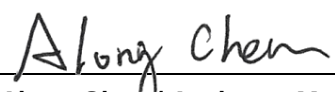


FCC C2PC Test Report

FCC ID : NKR-SY30
Equipment : WLAN/BT Module
Model No. : DHSR-SY30
Brand Name : Wistron NeWeb Corp.
Applicant : Wistron NeWeb Corp.
Address : 20 Park Avenue II, Hsinchu Science Park,
Hsinchu 308, Taiwan, R.O.C.
Standard : 47 CFR FCC Part 15.247
Received Date : Jun. 26, 2017
Tested Date : Jul. 12 ~ Jul. 14, 2017

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:


Along Chen / Assistant Manager

Approved by:

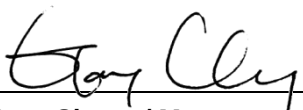

Gary Chang / Manager



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Release Record

Report No.	Version	Description	Issued Date
FR5D0701-02AD	Rev. 01	Initial issue	Jul. 24, 2017

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.383MHz 26.96 (Margin -21.25dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 48.82MHz 28.16 (Margin -11.84dB) - QP	Pass

1 General Description

1.1 Information

This report is issued as a FCC Class II Permissive Change. The modifications are concerned with following items:

- ✧ Additional antenna cables are adding.

Related test items had been performed and recorded in the following sections. Other test results were kept as same as mentioned on original report.

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information				
Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number	Data Rate
2400-2483.5	BR	2402-2480	0-78 [79]	1 Mbps
2400-2483.5	EDR	2402-2480	0-78 [79]	2 Mbps
2400-2483.5	EDR	2402-2480	0-78 [79]	3 Mbps
Note 1: RF output power specifies that Maximum Peak Conducted Output Power.				
Note 2: Bluetooth BR uses a GFSK.				
Note 3: Bluetooth EDR uses a combination of $\pi/4$ -DQPSK and 8DPSK.				

1.1.2 Antenna Details (Addition antenna cable had marked in boldface)

Ant. No.	Model	Type	Connector	Antenna Gain (dBi)
1	Antenna 1 (Green PCB, Cable 1)	Dipole	UFL	0.21
	Antenna 1 (Green PCB, Cable 1)	Dipole	UFL	0.69
2	Antenna 2 (Blue PCB, Cable 2)	Dipole	UFL	1.25
	Antenna 2 (Blue PCB, Cable 2)	Dipole	UFL	2.33

Note:

1. Antenna 2 with highest gain was chosen for final test.
2. Antenna structure is not changed. Reason to obtain higher antenna gain is shorter cable used.

The following antenna cables are used in this EUT. The only difference is cable length.

For Antenna 1 (Green PCB, Cable 1) / original

Cable No.	Model (Cable Color: Black)	Cable No.	Model (Cable Color: Gray)	Cable Length (mm)
1	8JJEKQ1990000001H1	22	8JJEKR1990000001H1	199
2	8JJEKQ2100000001H1	23	8JJEKR2100000001H1	210
3	8JJEKQ2200000001H1	24	8JJEKR2200000001H1	220
4	8JJEKQ2300000001H1	25	8JJEKR2300000001H1	230
5	8JJEKQ2400000001H1	26	8JJEKR2400000001H1	240
6	8JJEKQ2500000001H1	27	8JJEKR2500000001H1	250
7	8JJEKQ2600000001H1	28	8JJEKR2600000001H1	260
8	8JJEKQ2700000001H1	29	8JJEKR2700000001H1	270
9	8JJEKQ2800000001H1	30	8JJEKR2800000001H1	280
10	8JJEKQ2900000001H1	31	8JJEKR2900000001H1	290
11	8JJEKQ3000000001H1	32	8JJEKR3000000001H1	300
12	8JJEKQ3100000001H1	33	8JJEKR3100000001H1	310
13	8JJEKQ3200000001H1	34	8JJEKR3200000001H1	320
14	8JJEKQ3300000001H1	35	8JJEKR3300000001H1	330
15	8JJEKQ3400000001H1	36	8JJEKR3400000001H1	340
16	8JJEKQ3500000001H1	37	8JJEKR3500000001H1	350
17	8JJEKQ3600000001H1	38	8JJEKR3600000001H1	360
18	8JJEKQ3700000001H1	39	8JJEKR3700000001H1	370
19	8JJEKQ3800000001H1	40	8JJEKR3800000001H1	380
20	8JJEKQ3900000001H1	41	8JJEKR3900000001H1	390
21	8JJEKQ4000000001H1	42	8JJEKR4000000001H1	400

For Antenna 2 (Blue PCB, Cable 2) / original

Cable No.	Model (Cable Color: Black)	Cable No.	Model (Cable Color: Gray)	Cable No.	Model (Cable Color: White)	Cable Length (mm)
1	8JJEKQ4000000001H1	52	8JJEKR4000000001H1	103	8JJEKP4000000001H1	400
2	8JJEKQ4100000001H1	53	8JJEKR4100000001H1	104	8JJEKP4100000001H1	410
3	8JJEKQ4200000001H1	54	8JJEKR4200000001H1	105	8JJEKP4200000001H1	420
4	8JJEKQ4300000001H1	55	8JJEKR4300000001H1	106	8JJEKP4300000001H1	430
5	8JJEKQ4400000001H1	56	8JJEKR4400000001H1	107	8JJEKP4400000001H1	440
6	8JJEKQ4500000001H1	57	8JJEKR4500000001H1	108	8JJEKP4500000001H1	450
7	8JJEKQ4600000001H1	58	8JJEKR4600000001H1	109	8JJEKP4600000001H1	460
8	8JJEKQ4700000001H1	59	8JJEKR4700000001H1	110	8JJEKP4700000001H1	470
9	8JJEKQ4800000001H1	60	8JJEKR4800000001H1	111	8JJEKP4800000001H1	480
10	8JJEKQ4900000001H1	61	8JJEKR4900000001H1	112	8JJEKP4900000001H1	490
11	8JJEKQ5000000001H1	62	8JJEKR5000000001H1	113	8JJEKP5000000001H1	500
12	8JJEKQ5100000001H1	63	8JJEKR5100000001H1	114	8JJEKP5100000001H1	510
13	8JJEKQ5200000001H1	64	8JJEKR5200000001H1	115	8JJEKP5200000001H1	520
14	8JJEKQ5300000001H1	65	8JJEKR5300000001H1	116	8JJEKP5300000001H1	530
15	8JJEKQ5400000001H1	66	8JJEKR5400000001H1	117	8JJEKP5400000001H1	540
16	8JJEKQ5500000001H1	67	8JJEKR5500000001H1	118	8JJEKP5500000001H1	550
17	8JJEKQ5600000001H1	68	8JJEKR5600000001H1	119	8JJEKP5600000001H1	560
18	8JJEKQ5700000001H1	69	8JJEKR5700000001H1	120	8JJEKP5700000001H1	570
19	8JJEKQ5800000001H1	70	8JJEKR5800000001H1	121	8JJEKP5800000001H1	580
20	8JJEKQ5900000001H1	71	8JJEKR5900000001H1	122	8JJEKP5900000001H1	590
21	8JJEKQ6000000001H1	72	8JJEKR6000000001H1	123	8JJEKP6000000001H1	600
22	8JJEKQ6100000001H1	73	8JJEKR6100000001H1	124	8JJEKP6100000001H1	610
23	8JJEKQ6200000001H1	74	8JJEKR6200000001H1	125	8JJEKP6200000001H1	620
24	8JJEKQ6300000001H1	75	8JJEKR6300000001H1	126	8JJEKP6300000001H1	630
25	8JJEKQ6400000001H1	76	8JJEKR6400000001H1	127	8JJEKP6400000001H1	640
26	8JJEKQ6500000001H1	77	8JJEKR6500000001H1	128	8JJEKP6500000001H1	650
27	8JJEKQ6600000001H1	78	8JJEKR6600000001H1	129	8JJEKP6600000001H1	660
28	8JJEKQ6700000001H1	79	8JJEKR6700000001H1	130	8JJEKP6700000001H1	670
29	8JJEKQ6800000001H1	80	8JJEKR6800000001H1	131	8JJEKP6800000001H1	680
30	8JJEKQ6900000001H1	81	8JJEKR6900000001H1	132	8JJEKP6900000001H1	690
31	8JJEKQ7000000001H1	82	8JJEKR7000000001H1	133	8JJEKP7000000001H1	700
32	8JJEKQ7100000001H1	83	8JJEKR7100000001H1	134	8JJEKP7100000001H1	710
33	8JJEKQ7200000001H1	84	8JJEKR7200000001H1	135	8JJEKP7200000001H1	720
34	8JJEKQ7300000001H1	85	8JJEKR7300000001H1	136	8JJEKP7300000001H1	730
35	8JJEKQ7400000001H1	86	8JJEKR7400000001H1	137	8JJEKP7400000001H1	740
36	8JJEKQ7500000001H1	87	8JJEKR7500000001H1	138	8JJEKP7500000001H1	750
37	8JJEKQ7600000001H1	88	8JJEKR7600000001H1	139	8JJEKP7600000001H1	760

38	8JJEKQ7700000001H1	89	8JJEKR7700000001H1	140	8JJEKP7700000001H1	770
39	8JJEKQ7800000001H1	90	8JJEKR7800000001H1	141	8JJEKP7800000001H1	780
40	8JJEKQ7900000001H1	91	8JJEKR7900000001H1	142	8JJEKP7900000001H1	790
41	8JJEKQ8000000001H1	92	8JJEKR8000000001H1	143	8JJEKP8000000001H1	800
42	8JJEKQ8100000001H1	93	8JJEKR8100000001H1	144	8JJEKP8100000001H1	810
43	8JJEKQ8200000001H1	94	8JJEKR8200000001H1	145	8JJEKP8200000001H1	820
44	8JJEKQ8300000001H1	95	8JJEKR8300000001H1	146	8JJEKP8300000001H1	830
45	8JJEKQ8400000001H1	96	8JJEKR8400000001H1	147	8JJEKP8400000001H1	840
46	8JJEKQ8500000001H1	97	8JJEKR8500000001H1	148	8JJEKP8500000001H1	850
47	8JJEKQ8600000001H1	98	8JJEKR8600000001H1	149	8JJEKP8600000001H1	860
48	8JJEKQ8700000001H1	99	8JJEKR8700000001H1	150	8JJEKP8700000001H1	870
49	8JJEKQ8800000001H1	100	8JJEKR8800000001H1	151	8JJEKP8800000001H1	880
50	8JJEKQ8900000001H1	101	8JJEKR8900000001H1	152	8JJEKP8900000001H1	890
51	8JJEKQ9000000001H1	102	8JJEKR9000000001H1	153	8JJEKP9000000001H1	900

For Antenna 1 (Green PCB, Cable 1) / Additional

Cable No.	Model (Cable Color: Black)	Cable No.	Model (Cable Color: Gray)	Cable No.	Model (Cable Color: White)	Cable Length (mm)
1	8JJEKQ0500000001H1	37	8JJEKR0500000001H1	73	8JJEKP0500000001H1	50
2	8JJEKQ0600000001H1	38	8JJEKR0600000001H1	74	8JJEKP0600000001H1	60
3	8JJEKQ0700000001H1	39	8JJEKR0700000001H1	75	8JJEKP0700000001H1	70
4	8JJEKQ0800000001H1	40	8JJEKR0800000001H1	76	8JJEKP0800000001H1	80
5	8JJEKQ0900000001H1	41	8JJEKR0900000001H1	77	8JJEKP0900000001H1	90
6	8JJEKQ1000000001H1	42	8JJEKR1000000001H1	78	8JJEKP1000000001H1	100
7	8JJEKQ1100000001H1	43	8JJEKR1100000001H1	79	8JJEKP1100000001H1	110
8	8JJEKQ1200000001H1	44	8JJEKR1200000001H1	80	8JJEKP1200000001H1	120
9	8JJEKQ1300000001H1	45	8JJEKR1300000001H1	81	8JJEKP1300000001H1	130
10	8JJEKQ1400000001H1	46	8JJEKR1400000001H1	82	8JJEKP1400000001H1	140
11	8JJEKQ1500000001H1	47	8JJEKR1500000001H1	83	8JJEKP1500000001H1	150
12	8JJEKQ1600000001H1	48	8JJEKR1600000001H1	84	8JJEKP1600000001H1	160
13	8JJEKQ1700000001H1	49	8JJEKR1700000001H1	85	8JJEKP1700000001H1	170
14	8JJEKQ1800000001H1	50	8JJEKR1800000001H1	86	8JJEKP1800000001H1	180
15	8JJEKQ1900000001H1	51	8JJEKR1900000001H1	87	8JJEKP1900000001H1	190
16	8JJEKQ1990000001H1	52	8JJEKR1990000001H1	88	8JJEKP1990000001H1	199
17	8JJEKQ2100000001H1	53	8JJEKR2100000001H1	89	8JJEKP2100000001H1	210
18	8JJEKQ2200000001H1	54	8JJEKR2200000001H1	90	8JJEKP2200000001H1	220
19	8JJEKQ2300000001H1	55	8JJEKR2300000001H1	91	8JJEKP2300000001H1	230
20	8JJEKQ2400000001H1	56	8JJEKR2400000001H1	92	8JJEKP2400000001H1	240
21	8JJEKQ2500000001H1	57	8JJEKR2500000001H1	93	8JJEKP2500000001H1	250
22	8JJEKQ2600000001H1	58	8JJEKR2600000001H1	94	8JJEKP2600000001H1	260
23	8JJEKQ2700000001H1	59	8JJEKR2700000001H1	95	8JJEKP2700000001H1	270
24	8JJEKQ2800000001H1	60	8JJEKR2800000001H1	96	8JJEKP2800000001H1	280
25	8JJEKQ2900000001H1	61	8JJEKR2900000001H1	97	8JJEKP2900000001H1	290
26	8JJEKQ3000000001H1	62	8JJEKR3000000001H1	98	8JJEKP3000000001H1	300
27	8JJEKQ3100000001H1	63	8JJEKR3100000001H1	99	8JJEKP3100000001H1	310
28	8JJEKQ3200000001H1	64	8JJEKR3200000001H1	100	8JJEKP3200000001H1	320
29	8JJEKQ3300000001H1	65	8JJEKR3300000001H1	101	8JJEKP3300000001H1	330
30	8JJEKQ3400000001H1	66	8JJEKR3400000001H1	102	8JJEKP3400000001H1	340
31	8JJEKQ3500000001H1	67	8JJEKR3500000001H1	103	8JJEKP3500000001H1	350
32	8JJEKQ3600000001H1	68	8JJEKR3600000001H1	104	8JJEKP3600000001H1	360
33	8JJEKQ3700000001H1	69	8JJEKR3700000001H1	105	8JJEKP3700000001H1	370
34	8JJEKQ3800000001H1	70	8JJEKR3800000001H1	106	8JJEKP3800000001H1	380
35	8JJEKQ3900000001H1	71	8JJEKR3900000001H1	107	8JJEKP3900000001H1	390
36	8JJEKQ4000000001H1	72	8JJEKR4000000001H1	108	8JJEKP4000000001H1	400

For Antenna 2 (Blue PCB, Cable 2) / Additional

Cable No.	Model (Cable Color: Black)	Cable No.	Model (Cable Color: Gray)	Cable No.	Model (Cable Color: White)	Cable Length (mm)
1	8JJEKQ0500000001H1	87	8JJEKR0500000001H1	173	8JJEKP0500000001H1	50
2	8JJEKQ0600000001H1	88	8JJEKR0600000001H1	174	8JJEKP0600000001H1	60
3	8JJEKQ0700000001H1	89	8JJEKR0700000001H1	175	8JJEKP0700000001H1	70
4	8JJEKQ0800000001H1	90	8JJEKR0800000001H1	176	8JJEKP0800000001H1	80
5	8JJEKQ0900000001H1	91	8JJEKR0900000001H1	177	8JJEKP0900000001H1	90
6	8JJEKQ1000000001H1	92	8JJEKR1000000001H1	178	8JJEKP1000000001H1	100
7	8JJEKQ1100000001H1	93	8JJEKR1100000001H1	179	8JJEKP1100000001H1	110
8	8JJEKQ1200000001H1	94	8JJEKR1200000001H1	180	8JJEKP1200000001H1	120
9	8JJEKQ1300000001H1	95	8JJEKR1300000001H1	181	8JJEKP1300000001H1	130
10	8JJEKQ1400000001H1	96	8JJEKR1400000001H1	182	8JJEKP1400000001H1	140
11	8JJEKQ1500000001H1	97	8JJEKR1500000001H1	183	8JJEKP1500000001H1	150
12	8JJEKQ1600000001H1	98	8JJEKR1600000001H1	184	8JJEKP1600000001H1	160
13	8JJEKQ1700000001H1	99	8JJEKR1700000001H1	185	8JJEKP1700000001H1	170
14	8JJEKQ1800000001H1	100	8JJEKR1800000001H1	186	8JJEKP1800000001H1	180
15	8JJEKQ1900000001H1	101	8JJEKR1900000001H1	187	8JJEKP1900000001H1	190
16	8JJEKQ1990000001H1	102	8JJEKR1990000001H1	188	8JJEKP1990000001H1	199
17	8JJEKQ2100000001H1	103	8JJEKR2100000001H1	189	8JJEKP2100000001H1	210
18	8JJEKQ2200000001H1	104	8JJEKR2200000001H1	190	8JJEKP2200000001H1	220
19	8JJEKQ2300000001H1	105	8JJEKR2300000001H1	191	8JJEKP2300000001H1	230
20	8JJEKQ2400000001H1	106	8JJEKR2400000001H1	192	8JJEKP2400000001H1	240
21	8JJEKQ2500000001H1	107	8JJEKR2500000001H1	193	8JJEKP2500000001H1	250
22	8JJEKQ2600000001H1	108	8JJEKR2600000001H1	194	8JJEKP2600000001H1	260
23	8JJEKQ2700000001H1	109	8JJEKR2700000001H1	195	8JJEKP2700000001H1	270
24	8JJEKQ2800000001H1	110	8JJEKR2800000001H1	196	8JJEKP2800000001H1	280
25	8JJEKQ2900000001H1	111	8JJEKR2900000001H1	197	8JJEKP2900000001H1	290
26	8JJEKQ3000000001H1	112	8JJEKR3000000001H1	198	8JJEKP3000000001H1	300
27	8JJEKQ3100000001H1	113	8JJEKR3100000001H1	199	8JJEKP3100000001H1	310
28	8JJEKQ3200000001H1	114	8JJEKR3200000001H1	200	8JJEKP3200000001H1	320
29	8JJEKQ3300000001H1	115	8JJEKR3300000001H1	201	8JJEKP3300000001H1	330
30	8JJEKQ3400000001H1	116	8JJEKR3400000001H1	202	8JJEKP3400000001H1	340
31	8JJEKQ3500000001H1	117	8JJEKR3500000001H1	203	8JJEKP3500000001H1	350
32	8JJEKQ3600000001H1	118	8JJEKR3600000001H1	204	8JJEKP3600000001H1	360
33	8JJEKQ3700000001H1	119	8JJEKR3700000001H1	205	8JJEKP3700000001H1	370
34	8JJEKQ3800000001H1	120	8JJEKR3800000001H1	206	8JJEKP3800000001H1	380
35	8JJEKQ3900000001H1	121	8JJEKR3900000001H1	207	8JJEKP3900000001H1	390
36	8JJEKQ4000000001H1	122	8JJEKR4000000001H1	208	8JJEKP4000000001H1	400
37	8JJEKQ4100000001H1	123	8JJEKR4100000001H1	209	8JJEKP4100000001H1	410

38	8JJEKQ4200000001H1	124	8JJEKR4200000001H1	210	8JJEKP4200000001H1	420
39	8JJEKQ4300000001H1	125	8JJEKR4300000001H1	211	8JJEKP4300000001H1	430
40	8JJEKQ4400000001H1	126	8JJEKR4400000001H1	212	8JJEKP4400000001H1	440
41	8JJEKQ4500000001H1	127	8JJEKR4500000001H1	213	8JJEKP4500000001H1	450
42	8JJEKQ4600000001H1	128	8JJEKR4600000001H1	214	8JJEKP4600000001H1	460
43	8JJEKQ4700000001H1	129	8JJEKR4700000001H1	215	8JJEKP4700000001H1	470
44	8JJEKQ4800000001H1	130	8JJEKR4800000001H1	216	8JJEKP4800000001H1	480
45	8JJEKQ4900000001H1	131	8JJEKR4900000001H1	217	8JJEKP4900000001H1	490
46	8JJEKQ5000000001H1	132	8JJEKR5000000001H1	218	8JJEKP5000000001H1	500
47	8JJEKQ5100000001H1	133	8JJEKR5100000001H1	219	8JJEKP5100000001H1	510
48	8JJEKQ5200000001H1	134	8JJEKR5200000001H1	220	8JJEKP5200000001H1	520
49	8JJEKQ5300000001H1	135	8JJEKR5300000001H1	221	8JJEKP5300000001H1	530
50	8JJEKQ5400000001H1	136	8JJEKR5400000001H1	222	8JJEKP5400000001H1	540
51	8JJEKQ5500000001H1	137	8JJEKR5500000001H1	223	8JJEKP5500000001H1	550
52	8JJEKQ5600000001H1	138	8JJEKR5600000001H1	224	8JJEKP5600000001H1	560
53	8JJEKQ5700000001H1	139	8JJEKR5700000001H1	225	8JJEKP5700000001H1	570
54	8JJEKQ5800000001H1	140	8JJEKR5800000001H1	226	8JJEKP5800000001H1	580
55	8JJEKQ5900000001H1	141	8JJEKR5900000001H1	227	8JJEKP5900000001H1	590
56	8JJEKQ6000000001H1	142	8JJEKR6000000001H1	228	8JJEKP6000000001H1	600
57	8JJEKQ6100000001H1	143	8JJEKR6100000001H1	229	8JJEKP6100000001H1	610
58	8JJEKQ6200000001H1	144	8JJEKR6200000001H1	230	8JJEKP6200000001H1	620
59	8JJEKQ6300000001H1	145	8JJEKR6300000001H1	231	8JJEKP6300000001H1	630
60	8JJEKQ6400000001H1	146	8JJEKR6400000001H1	232	8JJEKP6400000001H1	640
61	8JJEKQ6500000001H1	147	8JJEKR6500000001H1	233	8JJEKP6500000001H1	650
62	8JJEKQ6600000001H1	148	8JJEKR6600000001H1	234	8JJEKP6600000001H1	660
63	8JJEKQ6700000001H1	149	8JJEKR6700000001H1	235	8JJEKP6700000001H1	670
64	8JJEKQ6800000001H1	150	8JJEKR6800000001H1	236	8JJEKP6800000001H1	680
65	8JJEKQ6900000001H1	151	8JJEKR6900000001H1	237	8JJEKP6900000001H1	690
66	8JJEKQ7000000001H1	152	8JJEKR7000000001H1	238	8JJEKP7000000001H1	700
67	8JJEKQ7100000001H1	153	8JJEKR7100000001H1	239	8JJEKP7100000001H1	710
68	8JJEKQ7200000001H1	154	8JJEKR7200000001H1	240	8JJEKP7200000001H1	720
69	8JJEKQ7300000001H1	155	8JJEKR7300000001H1	241	8JJEKP7300000001H1	730
70	8JJEKQ7400000001H1	156	8JJEKR7400000001H1	242	8JJEKP7400000001H1	740
71	8JJEKQ7500000001H1	157	8JJEKR7500000001H1	243	8JJEKP7500000001H1	750
72	8JJEKQ7600000001H1	158	8JJEKR7600000001H1	244	8JJEKP7600000001H1	760
73	8JJEKQ7700000001H1	159	8JJEKR7700000001H1	245	8JJEKP7700000001H1	770
74	8JJEKQ7800000001H1	160	8JJEKR7800000001H1	246	8JJEKP7800000001H1	780
75	8JJEKQ7900000001H1	161	8JJEKR7900000001H1	247	8JJEKP7900000001H1	790
76	8JJEKQ8000000001H1	162	8JJEKR8000000001H1	248	8JJEKP8000000001H1	800
77	8JJEKQ8100000001H1	163	8JJEKR8100000001H1	249	8JJEKP8100000001H1	810

78	8JJEKQ8200000001H1	164	8JJEKR8200000001H1	250	8JJEKP8200000001H1	820
79	8JJEKQ8300000001H1	165	8JJEKR8300000001H1	251	8JJEKP8300000001H1	830
80	8JJEKQ8400000001H1	166	8JJEKR8400000001H1	252	8JJEKP8400000001H1	840
81	8JJEKQ8500000001H1	167	8JJEKR8500000001H1	253	8JJEKP8500000001H1	850
82	8JJEKQ8600000001H1	168	8JJEKR8600000001H1	254	8JJEKP8600000001H1	860
83	8JJEKQ8700000001H1	169	8JJEKR8700000001H1	255	8JJEKP8700000001H1	870
84	8JJEKQ8800000001H1	170	8JJEKR8800000001H1	256	8JJEKP8800000001H1	880
85	8JJEKQ8900000001H1	171	8JJEKR8900000001H1	257	8JJEKP8900000001H1	890
86	8JJEKQ9000000001H1	172	8JJEKR9000000001H1	258	8JJEKP9000000001H1	900

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	DC 4V/1A
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1.1.4 Accessories

N/A

1.1.5 Channel List

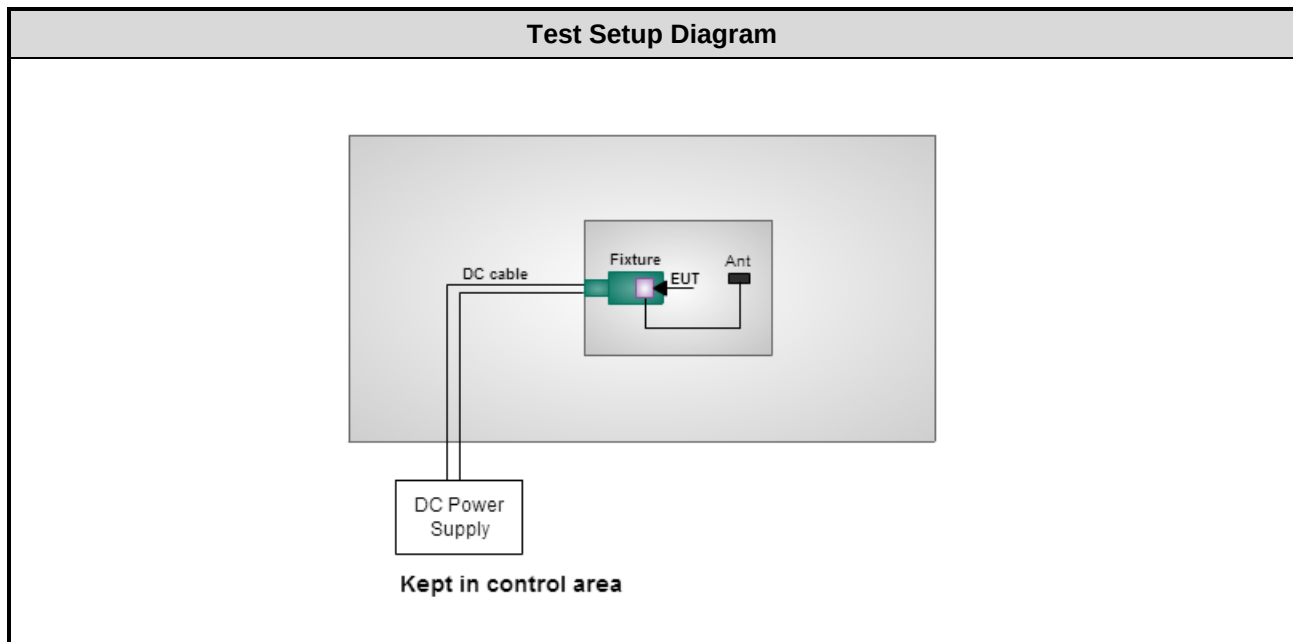
Frequency band (MHz)				2400~2483.5			
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	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	---	---

1.2 Local Support Equipment List

Support Equipment List						
No.	Equipment	Brand	Model	S/N	FCC ID	Signal cable / Length (m)
1	Notebook	DELL	Latitude E6440	2ZC4Z52	DoC	---
2	DC Power Supply	GW INSTEK	GPC-3060D	EM884797	---	---
3	Fixture	---	---	---	---	---

Note: Fixture was supplied by applicant.

1.3 Test Setup Chart



Note: The support notebook was disconnected from EUT and removed from test table when EUT is set to transmit continuously.

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101657	Dec. 21, 2016	Dec. 20, 2017
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 08, 2016	Nov. 07, 2017
RF Cable-CON	EMC	EMCCFD300-BM-BM-6000	50821	Dec. 20, 2016	Dec. 19, 2017
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101498	Nov. 25, 2016	Nov. 24, 2017
Receiver	R&S	ESR3	101658	Nov. 24, 2016	Nov. 23, 2017
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Aug. 04, 2016	Aug. 03, 2017
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 21, 2016	Dec. 20, 2017
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Oct. 25, 2016	Oct. 24, 2017
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 10, 2016	Nov. 09, 2017
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 09, 2016	Dec. 08, 2017
Preamplifier	EMC	EMC02325	980225	Aug. 05, 2016	Aug. 04, 2017
Preamplifier	Agilent	83017A	MY39501308	Oct. 06, 2016	Oct. 05, 2017
Preamplifier	EMC	EMC184045B	980192	Aug. 24, 2016	Aug. 23, 2017
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 09, 2016	Dec. 08, 2017
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 09, 2016	Dec. 08, 2017
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 09, 2016	Dec. 08, 2017
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	16052	Dec. 09, 2016	Dec. 08, 2017
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 09, 2016	Dec. 08, 2017
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 09, 2016	Dec. 08, 2017
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.247

ANSI C63.10-2013

1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$))

Measurement Uncertainty	
Parameters	Uncertainty
AC conducted emission	± 2.90 dB
Radiated emission ≤ 1 GHz	± 3.66 dB
Radiated emission > 1 GHz	± 5.63 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	25°C / 57%	Alex Tsai
Radiated Emissions	03CH01-WS	22-24°C / 62-64%	Vincent Yeh

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- IC site registration No.: 10807A-1

2.2 The Worst Test Modes and Channel Details

Test item	Mode	Test Frequency (MHz)	Data Rate (Mbps)
Conducted Emissions	8DPSK	2402	3Mbps
Radiated Emissions ≤ 1GHz	8DPSK	2402	3Mbps
Radiated Emissions > 1GHz	GFSK	2402, 2441, 2480	1Mbps
	8DPSK	2402, 2441, 2480	3Mbps
NOTE: The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The Y-plane result was found as the worst case and was shown in this report.			

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

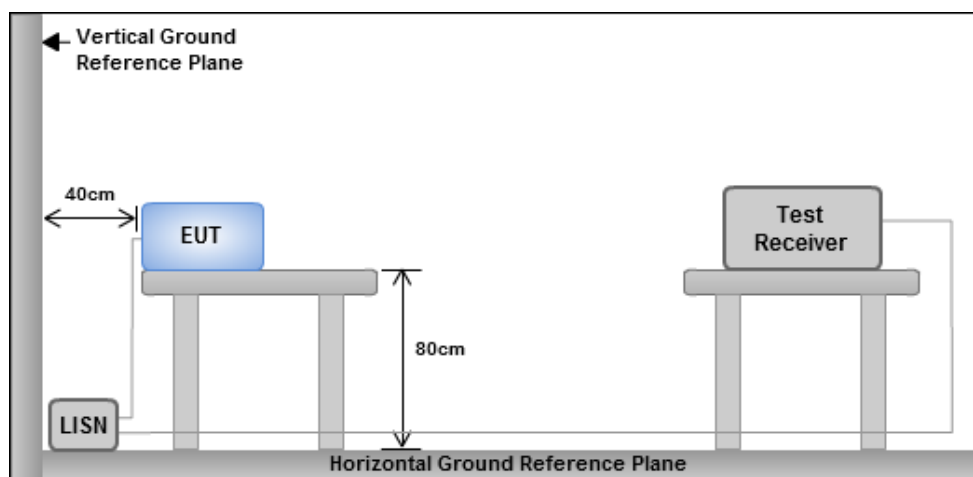
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

3.1.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V/60Hz

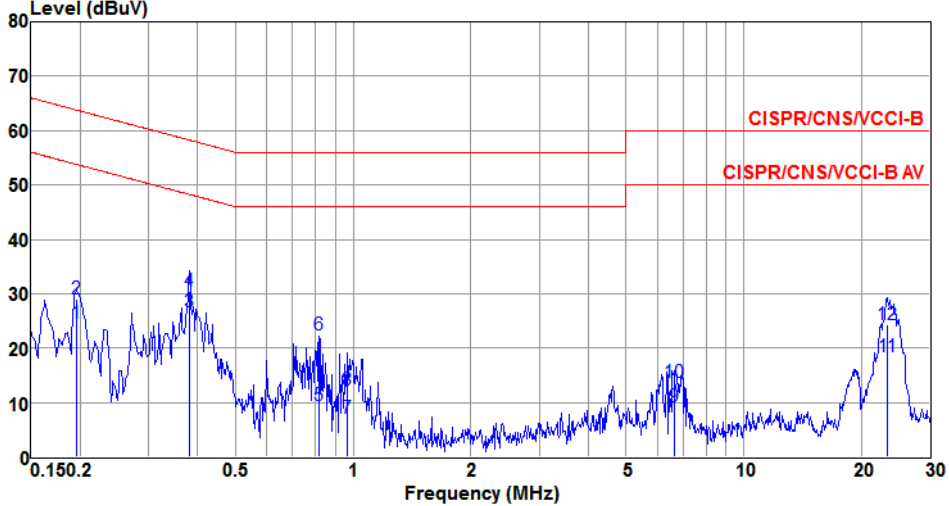
3.1.3 Test Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

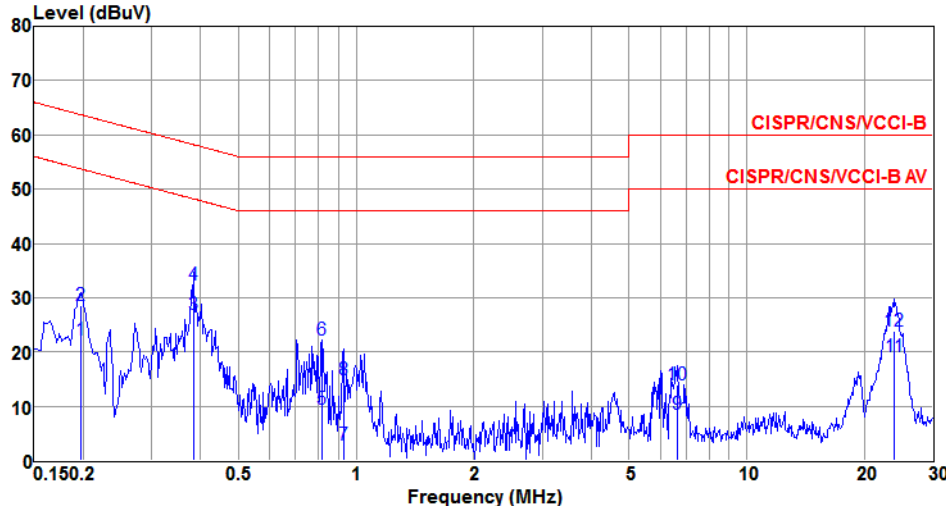
Modulation Mode	8DPSK	Test Freq. (MHz)	2402
Power Phase	Line		



	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark
			dBuV	dB	dBuV	dB	dB	
1	0.195	24.61	53.80	-29.19	24.47	0.10	0.04	Average
2	0.195	28.97	63.80	-34.83	28.83	0.10	0.04	QP
3	0.381	26.67	48.25	-21.58	26.57	0.06	0.04	Average
4	0.381	30.39	58.25	-27.86	30.29	0.06	0.04	QP
5	0.817	9.41	46.00	-36.59	9.30	0.07	0.04	Average
6	0.817	22.36	56.00	-33.64	22.25	0.07	0.04	QP
7	0.968	7.13	46.00	-38.87	7.02	0.07	0.04	Average
8	0.968	12.26	56.00	-43.74	12.15	0.07	0.04	QP
9	6.627	9.19	50.00	-40.81	8.81	0.19	0.19	Average
10	6.627	13.64	60.00	-46.36	13.26	0.19	0.19	QP
11	23.387	18.36	50.00	-31.64	17.66	0.42	0.28	Average
12	23.387	24.25	60.00	-35.75	23.55	0.42	0.28	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation Mode	8DPSK	Test Freq. (MHz)	2402
Power Phase	Neutral		



The graph displays the measured level in dBuV against frequency in MHz. Two red lines represent the CISPR/CNS/VCCI-B and CISPR/CNS/VCCI-B AV limits. The blue line shows the measured spectrum with peaks labeled 1 through 12.

Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark	
1	0.198	22.20	53.71	-31.51	22.07	0.09	0.04	Average
2	0.198	28.51	63.71	-35.20	28.38	0.09	0.04	QP
3	0.383	26.96	48.21	-21.25	26.79	0.13	0.04	Average
4	0.383	32.22	58.21	-25.99	32.05	0.13	0.04	QP
5	0.817	9.56	46.00	-36.44	9.42	0.10	0.04	Average
6	0.817	22.12	56.00	-33.88	21.98	0.10	0.04	QP
7	0.928	2.86	46.00	-43.14	2.73	0.09	0.04	Average
8	0.928	14.86	56.00	-41.14	14.73	0.09	0.04	QP
9	6.627	8.46	50.00	-41.54	8.04	0.23	0.19	Average
10	6.627	13.95	60.00	-46.05	13.53	0.23	0.19	QP
11	23.888	19.17	50.00	-30.83	18.44	0.45	0.28	Average
12	23.888	23.91	60.00	-36.09	23.18	0.45	0.28	QP

Note 1:	Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2:	Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

3.2 Unwanted Emissions into Restricted Frequency Bands

3.2.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.2.2 Test Procedures

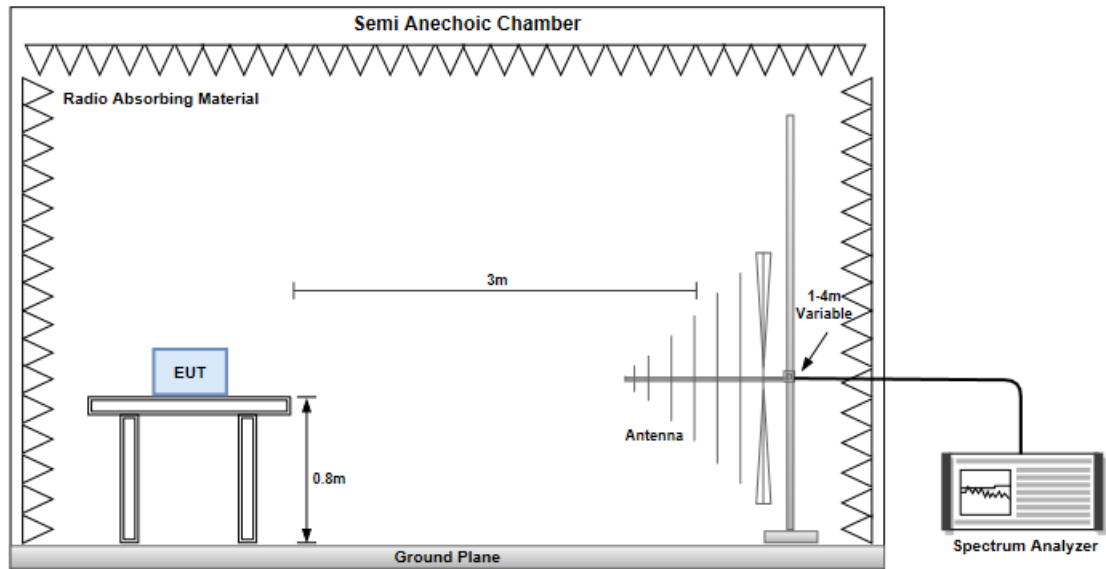
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

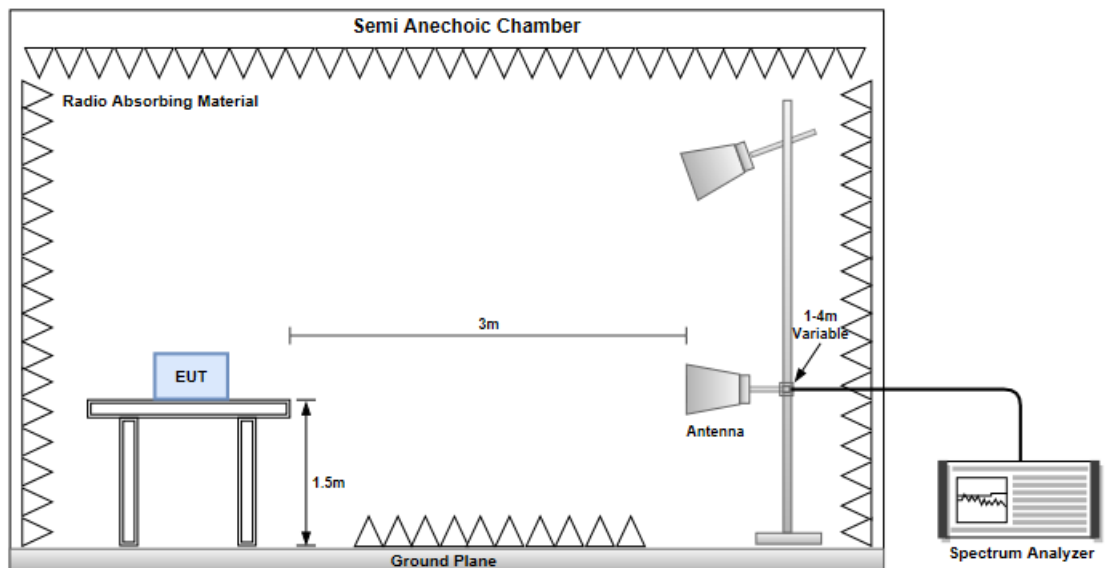
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. Radiated emission above 1GHz / Peak value
RBW=1MHz, VBW=3MHz and Peak detector
Radiated emission above 1GHz / Average value for harmonics
The average value is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula for DH5 packet type which has worst duty factor:
3.
$$20\log (\text{Duty cycle}) = 20\log \frac{1s / 1600 * 5}{100 \text{ ms}} = -30.1\text{dB}$$
4. Radiated emission above 1GHz / Average value for other emissions
RBW=1MHz, VBW=1/T and Peak detector

3.2.3 Test Setup

Radiated Emissions below 1 GHz



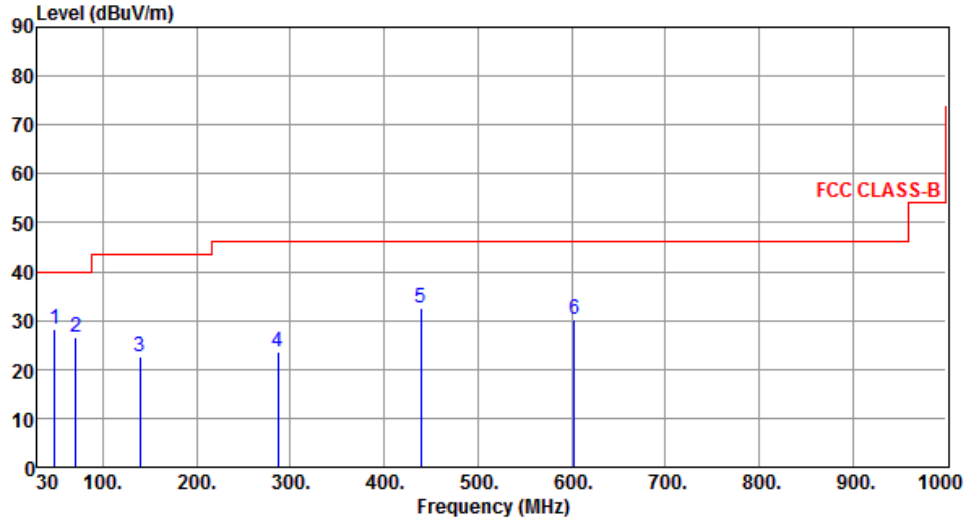
Radiated Emissions above 1 GHz



3.2.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	8DPSK	Test Freq. (MHz)	2402
Polarization	Horizontal		
Level (dBUV/m) </			

Modulation	8DPSK	Test Freq. (MHz)	2402
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	48.82	28.16	40.00	-11.84	35.78	-7.62	QP	112	24
2	70.62	26.52	40.00	-13.48	37.33	-10.81	Peak	---	---
3	139.36	22.58	43.50	-20.92	30.93	-8.35	Peak	---	---
4	286.58	23.65	46.00	-22.35	31.46	-7.81	Peak	---	---
5	439.14	32.58	46.00	-13.42	36.60	-4.02	Peak	---	---
6	602.65	30.25	46.00	-15.75	30.87	-0.62	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

3.2.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for GFSK

Modulation	GFSK		Test Freq. (MHz)		2402				
Polarization	Horizontal								
Level (dBuV/m)									

Modulation	GFSK	Test Freq. (MHz)	2402
Polarization	Vertical		
Level (dBuV/m)			

Modulation	GFSK	Test Freq. (MHz)	2441
Polarization	Horizontal		
Level (dBUV/m)			

Modulation	GFSK	Test Freq. (MHz)	2441
Polarization	Vertical		
Level (dBuV/m)			

Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Horizontal		
Level (dBUV/m) <			

Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Vertical		
Level (dBUV/m)			

3.2.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 8DPSK

Modulation	8DPSK	Test Freq. (MHz)	2402
Polarization	Horizontal		
Level (dBuV/m)			

Modulation	8DPSK	Test Freq. (MHz)	2402
Polarization	Vertical		
Level (dBuV/m)			

Modulation	8DPSK	Test Freq. (MHz)	2441
Polarization	Horizontal		
Level (dBUV/m)			

Modulation	8DPSK	Test Freq. (MHz)	2441
Polarization	Vertical		
Level (dBuV/m) <			

Modulation	8DPSK	Test Freq. (MHz)	2480
Polarization	Horizontal		
Level (dBUV/m) <			

Modulation	8DPSK	Test Freq. (MHz)	2480
Polarization	Vertical		
Level (dBUV/m) <			

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

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Kwei Shan Site II

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City 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information.

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Email: ICC_Service@icertifi.com.tw

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