FCC TEST REPORT (BLUETOOTH/DTS)

REPORT NO.:	RF 140515E03-2 R1
MODEL NO.:	J20H084ac, J20H084
FCC ID:	AK8J20H084AC
RECEIVED:	May 15, 2014
TESTED:	May 27 to June 12, 2014
ISSUED:	July 29, 2014

APPLICANT:	Sony Corporation
ADDRESS:	1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
LAB ADDRESS:	No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (1):	No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, Taiwan, R.O.C.
TEST LOCATION (2):	No.49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, Taiwan, R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140515E03-2	Original release	June 27, 2014
RF140515E03-2 R1	Modified information of applicant.	July 29, 2014

1 CERTIFICATION

PRODUCT :	WLAN Module
BRAND NAME :	FOXCONN
MODEL NO. :	J20H084ac, J20H084
TEST SAMPLE :	ENGINEERING SAMPLE
APPLICANT :	Sony Corporation
TESTED DATE :	May 27 to June 11, 2014
STANDARDS :	**FCC Part 15, Subpart C (Section 15.247)** ANSI C63.10-2009

The above equipment (Model: J20H084ac) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Phoenix Huang , **DATE:** *July 29, 2014*
(Phoenix Huang, Specialist)

APPROVED BY : , **DATE:** *July 29, 2014*
(May Chen, Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For BT-EDR mode:

APPLIED STANDARD: FCC Part 15, Subpart C			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -15.27dB at 0.67344MHz.
15.247(a)(1) (iii)	Number of Hopping Frequency Used	PASS	Meet the requirement of limit.
15.247(a)(1) (iii)	Dwell Time on Each Channel	PASS	Meet the requirement of limit.
15.247(a)(1)	1. Hopping Channel Separation 2. Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power	PASS	Meet the requirement of limit.
15.247(d)	Transmitter Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -5.0dB at 240.248MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is UFL not a standard connector.

For BT-LE mode:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -15.08dB at 0.66563MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -4.2dB at 2483.5MHz
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is UFL not a standard connector.

NOTE: Frequency Hopping System operating in 2400-2483.5MHz band and the output power less than 125mW. The hopping channel carrier frequencies separated by a minimum of 25kHz or two-thirds of the 20dB bandwidth of hopping channel whichever is greater.

2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.86 dB
Radiated emissions (30MHz-1GHz)	5.43 dB
Radiated emissions (1GHz -6GHz)	3.72 dB
Radiated emissions (6GHz -18GHz)	4.00 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT (BLUETOOTH/DTS)

PRODUCT	WLAN Module
MODEL NO.	J20H084ac, J20H084
POWER SUPPLY	3.3Vdc ± 5% (from host equipment)
MODULATION TYPE	GFSK, π/4-DQPSK, 8DPSK for FHSS 16QAM, QPSK, BPSK for OFDM GFSK for DTS
MODULATION TECHNOLOGY	FHSS, OFDM, DTS
DATE RATE	Up to 3Mbps for BT-EDR mode Up to 24Mbps for BT-HS mode Up to 1Mbps for BT-LE mode
FREQUENCY RANGE	BT-EDR, BT-LE mode: 2402MHz ~ 2480MHz BT-HS mode: 2412MHz ~ 2462MHz
NUMBER OF CHANNEL	BT-EDR mode: 79 BT-HS mode: 11 BT-LE mode: 40
MAX. OUTPUT POWER	BT-EDR mode: 5.212 mW BT-LE mode: 2.421 mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

1. There are Bluetooth 4.0 and WLAN technology used for the EUT.
2. The EUT is a combo module, therefore the WLAN OFDM will be cover BT OFDM (low power) scenario.
3. The EUT has two model names which are the same hardware (chip). This different function (base on different model) is controlled by firmware, one is enable 802.11ac mode, the other is disable 802.11ac mode, but the hardware is identical.

Model Name	Different
J20H084ac	Chip support 802.11ac function.
J20H084	Chip doesn't support 802.11ac function.

From the above models, models: **J20H084ac** was selected as representative model for the test and its data was recorded in this report.

4. For WLAN, 2.4GHz and 5GHz technology can not transmit at same time.
5. WLAN and Bluetooth technology can transmit at same time.
6. Spurious emissions of the simultaneous operation (WLAN & Bluetooth) has been evaluated and no non-compliance was found.
7. The antennas provided to the EUT, please refer to the following table:

For WLAN								
Antenna No.	Transmitter Circuit	Brand	Model	Antenna Gain(dBi) < including cable loss>	Frequency range (GHz)	Antenna Type	Connecter Type	Cable Length
1	Chain (0)	Foxconn WiFi	J20H084	2.81	2.4	PCB printing	NA	NA
				3.05	2.45			
				3.40	2.5			
				3.50	5.15			
				3.28	5.45			
				3.79	5.85			
2	Chain (1)	Foxconn WiFi	J20H084	2.93	2.4	PCB printing	NA	NA
				2.91	2.45			
				2.76	2.5			
				2.96	5.15			
				2.57	5.45			
				2.82	5.85			

For BT used								
Antenna No.	Brand	Model	Antenna Gain(dBi) <exclude cable loss>	Frequency range (MHz to MHz)	Cable Loss(dB)	Antenna Type	Connecter Type	Cable Length (mm)
3	Foxconn Corporation	WDAN-S1TV0100-DH	-0.58	2400-2500	0.24	PIFA	UFL	100
4	Foxconn Corporation	WDAN-S1TV0300-DH	-0.58	2400-2500	0.7	PIFA	UFL	300
5	Foxconn Corporation	WDAN-S1TV0310-DH	-0.58	2400-2500	0.8	PIFA	UFL	310
6	Foxconn Corporation	WDAN-S1TV0320-DH	-0.58	2400-2500	0.8	PIFA	UFL	320
7	Foxconn Corporation	WDAN-S1TV0330-DH	-0.58	2400-2500	0.8	PIFA	UFL	330
8	Foxconn Corporation	WDAN-S1TV0340-DH	-0.58	2400-2500	0.8	PIFA	UFL	340
9	Foxconn Corporation	WDAN-S1TV0350-DH	-0.58	2400-2500	0.9	PIFA	UFL	350
10	Foxconn Corporation	WDAN-S1TV0360-DH	-0.58	2400-2500	0.9	PIFA	UFL	360

Antenna No.	Brand	Model	Antenna Gain(dBi) <exclude cable loss>	Frequency range (MHz to MHz)	Cable Loss(dB)	Antenna Type	Connecter Type	Cable Length (mm)
11	Foxconn Corporation	WDAN-S1TV0370-DH	-0.58	2400-2500	0.9	PIFA	UFL	370
12	Foxconn Corporation	WDAN-S1TV0380-DH	-0.58	2400-2500	0.9	PIFA	UFL	380
13	Foxconn Corporation	WDAN-S1TV0390-DH	-0.58	2400-2500	1.0	PIFA	UFL	390
14	Foxconn Corporation	WDAN-S1TV0400-DH	-0.58	2400-2500	1.0	PIFA	UFL	400
15	Foxconn Corporation	WDAN-S1TV0410-DH	-0.58	2400-2500	1.0	PIFA	UFL	410
16	Foxconn Corporation	WDAN-S1TV0420-DH	-0.58	2400-2500	1.0	PIFA	UFL	420
17	Foxconn Corporation	WDAN-S1TV0430-DH	-0.58	2400-2500	1.1	PIFA	UFL	430
18	Foxconn Corporation	WDAN-S1TV0440-DH	-0.58	2400-2500	1.1	PIFA	UFL	440
19	Foxconn Corporation	WDAN-S1TV0450-DH	-0.58	2400-2500	1.1	PIFA	UFL	450
20	Foxconn Corporation	WDAN-S1TV0460-DH	-0.58	2400-2500	1.1	PIFA	UFL	460
21	Foxconn Corporation	WDAN-S1TV0470-DH	-0.58	2400-2500	1.2	PIFA	UFL	470
22	Foxconn Corporation	WDAN-S1TV0480-DH	-0.58	2400-2500	1.2	PIFA	UFL	480
23	Foxconn Corporation	WDAN-S1TV0490-DH	-0.58	2400-2500	1.2	PIFA	UFL	490
24	Foxconn Corporation	WDAN-S1TV0500-DH	-0.58	2400-2500	1.2	PIFA	UFL	500
25	Foxconn Corporation	WDAN-S1TV0510-DH	-0.58	2400-2500	1.2	PIFA	UFL	510
26	Foxconn Corporation	WDAN-S1TV0520-DH	-0.58	2400-2500	1.3	PIFA	UFL	520
27	Foxconn Corporation	WDAN-S1TV0530-DH	-0.58	2400-2500	1.3	PIFA	UFL	530
28	Foxconn Corporation	WDAN-S1TV0540-DH	-0.58	2400-2500	1.3	PIFA	UFL	540
29	Foxconn Corporation	WDAN-S1TV0550-DH	-0.58	2400-2500	1.3	PIFA	UFL	550
30	Foxconn Corporation	WDAN-S1TV0560-DH	-0.58	2400-2500	1.4	PIFA	UFL	560

Antenna No.	Brand	Model	Antenna Gain(dBi) <exclude cable loss>	Frequency range (MHz to MHz)	Cable Loss(dB)	Antenna Type	Connecter Type	Cable Length (mm)
31	Foxconn Corporation	WDAN-S1TV0570-DH	-0.58	2400-2500	1.4	PIFA	UFL	570
32	Foxconn Corporation	WDAN-S1TV0580-DH	-0.58	2400-2500	1.4	PIFA	UFL	580
33	Foxconn Corporation	WDAN-S1TV0590-DH	-0.58	2400-2500	1.4	PIFA	UFL	590
34	Foxconn Corporation	WDAN-S1TV0600-DH	-0.58	2400-2500	1.5	PIFA	UFL	600
35	Foxconn Corporation	WDAN-S1TV0610-DH	-0.58	2400-2500	1.5	PIFA	UFL	610
36	Foxconn Corporation	WDAN-S1TV0620-DH	-0.58	2400-2500	1.5	PIFA	UFL	620
37	Foxconn Corporation	WDAN-S1TV0630-DH	-0.58	2400-2500	1.5	PIFA	UFL	630
38	Foxconn Corporation	WDAN-S1TV0640-DH	-0.58	2400-2500	1.6	PIFA	UFL	640
39	Foxconn Corporation	WDAN-S1TV0650-DH	-0.58	2400-2500	1.6	PIFA	UFL	650
40	Foxconn Corporation	WDAN-S1TV0660-DH	-0.58	2400-2500	1.6	PIFA	UFL	660
41	Foxconn Corporation	WDAN-S1TV0670-DH	-0.58	2400-2500	1.6	PIFA	UFL	670
42	Foxconn Corporation	WDAN-S1TV0680-DH	-0.58	2400-2500	1.7	PIFA	UFL	680
43	Foxconn Corporation	WDAN-S1TV0690-DH	-0.58	2400-2500	1.7	PIFA	UFL	690
44	Foxconn Corporation	WDAN-S1TV0700-DH	-0.58	2400-2500	1.7	PIFA	UFL	700
45	Foxconn Corporation	WDAN-S1TV0710-DH	-0.58	2400-2500	1.7	PIFA	UFL	710
46	Foxconn Corporation	WDAN-S1TV0720-DH	-0.58	2400-2500	1.7	PIFA	UFL	720
47	Foxconn Corporation	WDAN-S1TV0730-DH	-0.58	2400-2500	1.8	PIFA	UFL	730
48	Foxconn Corporation	WDAN-S1TV0740-DH	-0.58	2400-2500	1.8	PIFA	UFL	740
49	Foxconn Corporation	WDAN-S1TV0750-DH	-0.58	2400-2500	1.8	PIFA	UFL	750
50	Foxconn Corporation	WDAN-S1TV0760-DH	-0.58	2400-2500	1.8	PIFA	UFL	760

Antenna No.	Brand	Model	Antenna Gain(dBi) <exclude cable loss>	Frequency range (MHz to MHz)	Cable Loss(dB)	Antenna Type	Connecter Type	Cable Length (mm)
51	Foxconn Corporation	WDAN-S1TV0770-DH	-0.58	2400-2500	1.9	PIFA	UFL	770
52	Foxconn Corporation	WDAN-S1TV0780-DH	-0.58	2400-2500	1.9	PIFA	UFL	780
53	Foxconn Corporation	WDAN-S1TV0790-DH	-0.58	2400-2500	1.9	PIFA	UFL	790
54	Foxconn Corporation	WDAN-S1TV0800-DH	-0.58	2400-2500	1.9	PIFA	UFL	800
55	Foxconn Corporation	WDAN-S1TV0810-DH	-0.58	2400-2500	2.0	PIFA	UFL	810
56	Foxconn Corporation	WDAN-S1TV0820-DH	-0.58	2400-2500	2.0	PIFA	UFL	820
57	Foxconn Corporation	WDAN-S1TV0830-DH	-0.58	2400-2500	2.0	PIFA	UFL	830
58	Foxconn Corporation	WDAN-S1TV0840-DH	-0.58	2400-2500	2.0	PIFA	UFL	840
59	Foxconn Corporation	WDAN-S1TV0850-DH	-0.58	2400-2500	2.1	PIFA	UFL	850
60	Foxconn Corporation	WDAN-S1TV0860-DH	-0.58	2400-2500	2.1	PIFA	UFL	860
61	Foxconn Corporation	WDAN-S1TV0870-DH	-0.58	2400-2500	2.1	PIFA	UFL	870
62	Foxconn Corporation	WDAN-S1TV0880-DH	-0.58	2400-2500	2.1	PIFA	UFL	880
63	Foxconn Corporation	WDAN-S1TV0890-DH	-0.58	2400-2500	2.2	PIFA	UFL	890
64	Foxconn Corporation	WDAN-S1TV0900-DH	-0.58	2400-2500	2.2	PIFA	UFL	900
65	Foxconn Corporation	WDAN-S1TV0910-DH	-0.58	2400-2500	2.2	PIFA	UFL	910
66	Foxconn Corporation	WDAN-S1TV0920-DH	-0.58	2400-2500	2.2	PIFA	UFL	920
67	Foxconn Corporation	WDAN-S1TV0930-DH	-0.58	2400-2500	2.3	PIFA	UFL	930
68	Foxconn Corporation	WDAN-S1TV0940-DH	-0.58	2400-2500	2.3	PIFA	UFL	940
69	Foxconn Corporation	WDAN-S1TV0950-DH	-0.58	2400-2500	2.3	PIFA	UFL	950
70	Foxconn Corporation	WDAN-S1TV0960-DH	-0.58	2400-2500	2.3	PIFA	UFL	960

Antenna No.	Brand	Model	Antenna Gain(dBi) <exclude cable loss>	Frequency range (MHz to MHz)	Cable Loss(dB)	Antenna Type	Connecter Type	Cable Length (mm)
71	Foxconn Corporation	WDAN-S1TV0970-DH	-0.58	2400-2500	2.3	PIFA	UFL	970
72	Foxconn Corporation	WDAN-S1TV0980-DH	-0.58	2400-2500	2.4	PIFA	UFL	980
73	Foxconn Corporation	WDAN-S1TV0990-DH	-0.58	2400-2500	2.4	PIFA	UFL	990
74	Foxconn Corporation	WDAN-S1TV1000-DH	-0.58	2400-2500	2.4	PIFA	UFL	1000
75	Foxconn Corporation	WDAN-S1TV1010-DH	-0.58	2400-2500	2.4	PIFA	UFL	1010
76	Foxconn Corporation	WDAN-S1TV1020-DH	-0.58	2400-2500	2.5	PIFA	UFL	1020
77	Foxconn Corporation	WDAN-S1TV1030-DH	-0.58	2400-2500	2.5	PIFA	UFL	1030
78	Foxconn Corporation	WDAN-S1TV1040-DH	-0.58	2400-2500	2.5	PIFA	UFL	1040
79	Foxconn Corporation	WDAN-S1TV1050-DH	-0.58	2400-2500	2.5	PIFA	UFL	1050
80	Foxconn Corporation	WDAN-S1TV1060-DH	-0.58	2400-2500	2.6	PIFA	UFL	1060
81	Foxconn Corporation	WDAN-S1TV1070-DH	-0.58	2400-2500	2.6	PIFA	UFL	1070
82	Foxconn Corporation	WDAN-S1TV1080-DH	-0.58	2400-2500	2.6	PIFA	UFL	1080
83	Foxconn Corporation	WDAN-S1TV1090-DH	-0.58	2400-2500	2.6	PIFA	UFL	1090
84	Foxconn Corporation	WDAN-S1TV1100-DH	-0.58	2400-2500	2.7	PIFA	UFL	1100
85	Foxconn Corporation	WDAN-S1TV1110-DH	-0.58	2400-2500	2.7	PIFA	UFL	1110
86	Foxconn Corporation	WDAN-S1TV1120-DH	-0.58	2400-2500	2.7	PIFA	UFL	1120
87	Foxconn Corporation	WDAN-S1TV1130-DH	-0.58	2400-2500	2.7	PIFA	UFL	1130
88	Foxconn Corporation	WDAN-S1TV1140-DH	-0.58	2400-2500	2.8	PIFA	UFL	1140
89	Foxconn Corporation	WDAN-S1TV1150-DH	-0.58	2400-2500	2.8	PIFA	UFL	1150
90	Foxconn Corporation	WDAN-S1TV1160-DH	-0.58	2400-2500	2.8	PIFA	UFL	1160

Antenna No.	Brand	Model	Antenna Gain(dBi) <exclude cable loss>	Frequency range (MHz to MHz)	Cable Loss(dB)	Antenna Type	Connecter Type	Cable Length (mm)
91	Foxconn Corporation	WDAN-S1TV1170-DH	-0.58	2400-2500	2.8	PIFA	UFL	1170
92	Foxconn Corporation	WDAN-S1TV1180-DH	-0.58	2400-2500	2.8	PIFA	UFL	1180
93	Foxconn Corporation	WDAN-S1TV1190-DH	-0.58	2400-2500	2.9	PIFA	UFL	1190
94	Foxconn Corporation	WDAN-S1TV1200-DH	-0.58	2400-2500	2.9	PIFA	UFL	1200
95	Foxconn Corporation	WDAN-S1TV1210-DH	-0.58	2400-2500	2.9	PIFA	UFL	1210
96	Foxconn Corporation	WDAN-S1TV1220-DH	-0.58	2400-2500	2.9	PIFA	UFL	1220
97	Foxconn Corporation	WDAN-S1TV1230-DH	-0.58	2400-2500	3.0	PIFA	UFL	1230
98	Foxconn Corporation	WDAN-S1TV1240-DH	-0.58	2400-2500	3.0	PIFA	UFL	1240
99	Foxconn Corporation	WDAN-S1TV1250-DH	-0.58	2400-2500	3.0	PIFA	UFL	1250
100	Foxconn Corporation	WDAN-S1TV1260-DH	-0.58	2400-2500	3.0	PIFA	UFL	1260
101	Foxconn Corporation	WDAN-S1TV1270-DH	-0.58	2400-2500	3.1	PIFA	UFL	1270
102	Foxconn Corporation	WDAN-S1TV1280-DH	-0.58	2400-2500	3.1	PIFA	UFL	1280
103	Foxconn Corporation	WDAN-S1TV1290-DH	-0.58	2400-2500	3.1	PIFA	UFL	1290
104	Foxconn Corporation	WDAN-S1TV1300-DH	-0.58	2400-2500	3.1	PIFA	UFL	1300
105	Foxconn Corporation	WDAN-S1TV1310-DH	-0.58	2400-2500	3.2	PIFA	UFL	1310
106	Foxconn Corporation	WDAN-S1TV1320-DH	-0.58	2400-2500	3.2	PIFA	UFL	1320
107	Foxconn Corporation	WDAN-S1TV1330-DH	-0.58	2400-2500	3.2	PIFA	UFL	1330
108	Foxconn Corporation	WDAN-S1TV1340-DH	-0.58	2400-2500	3.2	PIFA	UFL	1340
109	Foxconn Corporation	WDAN-S1TV1350-DH	-0.58	2400-2500	3.3	PIFA	UFL	1350
110	Foxconn Corporation	WDAN-S1TV1360-DH	-0.58	2400-2500	3.3	PIFA	UFL	1360

Antenna No.	Brand	Model	Antenna Gain(dBi) <exclude cable loss>	Frequency range (MHz to MHz)	Cable Loss(dB)	Antenna Type	Connecter Type	Cable Length (mm)
111	Foxconn Corporation	WDAN-S1TV1370-DH	-0.58	2400-2500	3.3	PIFA	UFL	1370
112	Foxconn Corporation	WDAN-S1TV1380-DH	-0.58	2400-2500	3.3	PIFA	UFL	1380
113	Foxconn Corporation	WDAN-S1TV1390-DH	-0.58	2400-2500	3.3	PIFA	UFL	1390
114	Foxconn Corporation	WDAN-S1TV1400-DH	-0.58	2400-2500	3.4	PIFA	UFL	1400
115	Foxconn Corporation	WDAN-S1TV1410-DH	-0.58	2400-2500	3.4	PIFA	UFL	1410
116	Foxconn Corporation	WDAN-S1TV1420-DH	-0.58	2400-2500	3.4	PIFA	UFL	1420
117	Foxconn Corporation	WDAN-S1TV1430-DH	-0.58	2400-2500	3.4	PIFA	UFL	1430
118	Foxconn Corporation	WDAN-S1TV1440-DH	-0.58	2400-2500	3.5	PIFA	UFL	1440
119	Foxconn Corporation	WDAN-S1TV1450-DH	-0.58	2400-2500	3.5	PIFA	UFL	1450
120	Foxconn Corporation	WDAN-S1TV1460-DH	-0.58	2400-2500	3.5	PIFA	UFL	1460
121	Foxconn Corporation	WDAN-S1TV1470-DH	-0.58	2400-2500	3.5	PIFA	UFL	1470
122	Foxconn Corporation	WDAN-S1TV1480-DH	-0.58	2400-2500	3.6	PIFA	UFL	1480
123	Foxconn Corporation	WDAN-S1TV1490-DH	-0.58	2400-2500	3.6	PIFA	UFL	1490
124	Foxconn Corporation	WDAN-S1TV1500-DH	-0.58	2400-2500	3.6	PIFA	UFL	1500
125	Foxconn Corporation	WDAN-S1TV1510-DH	-0.58	2400-2500	3.6	PIFA	UFL	1510
126	Foxconn Corporation	WDAN-S1TV1520-DH	-0.58	2400-2500	3.7	PIFA	UFL	1520
127	Foxconn Corporation	WDAN-S1TV1530-DH	-0.58	2400-2500	3.7	PIFA	UFL	1530
128	Foxconn Corporation	WDAN-S1TV1540-DH	-0.58	2400-2500	3.7	PIFA	UFL	1540
129	Foxconn Corporation	WDAN-S1TV1550-DH	-0.58	2400-2500	3.7	PIFA	UFL	1550
130	Foxconn Corporation	WDAN-S1TV1560-DH	-0.58	2400-2500	3.8	PIFA	UFL	1560

Antenna No.	Brand	Model	Antenna Gain(dBi) <exclude cable loss>	Frequency range (MHz to MHz)	Cable Loss(dB)	Antenna Type	Connecter Type	Cable Length (mm)
131	Foxconn Corporation	WDAN-S1TV1570-DH	-0.58	2400-2500	3.8	PIFA	UFL	1570
132	Foxconn Corporation	WDAN-S1TV1580-DH	-0.58	2400-2500	3.8	PIFA	UFL	1580
133	Foxconn Corporation	WDAN-S1TV1590-DH	-0.58	2400-2500	3.8	PIFA	UFL	1590
134	Foxconn Corporation	WDAN-S1TV1600-DH	-0.58	2400-2500	3.9	PIFA	UFL	1600
135	Foxconn Corporation	WDAN-S1TV1610-DH	-0.58	2400-2500	3.9	PIFA	UFL	1610
136	Foxconn Corporation	WDAN-S1TV1620-DH	-0.58	2400-2500	3.9	PIFA	UFL	1620
137	Foxconn Corporation	WDAN-S1TV1630-DH	-0.58	2400-2500	3.9	PIFA	UFL	1630
138	Foxconn Corporation	WDAN-S1TV1640-DH	-0.58	2400-2500	3.9	PIFA	UFL	1640
139	Foxconn Corporation	WDAN-S1TV1650-DH	-0.58	2400-2500	4.0	PIFA	UFL	1650
140	Foxconn Corporation	WDAN-S1TV1660-DH	-0.58	2400-2500	4.0	PIFA	UFL	1660
141	Foxconn Corporation	WDAN-S1TV1670-DH	-0.58	2400-2500	4.0	PIFA	UFL	1670
142	Foxconn Corporation	WDAN-S1TV1680-DH	-0.58	2400-2500	4.0	PIFA	UFL	1680
143	Foxconn Corporation	WDAN-S1TV1690-DH	-0.58	2400-2500	4.1	PIFA	UFL	1690
144	Foxconn Corporation	WDAN-S1TV1700-DH	-0.58	2400-2500	4.1	PIFA	UFL	1700
145	Foxconn Corporation	WDAN-S1TV1710-DH	-0.58	2400-2500	4.1	PIFA	UFL	1710
146	Foxconn Corporation	WDAN-S1TV1720-DH	-0.58	2400-2500	4.1	PIFA	UFL	1720
147	Foxconn Corporation	WDAN-S1TV1730-DH	-0.58	2400-2500	4.2	PIFA	UFL	1730
148	Foxconn Corporation	WDAN-S1TV1740-DH	-0.58	2400-2500	4.2	PIFA	UFL	1740
149	Foxconn Corporation	WDAN-S1TV1750-DH	-0.58	2400-2500	4.2	PIFA	UFL	1750
150	Foxconn Corporation	WDAN-S1TV1760-DH	-0.58	2400-2500	4.2	PIFA	UFL	1760

Antenna No.	Brand	Model	Antenna Gain(dBi) <exclude cable loss>	Frequency range (MHz to MHz)	Cable Loss(dB)	Antenna Type	Connecter Type	Cable Length (mm)
151	Foxconn Corporation	WDAN-S1TV1770-DH	-0.58	2400-2500	4.3	PIFA	UFL	1770
152	Foxconn Corporation	WDAN-S1TV1780-DH	-0.58	2400-2500	4.3	PIFA	UFL	1780
153	Foxconn Corporation	WDAN-S1TV1790-DH	-0.58	2400-2500	4.3	PIFA	UFL	1790
154	Foxconn Corporation	WDAN-S1TV1800-DH	-0.58	2400-2500	4.3	PIFA	UFL	1800
155	Foxconn Corporation	WDAN-S1TV2000-DH	-0.58	2400-2500	4.8	PIFA	UFL	2000
156	SAA	SN6506-11-010-C	-2.42	2400-2500	0.5	PIFA	UFL	100
157	SAA	SN6506-11-030-C	-2.42	2400-2500	1.1	PIFA	UFL	300
158	SAA	SN6506-11-031-C	-2.42	2400-2500	1.1	PIFA	UFL	310
159	SAA	SN6506-11-032-C	-2.42	2400-2500	1.1	PIFA	UFL	320
160	SAA	SN6506-11-033-C	-2.42	2400-2500	1.1	PIFA	UFL	330
161	SAA	SN6506-11-034-C	-2.42	2400-2500	1.2	PIFA	UFL	340
162	SAA	SN6506-11-035-C	-2.42	2400-2500	1.2	PIFA	UFL	350
163	SAA	SN6506-11-036-C	-2.42	2400-2500	1.2	PIFA	UFL	360
164	SAA	SN6506-11-037-C	-2.42	2400-2500	1.2	PIFA	UFL	370
165	SAA	SN6506-11-038-C	-2.42	2400-2500	1.3	PIFA	UFL	380
166	SAA	SN6506-11-039-C	-2.42	2400-2500	1.3	PIFA	UFL	390
167	SAA	SN6506-11-040-C	-2.42	2400-2500	1.3	PIFA	UFL	400
168	SAA	SN6506-11-041-C	-2.42	2400-2500	1.3	PIFA	UFL	410
169	SAA	SN6506-11-042-C	-2.42	2400-2500	1.4	PIFA	UFL	420
170	SAA	SN6506-11-043-C	-2.42	2400-2500	1.4	PIFA	UFL	430
171	SAA	SN6506-11-044-C	-2.42	2400-2500	1.4	PIFA	UFL	440
172	SAA	SN6506-11-045-C	-2.42	2400-2500	1.5	PIFA	UFL	450
173	SAA	SN6506-11-046-C	-2.42	2400-2500	1.5	PIFA	UFL	460
174	SAA	SN6506-11-047-C	-2.42	2400-2500	1.5	PIFA	UFL	470
175	SAA	SN6506-11-048-C	-2.42	2400-2500	1.5	PIFA	UFL	480
176	SAA	SN6506-11-049-C	-2.42	2400-2500	1.6	PIFA	UFL	490
177	SAA	SN6506-11-050-C	-2.42	2400-2500	1.6	PIFA	UFL	500
178	SAA	SN6506-11-051-C	-2.42	2400-2500	1.6	PIFA	UFL	510
179	SAA	SN6506-11-052-C	-2.42	2400-2500	1.6	PIFA	UFL	520
180	SAA	SN6506-11-053-C	-2.42	2400-2500	1.7	PIFA	UFL	530

Antenna No.	Brand	Model	Antenna Gain(dBi) <exclude cable loss>	Frequency range (MHz to MHz)	Cable Loss(dB)	Antenna Type	Connecter Type	Cable Length (mm)
181	SAA	SN6506-11-054-C	-2.42	2400-2500	1.7	PIFA	UFL	540
182	SAA	SN6506-11-055-C	-2.42	2400-2500	1.7	PIFA	UFL	550
183	SAA	SN6506-11-056-C	-2.42	2400-2500	1.7	PIFA	UFL	560
184	SAA	SN6506-11-057-C	-2.42	2400-2500	1.8	PIFA	UFL	570
185	SAA	SN6506-11-058-C	-2.42	2400-2500	1.8	PIFA	UFL	580
186	SAA	SN6506-11-059-C	-2.42	2400-2500	1.8	PIFA	UFL	590
187	SAA	SN6506-11-060-C	-2.42	2400-2500	1.8	PIFA	UFL	600
188	SAA	SN6506-11-061-C	-2.42	2400-2500	1.9	PIFA	UFL	610
189	SAA	SN6506-11-062-C	-2.42	2400-2500	1.9	PIFA	UFL	620
190	SAA	SN6506-11-063-C	-2.42	2400-2500	1.9	PIFA	UFL	630
191	SAA	SN6506-11-064-C	-2.42	2400-2500	2.0	PIFA	UFL	640
192	SAA	SN6506-11-065-C	-2.42	2400-2500	2.0	PIFA	UFL	650
193	SAA	SN6506-11-066-C	-2.42	2400-2500	2.0	PIFA	UFL	660
194	SAA	SN6506-11-067-C	-2.42	2400-2500	2.0	PIFA	UFL	670
195	SAA	SN6506-11-068-C	-2.42	2400-2500	2.1	PIFA	UFL	680
196	SAA	SN6506-11-069-C	-2.42	2400-2500	2.1	PIFA	UFL	690
197	SAA	SN6506-11-070-C	-2.42	2400-2500	2.1	PIFA	UFL	700
198	SAA	SN6506-11-071-C	-2.42	2400-2500	2.1	PIFA	UFL	710
199	SAA	SN6506-11-072-C	-2.42	2400-2500	2.2	PIFA	UFL	720
200	SAA	SN6506-11-073-C	-2.42	2400-2500	2.2	PIFA	UFL	730
201	SAA	SN6506-11-074-C	-2.42	2400-2500	2.2	PIFA	UFL	740
202	SAA	SN6506-11-075-C	-2.42	2400-2500	2.2	PIFA	UFL	750
203	SAA	SN6506-11-076-C	-2.42	2400-2500	2.3	PIFA	UFL	760
204	SAA	SN6506-11-077-C	-2.42	2400-2500	2.3	PIFA	UFL	770
205	SAA	SN6506-11-078-C	-2.42	2400-2500	2.3	PIFA	UFL	780
206	SAA	SN6506-11-079-C	-2.42	2400-2500	2.3	PIFA	UFL	790
207	SAA	SN6506-11-080-C	-2.42	2400-2500	2.4	PIFA	UFL	800
208	SAA	SN6506-11-081-C	-2.42	2400-2500	2.4	PIFA	UFL	810
209	SAA	SN6506-11-082-C	-2.42	2400-2500	2.4	PIFA	UFL	820
210	SAA	SN6506-11-083-C	-2.42	2400-2500	2.5	PIFA	UFL	830
211	SAA	SN6506-11-084-C	-2.42	2400-2500	2.5	PIFA	UFL	840
212	SAA	SN6506-11-085-C	-2.42	2400-2500	2.5	PIFA	UFL	850
213	SAA	SN6506-11-086-C	-2.42	2400-2500	2.5	PIFA	UFL	860
214	SAA	SN6506-11-087-C	-2.42	2400-2500	2.6	PIFA	UFL	870
215	SAA	SN6506-11-088-C	-2.42	2400-2500	2.6	PIFA	UFL	880

Antenna No.	Brand	Model	Antenna Gain(dBi) <exclude cable loss>	Frequency range (MHz to MHz)	Cable Loss(dB)	Antenna Type	Connecter Type	Cable Length (mm)
216	SAA	SN6506-11-089-C	-2.42	2400-2500	2.6	PIFA	UFL	890
217	SAA	SN6506-11-090-C	-2.42	2400-2500	2.6	PIFA	UFL	900
218	SAA	SN6506-11-091-C	-2.42	2400-2500	2.7	PIFA	UFL	910
219	SAA	SN6506-11-092-C	-2.42	2400-2500	2.7	PIFA	UFL	920
220	SAA	SN6506-11-093-C	-2.42	2400-2500	2.7	PIFA	UFL	930
221	SAA	SN6506-11-094-C	-2.42	2400-2500	2.7	PIFA	UFL	940
222	SAA	SN6506-11-095-C	-2.42	2400-2500	2.8	PIFA	UFL	950
223	SAA	SN6506-11-096-C	-2.42	2400-2500	2.8	PIFA	UFL	960
224	SAA	SN6506-11-097-C	-2.42	2400-2500	2.8	PIFA	UFL	970
225	SAA	SN6506-11-098-C	-2.42	2400-2500	2.8	PIFA	UFL	980
226	SAA	SN6506-11-099-C	-2.42	2400-2500	2.9	PIFA	UFL	990
227	SAA	SN6506-11-100-C	-2.42	2400-2500	2.9	PIFA	UFL	1000
228	SAA	SN6506-11-101-C	-2.42	2400-2500	2.9	PIFA	UFL	1010
229	SAA	SN6506-11-102-C	-2.42	2400-2500	3.0	PIFA	UFL	1020
230	SAA	SN6506-11-103-C	-2.42	2400-2500	3.0	PIFA	UFL	1030
231	SAA	SN6506-11-104-C	-2.42	2400-2500	3.0	PIFA	UFL	1040
232	SAA	SN6506-11-105-C	-2.42	2400-2500	3.0	PIFA	UFL	1050
233	SAA	SN6506-11-106-C	-2.42	2400-2500	3.1	PIFA	UFL	1060
234	SAA	SN6506-11-107-C	-2.42	2400-2500	3.1	PIFA	UFL	1070
235	SAA	SN6506-11-108-C	-2.42	2400-2500	3.1	PIFA	UFL	1080
236	SAA	SN6506-11-109-C	-2.42	2400-2500	3.1	PIFA	UFL	1090
237	SAA	SN6506-11-110-C	-2.42	2400-2500	3.2	PIFA	UFL	1100
238	SAA	SN6506-11-111-C	-2.42	2400-2500	3.2	PIFA	UFL	1110
239	SAA	SN6506-11-112-C	-2.42	2400-2500	3.2	PIFA	UFL	1120
240	SAA	SN6506-11-113-C	-2.42	2400-2500	3.2	PIFA	UFL	1130
241	SAA	SN6506-11-114-C	-2.42	2400-2500	3.3	PIFA	UFL	1140
242	SAA	SN6506-11-115-C	-2.42	2400-2500	3.3	PIFA	UFL	1150
243	SAA	SN6506-11-116-C	-2.42	2400-2500	3.3	PIFA	UFL	1160
244	SAA	SN6506-11-117-C	-2.42	2400-2500	3.3	PIFA	UFL	1170
245	SAA	SN6506-11-118-C	-2.42	2400-2500	3.4	PIFA	UFL	1180
246	SAA	SN6506-11-119-C	-2.42	2400-2500	3.4	PIFA	UFL	1190
247	SAA	SN6506-11-120-C	-2.42	2400-2500	3.4	PIFA	UFL	1200
248	SAA	SN6506-11-121-C	-2.42	2400-2500	3.5	PIFA	UFL	1210
249	SAA	SN6506-11-122-C	-2.42	2400-2500	3.5	PIFA	UFL	1220
250	SAA	SN6506-11-123-C	-2.42	2400-2500	3.5	PIFA	UFL	1230

Antenna No.	Brand	Model	Antenna Gain(dBi) <exclude cable loss>	Frequency range (MHz to MHz)	Cable Loss(dB)	Antenna Type	Connecter Type	Cable Length (mm)
251	SAA	SN6506-11-124-C	-2.42	2400-2500	3.5	PIFA	UFL	1240
252	SAA	SN6506-11-125-C	-2.42	2400-2500	3.6	PIFA	UFL	1250
253	SAA	SN6506-11-126-C	-2.42	2400-2500	3.6	PIFA	UFL	1260
254	SAA	SN6506-11-127-C	-2.42	2400-2500	3.6	PIFA	UFL	1270
255	SAA	SN6506-11-128-C	-2.42	2400-2500	3.6	PIFA	UFL	1280
256	SAA	SN6506-11-129-C	-2.42	2400-2500	3.7	PIFA	UFL	1290
257	SAA	SN6506-11-130-C	-2.42	2400-2500	3.7	PIFA	UFL	1300
258	SAA	SN6506-11-131-C	-2.42	2400-2500	3.7	PIFA	UFL	1310
259	SAA	SN6506-11-132-C	-2.42	2400-2500	3.7	PIFA	UFL	1320
260	SAA	SN6506-11-133-C	-2.42	2400-2500	3.8	PIFA	UFL	1330
261	SAA	SN6506-11-134-C	-2.42	2400-2500	3.8	PIFA	UFL	1340
262	SAA	SN6506-11-135-C	-2.42	2400-2500	3.8	PIFA	UFL	1350
263	SAA	SN6506-11-136-C	-2.42	2400-2500	3.8	PIFA	UFL	1360
264	SAA	SN6506-11-137-C	-2.42	2400-2500	3.9	PIFA	UFL	1370
265	SAA	SN6506-11-138-C	-2.42	2400-2500	3.9	PIFA	UFL	1380
266	SAA	SN6506-11-139-C	-2.42	2400-2500	3.9	PIFA	UFL	1390
267	SAA	SN6506-11-140-C	-2.42	2400-2500	4.0	PIFA	UFL	1400
268	SAA	SN6506-11-141-C	-2.42	2400-2500	4.0	PIFA	UFL	1410
269	SAA	SN6506-11-142-C	-2.42	2400-2500	4.0	PIFA	UFL	1420
270	SAA	SN6506-11-143-C	-2.42	2400-2500	4.0	PIFA	UFL	1430
271	SAA	SN6506-11-144-C	-2.42	2400-2500	4.1	PIFA	UFL	1440
272	SAA	SN6506-11-145-C	-2.42	2400-2500	4.1	PIFA	UFL	1450
273	SAA	SN6506-11-146-C	-2.42	2400-2500	4.1	PIFA	UFL	1460
274	SAA	SN6506-11-147-C	-2.42	2400-2500	4.1	PIFA	UFL	1470
275	SAA	SN6506-11-148-C	-2.42	2400-2500	4.2	PIFA	UFL	1480
276	SAA	SN6506-11-149-C	-2.42	2400-2500	4.2	PIFA	UFL	1490
277	SAA	SN6506-11-150-C	-2.42	2400-2500	4.2	PIFA	UFL	1500
278	SAA	SN6506-11-151-C	-2.42	2400-2500	4.2	PIFA	UFL	1510
279	SAA	SN6506-11-152-C	-2.42	2400-2500	4.3	PIFA	UFL	1520
280	SAA	SN6506-11-153-C	-2.42	2400-2500	4.3	PIFA	UFL	1530
281	SAA	SN6506-11-154-C	-2.42	2400-2500	4.3	PIFA	UFL	1540
282	SAA	SN6506-11-155-C	-2.42	2400-2500	4.3	PIFA	UFL	1550
283	SAA	SN6506-11-156-C	-2.42	2400-2500	4.4	PIFA	UFL	1560
284	SAA	SN6506-11-157-C	-2.42	2400-2500	4.4	PIFA	UFL	1570
285	SAA	SN6506-11-158-C	-2.42	2400-2500	4.4	PIFA	UFL	1580

Antenna No.	Brand	Model	Antenna Gain(dBi) <exclude cable loss>	Frequency range (MHz to MHz)	Cable Loss(dB)	Antenna Type	Connecter Type	Cable Length (mm)
286	SAA	SN6506-11-159-C	-2.42	2400-2500	4.5	PIFA	UFL	1590
287	SAA	SN6506-11-160-C	-2.42	2400-2500	4.5	PIFA	UFL	1600
288	SAA	SN6506-11-161-C	-2.42	2400-2500	4.5	PIFA	UFL	1610
289	SAA	SN6506-11-162-C	-2.42	2400-2500	4.5	PIFA	UFL	1620
290	SAA	SN6506-11-163-C	-2.42	2400-2500	4.6	PIFA	UFL	1630
291	SAA	SN6506-11-164-C	-2.42	2400-2500	4.6	PIFA	UFL	1640
292	SAA	SN6506-11-165-C	-2.42	2400-2500	4.6	PIFA	UFL	1650
293	SAA	SN6506-11-166-C	-2.42	2400-2500	4.6	PIFA	UFL	1660
294	SAA	SN6506-11-167-C	-2.42	2400-2500	4.7	PIFA	UFL	1670
295	SAA	SN6506-11-168-C	-2.42	2400-2500	4.7	PIFA	UFL	1680
296	SAA	SN6506-11-169-C	-2.42	2400-2500	4.7	PIFA	UFL	1690
297	SAA	SN6506-11-170-C	-2.42	2400-2500	4.7	PIFA	UFL	1700
298	SAA	SN6506-11-171-C	-2.42	2400-2500	4.8	PIFA	UFL	1710
299	SAA	SN6506-11-172-C	-2.42	2400-2500	4.8	PIFA	UFL	1720
300	SAA	SN6506-11-173-C	-2.42	2400-2500	4.8	PIFA	UFL	1730
301	SAA	SN6506-11-174-C	-2.42	2400-2500	4.8	PIFA	UFL	1740
302	SAA	SN6506-11-175-C	-2.42	2400-2500	4.9	PIFA	UFL	1750
303	SAA	SN6506-11-176-C	-2.42	2400-2500	4.9	PIFA	UFL	1760
304	SAA	SN6506-11-177-C	-2.42	2400-2500	4.9	PIFA	UFL	1770
305	SAA	SN6506-11-178-C	-2.42	2400-2500	5.0	PIFA	UFL	1780
306	SAA	SN6506-11-179-C	-2.42	2400-2500	5.0	PIFA	UFL	1790
307	SAA	SN6506-11-180-C	-2.42	2400-2500	5.0	PIFA	UFL	1800
308	SAA	SN6506-11-200-C	-2.42	2400-2500	5.5	PIFA	UFL	2000
From the above antennas for BT used, the **Ant. No.: 3** (BT max antenna gain: -0.82dBi) were selected as representative value for the test and its data was recorded in this report.								

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

3.2 DESCRIPTION OF TEST MODES

79 channels are provided for BT-EDR mode

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

40 channels are provided for BT-LE mode:

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

3.3 TEST MODE APPLICABLITY AND TESTED CHANNEL DETAIL:

For BT-EDR mode:

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	OB	
-	√	√	√	√	√	-

Where **PLC:** Power Line Conducted Emission **RE < 1G:** Radiated Emission below 1GHz

RE ≥ 1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

OB: Conducted Out-Band Emission Measurement

NOTE: 1. "-"means no effect.

2. The EUT's antenna (PIFA) had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane (below 1GHz)** and **Y-plane (for above 1GHz).**

POWER LINE CONDUCTED EMISSION:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type
0 to 78	78	FHSS	8DPSK	DH5

RADIATED EMISSION TEST (BELOW 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type
0 to 78	78	FHSS	8DPSK	DH5

RADIATED EMISSION TEST (ABOVE 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type
0 to 78	0, 39, 78	FHSS	GFSK	DH5
0 to 78	0, 39, 78	FHSS	8DPSK	DH5

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type
0 to 78	0, 39, 78	FHSS	GFSK	DH5
0 to 78	0, 39, 78	FHSS	8DPSK	DH5

CONDUCTED OUT-BAND EMISSION MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type
0 to 78	0, 78	FHSS	GFSK	DH5
0 to 78	0, 78	FHSS	8DPSK	DH5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	26deg. C,74%RH	120Vac, 60Hz	Ping Liu
RE<1G	21deg. C, 65%RH	120Vac, 60Hz	Andy Ho
RE≥1G	23deg. C, 70%RH	120Vac, 60Hz	Nelson Teng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Chilin Lee
OB	25deg. C, 60%RH	120Vac, 60Hz	Chilin Lee

For BT-LE mode:

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	OB	
-	√	√	√	√	√	-

Where **PLC:** Power Line Conducted Emission **RE < 1G:** Radiated Emission below 1GHz

RE ≥ 1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

OB: Conducted Out-Band Emission Measurement

NOTE: 1. "-"means no effect.

2. The EUT's antenna (PIFA) had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane (below 1GHz)** and **Y-plane (for above 1GHz).**

POWER LINE CONDUCTED EMISSION TEST:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	39	DTS	GFSK	1

RADIATED EMISSION TEST (BELOW 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	39	DTS	GFSK	1

RADIATED EMISSION TEST (ABOVE 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	0, 19, 39	DTS	GFSK	1

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	0, 19, 39	DTS	GFSK	1

CONDUCTED OUT-BAND EMISSION MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	0, 19, 39	DTS	GFSK	1

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	26deg. C,74%RH	120Vac, 60Hz	Ping Liu
RE<1G	21deg. C, 65%RH	120Vac, 60Hz	Andy Ho
RE≥1G	23deg. C, 66%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Chilin Lee
OB	25deg. C, 60%RH	120Vac, 60Hz	Chilin Lee

3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v03r01

ANSI C63.10-2009

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

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

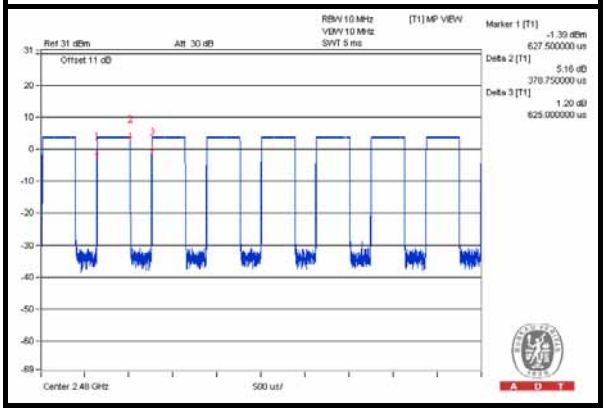
3.5 DUTY CYCLE OF TEST SIGNAL

Duty cycle of test signal is < 98 %, duty factor shall be considered.

For BT_LE-GFSK:

Duty cycle = 0.37875 ms/0.625 ms = 0.606, Duty factor = 10 * log(1/0.606) = 2.2

BT-LE



3.6 DESCRIPTION OF SUPPORT UNITS

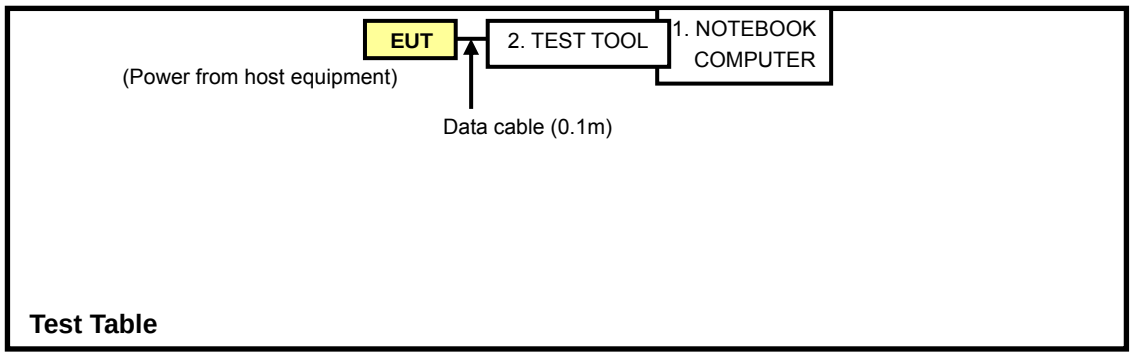
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	HSLB32S	FCC DoC
2	TEST TOOL	FOXCONN	NA	NA	NA

No.	Signal cable description
1	NA
2	Data cable, 0.1m

Note: The power cords of the above support units were unshielded (1.8m).

3.7 CONFIGURATION OF SYSTEM UNDER TEST



4 TEST PROCEDURES AND RESULTS (BLUETOOTH)

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 12, 2013	Sep. 11, 2014
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100071	Nov. 13, 2013	Nov. 12, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 10, 2014	Mar. 09, 2015
50 ohms Terminator	N/A	EMC-03	Sep. 24, 2013	Sep. 23, 2014
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2013	Sep. 30, 2014
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: May 29, 2014

4.1.3 TEST PROCEDURES

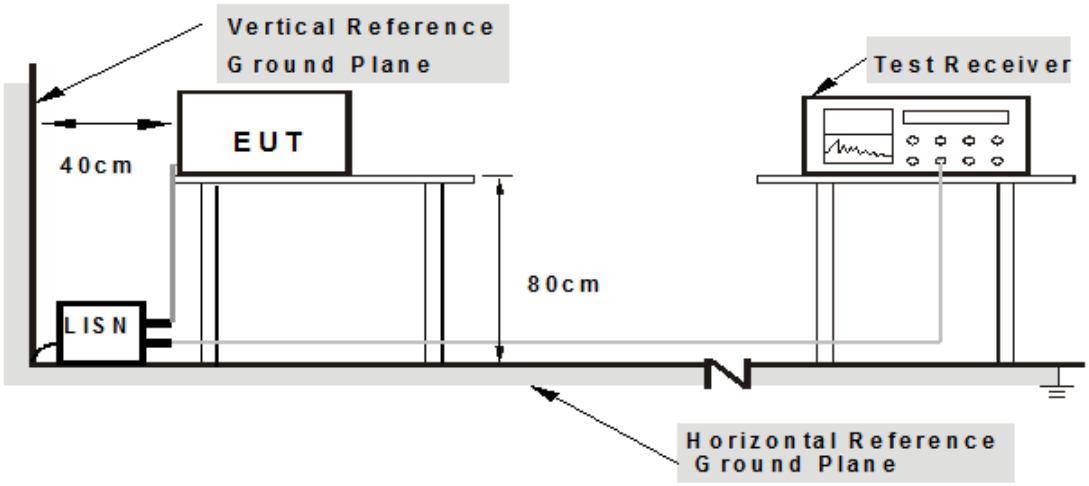
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN.
b. The two LISNs provide 50 ohm/ 50uH of coupling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

NOTE: The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “WNC Combo Tool[V 2.1323.00]” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

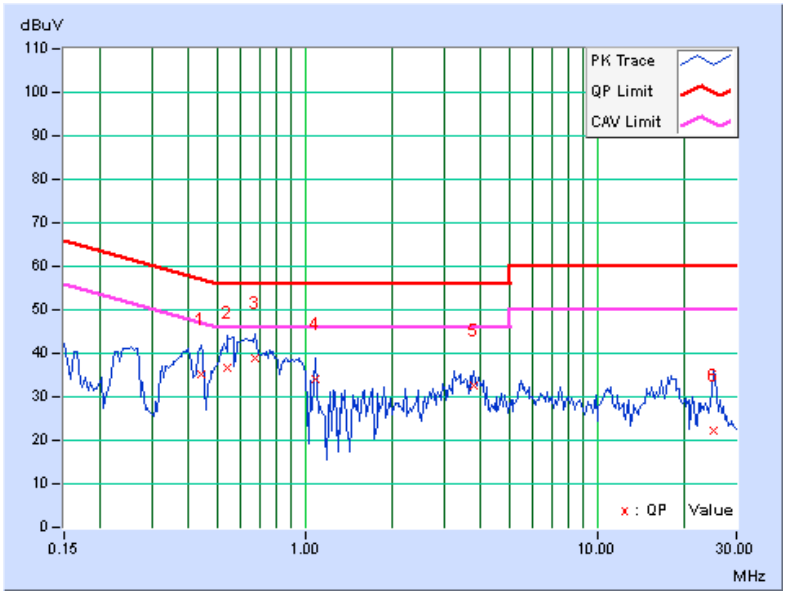
4.1.7 TEST RESULTS

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.43906	0.09	35.22	22.31	35.31	22.40	57.08	47.08	-21.77	-24.68
2	0.54453	0.10	36.63	26.33	36.73	26.43	56.00	46.00	-19.27	-19.57
3	0.67344	0.11	38.64	28.14	38.75	28.25	56.00	46.00	-17.25	-17.75
4	1.08594	0.13	33.91	23.05	34.04	23.18	56.00	46.00	-21.96	-22.82
5	3.79688	0.25	32.29	25.88	32.54	26.13	56.00	46.00	-23.46	-19.87
6	24.94141	0.85	21.46	14.79	22.31	15.64	60.00	50.00	-37.69	-34.36

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission Level – Limit value
4. Correction Factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

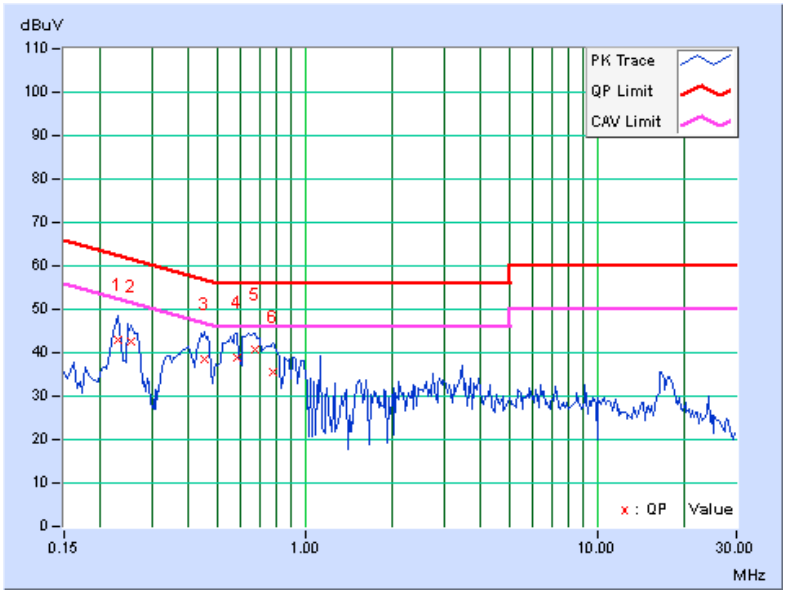


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.22812	0.07	42.76	33.59	42.83	33.66	62.52	52.52	-19.69	-18.86
2	0.25547	0.08	42.69	33.36	42.77	33.44	61.58	51.58	-18.81	-18.14
3	0.45078	0.09	38.28	26.38	38.37	26.47	56.86	46.86	-18.49	-20.39
4	0.58359	0.10	38.92	23.40	39.02	23.50	56.00	46.00	-16.98	-22.50
5	**0.67344**	**0.11**	**40.62**	**27.54**	**40.73**	**27.65**	**56.00**	**46.00**	**-15.27**	**-18.35**
6	0.78281	0.12	35.58	22.68	35.70	22.80	56.00	46.00	-20.30	-23.20

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission Level – Limit value
4. Correction Factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 15, 2014	Jan. 14, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: May 27 to June 12, 2014

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. 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 height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

NOTE:

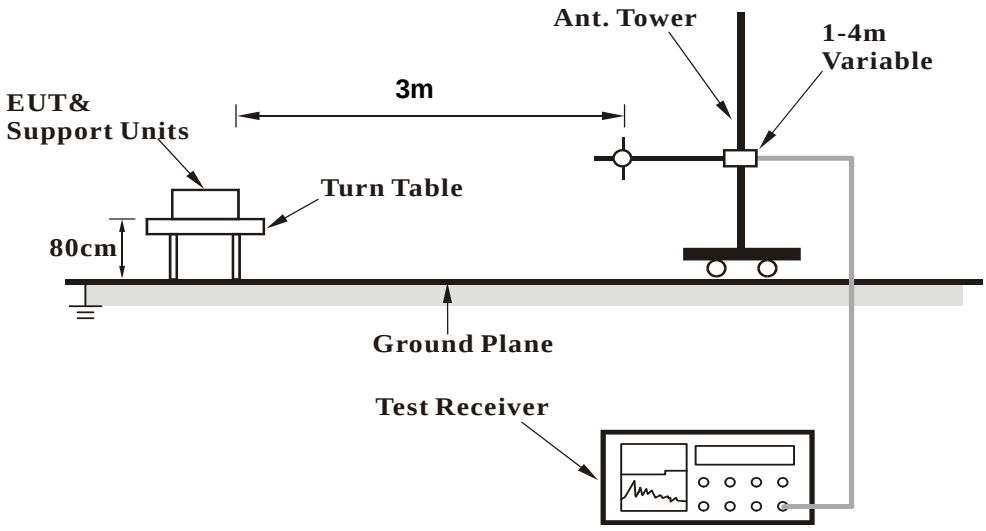
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 1MHz for Peak detection at frequency above 1GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

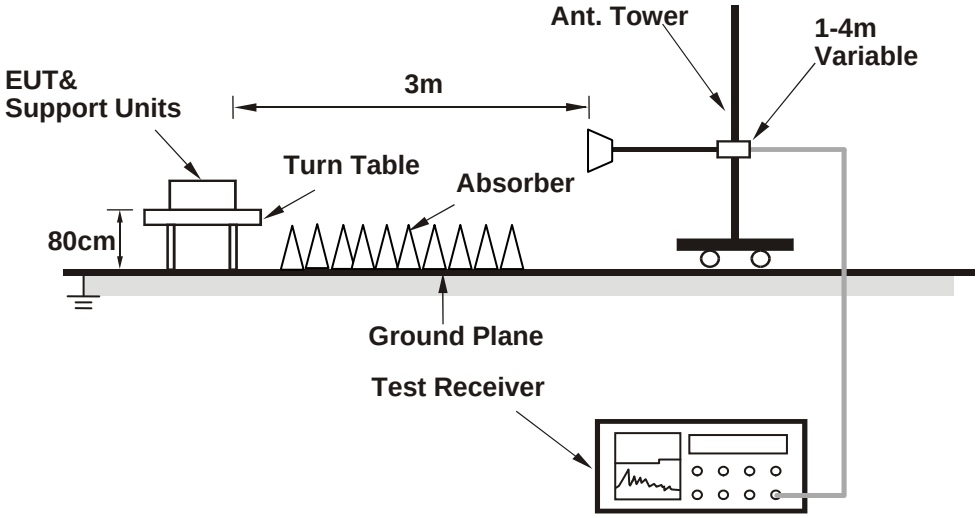
No deviation

4.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

BT_8DPSK

CHANNEL	TX Channel 78	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	77.05	30.9 QP	40.0	-9.1	2.00 H	246	47.70	-16.83
2	157.51	34.5 QP	43.5	-9.0	2.00 H	160	47.01	-12.52
3	214.88	35.5 QP	43.5	-8.0	1.50 H	4	51.25	-15.76
4	**240.25**	**41.0 QP**	**46.0**	**-5.0**	**1.00 H**	**339**	**54.80**	**-13.79**
5	296.70	36.9 QP	46.0	-9.1	1.00 H	350	48.76	-11.86
6	698.09	35.4 QP	46.0	-10.6	1.00 H	207	38.60	-3.16
7	748.92	37.9 QP	46.0	-8.2	1.50 H	0	39.50	-1.65
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	77.92	30.7 QP	40.0	-9.3	1.00 V	285	47.94	-17.20
2	157.46	35.2 QP	43.5	-8.3	1.00 V	152	47.69	-12.51
3	238.89	39.0 QP	46.0	-7.1	1.50 V	299	52.78	-13.83
4	299.37	36.7 QP	46.0	-9.3	1.50 V	360	48.46	-11.74
5	696.78	37.6 QP	46.0	-8.5	1.00 V	276	40.71	-3.16
6	897.81	35.5 QP	46.0	-10.5	1.00 V	314	35.01	0.46

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

ABOVE 1GHz DATA

BT_GFSK

CHANNEL	TX Channel 0	**DETECTOR FUNCTION**	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	53.1 PK	74.0	-20.9	1.05 H	34	21.47	31.63
2	2390.00	23.0 AV	54.0	-31.0	1.05 H	34	-8.63	31.63
3	*2402.00	99.6 PK			1.05 H	34	67.95	31.65
4	*2402.00	69.5 AV			1.05 H	34	37.85	31.65
5	4804.00	48.9 PK	74.0	-25.1	1.61 H	281	8.49	40.41
6	4804.00	18.8 AV	54.0	-35.2	1.61 H	281	-21.61	40.41
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	51.5 PK	74.0	-22.5	1.16 V	325	19.87	31.63
2	2390.00	28.3 AV	54.0	-25.7	1.16 V	325	-3.33	31.63
3	*2402.00	98.1 PK			1.16 V	360	66.45	31.65
4	*2402.00	72.7 AV			1.16 V	360	41.05	31.65
5	4804.00	48.3 PK	74.0	-25.7	1.49 V	144	7.89	40.41
6	4804.00	18.2 AV	54.0	-35.8	1.49 V	144	-22.21	40.41

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(3.125 / 100)= -30.1 dB
7. Average value = peak reading + 20log(duty cycle).

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	99.7 PK			1.33 H	33	67.96	31.74
2	*2441.00	69.6 AV			1.33 H	33	37.86	31.74
3	4882.00	49.1 PK	74.0	-24.9	1.62 H	266	8.75	40.35
4	4882.00	19.0 AV	54.0	-35.0	1.62 H	266	-21.35	40.35
5	7323.00	52.9 PK	74.0	-21.1	1.01 H	114	7.90	45.00
6	7323.00	22.8 AV	54.0	-31.2	1.01 H	114	-22.20	45.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	98.3 PK			1.14 V	320	66.56	31.74
2	*2441.00	68.2 AV			1.14 V	320	36.46	31.74
3	4882.00	48.7 PK	74.0	-25.3	1.53 V	133	8.35	40.35
4	4882.00	18.6 AV	54.0	-35.4	1.53 V	133	-21.75	40.35
5	7323.00	52.2 PK	74.0	-21.8	1.02 V	57	7.20	45.00
6	7323.00	22.1 AV	54.0	-31.9	1.02 V	57	-22.90	45.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(3.125 / 100)= -30.1 dB
7. Average value = peak reading + 20log(duty cycle).

CHANNEL	TX Channel 78	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	101.5 PK			1.02 H	37	69.68	31.82
2	*2480.00	71.4 AV			1.02 H	37	39.58	31.82
3	2483.50	67.4 PK	74.0	-6.6	1.02 H	37	35.56	31.84
4	2483.50	37.3 AV	54.0	-16.7	1.02 H	37	5.46	31.84
5	4960.00	49.4 PK	74.0	-24.6	1.57 H	271	9.11	40.29
6	4960.00	19.3 AV	54.0	-34.7	1.57 H	271	-20.99	40.29
7	7440.00	53.1 PK	74.0	-20.9	1.00 H	112	7.77	45.33
8	7440.00	23.0 AV	54.0	-31.0	1.00 H	112	-22.33	45.33
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	99.7 PK			1.13 V	322	67.88	31.82
2	*2480.00	69.6 AV			1.13 V	322	37.78	31.82
3	2483.50	65.3 PK	74.0	-8.7	1.13 V	322	33.46	31.84
4	2483.50	35.2 AV	54.0	-18.8	1.13 V	322	3.36	31.84
5	4960.00	48.6 PK	74.0	-25.4	1.58 V	138	8.31	40.29
6	4960.00	18.5 AV	54.0	-35.5	1.58 V	138	-21.79	40.29
7	7440.00	52.3 PK	74.0	-21.7	1.00 V	52	6.97	45.33
8	7440.00	22.2 AV	54.0	-31.8	1.00 V	52	-23.13	45.33

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(3.125 / 100)= -30.1 dB
7. Average value = peak reading + 20log(duty cycle).

BT_8DPSK

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.4 PK	74.0	-18.6	1.06 H	33	23.77	31.63
2	2390.00	25.3 AV	54.0	-28.7	1.06 H	33	-6.33	31.63
3	*2402.00	98.7 PK			1.06 H	33	67.05	31.65
4	*2402.00	68.6 AV			1.06 H	33	36.95	31.65
5	4804.00	49.1 PK	74.0	-24.9	1.61 H	248	8.69	40.41
6	4804.00	19.0 AV	54.0	-35.0	1.61 H	248	-21.41	40.41
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	53.7 PK	74.0	-20.3	1.16 V	323	22.07	31.63
2	2390.00	23.6 AV	54.0	-30.4	1.16 V	323	-8.03	31.63
3	*2402.00	97.1 PK			1.16 V	323	65.45	31.65
4	*2402.00	67.0 AV			1.16 V	323	35.35	31.65
5	4804.00	48.9 PK	74.0	-25.1	1.56 V	134	8.49	40.41
6	4804.00	18.8 AV	54.0	-35.2	1.56 V	134	-21.61	40.41

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(3.125 / 100)= -30.1 dB
7. Average value = peak reading + 20log(duty cycle).

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	99.1 PK			1.33 H	37	67.36	31.74
2	*2441.00	69.0 AV			1.33 H	37	37.26	31.74
3	4882.00	49.1 PK	74.0	-24.9	1.55 H	257	8.75	40.35
4	4882.00	19.0 AV	54.0	-35.0	1.55 H	257	-21.35	40.35
5	7323.00	53.6 PK	74.0	-20.4	1.00 H	125	8.60	45.00
6	7323.00	23.5 AV	54.0	-30.5	1.00 H	125	-21.50	45.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	97.7 PK			1.15 V	322	65.96	31.74
2	*2441.00	67.6 AV			1.15 V	322	35.86	31.74
3	4882.00	48.7 PK	74.0	-25.3	1.54 V	140	8.35	40.35
4	4882.00	18.6 AV	54.0	-35.4	1.54 V	140	-21.75	40.35
5	7323.00	52.2 PK	74.0	-21.8	1.03 V	35	7.20	45.00
6	7323.00	22.1 AV	54.0	-31.9	1.03 V	35	-22.90	45.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(3.125 / 100)= -30.1 dB
7. Average value = peak reading + 20log(duty cycle).

CHANNEL	TX Channel 78	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	100.1 PK			1.02 H	35	68.28	31.82
2	*2480.00	70.0 AV			1.02 H	35	38.18	31.82
3	2483.50	68.3 PK	74.0	-5.7	1.02 H	35	36.46	31.84
4	2483.50	38.2 AV	54.0	-15.8	1.02 H	35	6.36	31.84
5	4960.00	49.6 PK	74.0	-24.4	1.57 H	264	9.31	40.29
6	4960.00	19.5 AV	54.0	-34.5	1.57 H	264	-20.79	40.29
7	7440.00	53.4 PK	74.0	-20.6	1.05 H	128	8.07	45.33
8	7440.00	23.3 AV	54.0	-30.7	1.05 H	128	-22.03	45.33
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	97.5 PK			1.15 V	325	65.68	31.82
2	*2480.00	67.4 AV			1.15 V	325	35.58	31.82
3	2483.50	65.4 PK	74.0	-8.6	1.15 V	325	33.56	31.84
4	2483.50	35.3 AV	54.0	-18.7	1.15 V	325	3.46	31.84
5	4960.00	48.7 PK	74.0	-25.3	1.54 V	144	8.41	40.29
6	4960.00	18.6 AV	54.0	-35.4	1.54 V	144	-21.69	40.29
7	7440.00	52.1 PK	74.0	-21.9	1.04 V	50	6.77	45.33
8	7440.00	22.0 AV	54.0	-32.0	1.04 V	50	-23.33	45.33

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: 20log(3.125 / 100)= -30.1 dB
7. Average value = peak reading + 20log(duty cycle).

4.3 NUMBER OF HOPPING FREQUENCY USED

4.3.1 LIMIT OF HOPPING FREQUENCY USED

At least 15 hopping frequencies, and should be equally spaced.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 11, 2014

4.3.3 TEST PROCEDURES

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.

c. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.

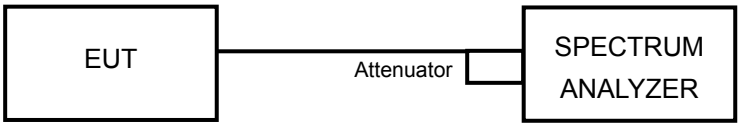
d. Set the SA on View mode and then plot the result on SA screen.

e. Repeat above procedures until all frequencies measured were complete.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

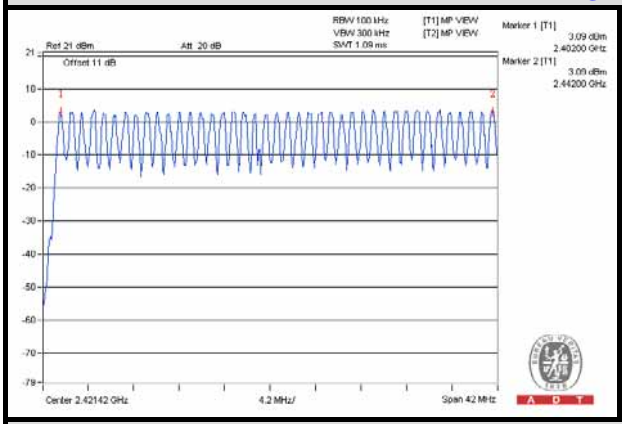
4.3.5 TEST SETUP

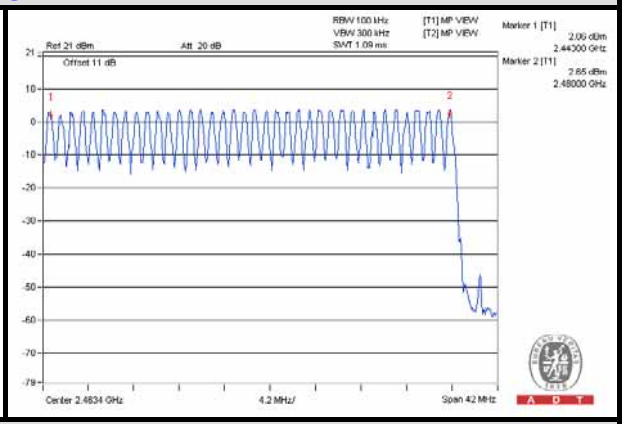


4.3.6 TEST RESULTS

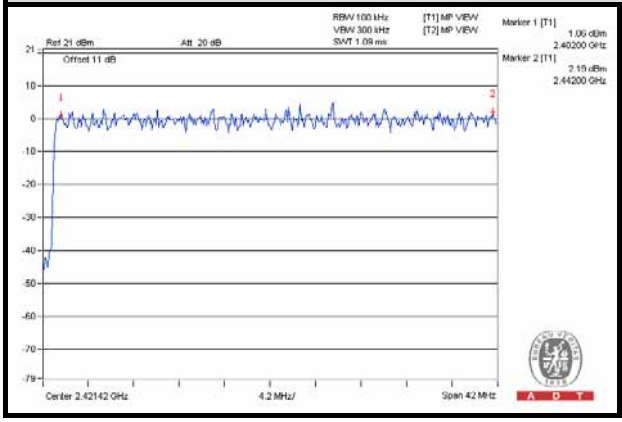
There are 79 hopping frequencies in the hopping mode. Please refer the test result. On the plots, it shows that the hopping frequencies are equally spaced.

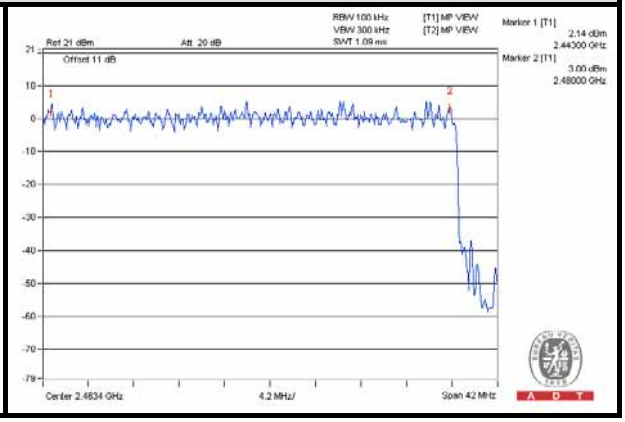
GFSK





8DPSK





4.4 DWELL TIME ON EACH CHANNEL

4.4.1 LIMIT OF DWELL TIME USED

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 11, 2014

4.4.3 TEST PROCEDURES

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.

c. Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.

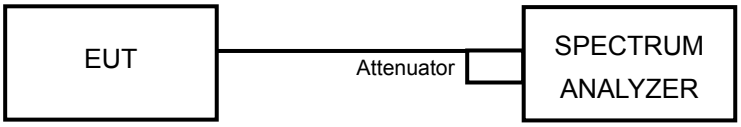
d. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.

e. Repeat above procedures until all different time-slot modes have been completed.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



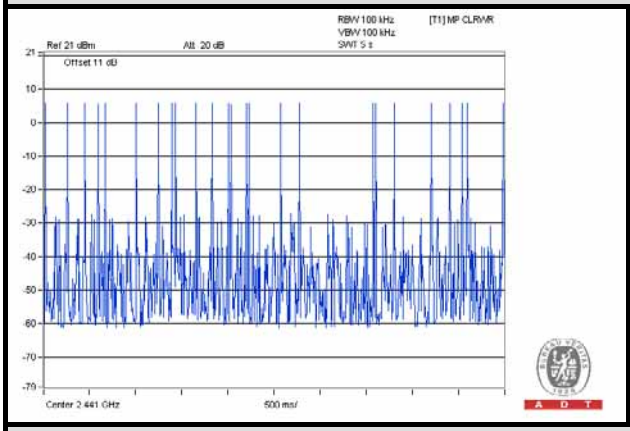
4.4.6 TEST RESULTS

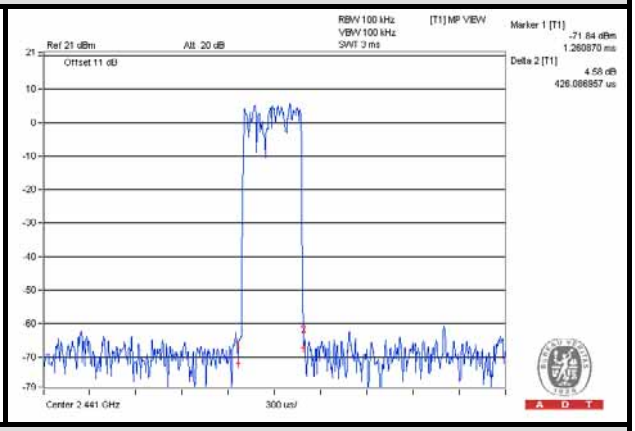
For GFSK:

Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	25 (times / 5 sec) *6.32=158 times	0.426	67.308	400
DH3	26 (times / 5 sec) *6.32=164.32 times	1.667	273.92	400
DH5	16 (times / 5 sec) *6.32=101.12 times	2.933	296.58	400

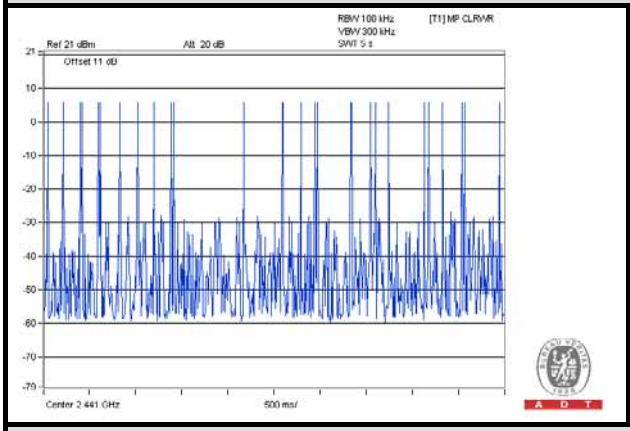
NOTE: Test plots of the transmitting time slot are shown on next page.

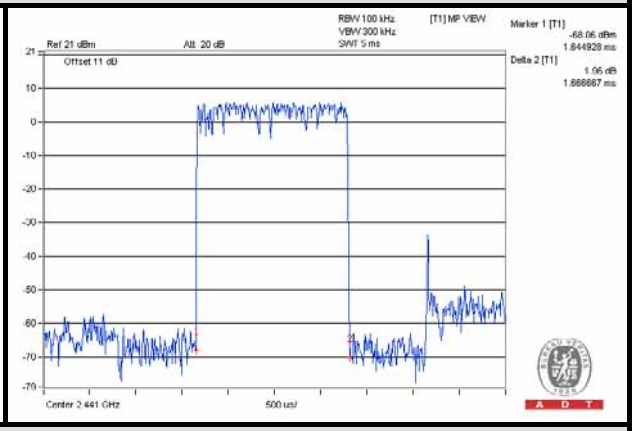
DH1


RBW 100 kHz
VBW 100 kHz
SWT 5 s
[T1] MP CLRWR
Ref 21 dBm
Att 20 dB
Offset 11 dB
Center 2.441 GHz
500 ms/

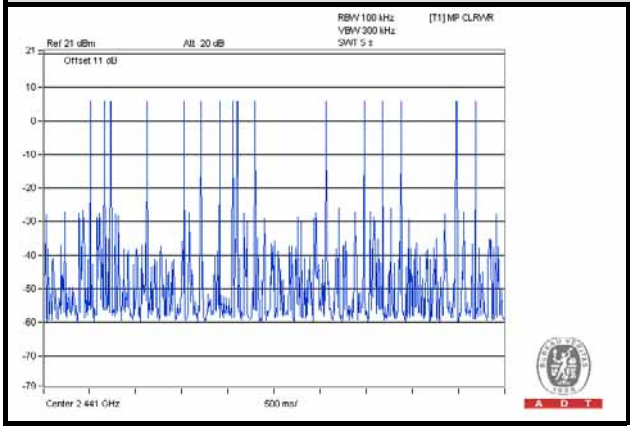

RBW 100 kHz
VBW 100 kHz
SWT 3 ms
[T1] MP VIEW
Marker 1 [T1]
-71.84 dBm
1.260870 ms
Delta 2 [T1]
4.58 dB
426.086957 us
Ref 21 dBm
Att 20 dB
Offset 11 dB
Center 2.441 GHz
300 us/

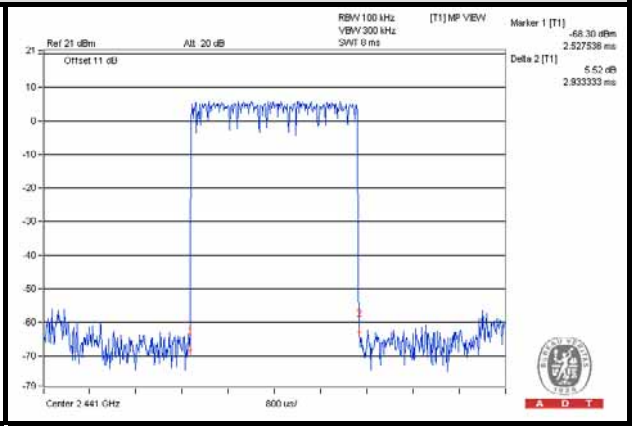
DH3


RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MP CLRWR
Ref 21 dBm
Att 20 dB
Offset 11 dB
Center 2.441 GHz
500 ms/


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MP VIEW
Marker 1 [T1]
-68.06 dBm
1.644928 ms
Delta 2 [T1]
1.06 dB
1.666667 ms
Ref 21 dBm
Att 20 dB
Offset 11 dB
Center 2.441 GHz
500 us/

DH5

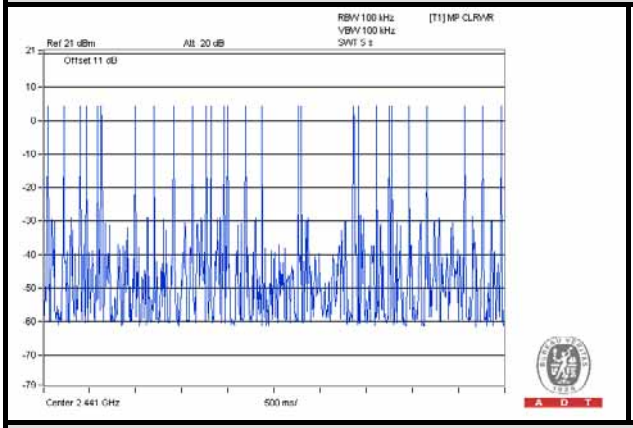
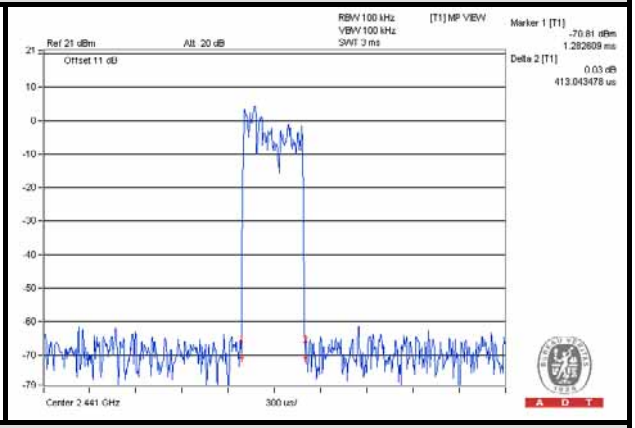
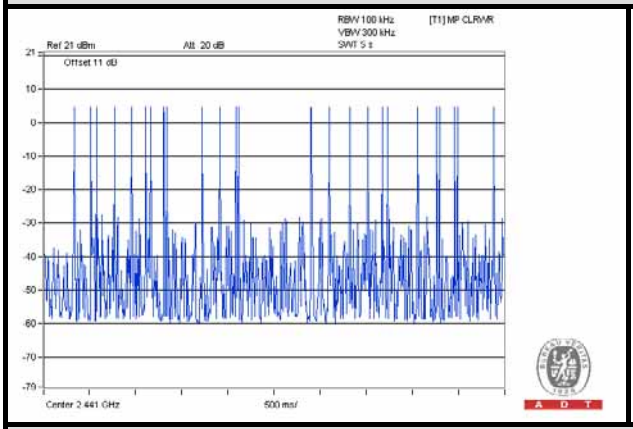
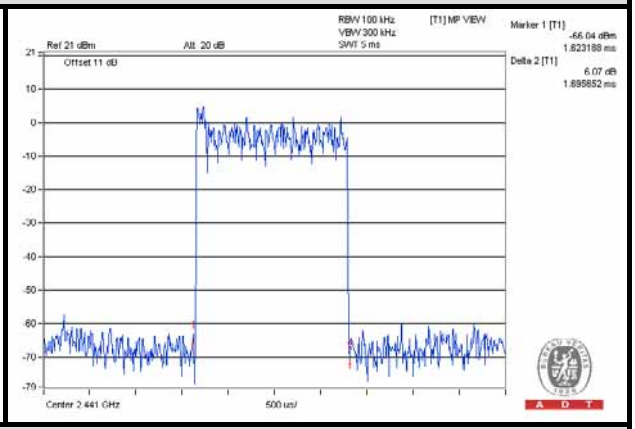
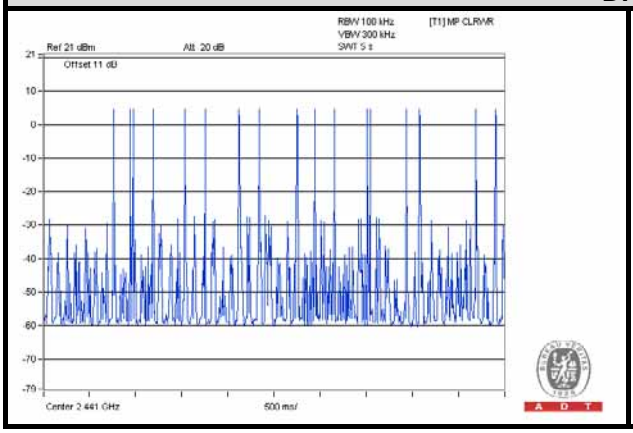
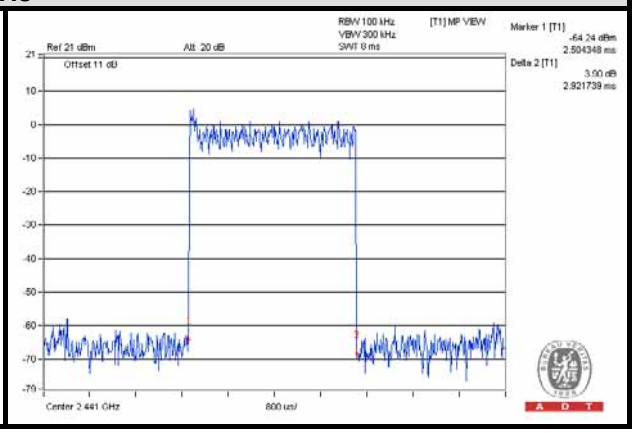

RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MP CLRWR
Ref 21 dBm
Att 20 dB
Offset 11 dB
Center 2.441 GHz
500 ms/


RBW 100 kHz
VBW 300 kHz
SWT 8 ms
[T1] MP VIEW
Marker 1 [T1]
-68.30 dBm
2.527536 ms
Delta 2 [T1]
5.52 dB
2.933333 ms
Ref 21 dBm
Att 20 dB
Offset 11 dB
Center 2.441 GHz
800 us/

For 8DPSK:

Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	28 (times / 5 sec) *6.32=176.96 times	0.413	73.084	400
DH3	25 (times / 5 sec) *6.32=158 times	1.696	267.97	400
DH5	17 (times / 5 sec) *6.32=107.44 times	2.922	313.94	400

NOTE: Test plots of the transmitting time slot are shown on next page.

DH1	
	
DH3	
	
DH5	
	

4.5 CHANNEL BANDWIDTH

4.5.1 LIMITS OF CHANNEL BANDWIDTH

For frequency hopping system operating in the 2400-2483.5MHz, If the 20dB bandwidth of hopping channel is greater than 25kHz, two-thirds 20dBbandwidth of hopping channel shell be a minimum limit for the hopping channel separation.

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 11, 2014

4.5.3 TEST PROCEDURE

a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

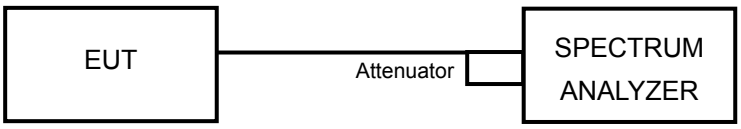
c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.

d. Repeat above procedures until all frequencies measured were complete.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP

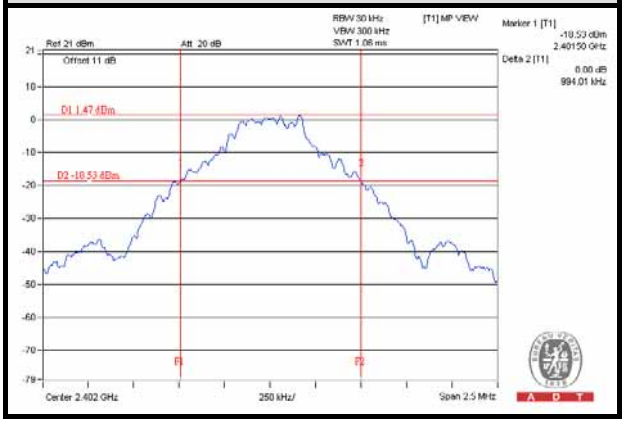
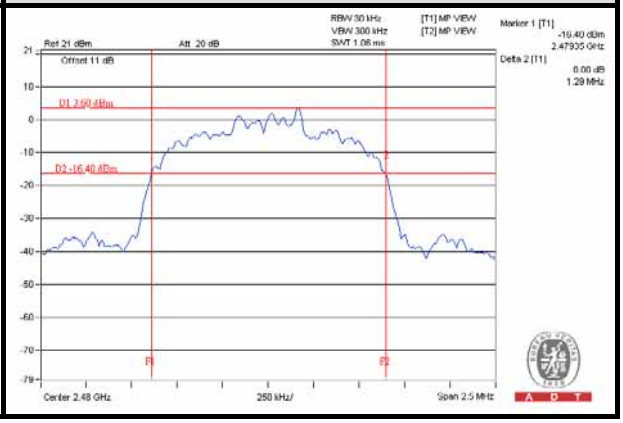


4.5.6 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.5.7 TEST RESULTS

CHANNEL	FREQUENCY (MHz)	20dB BANDWIDTH (MHz)	
		GFSK	8DPSK
0	2402	0.99	1.29
39	2441	0.99	1.29
78	2480	0.98	1.29

SPECTRUM PLOT OF WORST VALUE	
GFSK / CH0	8DPSK / CH78
	

4.6 HOPPING CHANNEL SEPARATION

4.6.1 LIMIT OF HOPPING CHANNEL SEPARATION

At least 25 kHz or two-thirds of 20dB hopping channel bandwidth (whichever is greater).

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 11, 2014

4.6.3 TEST PROCEDURES

a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.

c. By using the MaxHold function record the separation of two adjacent channels.

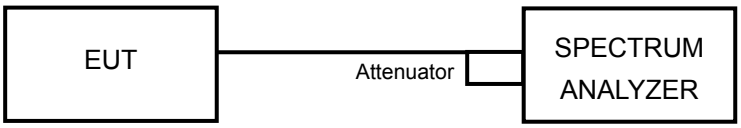
d. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.

e. Repeat above procedures until all frequencies measured were complete.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

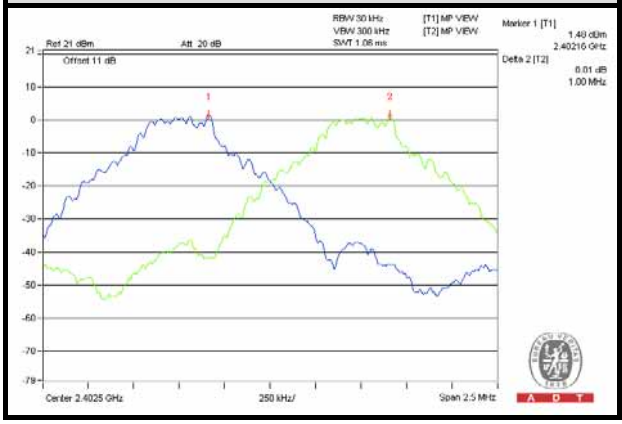
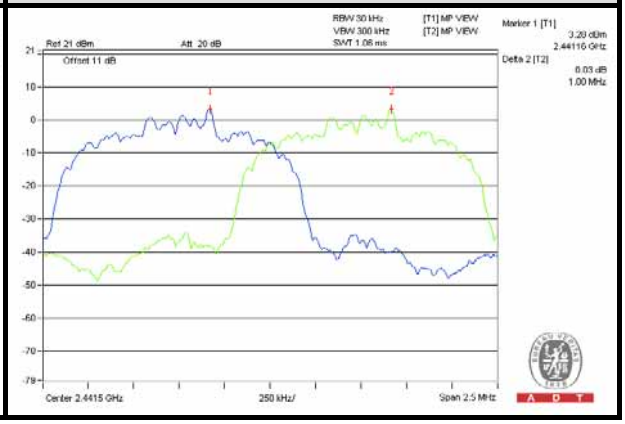
4.6.5 TEST SETUP



4.6.6 TEST RESULTS

CHANNEL	FREQUENCY (MHz)	ADJACENT CHANNEL SEPARATION (MHz)		20dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)		PASS / FAIL
		GFSK	8DPSK	GFSK	8DPSK	GFSK	8DPSK	
0	2402	1.00	1.01	0.99	1.29	0.66	0.86	PASS
39	2441	1.01	1.00	0.99	1.29	0.66	0.86	PASS
78	2480	1.01	1.01	0.98	1.29	0.66	0.86	PASS

NOTE: The minimum limit is two-third 20dB bandwidth.

SPECTRUM PLOT OF WORST VALUE	
GFSK / CH0	8DPSK / CH39
	

4.7 MAXIMUM PEAK OUTPUT POWER

4.7.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Limit is 125mW.

4.7.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 11, 2014

4.7.3 TEST PROCEDURES

a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

c. The center frequency of the spectrum analyzer is set to the fundamental frequency and using 3MHz RBW and 10 MHz VBW.

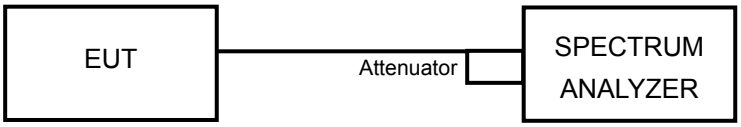
d. Measure the captured power within the band and recording the plot.

e. Repeat above procedures until all frequencies required were complete.

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



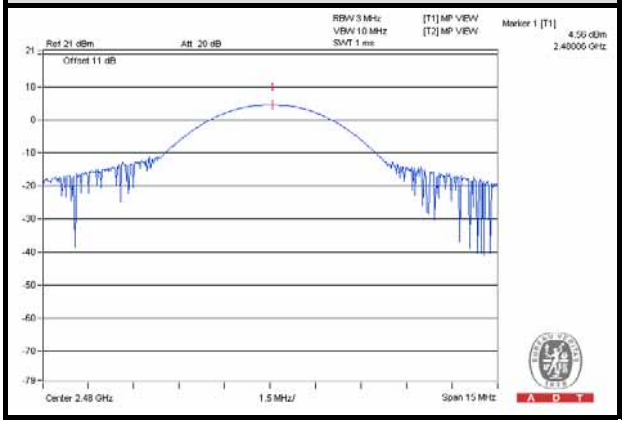
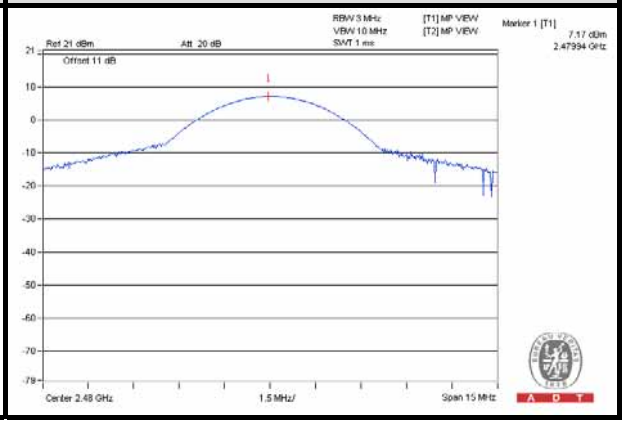
For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

4.7.6 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.7.7 TEST RESULTS

CHANNEL	FREQUENCY (MHz)	OUTPUT POWER (mW)		OUTPUT POWER (dBm)		POWER LIMIT (mW)	PASS / FAIL
		GFSK	8DPSK	GFSK	8DPSK		
0	2402	2.559	4.645	4.08	6.67	125	PASS
39	2441	2.685	4.887	4.29	6.89	125	PASS
78	2480	2.858	5.212	4.56	7.17	125	PASS

SPECTRUM PLOT OF WORST VALUE	
GFSK / CH78	8DPSK / CH78
	

4.8 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.8.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below 20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.8.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 11, 2014

4.8.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set RBW a of spectrum analyzer to 100 kHz and VBW of spectrum analyzer to 300 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

4.8.4 DEVIATION FROM TEST STANDARD

No deviation

4.8.5 TEST SETUP

4.8.6 EUT OPERATING CONDITION

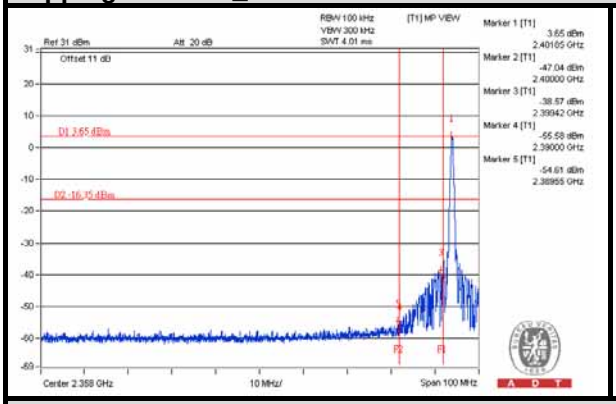
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

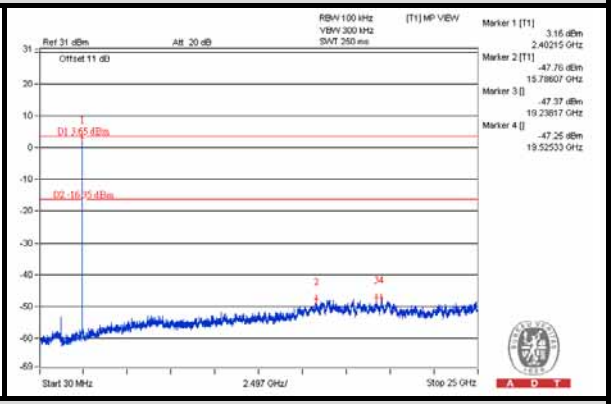
4.8.7 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

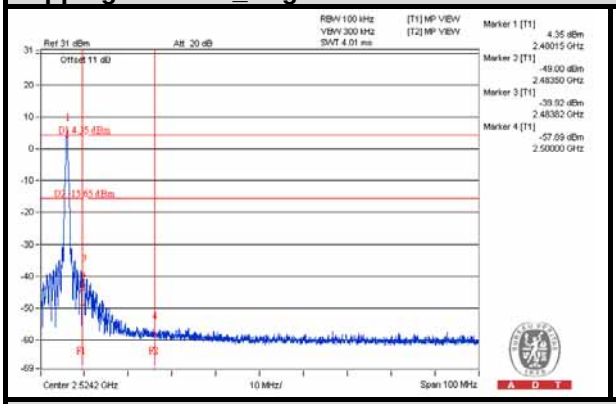
GFSK

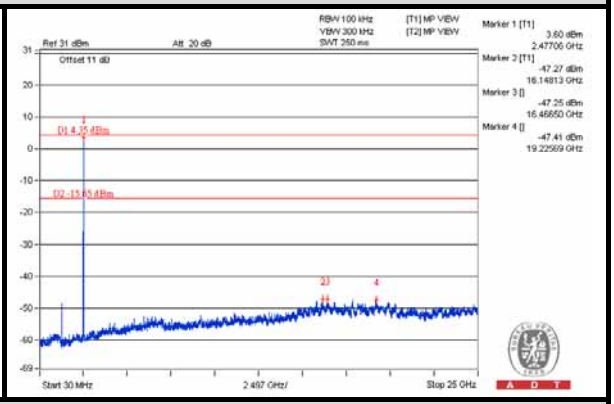
Hopping disabled_ Low Channel



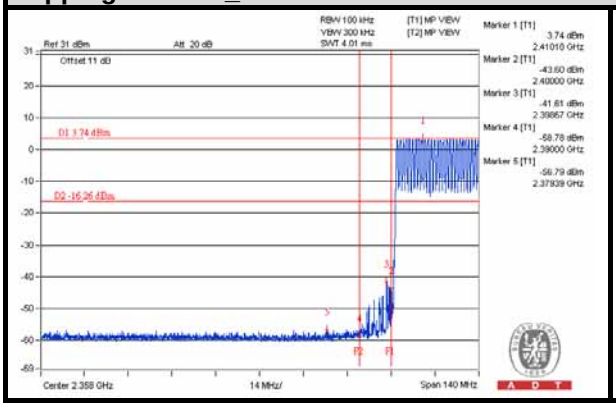


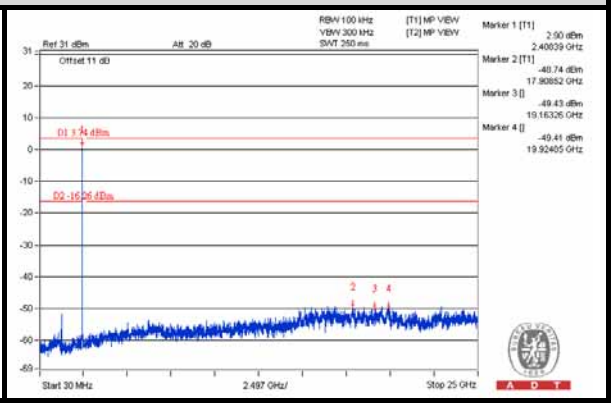
Hopping disabled_ High Channel



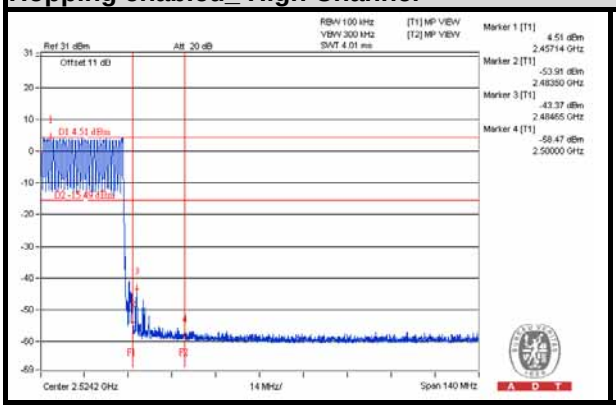


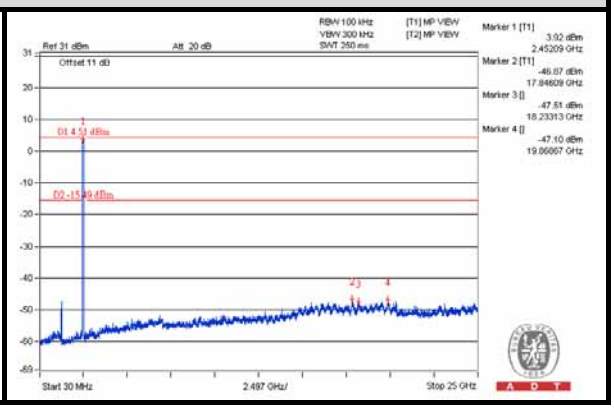
Hopping enabled_ Low Channel





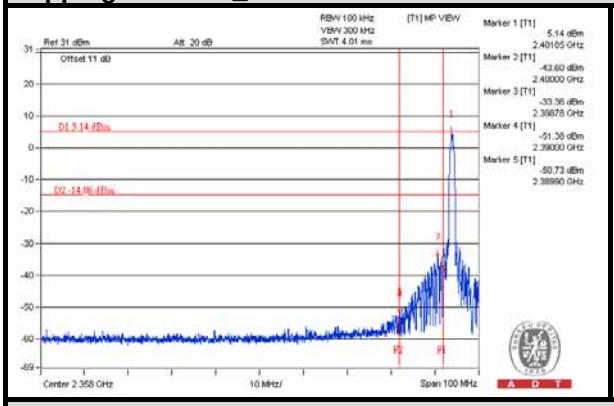
Hopping enabled_ High Channel

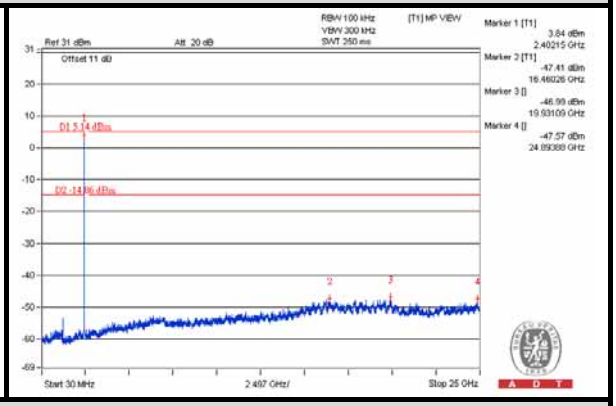




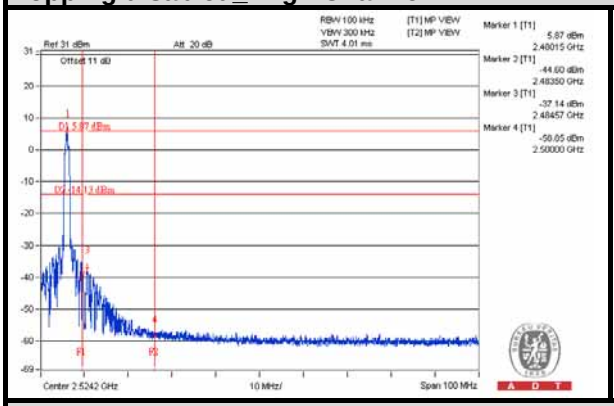
8DPSK

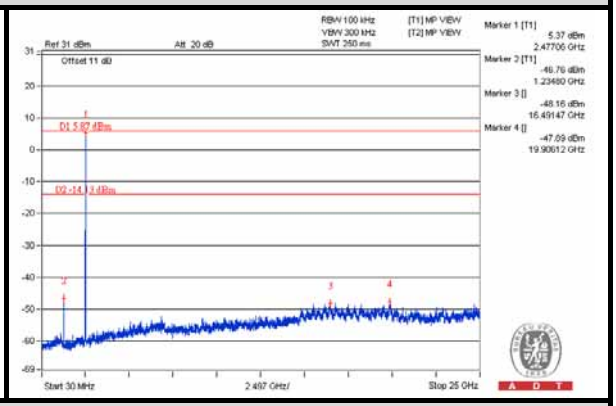
Hopping disabled_ Low Channel



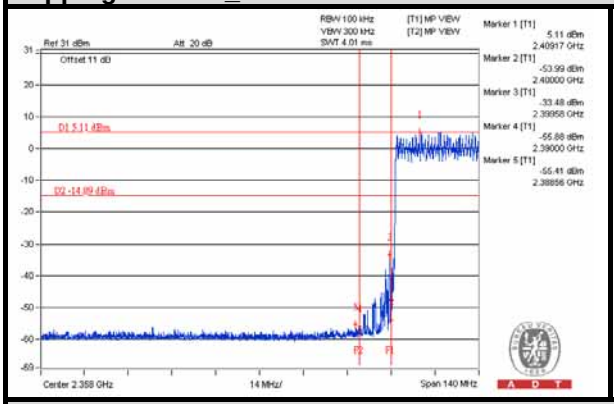


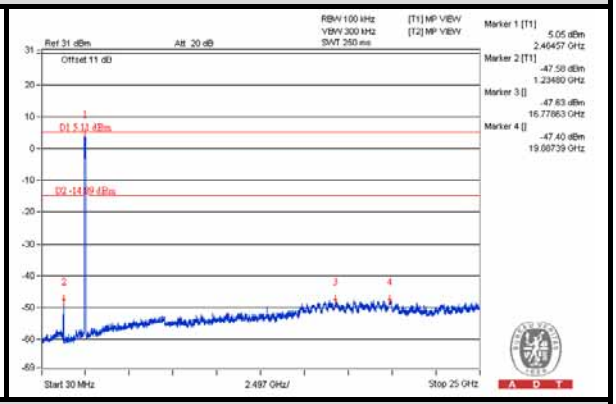
Hopping disabled_ High Channel



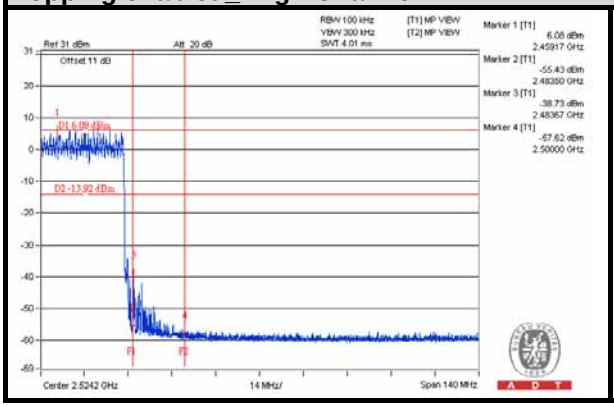


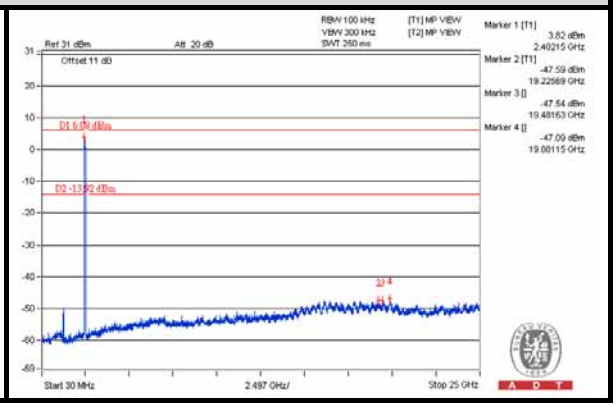
Hopping enabled_ Low Channel





Hopping enabled_ High Channel





5 TEST TYPES AND RESULTS (DTS)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 50

NOTE: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 12, 2013	Sep. 11, 2014
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100071	Nov. 13, 2013	Nov. 12, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 10, 2014	Mar. 09, 2015
50 ohms Terminator	N/A	EMC-03	Sep. 24, 2013	Sep. 23, 2014
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2013	Sep. 30, 2014
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: May 29, 2014

5.1.3 TEST PROCEDURES

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

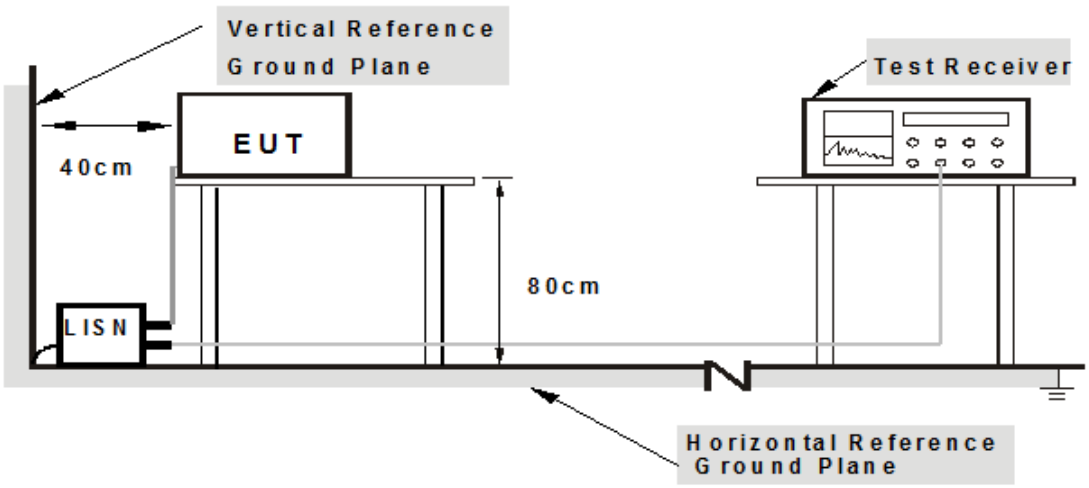
NOTE:

1. The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

5.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “WNC Combo Tool[V 2.1323.00]” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

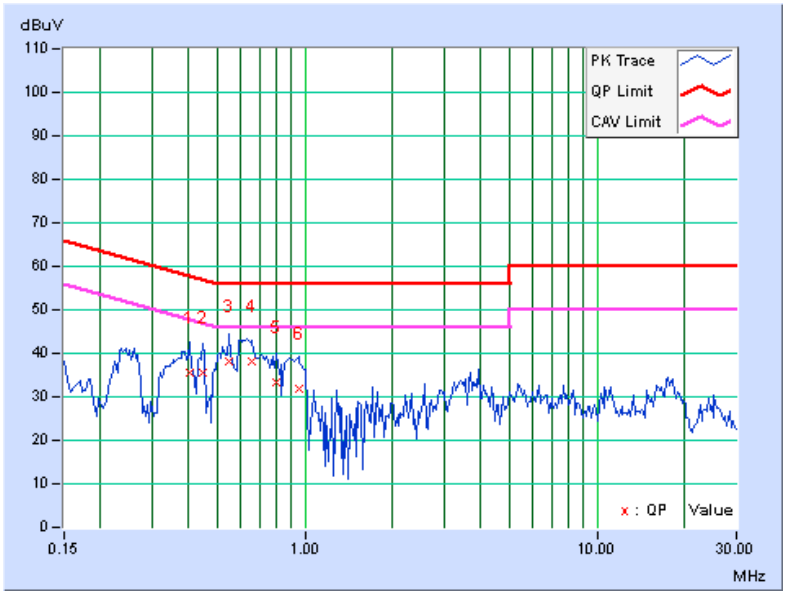
5.1.7 TEST RESULTS

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.40391	0.09	35.40	22.38	35.49	22.47	57.77	47.77	-22.28	-25.30
2	0.44688	0.09	35.62	23.56	35.71	23.65	56.93	46.93	-21.22	-23.28
3	0.55234	0.10	38.12	27.70	38.22	27.80	56.00	46.00	-17.78	-18.20
4	0.65781	0.11	37.90	23.59	38.01	23.70	56.00	46.00	-17.99	-22.30
5	0.80234	0.12	33.23	19.99	33.35	20.11	56.00	46.00	-22.65	-25.89
6	0.95078	0.13	31.89	18.05	32.02	18.18	56.00	46.00	-23.98	-27.82

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission Level – Limit value
4. Correction Factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

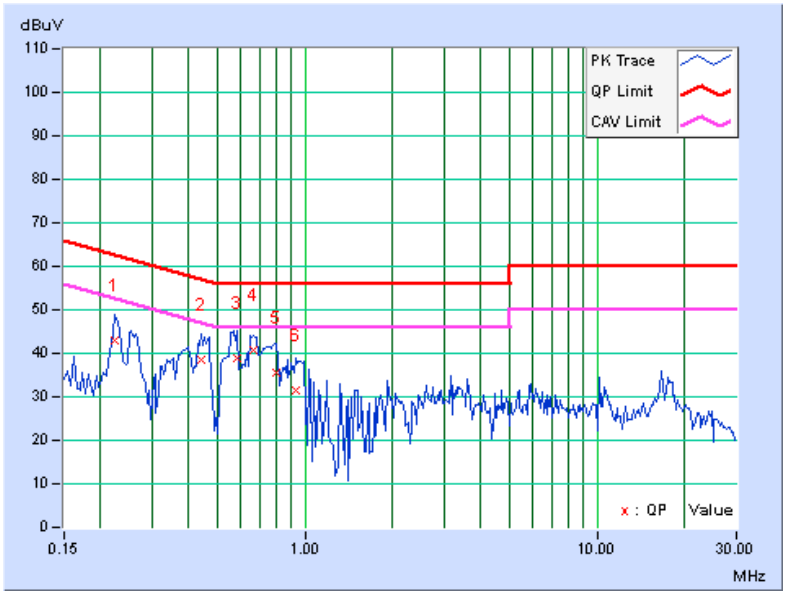


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.22422	0.07	42.75	31.66	42.82	31.73	62.66	52.66	-19.84	-20.93
2	0.44297	0.09	38.31	24.24	38.40	24.33	57.01	47.01	-18.60	-22.67
3	0.58750	0.10	38.84	21.83	38.94	21.93	56.00	46.00	-17.06	-24.07
4	**0.66563**	**0.11**	**40.81**	**29.16**	**40.92**	**29.27**	**56.00**	**46.00**	**-15.08**	**-16.73**
5	0.79453	0.12	35.43	21.95	35.55	22.07	56.00	46.00	-20.45	-23.93
6	0.93125	0.13	31.26	18.43	31.39	18.56	56.00	46.00	-24.61	-27.44

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission Level – Limit value
4. Correction Factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



5.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

5.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

5.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 15, 2014	Jan. 14, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: May 27 to June 12, 2014

5.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. 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 height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

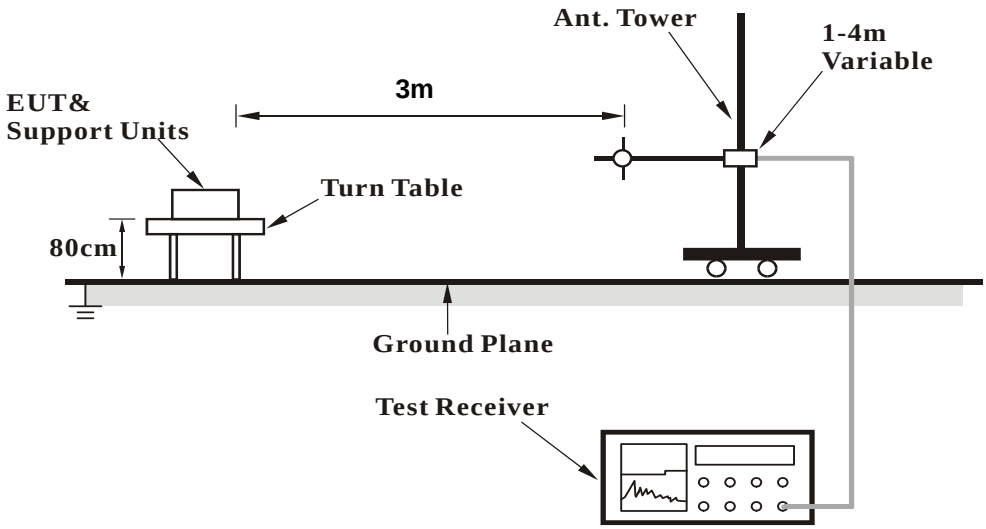
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

5.2.4 DEVIATION FROM TEST STANDARD

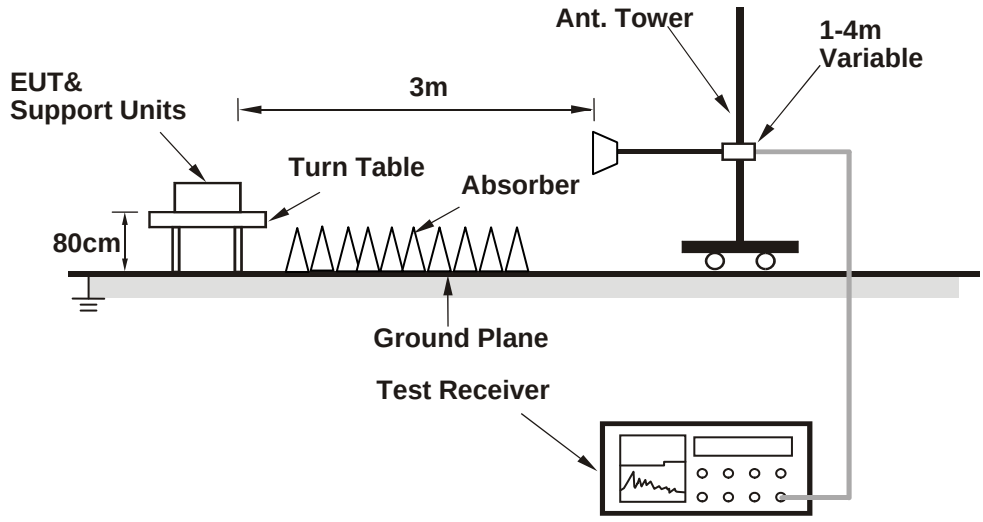
No deviation

5.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

BT_LE-GFSK

CHANNEL	TX Channel 39	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	77.82	31.9 QP	40.0	-8.1	2.00 H	261	49.09	-17.16
2	236.32	41.1 QP	46.0	-4.9	1.50 H	0	55.18	-14.04
3	294.71	39.6 QP	46.0	-6.4	1.50 H	0	51.52	-11.92
4	699.93	38.3 QP	46.0	-7.8	1.00 H	306	41.33	-3.08
5	748.04	38.0 QP	46.0	-8.0	1.50 H	0	39.68	-1.66
6	901.55	35.9 QP	46.0	-10.1	1.00 H	63	35.31	0.59
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	78.84	30.1 QP	40.0	-9.9	1.00 V	296	47.42	-17.34
2	155.47	32.7 QP	43.5	-10.9	1.00 V	39	45.09	-12.44
3	234.72	37.3 QP	46.0	-8.7	1.50 V	302	51.55	-14.23
4	298.93	35.3 QP	46.0	-10.7	2.00 V	26	47.04	-11.76
5	697.94	37.0 QP	46.0	-9.0	1.00 V	266	40.13	-3.16
6	749.79	37.3 QP	46.0	-8.7	1.50 V	281	38.93	-1.64

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

ABOVE 1GHz DATA

BT_LE-GFSK

CHANNEL	TX Channel 0	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	54.1 PK	74.0	-19.9	1.28 H	58	22.47	31.63
2	2390.00	36.0 AV	54.0	-18.0	1.28 H	58	4.37	31.63
3	*2402.00	97.7 PK			1.28 H	58	66.05	31.65
4	*2402.00	96.3 AV			1.28 H	58	64.65	31.65
5	4804.00	47.5 PK	74.0	-26.5	1.00 H	254	7.09	40.41
6	4804.00	39.1 AV	54.0	-14.9	1.00 H	254	-1.31	40.41
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	49.4 PK	74.0	-24.6	1.17 V	14	17.77	31.63
2	2390.00	33.4 AV	54.0	-20.6	1.17 V	14	1.77	31.63
3	*2402.00	94.4 PK			1.17 V	14	62.75	31.65
4	*2402.00	93.0 AV			1.17 V	14	61.35	31.65
5	4804.00	50.3 PK	74.0	-23.7	1.81 V	25	9.89	40.41
6	4804.00	42.8 AV	54.0	-11.2	1.81 V	25	2.39	40.41

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	99.0 PK			1.26 H	55	67.26	31.74
2	*2440.00	96.7 AV			1.26 H	55	64.96	31.74
3	4880.00	50.4 PK	74.0	-23.6	1.01 H	243	10.05	40.35
4	4880.00	42.2 AV	54.0	-11.8	1.01 H	243	1.85	40.35
5	7320.00	52.6 PK	74.0	-21.4	1.11 H	302	7.61	44.99
6	7320.00	43.8 AV	54.0	-10.2	1.11 H	302	-1.19	44.99
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	94.4 PK			1.24 V	8	62.66	31.74
2	*2440.00	92.7 AV			1.24 V	8	60.96	31.74
3	4880.00	50.1 PK	74.0	-23.9	1.84 V	26	9.75	40.35
4	4880.00	42.7 AV	54.0	-11.3	1.84 V	26	2.35	40.35
5	7320.00	52.0 PK	74.0	-22.0	1.18 V	63	7.01	44.99
6	7320.00	44.1 AV	54.0	-9.9	1.18 V	63	-0.89	44.99

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	98.7 PK			1.18 H	54	66.88	31.82
2	*2480.00	97.3 AV			1.18 H	54	65.48	31.82
3	**2483.50**	**69.8 PK**	**74.0**	**-4.2**	**1.18 H**	**54**	**37.96**	**31.84**
4	2483.50	36.5 AV	54.0	-17.5	1.18 H	54	4.66	31.84
5	4960.00	50.4 PK	74.0	-23.6	1.06 H	255	10.11	40.29
6	4960.00	42.1 AV	54.0	-11.9	1.06 H	255	1.81	40.29
7	7440.00	53.0 PK	74.0	-21.0	1.16 H	303	7.67	45.33
8	7440.00	43.9 AV	54.0	-10.1	1.16 H	303	-1.43	45.33
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	95.9 PK			1.16 V	9	64.08	31.82
2	*2480.00	94.4 AV			1.16 V	9	62.58	31.82
3	2483.50	66.4 PK	74.0	-7.6	1.16 V	9	34.56	31.84
4	2483.50	35.0 AV	54.0	-19.0	1.16 V	9	3.16	31.84
5	4960.00	49.7 PK	74.0	-24.3	1.80 V	23	9.41	40.29
6	4960.00	42.4 AV	54.0	-11.6	1.80 V	23	2.11	40.29
7	7440.00	52.4 PK	74.0	-21.6	1.19 V	73	7.07	45.33
8	7440.00	44.4 AV	54.0	-9.6	1.19 V	73	-0.93	45.33

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 11, 2014

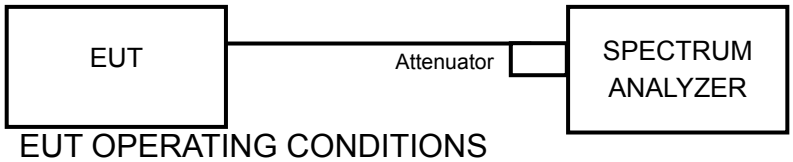
5.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

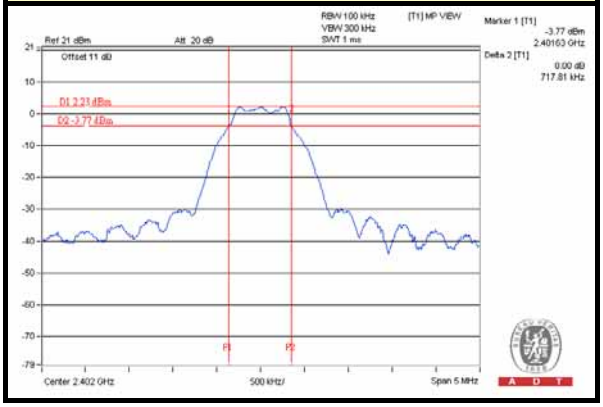
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

5.3.7 TEST RESULTS

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	0.72	0.5	PASS
19	2440	0.73	0.5	PASS
39	2480	0.72	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

BT_LE-GFSK / CH0



5.4 CONDUCTED OUTPUT POWER MEASUREMENT

5.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

5.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 11, 2014

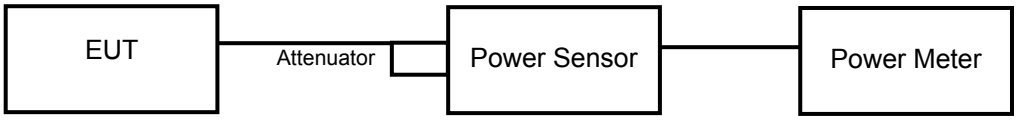
5.4.3 TEST PROCEDURES

The peak / average power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak / average power sensor. Record the peak power level.

5.4.4 DEVIATION FROM TEST STANDARD

No deviation.

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

5.4.7 TEST RESULTS

FOR PEAK POWER

BT_LE-GFSK

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
0	2402	2.188	3.40	30	PASS
19	2440	2.239	3.50	30	PASS
39	2480	2.421	3.84	30	PASS

FOR AVERAGE POWER

BT_LE-GFSK

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
0	2402	2.042	3.10
19	2440	2.084	3.19
39	2480	2.291	3.60

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 11, 2014

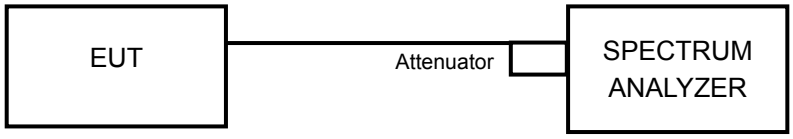
5.5.3 TEST PROCEDURE

1. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
2. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
3. Use the peak marker function to determine the maximum amplitude level.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

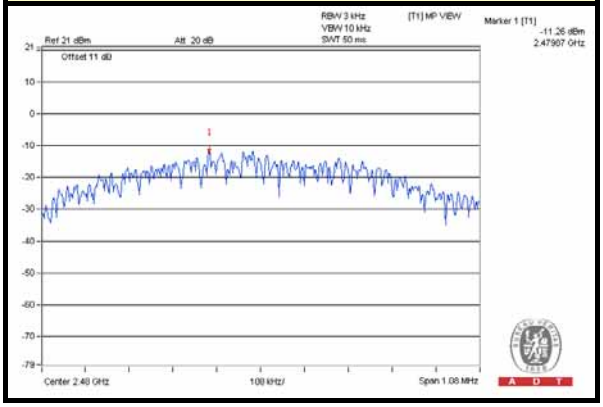
5.5.7 TEST RESULTS

BT_LE-GFSK

Channel	FREQUENCY (MHz)	PSD (dBm)	LIMIT (dBm)	PASS /FAIL
0	2402	-12.18	8	PASS
19	2440	-11.64	8	PASS
39	2480	-11.26	8	PASS

SPECTRUM PLOT OF WORST VALUE

BT_LE-GFSK / CH39



5.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below 20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

5.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 11, 2014

5.6.3 TEST PROCEDURE

Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

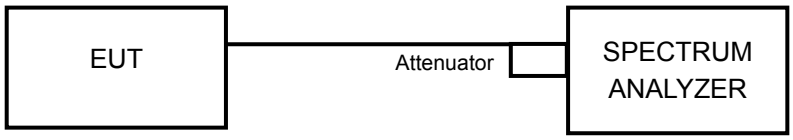
Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

5.6.4 DEVIATION FROM TEST STANDARD

No deviation

5.6.5 TEST SETUP



5.6.6 EUT OPERATING CONDITION

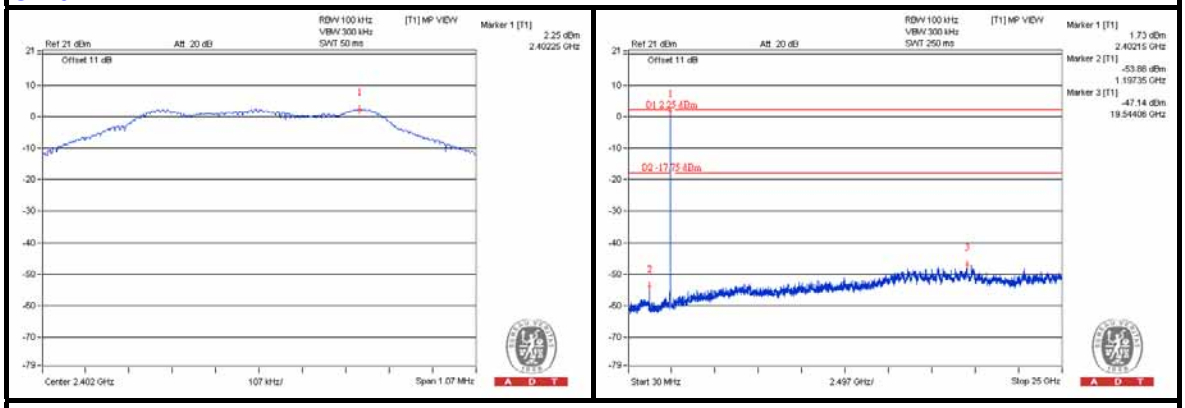
Same as Item 4.3.6

5.6.7 TEST RESULTS

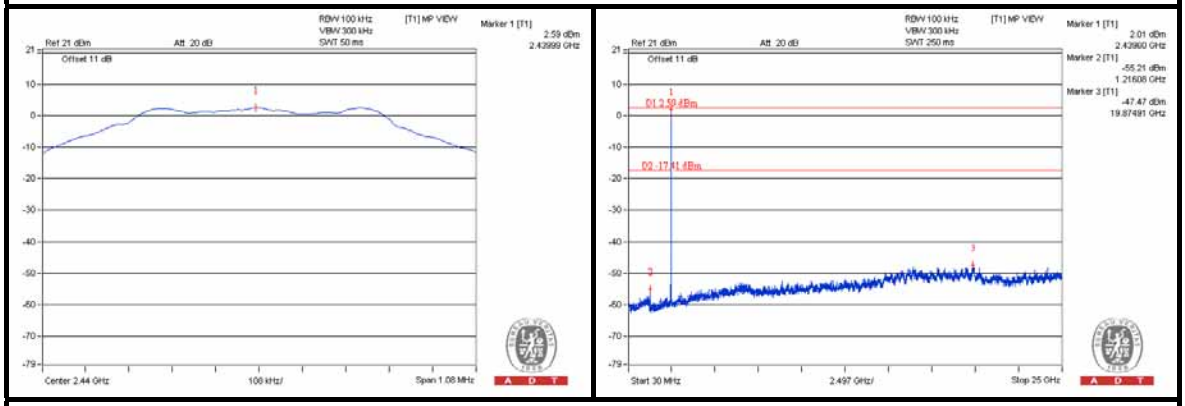
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

BT_LE-GFSK

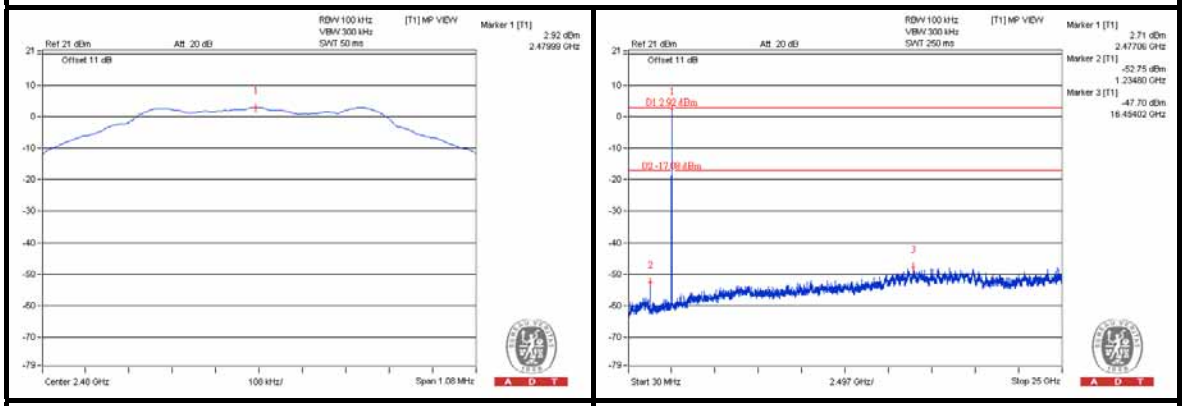
CH 0



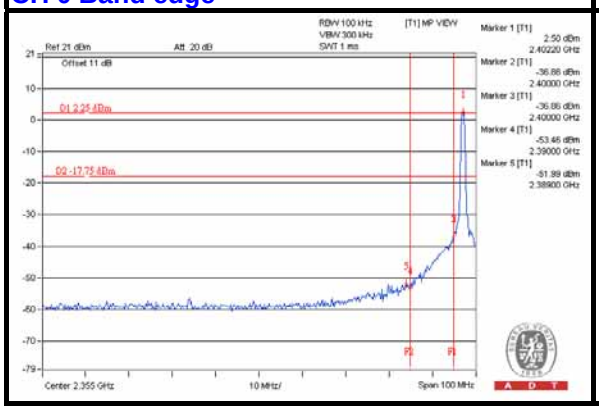
CH 19



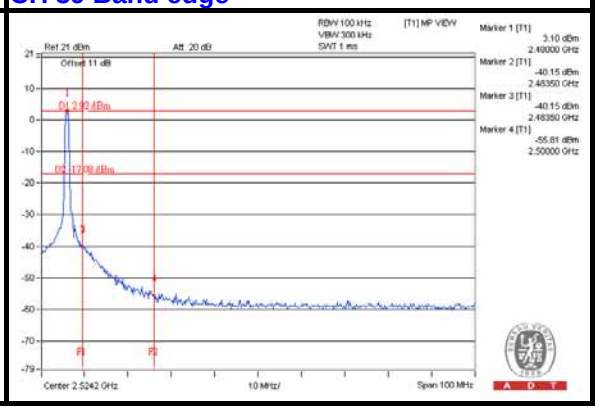
CH 39



CH 0 Band edge



CH 39 Band edge



6 PHOTOGRAPHS OF THE TEST CONFIGURATION

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

7 INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

8 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

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