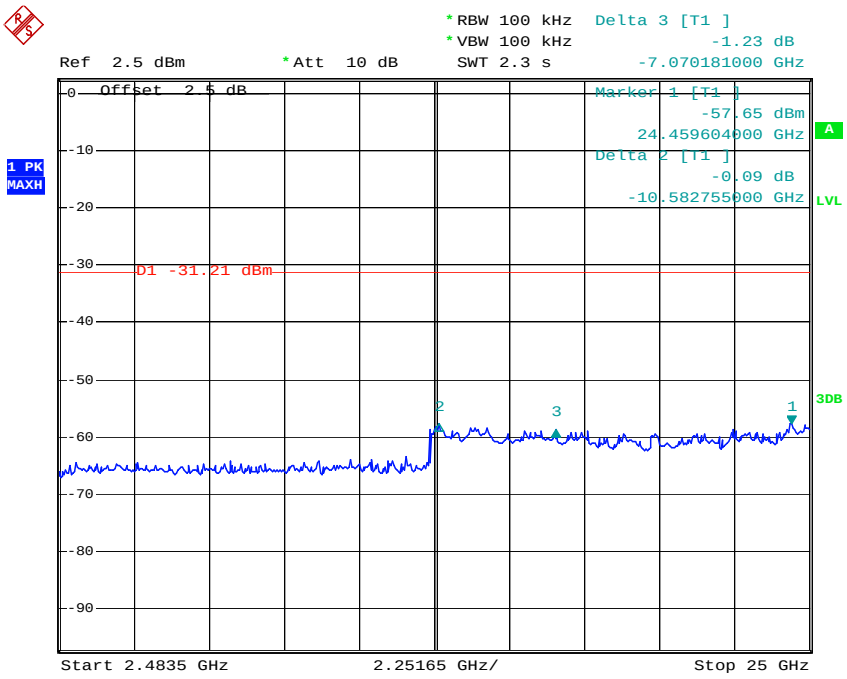



*RBW 100 kHz
*VBW 100 kHz
Ref 2.5 dBm
*Att 10 dB
SWT 2.3 s
Marker 3 [T1]
-58.95 dBm
17.794720000 GHz
Offset 2.5 dB
Marker 1 [T1]
-58.51 dBm
14.912608000 GHz
Marker 2 [T1]
-64.37 dBm
5.860975000 GHz
1 PK VIEW
A
LVL
3DB
D1 -31 dBm
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Start 2.4835 GHz
2.25165 GHz/
Stop 25 GHz

Test channel:	Highest






*RBW 100 kHz
*VBW 100 kHz
Ref 2.5 dBm
*Att 10 dB
SWT 2.3 s
Delta 3 [T1]
-1.23 dB
-7.070181000 GHz
Offset 2.5 dB
Marker 1 [T1]
-57.65 dBm
24.459604000 GHz
Delta 2 [T1]
-0.09 dB
-10.582755000 GHz
1 PK
MAXH
A
LVL
3DB
D1 -31.21 dBm
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Start 2.4835 GHz
2.25165 GHz/
Stop 25 GHz

5.9 Pseudorandom Frequency Hopping Sequence

Test Requirement:	FCC Part15 C Section 15.247 (a)(1) requirement:

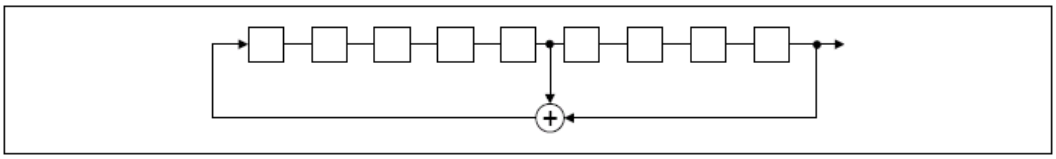
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Alternatively. 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, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

EUT Pseudorandom Frequency Hopping Sequence

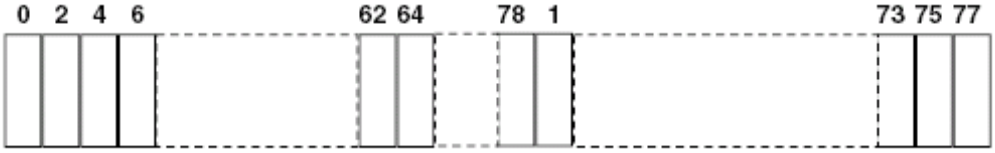
The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

- *Number of shift register stages: 9*
- *Length of pseudo-random sequence: 2^9 -1 = 511 bits*
- *Longest sequence of zeros: 8 (non-inverted signal)*



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.
The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

5.10 Radiated Emission

Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.4: 2003
Test Frequency Range:	30MHz to 25GHz
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)
Receiver setup:	

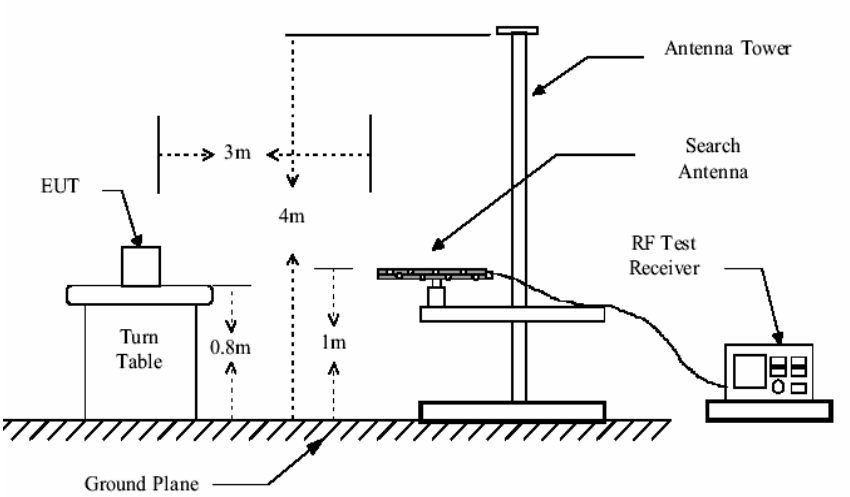
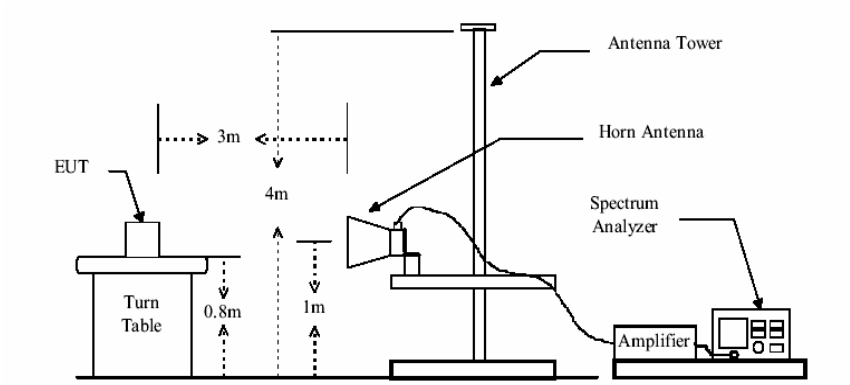
Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	Peak	1MHz	10Hz	Average Value

Limit:

Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test Procedure:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
g. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test setup:	Below 1GHz  Above 1GHz 
Test Instruments:	Refer to section 4.7 for details
Test mode:	Non-hopping transmitting with modulation. Pre-scan the EUT in GFSK, Pi/4QPSK and 8DPSK modes and find out the worst case is GFSK mode.
Test results:	Passed

Note:
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

5.10.1 Radiated emission below 1GHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
52.31	0.80	7.80	28.09	49.99	30.50	40.00	-9.50	Vertical
98.87	1.19	9.06	27.89	44.31	26.67	43.50	-16.83	Vertical
187.14	1.38	10.05	27.22	44.03	28.24	43.50	-15.26	Vertical
230.79	1.58	11.70	27.00	45.55	31.83	46.00	-14.17	Vertical
257.95	1.71	12.47	26.88	41.97	29.27	46.00	-16.73	Vertical
451.95	2.42	16.96	27.57	42.17	33.98	46.00	-12.02	Vertical
55.22	0.80	7.78	28.08	50.54	31.04	40.00	-8.96	Horizontal
70.74	0.83	6.97	28.00	39.96	19.76	40.00	-20.24	Horizontal
121.18	1.26	7.87	27.67	48.77	30.23	43.50	-13.27	Horizontal
184.23	1.38	9.98	27.24	51.35	35.47	43.50	-8.03	Horizontal
230.79	1.58	11.70	27.00	51.30	37.58	46.00	-8.42	Horizontal
296.75	1.88	13.76	26.73	46.40	35.31	46.00	-10.69	Horizontal

5.10.2 Transmitter emission above 1GHz

Test channel:	Lowest	Remark:	Peak

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2394	4.97	32.24	37.65	60.08	59.64	74.00	-14.36	Vertical
2400	4.97	32.25	37.65	66.14	65.71	74.00	-8.29	Vertical
4804	9.36	34.25	41.53	41.12	43.20	74.00	-30.80	Vertical
7206	13.38	37.23	40.98	37.40	47.03	74.00	-26.97	Vertical
9608	13.39	37.99	37.56	35.10	48.92	74.00	-25.08	Vertical
12010	16.45	39.10	39.09	36.20	52.66	74.00	-21.34	Vertical
2394	4.97	32.24	37.65	60.16	59.72	74.00	-14.28	Horizontal
2400	4.97	32.25	37.65	64.51	64.08	74.00	-9.92	Horizontal
4804	9.36	34.25	41.53	39.58	41.66	74.00	-32.34	Horizontal
7206	13.38	37.23	40.98	38.65	48.28	74.00	-25.72	Horizontal
9608	13.39	37.99	37.56	34.62	48.44	74.00	-25.56	Horizontal
12010	16.45	39.10	39.09	34.97	51.43	74.00	-22.57	Horizontal

Test channel:	Lowest	Remark:	Average

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2394	4.97	32.24	37.65	40.40	39.96	54.00	-14.04	Vertical
2400	4.97	32.25	37.65	44.85	44.42	54.00	-9.58	Vertical
4804	9.36	34.25	41.53	29.96	32.04	54.00	-21.96	Vertical
7206	13.38	37.23	40.98	26.34	35.97	54.00	-18.03	Vertical
9608	13.39	37.99	37.56	23.39	37.21	54.00	-16.79	Vertical
12010	16.45	39.10	39.09	23.98	40.44	54.00	-13.56	Vertical
2394	4.97	32.24	37.65	39.30	38.86	54.00	-15.14	Horizontal
2400	4.97	32.25	37.65	46.75	46.32	54.00	-7.68	Horizontal
4804	9.36	34.25	41.53	28.14	30.22	54.00	-23.78	Horizontal
7206	13.38	37.23	40.98	26.41	36.04	54.00	-17.96	Horizontal
9608	13.39	37.99	37.56	23.41	37.23	54.00	-16.77	Horizontal
12010	16.45	39.10	39.09	23.97	40.43	54.00	-13.57	Horizontal

Test channel:	Middle	Remark:	Peak

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4882	10.57	34.35	40.33	42.84	47.43	74.00	-26.57	Vertical
7323	12.91	37.31	40.40	36.75	46.57	74.00	-27.43	Vertical
9764	13.89	38.03	37.94	31.46	45.44	74.00	-28.56	Vertical
12205	17.95	39.23	39.30	33.57	51.45	74.00	-22.55	Vertical
14646	17.18	41.27	45.96	31.81	44.30	74.00	-29.70	Vertical
4882	10.57	34.35	40.33	41.52	46.11	74.00	-27.89	Horizontal
7323	12.91	37.31	40.40	39.26	49.08	74.00	-24.92	Horizontal
9764	13.89	38.03	37.94	33.60	47.58	74.00	-26.42	Horizontal
12205	17.95	39.23	39.30	35.45	53.33	74.00	-20.67	Horizontal
14646	17.18	41.27	45.96	34.01	46.50	74.00	-27.50	Horizontal

Test channel:	Middle	Remark:	Average

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4882	10.57	34.35	40.33	31.02	35.61	54.00	-18.39	Vertical
7323	12.91	37.31	40.40	26.36	36.18	54.00	-17.82	Vertical
9764	13.89	38.03	37.94	20.38	34.36	54.00	-19.64	Vertical
12205	17.95	39.23	39.30	22.27	40.15	54.00	-13.85	Vertical
14646	17.18	41.27	45.96	20.70	33.19	54.00	-20.81	Vertical
4882	10.57	34.35	40.33	29.34	33.93	54.00	-20.07	Horizontal
7323	12.91	37.31	40.40	27.33	37.15	54.00	-16.85	Horizontal
9764	13.89	38.03	37.94	22.26	36.24	54.00	-17.76	Horizontal
12205	17.95	39.23	39.30	24.21	42.09	54.00	-11.91	Horizontal
14646	17.18	41.27	45.96	22.68	35.17	54.00	-18.83	Horizontal

Test channel:	Highest	Remark:	Peak

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.5	5.08	32.29	37.64	59.55	59.28	74.00	-14.72	Vertical
4960	10.43	34.45	41.03	42.42	46.27	74.00	-27.73	Vertical
7440	12.72	37.37	40.01	37.66	47.74	74.00	-26.26	Vertical
9920	14.24	38.08	37.78	30.66	45.20	74.00	-28.80	Vertical
12400	17.55	39.34	39.48	33.21	50.62	74.00	-23.38	Vertical
14880	16.69	41.16	46.61	32.98	44.22	74.00	-29.78	Vertical
2483.5	5.08	32.29	37.64	62.47	62.20	74.00	-11.80	Horizontal
4960	10.43	34.45	41.03	39.10	42.95	74.00	-31.05	Horizontal
7440	12.72	37.37	40.01	37.14	47.22	74.00	-26.78	Horizontal
9920	14.24	38.08	37.78	30.45	44.99	74.00	-29.01	Horizontal
12400	17.55	39.34	39.48	34.21	51.62	74.00	-22.38	Horizontal
14880	16.69	41.16	46.61	32.43	43.67	74.00	-30.33	Horizontal

Test channel:	Highest	Remark:	Average

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.5	5.08	32.29	37.64	44.66	44.39	54.00	-9.61	Vertical
4960	10.43	34.45	41.03	30.98	34.83	54.00	-19.17	Vertical
7440	12.72	37.37	40.01	26.21	36.29	54.00	-17.71	Vertical
9920	14.24	38.08	37.78	18.57	33.11	54.00	-20.89	Vertical
12400	17.55	39.34	39.48	22.21	39.62	54.00	-14.38	Vertical
14880	16.69	41.16	46.61	20.96	32.20	54.00	-21.80	Vertical
2483.5	5.08	32.29	37.64	46.73	46.46	54.00	-7.54	Horizontal
4960	10.43	34.45	41.03	27.88	31.73	54.00	-22.27	Horizontal
7440	12.72	37.37	40.01	26.20	36.28	54.00	-17.72	Horizontal
9920	14.24	38.08	37.78	18.63	33.17	54.00	-20.83	Horizontal
12400	17.55	39.34	39.48	22.20	39.61	54.00	-14.39	Horizontal
14880	16.69	41.16	46.61	20.82	32.06	54.00	-21.94	Horizontal