FCC Test Report (BT-EDR)

Report No.:	RF151104E03-2
FCC ID:	UZ7VC80
Test Model:	VC80
Received Date:	Nov. 04, 2015
Test Date:	Nov. 17 to 28, 2015
Issued Date:	Dec. 16, 2015
Applicant:	Zebra Technologies Corporation
Address:	1 Zebra Plaza, Holtsville, NY 11742
Manufacturer:	Zebra Technologies Corporation
Address:	1 Zebra Plaza, Holtsville, NY 11742
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (1):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
RF151104E03-2	Original release.	Dec. 16, 2015

1 Certificate of Conformity

Product:	Vehicle Computer
Brand:	Zebra
Test Model:	VC80
Sample Status:	ENGINEERING SAMPLE
Applicant:	Zebra Technologies Corporation
Test Date:	Nov. 17 to 28, 2015
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) ANSI C63.10: 2013

The above equipment 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 : _____ , **Date:** Dec. 16, 2015

Elsie Hsu / Specialist

Approved by : _____ , **Date:** Dec. 16, 2015

May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -3.15dB at 0.58361MHz.
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.
15.205 & 209 & 15.247(d)	Radiated Emissions Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -3.0dB at 260.43MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is RSMA or i-pex(MHF) not a standard connector.

NOTE: If The 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:

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.31 dB
Radiated Emissions above 1 GHz	1GHz ~6GHz	3.40 dB
	6GHz ~ 18GHz	3.73 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (BT-EDR)

Product	Vehicle Computer
Brand	Zebra
Test Model	VC80
Status of EUT	ENGINEERING SAMPLE
SW Version	6.30.223.249
Power Supply Rating	DC 9-24V from Adapter DC 12-60V from Vehicle Battery DC 12.6V from PSU Battery
Modulation Type	GFSK, π/4-DQPSK, 8DPSK
Modulation Technology	FHSS
Transfer Rate	Up to 3Mbps
Operating Frequency	2402MHz ~ 2480MHz
Number of Channel	79
Output Power	2.410mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. The EUT has two different types could be chosen and please refer the below table:

Type	Difference
1	With External antenna
2	With Internal antenna

2. There are WLAN and BT technology used for the EUT.
3. For WLAN: 2.4GHz and 5GHz technology cannot transmit at same time.
4. 2.4GHz/5GHz WLAN + BT will timely shared at same antenna port
5. The EUT could be supplied with a power adaper as below table (only for test, not for sale):

Brand:	FSP GROUP INC.
Model No.:	FSP150-AAAN2
Input power :	100-240V, 50-60Hz, 2A
Output power :	+24V, 6.25A DC output cable (Unshielded, 1.8m with 2 cores)

6. The EUT antennas information:

Antenna No	PCB Chain No.	Model	Antenna Type	Antenna Connector	Antenna Gain (dBi) Exclude cable loss	Internal cable loss (dB)	External cable loss (dB)	Antenna Gain (dBi) Include cable loss	Internal cable length (mm)	External cable length (mm)	Frequency (GHz to GHz)
1	Int.Chain0	AN000097A01	Patch	i-pex (MHFL4)	5	NA	NA	5	NA	NA	2.4~2.4835
					5	NA	NA	5	NA	NA	5.15~5.85
	Int.Chain1				5	NA	NA	5	NA	NA	2.4~2.4835
					5	NA	NA	5	NA	NA	5.15~5.85
2	ext.Chain0	AN2010	Monopole	RPSMA	2	0.6	1.8	-0.4	147	2850	2.4~2.4835
					2	0.9	2.6	-1.5	147	2850	5.15~5.85
	ext.Chain1				2	0.6	1.8	-0.4	147	2850	2.4~2.4835
					2	0.9	2.6	-1.5	147	2850	5.15~5.85
3	ext.Chain0	AN2020	Monopole	RPSMA	5	0.6	1.8	2.6	147	2850	2.4~2.4835
	ext.Chain1				5	0.6	1.8	2.6	147	2850	2.4~2.4835
4	ext.Chain0	AN2030	Dipole	RPSMA	2	0.6	NA	1.4	147	NA	2.4~2.4835
					3.7	0.9	NA	2.8	147	NA	5.15~5.85
	ext.Chain1				2	0.6	NA	1.4	147	NA	2.4~2.4835
					3.7	0.9	NA	2.8	147	NA	5.15~5.85
5	ext.Chain0	AN2040	Dipole	RPSMA	2	0.6	NA	1.4	147	NA	2.4~2.4835
	ext.Chain1				2	0.6	NA	1.4	147	NA	2.4~2.4835

Note:
1. For 1TX configuration mode: max gain was selected as representative antenna.

7. The Version of EUT information are as below:

HW Version	MLB	EVT
	IO Board	EVT
	Battery Heater	EVT
	DTB	EVT
	DB9	EVT
	PSU	2
	Keypad	EVT
	Screen	Mitsubishi
SW Version	Operating System	WIN 7 professional
		WIN 7 Embedded
	Broadcom-WLAN	6.30.223.249 for Embedde
		6.30.223.262 for professional

8. The HW spec. are as below:

Detail HW spec.	Basic Warehouse int. Antenna	Basic Warehouse ext. Antenna
Intel E3825 Dual Core, 1.33GHz, 1MB Cache, 2GB RAM	v	v
16 GB SSD	v	v
Internal Antenna	v	
External Antenna (mag mount)		v
400 NITs Display	v	v
CAN Bus I/O	v	v

9. The EUT was pre-tested under following test modes:

Pre-test Mode	Description
Mode A	Power from Adapter
Mode B	DC 12V from DC Power Supply
Mode C	DC 24V from DC Power Supply

From the above modes, the worst case was found in **Mode A**. Therefore only the test data of the modes were recorded in this report individually.

10. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or 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		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
1	√	√	-	√	With Antenna 1 (Power from adapter)
2	√	√	√	-	With Antenna 3 (Power from adapter)
3	√	√	-	-	With Antenna 4 (Power from adapter)
4	-	-	√	-	With Antenna 2 (DC 24V from DC power supply)
5	-	-	√	-	With Antenna 2 (DC 12V from DC power supply)

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

NOTE 1: "-"means no effect.

Radiated Emission Test (Above 1GHz):

☒ 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	3DH5

Radiated Emission Test (Below 1GHz):

☒ 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	3DH5

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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
0 to 78	0	FHSS	8DPSK	3DH5

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ 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	3DH5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (System)	TESTED BY
RE≥1G	25deg. C, 73%RH	120Vac, 60Hz	Gary Cheng
RE<1G	26deg. C, 71%RH	120Vac, 60Hz	Tim Ho
PLC	25deg. C, 63%RH 22deg. C, 63%RH 24deg. C, 62%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

3.3 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.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Modem	ACEEX	1414	0206026778	IFAXDM1414	Prodived by Lab
B.	Modem	ACEEX	1414	0206026779	IFAXDM1414	Prodived by Lab
C.	Notebook Computer	DELL	PP27L	7YLB32S	FCC DoC	Prodived by Lab
D.	Keyboard	MOTOROLA	KYBD-NU-VC70	NA	NA	Supplied by Client
E.	Scanner	Symbol	DS3508	NA	NA	Supplied by Client
F.	Speaker/ mic	OTTO	V2-10332 1250	NA	NA	Supplied by Client
G.	Adapter	FSP GROUP INC.	FSP150-AAAN2	H00000231	NA	Supplied by Client
H.	DC Power Supply	Topward	6603D	795551	NA	Prodived by Lab

Note:

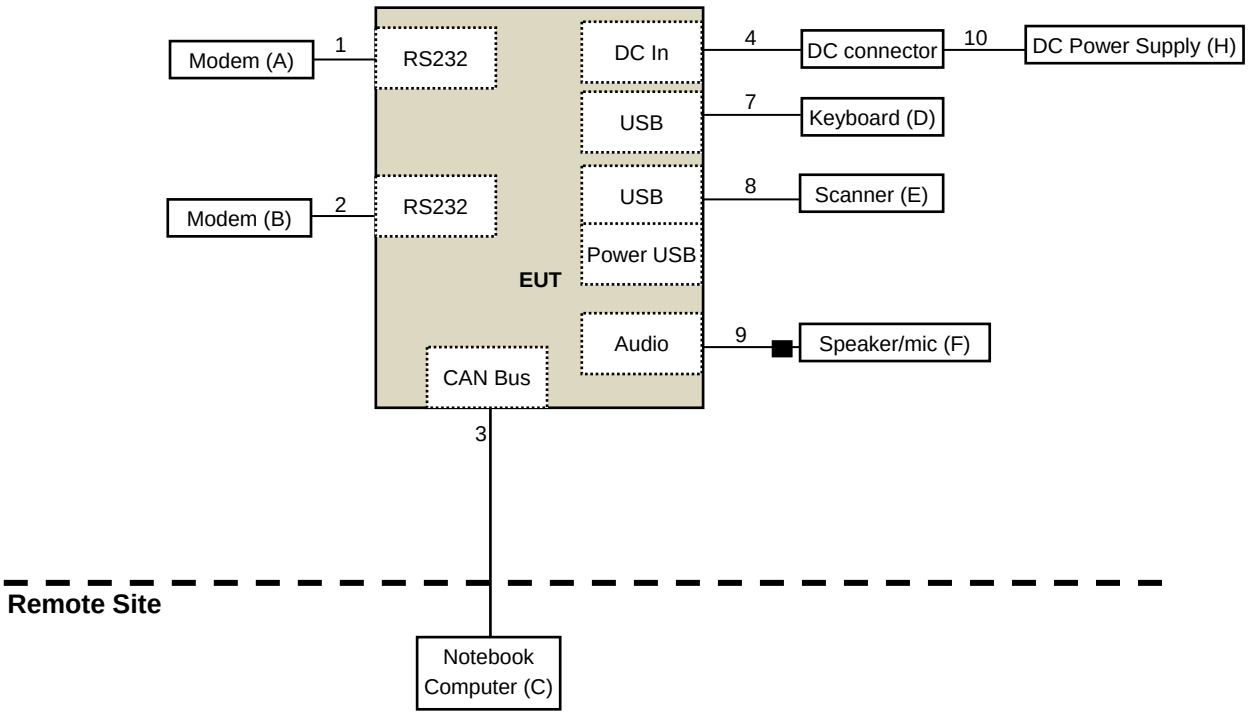
1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RS232	1	0.9	No	0	Prodived by Lab
2.	RS232	1	0.9	No	0	Prodived by Lab
3.	RJ45	1	10	No	0	Prodived by Lab
4.	DC	1	0.6	No	0	Supplied by Client
5.	DC	1	1.8	No	2	Supplied by Client
6.	AC	1	1.8	No	0	Prodived by Lab
7.	USB	1	0.9	No	0	Supplied by Client
8.	USB	1	2	No	0	Supplied by Client
9.	Audio	1	0.6	No	1	Supplied by Client
10.	DC	1	1.8	No	0	Supplied by Client

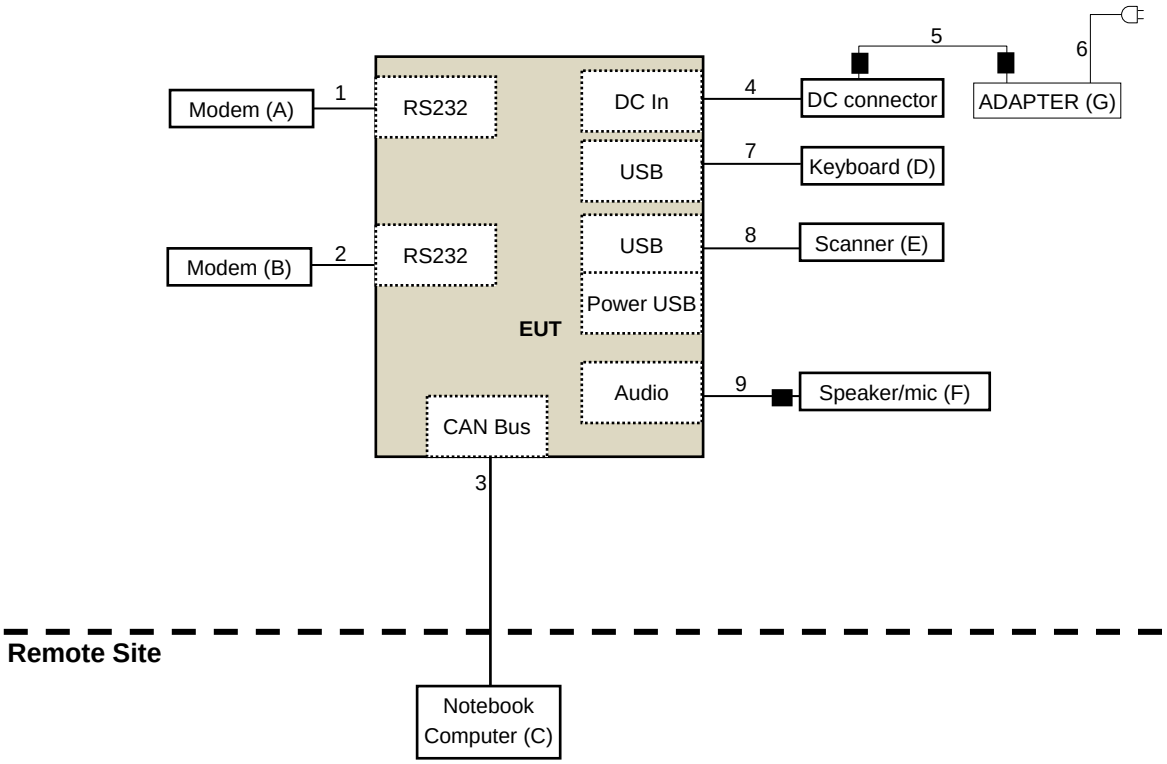
Note: The core(s) is(are) originally attached to the cable(s).

3.3.1 Configuration of System under Test

For Conducted emission test mode 4 & 5:



For Other test items:



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)
FCC Public Notice DA 00-705
ANSI C63.10-2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 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.

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	Aug. 12, 2015	Aug. 11, 2016
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 13, 2014	Jan. 12, 2016
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2014	Dec. 15, 2016
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 18, 2015	Jan. 17, 2016
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-07	May 08, 2015	May 07, 2016
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	138	Feb. 03, 2015	Feb. 02, 2016
RF Cable	8D	966-3-1 966-3-2 966-3-3	Apr. 03, 2015	Apr. 02, 2016
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Feb. 05, 2015	Feb. 04, 2016
Pre-Amplifier Agilent	8449B	3008A02465	Apr. 06, 2015	Apr. 05, 2016
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	150317 150321 150322	Mar. 31, 2015	Mar. 30, 2016
Spectrum Analyzer Keysight	N9030A	MY54490520	July 26, 2015	July 25, 2016
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Feb. 05, 2015	Feb. 04, 2016
RF Cable	SUCOFLEX104	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Power Meter Anritsu	ML2495A	1014008	Apr. 28, 2015	Apr. 27, 2016
Power Sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 2016
Spectrum Analyzer R&S	FSP40	100060	May 08, 2015	May 07, 2016

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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Loop antenna was used for all emissions below 30 MHz.
4. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The test was performed in 966 Chamber No. 3.
6 The FCC Site Registration No. is 147459
7 The CANADA Site Registration No. is 20331-1
8 Tested Date: Nov. 17 to 27, 2015

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) 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 detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

Note:

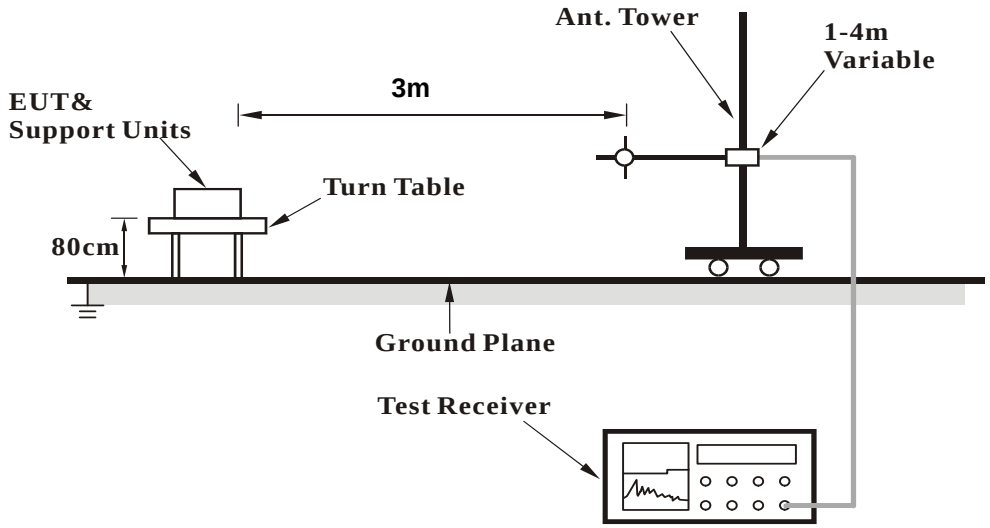
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. For Average measurement, due to 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, therefore Average value = peak reading + 20log(duty cycle).
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

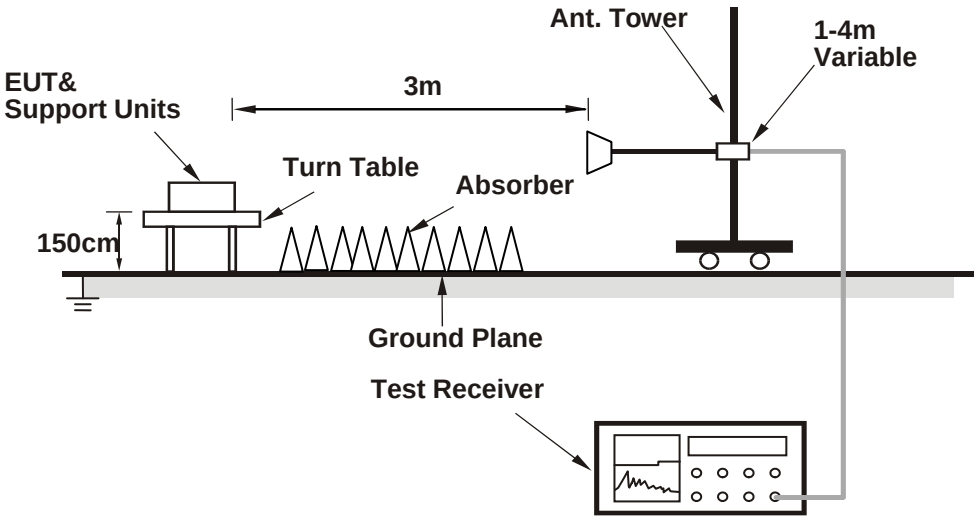
No deviation.

4.1.5 Test Setup

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.1.6 EUT Operating Conditions

1. Connect the EUT with the support unit C (Notebook Computer) which is placed on remote site.
2. The communication partner run test program “Blue Tool.exe [ver1.9.0.2]” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 Test Results (Mode 1)

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	57.3 PK	74.0	-16.7	2.30 H	45	60.00	-2.70
2	2390.00	27.2 AV	54.0	-26.8	2.30 H	45	29.90	-2.70
3	*2402.00	94.6 PK			2.30 H	45	97.10	-2.50
4	*2402.00	64.5 AV			2.30 H	45	67.00	-2.50
5	4804.00	39.7 PK	74.0	-34.3	1.61 H	34	35.60	4.10
6	4804.00	9.6 AV	54.0	-44.4	1.61 H	34	5.50	4.10
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	57.5 PK	74.0	-16.5	1.92 V	88	60.20	-2.70
2	2390.00	27.4 AV	54.0	-26.6	1.92 V	88	30.10	-2.70
3	*2402.00	90.0 PK			1.92 V	88	92.50	-2.50
4	*2402.00	59.9 AV			1.92 V	88	62.40	-2.50
5	4804.00	39.4 PK	74.0	-34.6	1.59 V	225	35.30	4.10
6	4804.00	9.3 AV	54.0	-44.7	1.59 V	225	5.20	4.10

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	95.3 PK			1.90 H	42	97.80	-2.50
2	*2441.00	65.2 AV			1.90 H	42	67.70	-2.50
3	4882.00	39.1 PK	74.0	-34.9	1.66 H	45	34.70	4.40
4	4882.00	9.0 AV	54.0	-45.0	1.66 H	45	4.60	4.40
5	7323.00	46.1 PK	74.0	-27.9	1.62 H	231	35.50	10.60
6	7323.00	16.0 AV	54.0	-38.0	1.62 H	231	5.40	10.60
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	93.5 PK			2.30 V	93	96.00	-2.50
2	*2441.00	63.4 AV			2.30 V	93	65.90	-2.50
3	4882.00	39.2 PK	74.0	-34.8	1.54 V	231	34.80	4.40
4	4882.00	9.1 AV	54.0	-44.9	1.54 V	231	4.70	4.40
5	7323.00	47.8 PK	74.0	-26.2	1.48 V	198	37.20	10.60
6	7323.00	17.7 AV	54.0	-36.3	1.48 V	198	7.10	10.60

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	93.1 PK			2.23 H	15	95.50	-2.40
2	*2480.00	63.0 AV			2.23 H	15	65.40	-2.40
3	2483.50	57.6 PK	74.0	-16.4	2.23 H	15	60.00	-2.40
4	2483.50	27.5 AV	54.0	-26.5	2.23 H	15	29.90	-2.40
5	4960.00	39.5 PK	74.0	-34.5	1.65 H	34	34.90	4.60
6	4960.00	9.4 AV	54.0	-44.6	1.65 H	34	4.80	4.60
7	7440.00	46.2 PK	74.0	-27.8	1.63 H	228	35.40	10.80
8	7440.00	16.1 AV	54.0	-37.9	1.63 H	228	5.30	10.80
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	89.7 PK			2.41 V	74	92.10	-2.40
2	*2480.00	59.6 AV			2.41 V	74	62.00	-2.40
3	2483.50	58.4 PK	74.0	-15.6	2.41 V	74	60.80	-2.40
4	2483.50	28.3 AV	54.0	-25.7	2.41 V	74	30.70	-2.40
5	4960.00	39.7 PK	74.0	-34.3	1.52 V	230	35.10	4.60
6	4960.00	9.6 AV	54.0	-44.4	1.52 V	230	5.00	4.60
7	7440.00	47.4 PK	74.0	-26.6	1.44 V	182	36.60	10.80
8	7440.00	17.3 AV	54.0	-36.7	1.44 V	182	6.50	10.80

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	56.7 PK	74.0	-17.3	1.97 H	61	59.40	-2.70
2	2390.00	26.6 AV	54.0	-27.4	1.97 H	61	29.30	-2.70
3	*2402.00	93.4 PK			1.97 H	61	95.90	-2.50
4	*2402.00	63.3 AV			1.97 H	61	65.80	-2.50
5	4804.00	39.2 PK	74.0	-34.8	1.66 H	21	35.10	4.10
6	4804.00	9.1 AV	54.0	-44.9	1.66 H	21	5.00	4.10
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	57.3 PK	74.0	-16.7	2.38 V	83	60.00	-2.70
2	2390.00	27.2 AV	54.0	-26.8	2.38 V	83	29.90	-2.70
3	*2402.00	89.8 PK			2.38 V	83	92.30	-2.50
4	*2402.00	59.7 AV			2.38 V	83	62.20	-2.50
5	4804.00	39.3 PK	74.0	-34.7	1.54 V	261	35.20	4.10
6	4804.00	9.2 AV	54.0	-44.8	1.54 V	261	5.10	4.10

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	94.3 PK			2.60 H	19	96.80	-2.50
2	*2441.00	64.2 AV			2.60 H	19	66.70	-2.50
3	4882.00	39.2 PK	74.0	-34.8	1.71 H	25	34.80	4.40
4	4882.00	9.1 AV	54.0	-44.9	1.71 H	25	4.70	4.40
5	7323.00	46.2 PK	74.0	-27.8	1.60 H	225	35.60	10.60
6	7323.00	16.1 AV	54.0	-37.9	1.60 H	225	5.50	10.60
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	90.7 PK			2.36 V	76	93.20	-2.50
2	*2441.00	60.6 AV			2.36 V	76	63.10	-2.50
3	4882.00	39.7 PK	74.0	-34.3	1.55 V	245	35.30	4.40
4	4882.00	9.6 AV	54.0	-44.4	1.55 V	245	5.20	4.40
5	7323.00	47.6 PK	74.0	-26.4	1.47 V	168	37.00	10.60
6	7323.00	17.5 AV	54.0	-36.5	1.47 V	168	6.90	10.60

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	94.1 PK			2.23 H	14	96.50	-2.40
2	*2480.00	64.0 AV			2.23 H	14	66.40	-2.40
3	2483.50	57.5 PK	74.0	-16.5	2.23 H	14	59.90	-2.40
4	2483.50	27.4 AV	54.0	-26.6	2.23 H	14	29.80	-2.40
5	4960.00	39.5 PK	74.0	-34.5	1.76 H	25	34.90	4.60
6	4960.00	9.4 AV	54.0	-44.6	1.76 H	25	4.80	4.60
7	7440.00	46.0 PK	74.0	-28.0	1.62 H	227	35.20	10.80
8	7440.00	15.9 AV	54.0	-38.1	1.62 H	227	5.10	10.80
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	90.5 PK			2.41 V	68	92.90	-2.40
2	*2480.00	60.4 AV			2.41 V	68	62.80	-2.40
3	2483.50	58.5 PK	74.0	-15.5	2.41 V	68	60.90	-2.40
4	2483.50	28.4 AV	54.0	-25.6	2.41 V	68	30.80	-2.40
5	4960.00	39.4 PK	74.0	-34.6	1.58 V	247	34.80	4.60
6	4960.00	9.3 AV	54.0	-44.7	1.58 V	247	4.70	4.60
7	7440.00	48.2 PK	74.0	-25.8	1.42 V	179	37.40	10.80
8	7440.00	18.1 AV	54.0	-35.9	1.42 V	179	7.30	10.80

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).

Below 1GHz Data

BT_GFSK

CHANNEL	TX Channel 0	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	33.73	24.5 QP	40.0	-15.5	1.49 H	158	34.10	-9.60
2	195.10	40.0 QP	43.5	-3.5	1.50 H	39	51.30	-11.30
3	259.98	42.5 QP	46.0	-3.5	1.50 H	43	51.50	-9.00
4	379.57	33.2 QP	46.0	-12.8	1.04 H	331	38.50	-5.30
5	695.82	37.4 QP	46.0	-8.6	1.03 H	327	36.00	1.40
6	1000.00	41.2 QP	54.0	-12.8	2.03 H	260	35.50	5.70
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	98.48	25.5 QP	43.5	-18.0	1.94 V	320	38.80	-13.30
2	195.97	33.9 QP	43.5	-9.6	1.55 V	213	45.30	-11.40
3	260.12	39.1 QP	46.0	-6.9	2.00 V	130	48.00	-8.90
4	325.84	32.4 QP	46.0	-13.6	1.03 V	4	38.80	-6.40
5	749.91	36.9 QP	46.0	-9.1	1.56 V	327	34.50	2.40
6	1000.00	39.2 QP	54.0	-14.8	1.00 V	271	33.50	5.70

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

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	33.86	24.4 QP	40.0	-15.6	1.48 H	164	34.00	-9.60
2	195.12	40.2 QP	43.5	-3.3	1.50 H	35	51.50	-11.30
3	260.14	42.8 QP	46.0	-3.2	1.46 H	27	51.70	-8.90
4	379.36	33.4 QP	46.0	-12.6	1.04 H	329	38.70	-5.30
5	696.08	37.2 QP	46.0	-8.8	1.00 H	341	35.80	1.40
6	1000.00	41.5 QP	54.0	-12.5	2.01 H	249	35.80	5.70
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	98.62	25.8 QP	43.5	-17.7	1.94 V	312	39.10	-13.30
2	196.12	34.0 QP	43.5	-9.5	1.58 V	202	45.40	-11.40
3	260.10	39.3 QP	46.0	-6.7	1.97 V	120	48.20	-8.90
4	325.85	32.6 QP	46.0	-13.4	1.06 V	12	39.00	-6.40
5	750.00	37.1 QP	46.0	-8.9	1.56 V	322	34.70	2.40
6	1000.00	39.3 QP	54.0	-14.7	1.01 V	256	33.60	5.70

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

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	33.98	24.7 QP	40.0	-15.3	1.46 H	171	34.20	-9.50
2	195.26	40.2 QP	43.5	-3.3	1.45 H	28	51.50	-11.30
3	260.21	42.8 QP	46.0	-3.2	1.53 H	56	51.70	-8.90
4	379.86	33.0 QP	46.0	-13.0	1.06 H	339	38.30	-5.30
5	696.01	37.6 QP	46.0	-8.4	1.07 H	320	36.20	1.40
6	1000.00	41.2 QP	54.0	-12.8	2.07 H	257	35.50	5.70
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	98.56	25.8 QP	43.5	-17.7	1.99 V	331	39.10	-13.30
2	195.94	34.0 QP	43.5	-9.5	1.58 V	227	45.40	-11.40
3	259.88	38.8 QP	46.0	-7.2	1.99 V	117	47.80	-9.00
4	325.72	32.1 QP	46.0	-13.9	1.07 V	0	38.50	-6.40
5	750.09	36.8 QP	46.0	-9.2	1.52 V	325	34.40	2.40
6	1000.00	39.4 QP	54.0	-14.6	1.02 V	272	33.70	5.70

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

BT_8DPSK

CHANNEL	TX Channel 0	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	33.72	24.4 QP	40.0	-15.6	1.52 H	160	34.00	-9.60
2	195.34	40.0 QP	43.5	-3.5	1.50 H	28	51.40	-11.40
3	259.77	42.7 QP	46.0	-3.3	1.46 H	28	51.80	-9.10
4	379.37	33.1 QP	46.0	-12.9	1.09 H	328	38.40	-5.30
5	696.07	37.2 QP	46.0	-8.8	1.02 H	323	35.80	1.40
6	1000.00	41.1 QP	54.0	-12.9	2.04 H	268	35.40	5.70
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	98.65	25.6 QP	43.5	-17.9	2.00 V	311	38.90	-13.30
2	196.14	34.1 QP	43.5	-9.4	1.54 V	209	45.50	-11.40
3	259.85	38.9 QP	46.0	-7.1	2.03 V	145	47.90	-9.00
4	326.03	32.6 QP	46.0	-13.4	1.01 V	11	39.00	-6.40
5	749.95	36.6 QP	46.0	-9.4	1.58 V	321	34.20	2.40
6	1000.00	39.2 QP	54.0	-14.8	1.00 V	260	33.50	5.70

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

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	33.46	24.5 QP	40.0	-15.5	1.49 H	156	34.10	-9.60
2	194.88	39.8 QP	43.5	-3.7	1.47 H	26	51.10	-11.30
3	260.25	42.6 QP	46.0	-3.4	1.46 H	44	51.50	-8.90
4	379.28	33.0 QP	46.0	-13.0	1.08 H	318	38.30	-5.30
5	696.10	37.6 QP	46.0	-8.4	1.04 H	331	36.20	1.40
6	1000.00	41.1 QP	54.0	-12.9	2.03 H	260	35.40	5.70
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	98.42	25.4 QP	43.5	-18.1	1.92 V	311	38.70	-13.30
2	195.97	33.7 QP	43.5	-9.8	1.54 V	218	45.10	-11.40
3	259.93	39.4 QP	46.0	-6.6	2.03 V	145	48.40	-9.00
4	326.05	32.4 QP	46.0	-13.6	1.02 V	13	38.80	-6.40
5	749.71	37.0 QP	46.0	-9.0	1.51 V	321	34.60	2.40
6	1000.00	39.2 QP	54.0	-14.8	1.00 V	260	33.50	5.70

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

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	33.80	24.5 QP	40.0	-15.5	1.44 H	173	34.10	-9.60
2	195.13	39.9 QP	43.5	-3.6	1.46 H	49	51.20	-11.30
3	259.94	42.4 QP	46.0	-3.6	1.48 H	49	51.40	-9.00
4	379.61	33.0 QP	46.0	-13.0	1.00 H	317	38.30	-5.30
5	695.74	37.6 QP	46.0	-8.4	1.00 H	342	36.20	1.40
6	1000.00	41.5 QP	54.0	-12.5	2.01 H	260	35.80	5.70
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	98.76	25.5 QP	43.5	-18.0	1.91 V	315	38.70	-13.20
2	196.26	34.1 QP	43.5	-9.4	1.58 V	228	45.50	-11.40
3	260.32	39.1 QP	46.0	-6.9	2.03 V	117	48.00	-8.90
4	325.67	32.4 QP	46.0	-13.6	1.02 V	17	38.80	-6.40
5	750.02	36.8 QP	46.0	-9.2	1.51 V	333	34.40	2.40
6	1000.00	39.1 QP	54.0	-14.9	1.00 V	266	33.40	5.70

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

4.1.8 Test Results (Mode 2)

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	56.5 PK	74.0	-17.5	2.32 H	61	59.20	-2.70
2	2390.00	26.4 AV	54.0	-27.6	2.32 H	61	29.10	-2.70
3	*2402.00	95.4 PK			2.32 H	61	97.90	-2.50
4	*2402.00	65.3 AV			2.32 H	61	67.80	-2.50
5	4804.00	39.0 PK	74.0	-35.0	1.55 H	47	34.90	4.10
6	4804.00	8.9 AV	54.0	-45.1	1.55 H	47	4.80	4.10
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	56.5 PK	74.0	-17.5	1.92 V	63	59.20	-2.70
2	2390.00	26.4 AV	54.0	-27.6	1.92 V	63	29.10	-2.70
3	*2402.00	89.6 PK			1.92 V	63	92.10	-2.50
4	*2402.00	59.5 AV			1.92 V	63	62.00	-2.50
5	4804.00	40.2 PK	74.0	-33.8	1.64 V	243	36.10	4.10
6	4804.00	10.1 AV	54.0	-43.9	1.64 V	243	6.00	4.10

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	95.9 PK			1.87 H	44	98.40	-2.50
2	*2441.00	65.8 AV			1.87 H	44	68.30	-2.50
3	4882.00	38.4 PK	74.0	-35.6	1.62 H	40	34.00	4.40
4	4882.00	8.3 AV	54.0	-45.7	1.62 H	40	3.90	4.40
5	7323.00	45.7 PK	74.0	-28.3	1.59 H	248	35.10	10.60
6	7323.00	15.6 AV	54.0	-38.4	1.59 H	248	5.00	10.60
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	90.4 PK			1.92 V	75	92.90	-2.50
2	*2441.00	60.3 AV			1.92 V	75	62.80	-2.50
3	4882.00	39.4 PK	74.0	-34.6	1.61 V	216	35.00	4.40
4	4882.00	9.3 AV	54.0	-44.7	1.61 V	216	4.90	4.40
5	7323.00	48.0 PK	74.0	-26.0	1.51 V	185	37.40	10.60
6	7323.00	17.9 AV	54.0	-36.1	1.51 V	185	7.30	10.60

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	93.1 PK			2.28 H	0	95.50	-2.40
2	*2480.00	63.0 AV			2.28 H	0	65.40	-2.40
3	2483.50	58.1 PK	74.0	-15.9	2.28 H	0	60.50	-2.40
4	2483.50	28.0 AV	54.0	-26.0	2.28 H	0	30.40	-2.40
5	4960.00	39.9 PK	74.0	-34.1	1.74 H	35	35.30	4.60
6	4960.00	9.8 AV	54.0	-44.2	1.74 H	35	5.20	4.60
7	7440.00	45.6 PK	74.0	-28.4	1.62 H	247	34.80	10.80
8	7440.00	15.5 AV	54.0	-38.5	1.62 H	247	4.70	10.80
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	88.9 PK			1.90 V	60	91.30	-2.40
2	*2480.00	58.8 AV			1.90 V	60	61.20	-2.40
3	2483.50	57.9 PK	74.0	-16.1	1.90 V	60	60.30	-2.40
4	2483.50	27.8 AV	54.0	-26.2	1.90 V	60	30.20	-2.40
5	4960.00	39.3 PK	74.0	-34.7	1.58 V	236	34.70	4.60
6	4960.00	9.2 AV	54.0	-44.8	1.58 V	236	4.60	4.60
7	7440.00	47.4 PK	74.0	-26.6	1.51 V	201	36.60	10.80
8	7440.00	17.3 AV	54.0	-36.7	1.51 V	201	6.50	10.80

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	56.8 PK	74.0	-17.2	1.98 H	46	59.50	-2.70
2	2390.00	26.7 AV	54.0	-27.3	1.98 H	46	29.40	-2.70
3	*2402.00	92.8 PK			1.98 H	46	95.30	-2.50
4	*2402.00	62.7 AV			1.98 H	46	65.20	-2.50
5	4804.00	39.3 PK	74.0	-34.7	1.75 H	32	35.20	4.10
6	4804.00	9.2 AV	54.0	-44.8	1.75 H	32	5.10	4.10
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	56.8 PK	74.0	-17.2	2.38 V	67	59.50	-2.70
2	2390.00	26.7 AV	54.0	-27.3	2.38 V	67	29.40	-2.70
3	*2402.00	90.6 PK			2.38 V	67	93.10	-2.50
4	*2402.00	60.5 AV			2.38 V	67	63.00	-2.50
5	4804.00	40.0 PK	74.0	-34.0	1.53 V	269	35.90	4.10
6	4804.00	9.9 AV	54.0	-44.1	1.53 V	269	5.80	4.10

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	93.9 PK			2.62 H	6	96.40	-2.50
2	*2441.00	63.8 AV			2.62 H	6	66.30	-2.50
3	4882.00	38.2 PK	74.0	-35.8	1.68 H	23	33.80	4.40
4	4882.00	8.1 AV	54.0	-45.9	1.68 H	23	3.70	4.40
5	7323.00	46.2 PK	74.0	-27.8	1.52 H	209	35.60	10.60
6	7323.00	16.1 AV	54.0	-37.9	1.52 H	209	5.50	10.60
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	91.3 PK			2.36 V	91	93.80	-2.50
2	*2441.00	61.2 AV			2.36 V	91	63.70	-2.50
3	4882.00	40.0 PK	74.0	-34.0	1.58 V	224	35.60	4.40
4	4882.00	9.9 AV	54.0	-44.1	1.58 V	224	5.50	4.40
5	7323.00	48.4 PK	74.0	-25.6	1.44 V	199	37.80	10.60
6	7323.00	18.3 AV	54.0	-35.7	1.44 V	199	7.70	10.60

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	93.6 PK			2.15 H	16	96.00	-2.40
2	*2480.00	63.5 AV			2.15 H	16	65.90	-2.40
3	2483.50	57.9 PK	74.0	-16.1	2.15 H	16	60.30	-2.40
4	2483.50	27.8 AV	54.0	-26.2	2.15 H	16	30.20	-2.40
5	4960.00	39.3 PK	74.0	-34.7	1.74 H	50	34.70	4.60
6	4960.00	9.2 AV	54.0	-44.8	1.74 H	50	4.60	4.60
7	7440.00	45.6 PK	74.0	-28.4	1.58 H	204	34.80	10.80
8	7440.00	15.5 AV	54.0	-38.5	1.58 H	204	4.70	10.80
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	91.7 PK			2.36 V	74	94.10	-2.40
2	*2480.00	61.6 AV			2.36 V	74	64.00	-2.40
3	2483.50	58.4 PK	74.0	-15.6	2.36 V	74	60.80	-2.40
4	2483.50	28.3 AV	54.0	-25.7	2.36 V	74	30.70	-2.40
5	4960.00	39.6 PK	74.0	-34.4	1.49 V	219	35.00	4.60
6	4960.00	9.5 AV	54.0	-44.5	1.49 V	219	4.90	4.60
7	7440.00	47.8 PK	74.0	-26.2	1.49 V	187	37.00	10.80
8	7440.00	17.7 AV	54.0	-36.3	1.49 V	187	6.90	10.80

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).

Below 1GHz Data

BT_GFSK

CHANNEL	TX Channel 0	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	34.30	24.4 QP	40.0	-15.6	1.48 H	150	33.90	-9.50
2	195.56	40.1 QP	43.5	-3.4	1.58 H	34	51.50	-11.40
3	260.17	42.8 QP	46.0	-3.2	1.54 H	58	51.70	-8.90
4	379.32	33.7 QP	46.0	-12.3	1.06 H	341	39.00	-5.30
5	695.75	37.5 QP	46.0	-8.5	1.06 H	336	36.10	1.40
6	1000.00	41.2 QP	54.0	-12.8	2.04 H	261	35.50	5.70
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	98.26	25.2 QP	43.5	-18.3	2.00 V	299	38.60	-13.40
2	196.06	33.4 QP	43.5	-10.1	1.52 V	214	44.80	-11.40
3	260.11	38.9 QP	46.0	-7.1	2.04 V	156	47.80	-8.90
4	325.83	32.0 QP	46.0	-14.0	1.00 V	39	38.40	-6.40
5	749.95	37.4 QP	46.0	-8.6	1.57 V	327	35.00	2.40
6	1000.00	38.9 QP	54.0	-15.1	1.02 V	261	33.20	5.70

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

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	34.58	24.1 QP	40.0	-15.9	1.46 H	165	33.60	-9.50
2	195.27	40.0 QP	43.5	-3.5	1.58 H	21	51.30	-11.30
3	259.96	42.9 QP	46.0	-3.1	1.51 H	60	51.90	-9.00
4	379.55	33.8 QP	46.0	-12.2	1.04 H	341	39.10	-5.30
5	696.02	37.6 QP	46.0	-8.4	1.04 H	333	36.20	1.40
6	1000.00	41.4 QP	54.0	-12.6	2.08 H	256	35.70	5.70
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	98.38	25.4 QP	43.5	-18.1	1.99 V	303	38.70	-13.30
2	196.04	33.2 QP	43.5	-10.3	1.50 V	223	44.60	-11.40
3	260.30	39.1 QP	46.0	-6.9	2.00 V	158	48.00	-8.90
4	326.12	31.8 QP	46.0	-14.2	1.00 V	29	38.20	-6.40
5	749.95	37.4 QP	46.0	-8.6	1.61 V	331	35.00	2.40
6	1000.00	38.7 QP	54.0	-15.3	1.00 V	275	33.00	5.70

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

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	34.53	24.4 QP	40.0	-15.6	1.52 H	153	33.90	-9.50
2	195.49	40.2 QP	43.5	-3.3	1.63 H	39	51.60	-11.40
3	259.96	42.8 QP	46.0	-3.2	1.48 H	53	51.80	-9.00
4	379.06	33.8 QP	46.0	-12.2	1.04 H	352	39.10	-5.30
5	695.50	37.5 QP	46.0	-8.5	1.11 H	338	36.10	1.40
6	1000.00	41.3 QP	54.0	-12.7	2.01 H	259	35.60	5.70
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	98.55	25.1 QP	43.5	-18.4	2.04 V	286	38.40	-13.30
2	196.21	33.3 QP	43.5	-10.2	1.55 V	229	44.70	-11.40
3	259.93	39.0 QP	46.0	-7.0	2.05 V	166	48.00	-9.00
4	326.05	32.0 QP	46.0	-14.0	1.00 V	36	38.40	-6.40
5	749.95	37.4 QP	46.0	-8.6	1.57 V	324	35.00	2.40
6	1000.00	38.9 QP	54.0	-15.1	1.05 V	277	33.20	5.70

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

BT_8DPSK

CHANNEL	TX Channel 0	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	34.07	24.1 QP	40.0	-15.9	1.52 H	164	33.60	-9.50
2	195.47	40.0 QP	43.5	-3.5	1.53 H	38	51.40	-11.40
3	259.97	42.7 QP	46.0	-3.3	1.57 H	63	51.70	-9.00
4	379.09	33.6 QP	46.0	-12.4	1.10 H	337	38.90	-5.30
5	695.79	37.6 QP	46.0	-8.4	1.10 H	320	36.20	1.40
6	1000.00	41.0 QP	54.0	-13.0	2.04 H	250	35.30	5.70
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	98.13	25.2 QP	43.5	-18.3	2.02 V	288	38.60	-13.40
2	196.30	33.2 QP	43.5	-10.3	1.50 V	204	44.60	-11.40
3	259.87	39.1 QP	46.0	-6.9	2.01 V	170	48.10	-9.00
4	325.57	32.0 QP	46.0	-14.0	1.00 V	28	38.40	-6.40
5	749.96	37.6 QP	46.0	-8.4	1.57 V	337	35.20	2.40
6	1000.00	38.7 QP	54.0	-15.3	1.00 V	262	33.00	5.70

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

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	34.52	24.5 QP	40.0	-15.5	1.53 H	160	34.00	-9.50
2	195.70	40.0 QP	43.5	-3.5	1.60 H	34	51.40	-11.40
3	**260.43**	**43.0 QP**	**46.0**	**-3.0**	**1.50 H**	**44**	**51.90**	**-8.90**
4	379.24	33.9 QP	46.0	-12.1	1.09 H	345	39.20	-5.30
5	695.49	37.3 QP	46.0	-8.7	1.07 H	332	35.90	1.40
6	1000.00	41.1 QP	54.0	-12.9	2.01 H	255	35.40	5.70
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	97.99	25.0 QP	43.5	-18.5	1.98 V	312	38.50	-13.50
2	196.17	33.5 QP	43.5	-10.0	1.55 V	216	44.90	-11.40
3	259.97	38.8 QP	46.0	-7.2	2.09 V	155	47.80	-9.00
4	325.93	31.7 QP	46.0	-14.3	1.00 V	27	38.10	-6.40
5	750.23	37.6 QP	46.0	-8.4	1.57 V	338	35.20	2.40
6	1000.00	38.8 QP	54.0	-15.2	1.00 V	266	33.10	5.70

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

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	34.06	24.5 QP	40.0	-15.5	1.43 H	143	34.00	-9.50
2	195.53	40.1 QP	43.5	-3.4	1.63 H	26	51.50	-11.40
3	260.37	42.6 QP	46.0	-3.4	1.53 H	61	51.50	-8.90
4	379.57	33.7 QP	46.0	-12.3	1.04 H	335	39.00	-5.30
5	695.61	37.6 QP	46.0	-8.4	1.03 H	346	36.20	1.40
6	1000.00	40.9 QP	54.0	-13.1	1.99 H	258	35.20	5.70
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	98.01	25.1 QP	43.5	-18.4	2.03 V	302	38.60	-13.50
2	196.15	33.5 QP	43.5	-10.0	1.54 V	209	44.90	-11.40
3	260.08	39.1 QP	46.0	-6.9	2.07 V	163	48.00	-8.90
4	326.00	31.9 QP	46.0	-14.1	1.01 V	28	38.30	-6.40
5	749.74	37.3 QP	46.0	-8.7	1.60 V	333	34.90	2.40
6	1000.00	38.7 QP	54.0	-15.3	1.06 V	254	33.00	5.70

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

4.1.9 Test Results (Mode 3)

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	56.8 PK	74.0	-17.2	2.33 H	58	59.50	-2.70
2	2390.00	26.7 AV	54.0	-27.3	2.33 H	58	29.40	-2.70
3	*2402.00	95.3 PK			2.33 H	58	97.80	-2.50
4	*2402.00	65.2 AV			2.33 H	58	67.70	-2.50
5	4804.00	39.6 PK	74.0	-34.4	1.60 H	42	35.50	4.10
6	4804.00	9.5 AV	54.0	-44.5	1.60 H	42	5.40	4.10
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	56.5 PK	74.0	-17.5	1.90 V	76	59.20	-2.70
2	2390.00	26.4 AV	54.0	-27.6	1.90 V	76	29.10	-2.70
3	*2402.00	90.0 PK			1.90 V	76	92.50	-2.50
4	*2402.00	59.9 AV			1.90 V	76	62.40	-2.50
5	4804.00	39.6 PK	74.0	-34.4	1.60 V	229	35.50	4.10
6	4804.00	9.5 AV	54.0	-44.5	1.60 V	229	5.40	4.10

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	95.3 PK			1.92 H	30	97.80	-2.50
2	*2441.00	65.2 AV			1.92 H	30	67.70	-2.50
3	4882.00	38.8 PK	74.0	-35.2	1.63 H	44	34.40	4.40
4	4882.00	8.7 AV	54.0	-45.3	1.63 H	44	4.30	4.40
5	7323.00	45.7 PK	74.0	-28.3	1.61 H	245	35.10	10.60
6	7323.00	15.6 AV	54.0	-38.4	1.61 H	245	5.00	10.60
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	90.4 PK			1.94 V	88	92.90	-2.50
2	*2441.00	60.3 AV			1.94 V	88	62.80	-2.50
3	4882.00	39.4 PK	74.0	-34.6	1.59 V	230	35.00	4.40
4	4882.00	9.3 AV	54.0	-44.7	1.59 V	230	4.90	4.40
5	7323.00	47.9 PK	74.0	-26.1	1.50 V	185	37.30	10.60
6	7323.00	17.8 AV	54.0	-36.2	1.50 V	185	7.20	10.60

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	93.2 PK			2.27 H	6	95.60	-2.40
2	*2480.00	63.1 AV			2.27 H	6	65.50	-2.40
3	2483.50	57.9 PK	74.0	-16.1	2.27 H	6	60.30	-2.40
4	2483.50	27.8 AV	54.0	-26.2	2.27 H	6	30.20	-2.40
5	4960.00	39.4 PK	74.0	-34.6	1.68 H	31	34.80	4.60
6	4960.00	9.3 AV	54.0	-44.7	1.68 H	31	4.70	4.60
7	7440.00	45.9 PK	74.0	-28.1	1.68 H	234	35.10	10.80
8	7440.00	15.8 AV	54.0	-38.2	1.68 H	234	5.00	10.80
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	89.4 PK			1.85 V	63	91.80	-2.40
2	*2480.00	59.3 AV			1.85 V	63	61.70	-2.40
3	2483.50	57.6 PK	74.0	-16.4	1.85 V	63	60.00	-2.40
4	2483.50	27.5 AV	54.0	-26.5	1.85 V	63	29.90	-2.40
5	4960.00	39.1 PK	74.0	-34.9	1.64 V	230	34.50	4.60
6	4960.00	9.0 AV	54.0	-45.0	1.64 V	230	4.40	4.60
7	7440.00	47.5 PK	74.0	-26.5	1.47 V	199	36.70	10.80
8	7440.00	17.4 AV	54.0	-36.6	1.47 V	199	6.60	10.80

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	56.6 PK	74.0	-17.4	1.92 H	58	59.30	-2.70
2	2390.00	26.5 AV	54.0	-27.5	1.92 H	58	29.20	-2.70
3	*2402.00	93.1 PK			1.92 H	58	95.60	-2.50
4	*2402.00	63.0 AV			1.92 H	58	65.50	-2.50
5	4804.00	39.6 PK	74.0	-34.4	1.71 H	21	35.50	4.10
6	4804.00	9.5 AV	54.0	-44.5	1.71 H	21	5.40	4.10
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	57.1 PK	74.0	-16.9	2.36 V	71	59.80	-2.70
2	2390.00	27.0 AV	54.0	-27.0	2.36 V	71	29.70	-2.70
3	*2402.00	90.1 PK			2.36 V	71	92.60	-2.50
4	*2402.00	60.0 AV			2.36 V	71	62.50	-2.50
5	4804.00	39.7 PK	74.0	-34.3	1.51 V	266	35.60	4.10
6	4804.00	9.6 AV	54.0	-44.4	1.51 V	266	5.50	4.10

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	93.9 PK			2.59 H	12	96.40	-2.50
2	*2441.00	63.8 AV			2.59 H	12	66.30	-2.50
3	4882.00	38.7 PK	74.0	-35.3	1.71 H	22	34.30	4.40
4	4882.00	8.6 AV	54.0	-45.4	1.71 H	22	4.20	4.40
5	7323.00	46.1 PK	74.0	-27.9	1.55 H	215	35.50	10.60
6	7323.00	16.0 AV	54.0	-38.0	1.55 H	215	5.40	10.60
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	91.2 PK			2.37 V	85	93.70	-2.50
2	*2441.00	61.1 AV			2.37 V	85	63.60	-2.50
3	4882.00	39.9 PK	74.0	-34.1	1.54 V	231	35.50	4.40
4	4882.00	9.8 AV	54.0	-44.2	1.54 V	231	5.40	4.40
5	7323.00	47.9 PK	74.0	-26.1	1.43 V	183	37.30	10.60
6	7323.00	17.8 AV	54.0	-36.2	1.43 V	183	7.20	10.60

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	93.7 PK			2.20 H	26	96.10	-2.40
2	*2480.00	63.6 AV			2.20 H	26	66.00	-2.40
3	2483.50	57.3 PK	74.0	-16.7	2.20 H	26	59.70	-2.40
4	2483.50	27.2 AV	54.0	-26.8	2.20 H	26	29.60	-2.40
5	4960.00	39.7 PK	74.0	-34.3	1.76 H	39	35.10	4.60
6	4960.00	9.6 AV	54.0	-44.4	1.76 H	39	5.00	4.60
7	7440.00	46.1 PK	74.0	-27.9	1.64 H	212	35.30	10.80
8	7440.00	16.0 AV	54.0	-38.0	1.64 H	212	5.20	10.80
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	91.0 PK			2.33 V	74	93.40	-2.40
2	*2480.00	60.9 AV			2.33 V	74	63.30	-2.40
3	2483.50	57.9 PK	74.0	-16.1	2.33 V	74	60.30	-2.40
4	2483.50	27.8 AV	54.0	-26.2	2.33 V	74	30.20	-2.40
5	4960.00	39.7 PK	74.0	-34.3	1.49 V	227	35.10	4.60
6	4960.00	9.6 AV	54.0	-44.4	1.49 V	227	5.00	4.60
7	7440.00	47.9 PK	74.0	-26.1	1.48 V	193	37.10	10.80
8	7440.00	17.8 AV	54.0	-36.2	1.48 V	193	7.00	10.80

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).

Below 1GHz Data

BT_GFSK

CHANNEL	TX Channel 0	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	34.00	24.7 QP	40.0	-15.3	1.47 H	156	34.20	-9.50
2	195.31	40.2 QP	43.5	-3.3	1.54 H	33	51.50	-11.30
3	259.92	42.6 QP	46.0	-3.4	1.55 H	72	51.60	-9.00
4	379.55	33.5 QP	46.0	-12.5	1.04 H	327	38.80	-5.30
5	695.59	37.3 QP	46.0	-8.7	1.04 H	329	35.90	1.40
6	1000.00	41.1 QP	54.0	-12.9	2.05 H	257	35.40	5.70
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	98.25	25.3 QP	43.5	-18.2	1.97 V	309	38.70	-13.40
2	196.17	33.6 QP	43.5	-9.9	1.57 V	208	45.00	-11.40
3	260.07	39.1 QP	46.0	-6.9	2.03 V	143	48.00	-8.90
4	326.03	32.2 QP	46.0	-13.8	1.01 V	41	38.60	-6.40
5	750.17	37.2 QP	46.0	-8.8	1.58 V	341	34.80	2.40
6	1000.00	39.1 QP	54.0	-14.9	1.01 V	268	33.40	5.70

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

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	34.10	24.6 QP	40.0	-15.4	1.45 H	161	34.10	-9.50
2	195.21	40.2 QP	43.5	-3.3	1.59 H	41	51.50	-11.30
3	260.07	42.6 QP	46.0	-3.4	1.52 H	87	51.50	-8.90
4	379.53	33.5 QP	46.0	-12.5	1.00 H	323	38.80	-5.30
5	695.75	37.4 QP	46.0	-8.6	1.04 H	340	36.00	1.40
6	1000.00	40.9 QP	54.0	-13.1	2.00 H	251	35.20	5.70
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	98.35	25.5 QP	43.5	-18.0	1.91 V	293	38.90	-13.40
2	196.46	33.4 QP	43.5	-10.1	1.58 V	199	44.80	-11.40
3	259.95	38.9 QP	46.0	-7.1	1.98 V	147	47.90	-9.00
4	325.89	32.4 QP	46.0	-13.6	1.00 V	40	38.80	-6.40
5	750.17	37.2 QP	46.0	-8.8	1.62 V	330	34.80	2.40
6	1000.00	38.9 QP	54.0	-15.1	1.05 V	267	33.20	5.70

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

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	34.03	24.8 QP	40.0	-15.2	1.43 H	154	34.30	-9.50
2	195.23	40.4 QP	43.5	-3.1	1.55 H	45	51.70	-11.30
3	259.70	42.3 QP	46.0	-3.7	1.57 H	61	51.40	-9.10
4	379.75	33.7 QP	46.0	-12.3	1.03 H	324	39.00	-5.30
5	695.57	37.1 QP	46.0	-8.9	1.08 H	316	35.70	1.40
6	1000.00	41.2 QP	54.0	-12.8	2.08 H	266	35.50	5.70
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	98.40	25.5 QP	43.5	-18.0	2.00 V	307	38.80	-13.30
2	196.38	33.6 QP	43.5	-9.9	1.62 V	204	45.00	-11.40
3	260.29	38.9 QP	46.0	-7.1	1.98 V	154	47.80	-8.90
4	326.10	32.4 QP	46.0	-13.6	1.00 V	36	38.80	-6.40
5	750.06	36.9 QP	46.0	-9.1	1.52 V	354	34.50	2.40
6	1000.00	39.1 QP	54.0	-14.9	1.04 V	254	33.40	5.70

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

BT_8DPSK

CHANNEL	TX Channel 0	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	34.03	24.6 QP	40.0	-15.4	1.43 H	162	34.10	-9.50
2	195.41	40.3 QP	43.5	-3.2	1.51 H	18	51.70	-11.40
3	260.12	42.6 QP	46.0	-3.4	1.51 H	67	51.50	-8.90
4	379.34	33.4 QP	46.0	-12.6	1.04 H	328	38.70	-5.30
5	695.77	37.6 QP	46.0	-8.4	1.01 H	329	36.20	1.40
6	1000.00	41.1 QP	54.0	-12.9	2.06 H	260	35.40	5.70
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	98.33	25.3 QP	43.5	-18.2	1.99 V	297	38.70	-13.40
2	196.30	33.7 QP	43.5	-9.8	1.53 V	199	45.10	-11.40
3	260.01	38.9 QP	46.0	-7.1	1.97 V	139	47.80	-8.90
4	326.05	32.0 QP	46.0	-14.0	1.04 V	37	38.40	-6.40
5	750.35	37.2 QP	46.0	-8.8	1.54 V	341	34.80	2.40
6	1000.00	39.3 QP	54.0	-14.7	1.00 V	269	33.60	5.70

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

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	33.86	24.8 QP	40.0	-15.2	1.43 H	158	34.40	-9.60
2	195.10	39.9 QP	43.5	-3.6	1.59 H	18	51.20	-11.30
3	259.64	42.8 QP	46.0	-3.2	1.59 H	58	51.90	-9.10
4	379.52	33.7 QP	46.0	-12.3	1.09 H	329	39.00	-5.30
5	695.32	37.3 QP	46.0	-8.7	1.01 H	341	35.90	1.40
6	1000.00	41.4 QP	54.0	-12.6	2.02 H	273	35.70	5.70
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	98.07	25.3 QP	43.5	-18.2	1.98 V	302	38.80	-13.50
2	195.91	33.5 QP	43.5	-10.0	1.61 V	203	44.90	-11.40
3	259.89	38.8 QP	46.0	-7.2	2.02 V	157	47.80	-9.00
4	325.87	32.2 QP	46.0	-13.8	1.07 V	41	38.60	-6.40
5	750.32	37.1 QP	46.0	-8.9	1.56 V	336	34.70	2.40
6	1000.00	38.8 QP	54.0	-15.2	1.04 V	273	33.10	5.70

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

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	33.85	24.5 QP	40.0	-15.5	1.45 H	149	34.10	-9.60
2	195.29	39.9 QP	43.5	-3.6	1.55 H	35	51.20	-11.30
3	259.64	42.4 QP	46.0	-3.6	1.50 H	82	51.50	-9.10
4	379.38	33.6 QP	46.0	-12.4	1.00 H	321	38.90	-5.30
5	695.49	37.4 QP	46.0	-8.6	1.07 H	327	36.00	1.40
6	1000.00	41.0 QP	54.0	-13.0	2.02 H	245	35.30	5.70
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	98.42	25.1 QP	43.5	-18.4	2.00 V	315	38.40	-13.30
2	195.93	33.4 QP	43.5	-10.1	1.61 V	216	44.80	-11.40
3	259.80	39.1 QP	46.0	-6.9	2.04 V	143	48.10	-9.00
4	325.91	32.3 QP	46.0	-13.7	1.01 V	48	38.70	-6.40
5	750.40	36.9 QP	46.0	-9.1	1.62 V	329	34.50	2.40
6	1000.00	39.0 QP	54.0	-15.0	1.02 V	262	33.30	5.70

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	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 0.50MHz.

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	100375	May 06, 2015	May 05, 2016
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 01, 2015	Aug. 31, 2016
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 11, 2015	June 10, 2016
RF Cable	5D-FB	COCCAB-001	Mar. 09, 2015	Mar. 08, 2016
50 ohms Terminator	N/A	EMC-03	Sep. 23, 2015	Sep. 22, 2016
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2015	Sep. 30, 2016
Software BVADT	BVADT_Cond_ V7.3.7.3	NA	NA	NA

Note:
1. The calibration interval of the above test instruments are 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: Nov. 20 to 28, 2015

4.2.3 Test Procedures

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

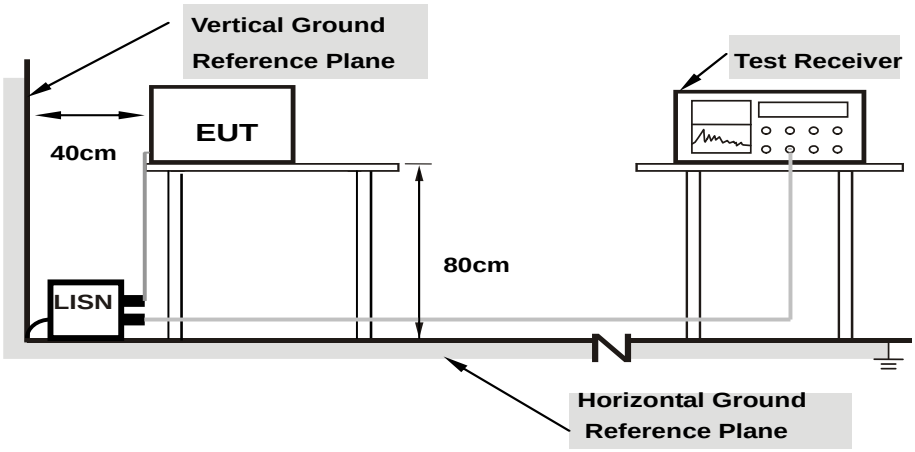
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation From Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

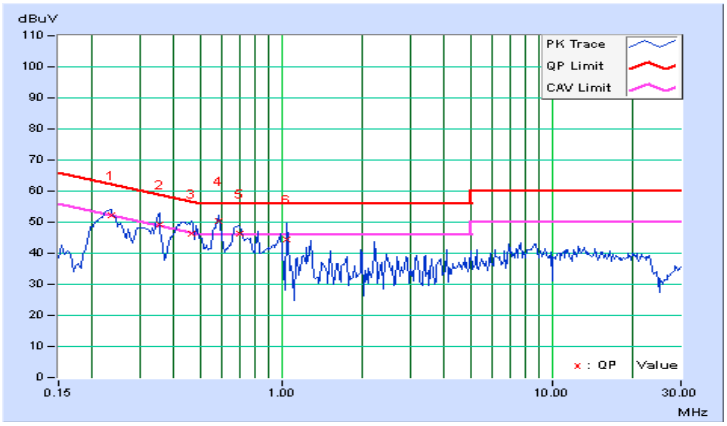
4.2.7 Test Results (Mode 2)

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	0.23595	10.22	41.92	36.36	52.14	46.58	62.24	52.24	-10.09	-5.65
2	0.35313	10.24	39.12	35.13	49.36	45.37	58.89	48.89	-9.53	-3.52
3	0.46281	10.23	36.24	24.64	46.47	34.87	56.64	46.64	-10.17	-11.77
4	**0.58361**	**10.22**	**40.18**	**32.63**	**50.40**	**42.85**	**56.00**	**46.00**	**-5.60**	**-3.15**
5	0.70070	10.20	36.24	26.72	46.44	36.92	56.00	46.00	-9.56	-9.08
6	1.05076	10.17	34.24	29.23	44.41	39.40	56.00	46.00	-11.59	-6.60

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

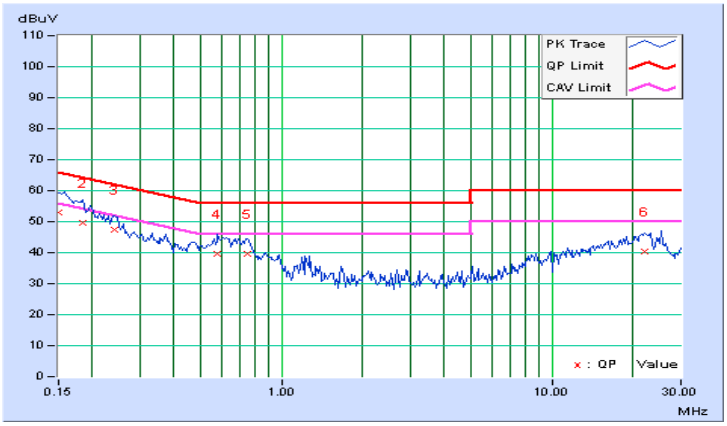


Phase	Neutral (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15000	10.24	42.73	23.86	52.97	34.10	66.00	56.00	-13.03	-21.90
2	0.18519	10.21	39.56	22.96	49.77	33.17	64.25	54.25	-14.48	-21.08
3	0.23986	10.20	37.25	25.23	47.45	35.43	62.10	52.10	-14.65	-16.67
4	0.57972	10.20	29.56	20.64	39.76	30.84	56.00	46.00	-16.24	-15.16
5	0.75155	10.18	29.31	18.97	39.49	29.15	56.00	46.00	-16.51	-16.85
6	22.09764	10.97	29.39	14.22	40.36	25.19	60.00	50.00	-19.64	-24.81

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



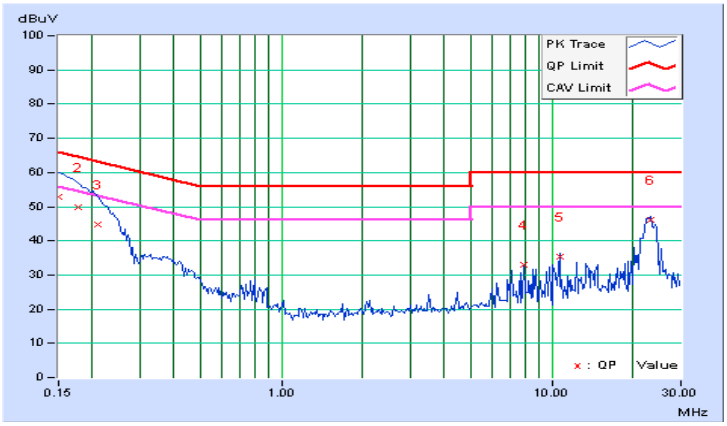
4.2.8 Test Results (Mode 4)

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	0.15000	10.26	42.62	14.03	52.88	24.29	66.00	56.00	-13.12	-31.71
2	0.17736	10.24	39.71	10.11	49.95	20.35	64.61	54.61	-14.66	-34.26
3	0.20861	10.22	34.68	6.14	44.90	16.36	63.26	53.26	-18.36	-36.90
4	7.92578	10.47	22.38	21.56	32.85	32.03	60.00	50.00	-27.15	-17.97
5	10.65625	10.55	24.64	24.56	35.19	35.11	60.00	50.00	-24.81	-14.89
6	23.23046	10.96	35.16	33.32	46.12	44.28	60.00	50.00	-13.88	-5.72

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

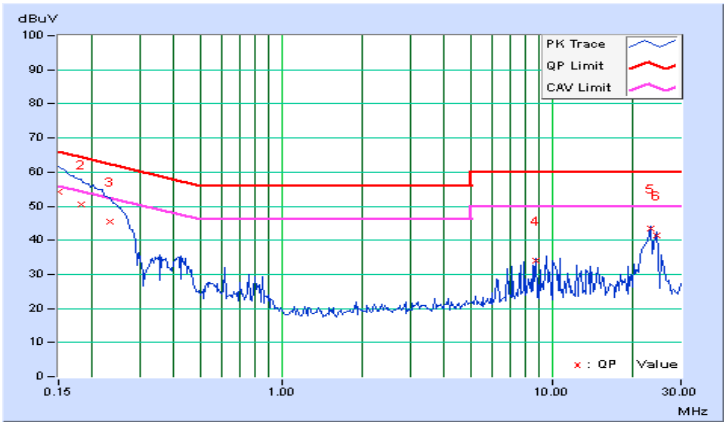


Phase	Neutral (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15000	10.24	43.83	14.42	54.07	24.66	66.00	56.00	-11.93	-31.34
2	0.18126	10.21	40.36	11.23	50.57	21.44	64.43	54.43	-13.85	-32.98
3	0.23205	10.20	35.24	7.45	45.44	17.65	62.38	52.38	-16.93	-34.72
4	8.74609	10.50	23.39	22.76	33.89	33.26	60.00	50.00	-26.11	-16.74
5	23.23046	10.98	32.52	32.12	43.50	43.10	60.00	50.00	-16.50	-6.90
6	24.32423	10.99	30.38	30.24	41.37	41.23	60.00	50.00	-18.63	-8.77

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



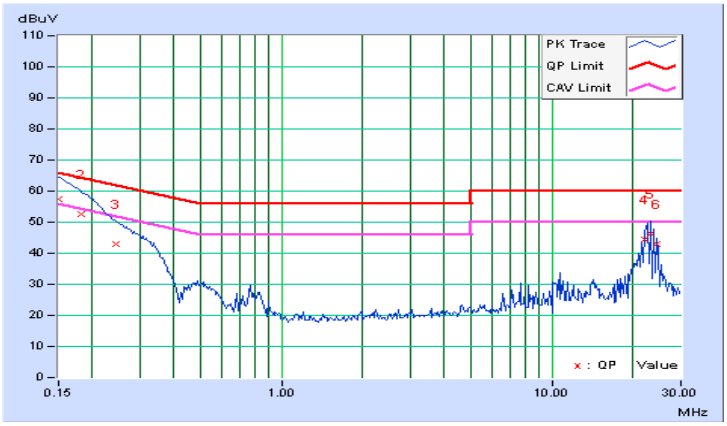
4.2.9 Test Results (Mode 5)

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	0.15000	10.26	47.13	17.86	57.39	28.12	66.00	56.00	-8.61	-27.88
2	0.18126	10.23	42.48	14.36	52.71	24.59	64.43	54.43	-11.71	-29.83
3	0.24374	10.22	32.89	9.11	43.11	19.33	61.97	51.97	-18.85	-32.63
4	22.14062	10.95	33.36	32.43	44.31	43.38	60.00	50.00	-15.69	-6.62
5	23.23439	10.96	35.26	33.43	46.22	44.39	60.00	50.00	-13.78	-5.61
6	24.32815	10.97	32.13	31.43	43.10	42.40	60.00	50.00	-16.90	-7.60

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

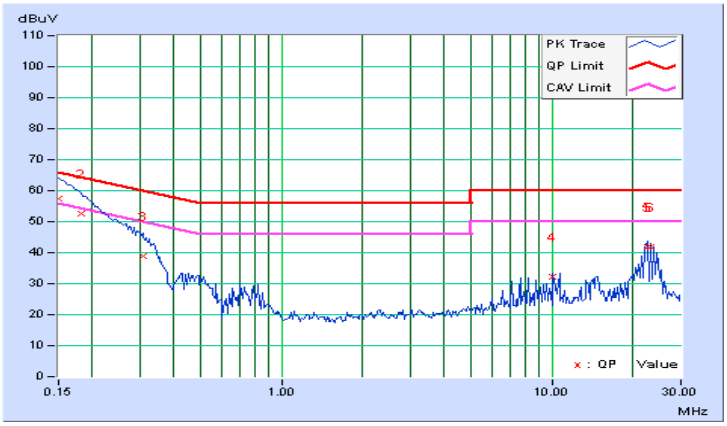


Phase	Neutral (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15000	10.24	47.12	17.89	57.36	28.13	66.00	56.00	-8.64	-27.87
2	0.18126	10.21	42.43	13.44	52.64	23.65	64.43	54.43	-11.78	-30.77
3	0.30624	10.21	28.64	5.67	38.85	15.88	60.07	50.07	-21.22	-34.19
4	10.11326	10.54	21.59	20.63	32.13	31.17	60.00	50.00	-27.87	-18.83
5	22.68752	10.97	30.83	30.36	41.80	41.33	60.00	50.00	-18.20	-8.67
6	23.23439	10.98	30.96	30.46	41.94	41.44	60.00	50.00	-18.06	-8.56

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

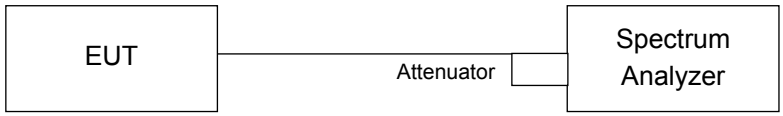


4.3 Number of Hopping Frequency Used

4.3.1 Limits of Hopping Frequency Used Measurement

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

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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.

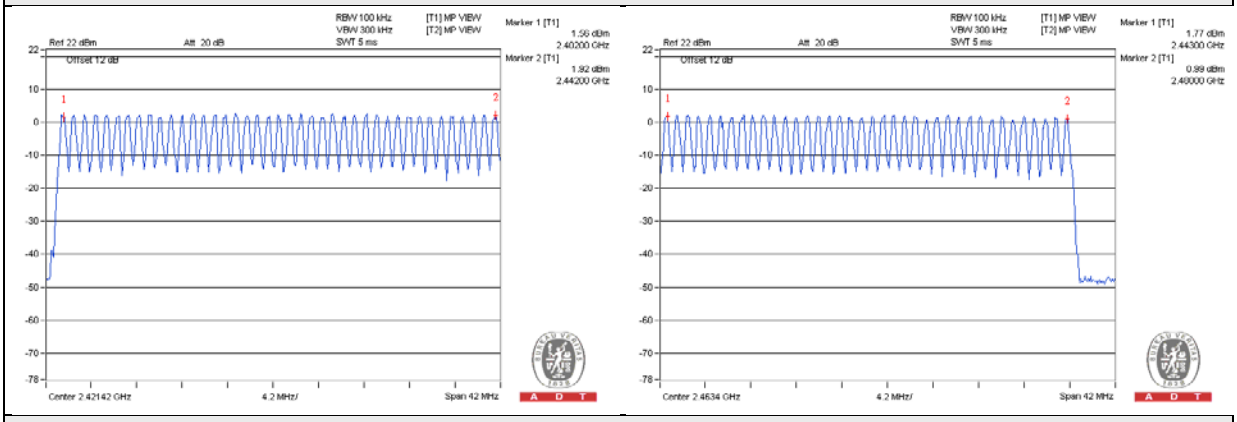
4.3.5 Deviation from Test Standard

No deviation.

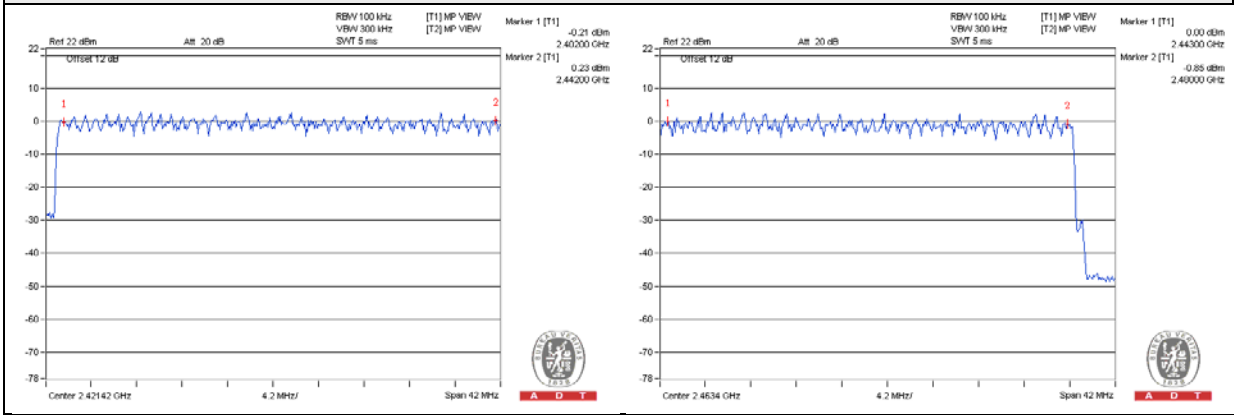
4.3.6 Test Results

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

GFSK



8DPSK

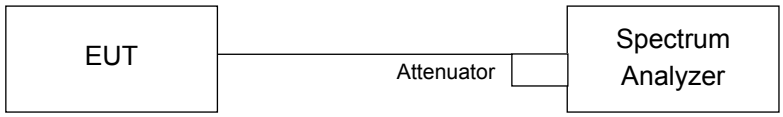


4.4 Dwell Time on Each Channel

4.4.1 Limits of Dwell Time on Each Channel Measurement

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 Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 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.

.

4.4.5 Deviation from Test Standard

No deviation.

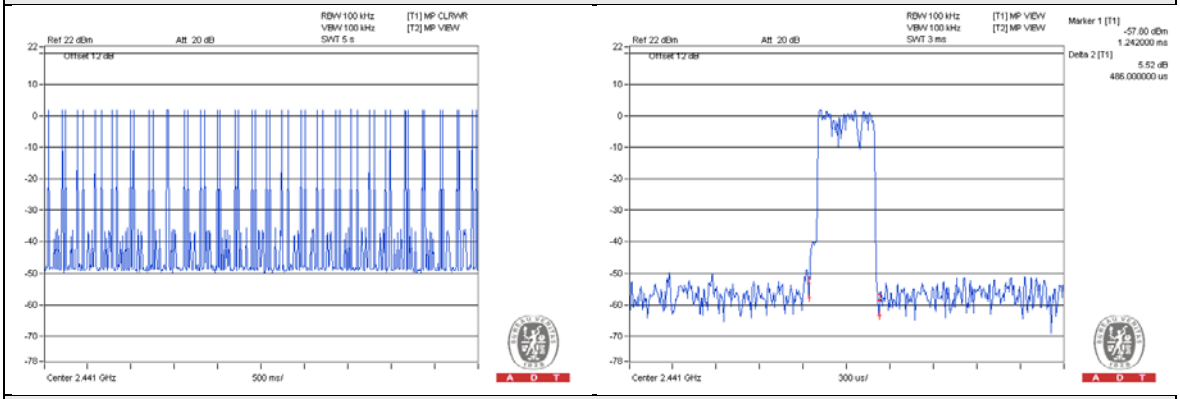
4.4.6 Test Results

GFSK

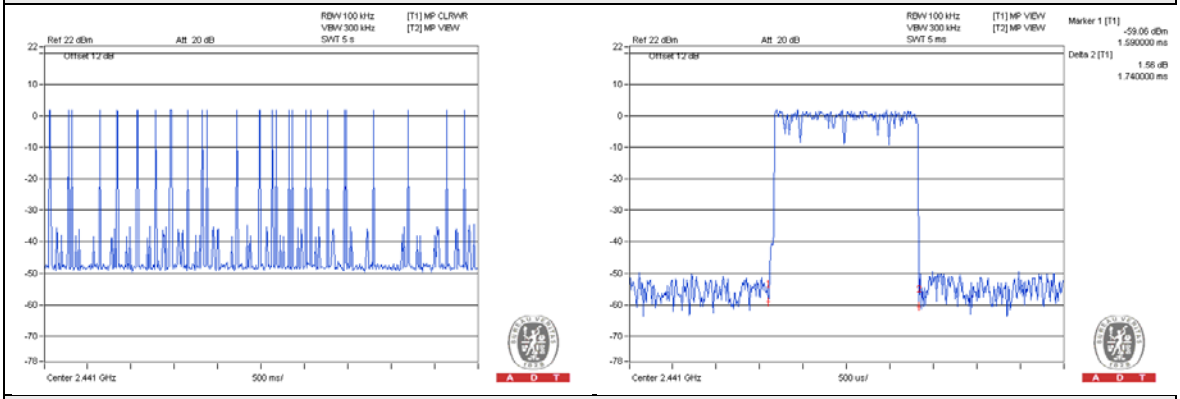
Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	50 (times / 5 sec) * 6.32 = 316 times	0.486	153.58	400
DH3	27 (times / 5 sec) * 6.32 = 170.64 times	1.74	296.91	400
DH5	18 (times / 5 sec) * 6.32 = 113.76 times	3.056	347.65	400

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

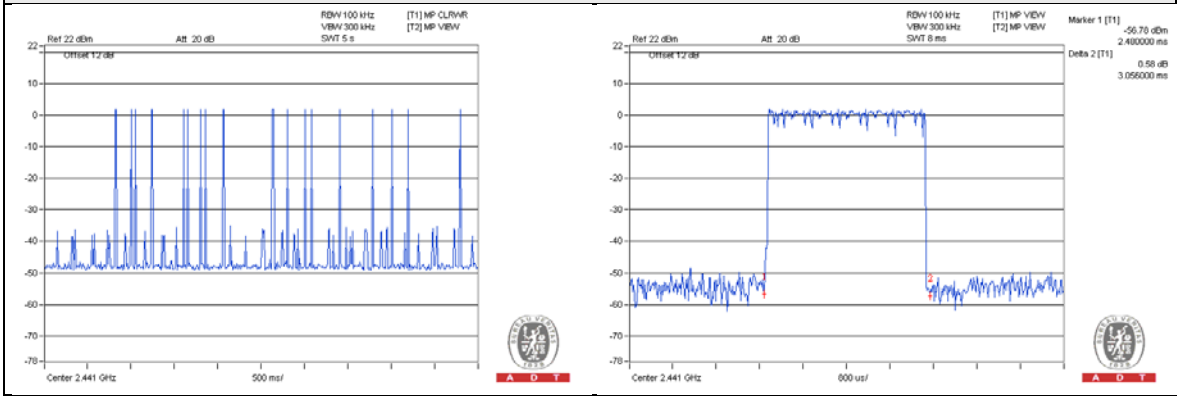
DH1


RBW 100 kHz
VBW 100 kHz
SWT 5 s
[T1] MP CLRWR
[T2] MP VIEW
Ref 22 dBm
Att 20 dB
Offset 1.2 dB
Center 2.441 GHz
500 ms/
RBW 100 kHz
VBW 100 kHz
SWT 3 ms
[T1] MP VIEW
[T2] MP VIEW
Marker 1 [T1]
-57.00 dBm
1.242000 ms
Delta 2 [T1]
5.52 dB
486.000000 us
Ref 22 dBm
Att 20 dB
Offset 1.2 dB
Center 2.441 GHz
300 us/

DH3


RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MP CLRWR
[T2] MP VIEW
Ref 22 dBm
Att 20 dB
Offset 1.2 dB
Center 2.441 GHz
500 ms/
RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MP VIEW
[T2] MP VIEW
Marker 1 [T1]
-59.06 dBm
1.590000 ms
Delta 2 [T1]
1.56 dB
1.740000 ms
Ref 22 dBm
Att 20 dB
Offset 1.2 dB
Center 2.441 GHz
500 us/

DH5

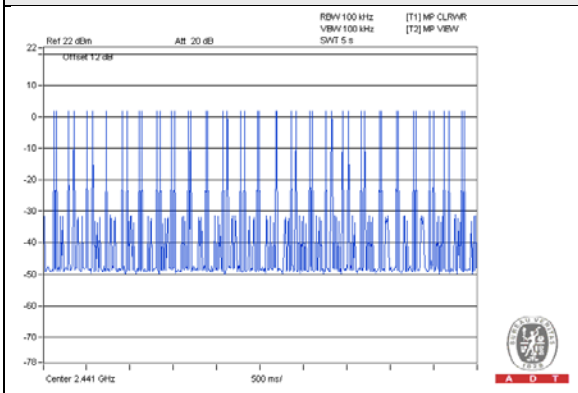

RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MP CLRWR
[T2] MP VIEW
Ref 22 dBm
Att 20 dB
Offset 1.2 dB
Center 2.441 GHz
500 ms/
RBW 100 kHz
VBW 300 kHz
SWT 8 ms
[T1] MP VIEW
[T2] MP VIEW
Marker 1 [T1]
-56.76 dBm
2.400000 ms
Delta 2 [T1]
0.58 dB
3.056000 ms
Ref 22 dBm
Att 20 dB
Offset 1.2 dB
Center 2.441 GHz
800 us/

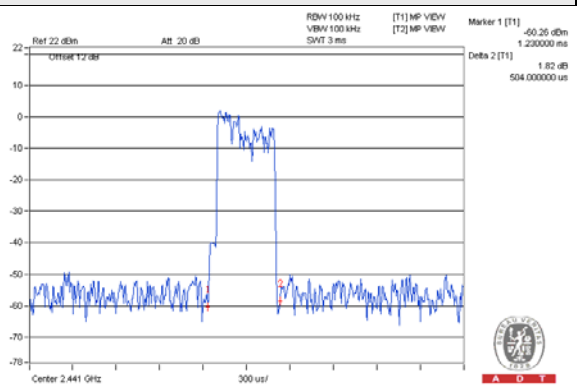
8DPSK

Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	48 (times / 5 sec) * 6.32 = 303.36 times	0.504	152.89	400
DH3	25 (times / 5 sec) * 6.32 = 158 times	1.77	279.66	400
DH5	16 (times / 5 sec) * 6.32 = 101.12 times	2.992	302.55	400

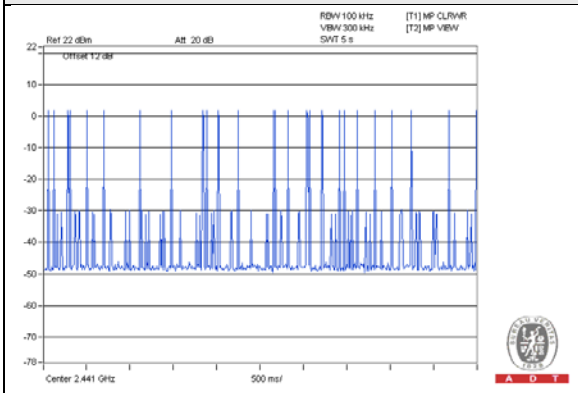
NOTE: Test plots of the transmitting time slot are shown on next page.

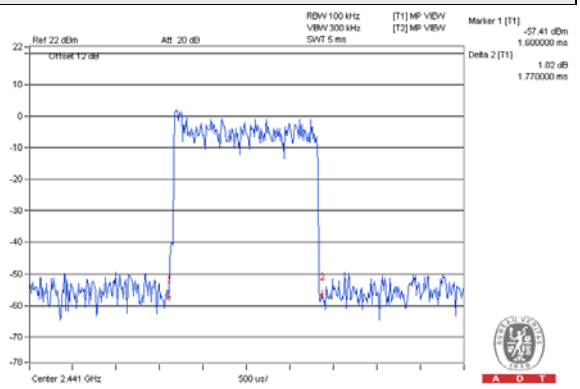
DH1


RBW 100 kHz
VBW 100 kHz
SWT 5 s
[T1] MP CLRWR
[T2] MP VBW
Ref 22 dBm
Att 20 dB
Offset 1.2 dB
Center 2.441 GHz
500 ms/

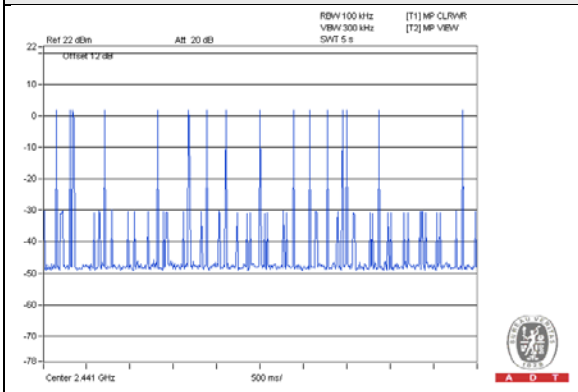

RBW 100 kHz
VBW 100 kHz
SWT 3 ms
[T1] MP VBW
[T2] MP VBW
Marker 1 [T1]
-50.26 dBm
1.230000 ms
Delta 2 [T1]
1.82 dB
504.000000 us
Ref 22 dBm
Att 20 dB
Offset 1.2 dB
Center 2.441 GHz
300 us/

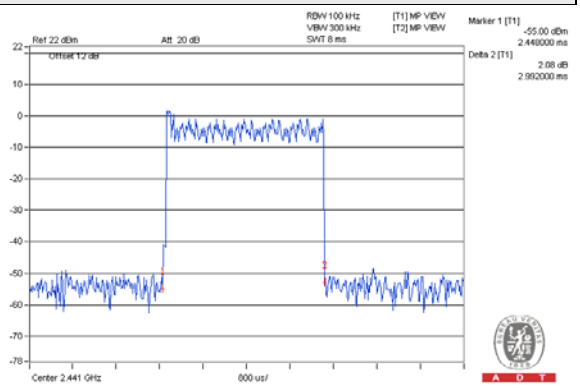
DH3


RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MP CLRWR
[T2] MP VBW
Ref 22 dBm
Att 20 dB
Offset 1.2 dB
Center 2.441 GHz
500 ms/


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MP VBW
[T2] MP VBW
Marker 1 [T1]
-57.41 dBm
1.600000 ms
Delta 2 [T1]
1.02 dB
1.770000 ms
Ref 22 dBm
Att 20 dB
Offset 1.2 dB
Center 2.441 GHz
500 us/

DH5


RBW 100 kHz
VBW 300 kHz
SWT 5 s
[T1] MP CLRWR
[T2] MP VBW
Ref 22 dBm
Att 20 dB
Offset 1.2 dB
Center 2.441 GHz
500 ms/

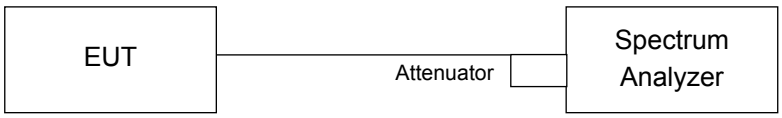

RBW 100 kHz
VBW 300 kHz
SWT 8 ms
[T1] MP VBW
[T2] MP VBW
Marker 1 [T1]
-55.00 dBm
2.440000 ms
Delta 2 [T1]
2.08 dB
2.992000 ms
Ref 22 dBm
Att 20 dB
Offset 1.2 dB
Center 2.441 GHz
800 us/

4.5 Channel Bandwidth

4.5.1 Limits of Channel Bandwidth Measurement

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 Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 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.

4.5.5 Deviation from Test Standard

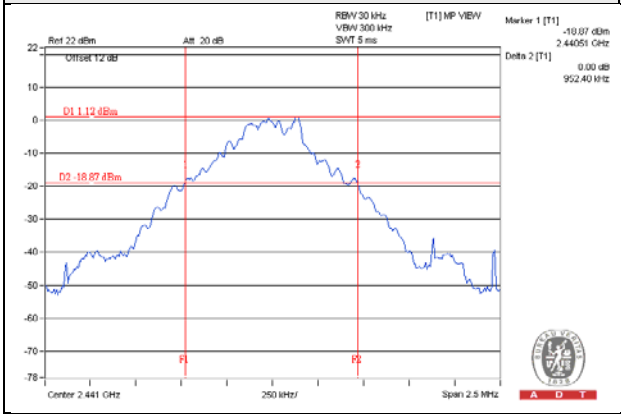
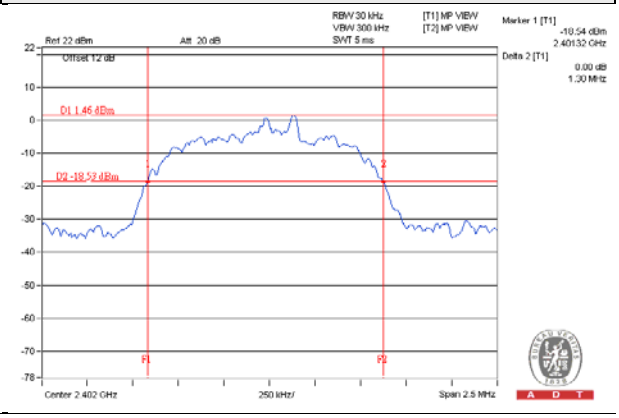
No deviation.

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	0.94	1.30
39	2441	0.95	1.30
78	2480	0.94	1.30

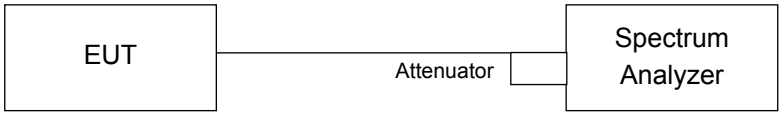
Spectrum Plot of Worst Value	
GFSK / CH 39	8DPSK / CH 0
	

4.6 Hopping Channel Separation

4.6.1 Limits of Hopping Channel Separation Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

Measurement Procedure REF

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.

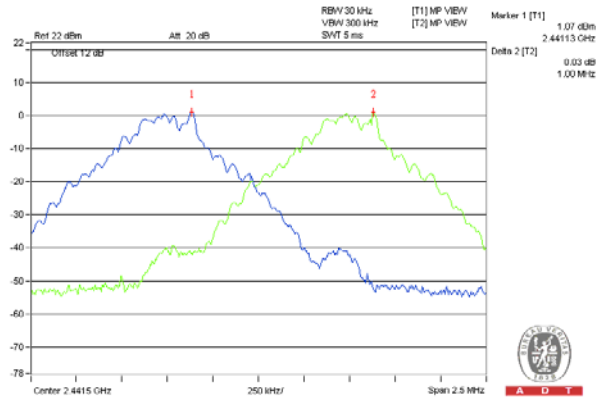
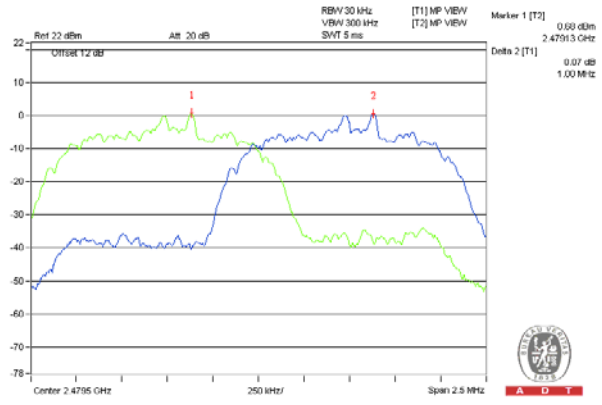
4.6.5 Deviation from Test Standard

No deviation.

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	0.94	1.30	0.63	0.87	Pass
39	2441	1.00	1.00	0.95	1.30	0.64	0.87	Pass
78	2480	1.01	1.00	0.94	1.30	0.63	0.87	Pass

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

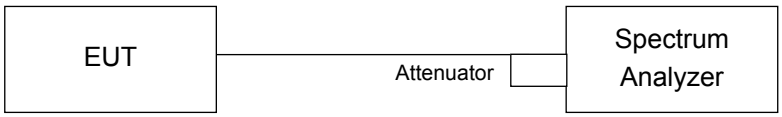
Spectrum Plot of Worst Value	
GFSK / CH39	**8DPSK / CH78**
	

4.7 Maximum Output Power

4.7.1 Limits of Maximum Output Power Measurement

The Maximum Output Power Measurement is 125mW.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 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. 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.

4.7.5 Deviation from Test Standard

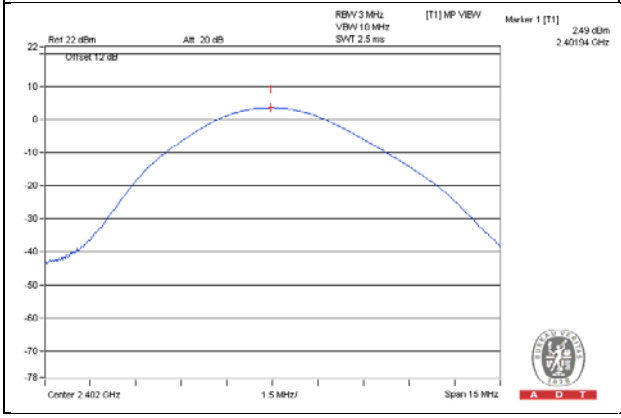
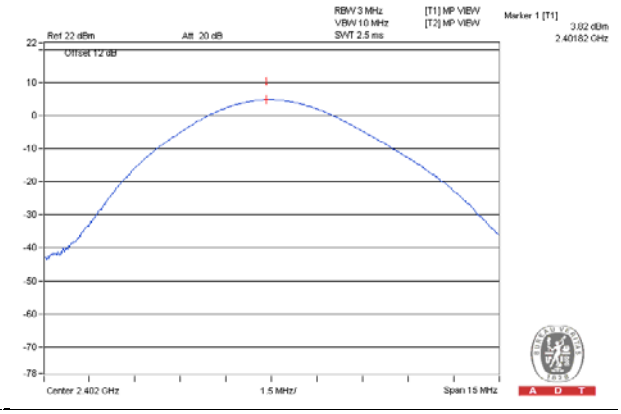
No deviation.

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	1.774	2.410	2.49	3.82	125	Pass
39	2441	1.663	2.265	2.21	3.55	125	Pass
78	2480	1.466	1.968	1.66	2.94	125	Pass

Spectrum Plot of Worst Value	
GFSK / CH0	8DPSK / CH0
	

4.8 Conducted Out of Band Emission Measurement

4.8.1 Limits Of Conducted Out Of Band Emission Measurement

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

4.8.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.8.3 Test Procedure

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz and 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 Eut Operating Condition

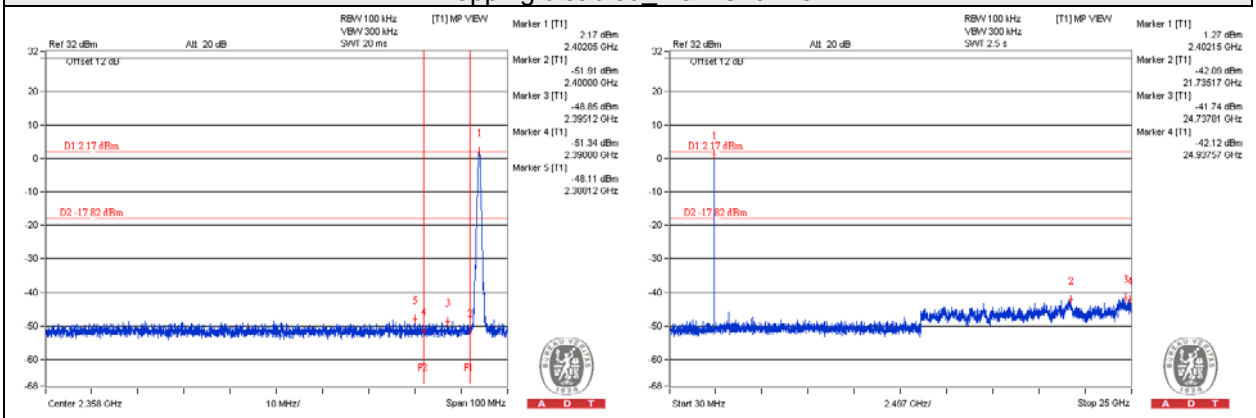
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.8.6 Test Results

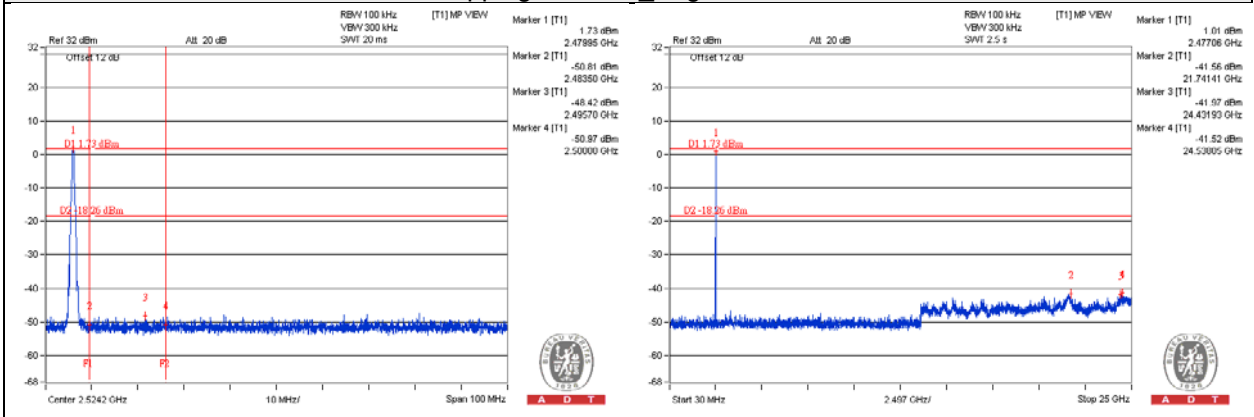
The spectrum plots are attached on the following images. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

GFSK

Hopping disabled_ Low Channel



Hopping disabled_ High Channel



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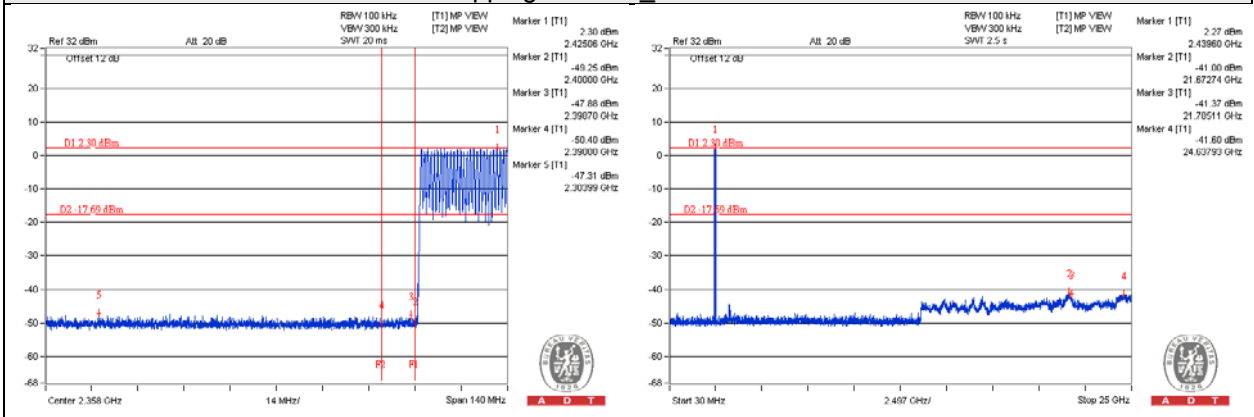

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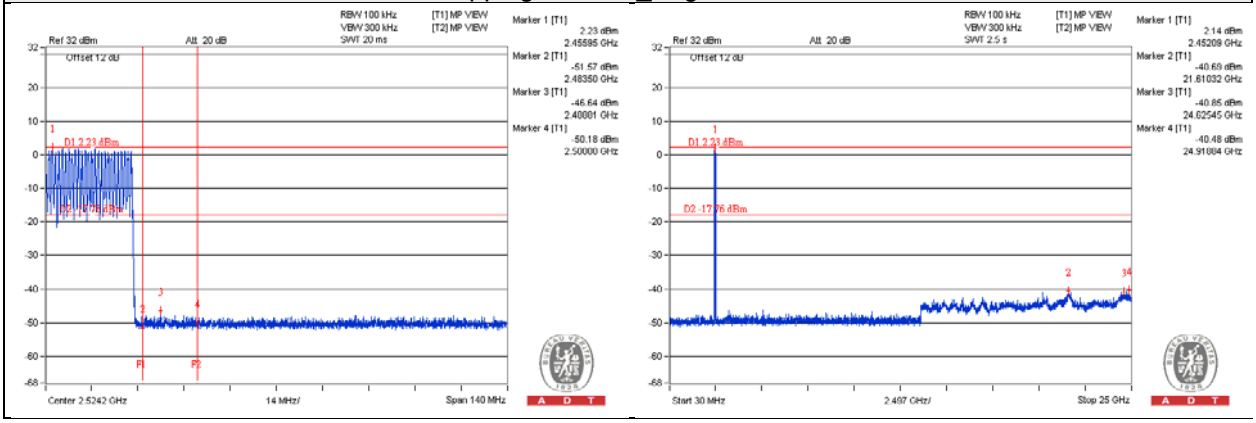

8DPSK

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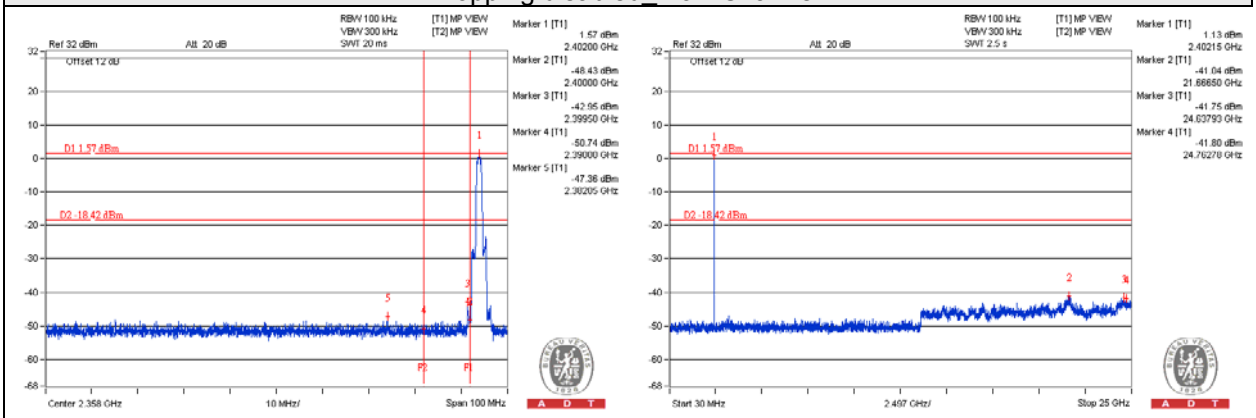

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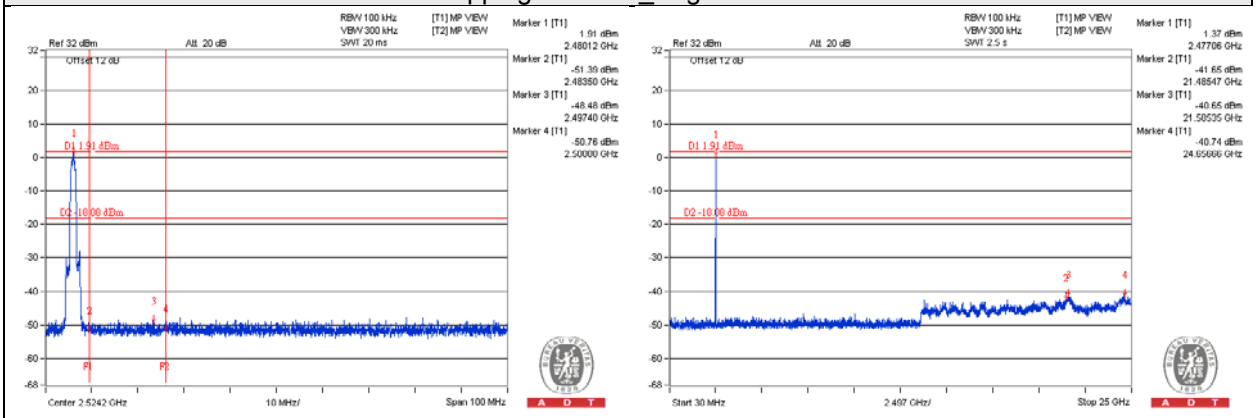

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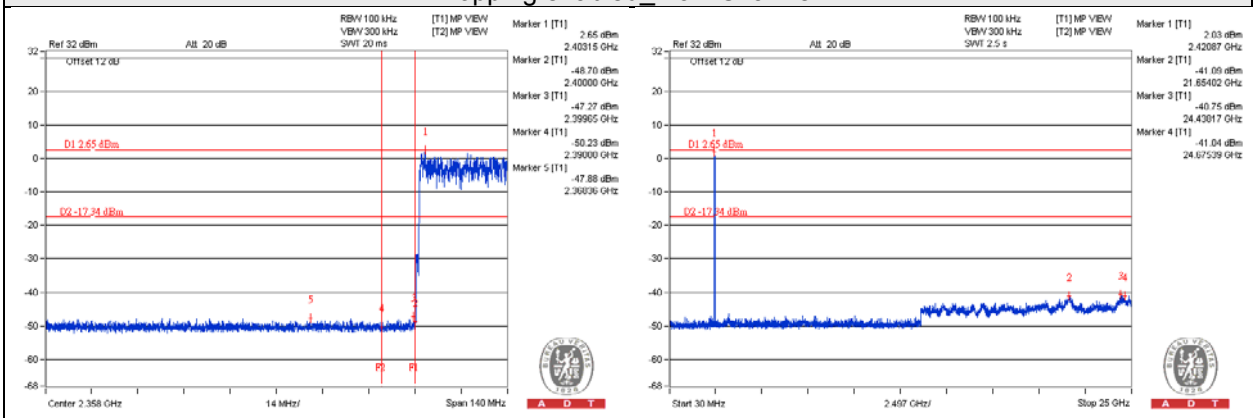

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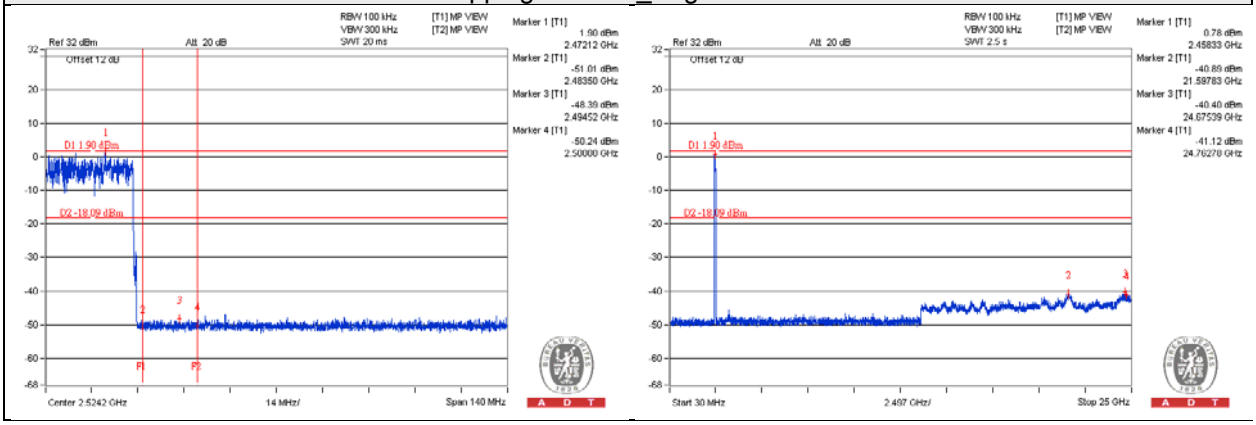

5 Pictures of Test Arrangements

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

Appendix – 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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Web Site: www.bureauveritas-adt.com

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

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