



FCC TEST REPORT (Bluetooth)

REPORT NO.: RF990809E03-3 R2

MODEL NO.: MC9190

FCC ID: UZ7MC9190

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TESTED: Aug. 11 to 26, 2010 & Sep. 30 to Nov. 17, 2010

ISSUED: Dec. 13, 2010

APPLICANT: Motorola Inc.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	NA	Dec. 01, 2010
RF990809E03-3 R1	<ol style="list-style-type: none">1. Add addition note at item 4.2.3, 4.3.3, 4.4.3, 4.5.3, 4.6.3 & 4.8.32. For Antenna Port Conducted Measurement: Add plots of all tested channels.	Dec. 08, 2010
RF990809E03-3 R2	<ol style="list-style-type: none">1. Add standard : ANSI C63.10-20092. Modified note of item 4.2.3, 4.3.3, 4.4.3, 4.5.3, 4.6.3 & 4.8.3.3. Modified the test sample of item 1: From ENGINEERING SAMPLE to MASS PRODUCTION	Dec. 13, 2010



1 CERTIFICATION

PRODUCT : Mobile Computer
BRAND NAME : MOTOROLA
MODEL NO. : MC9190
APPLICANT : Motorola Inc.
TESTED DATE : Aug. 11 to 26, 2010 & Sep. 30 to Nov. 17, 2010
TEST SAMPLE : MASS PRODUCTION
STANDARDS : 47 CFR Part 15, Subpart C (Section 15.247)
ANSI C63.4-2003
ANSI C63.10-2009

The above equipment (Model: MC9190) 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 : Sunny Wen , **DATE:** Dec 13, 2010
(Sunny Wen, Specialist)

TECHNICAL ACCEPTANCE : Hank Chung , **DATE:** Dec 13, 2010
(Hank Chung, Deputy Manager)

APPROVED BY : May Chen , **DATE:** Dec 13, 2010
(May Chen, Deputy Manager)



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2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
Standard Section	Test Type and Limit	Result	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -13.88dB at 0.201MHz
15.247(a)(1)(I)-(ii)	Number of Hopping Frequency Used Spec.: At least 15 channels	PASS	Meet the requirement of limit
15.247(a)(1)(ii)	Dwell Time on Each Channel Spec.: Max. 0.4 second within 31.6 second	PASS	Meet the requirement of limit
15.247(a)(1)(I)-(ii)	Hopping Channel Separation Spec. : Min. 25 kHz or two-thirds of 20 dB bandwidth, which ever is greater	PASS	Meet the requirement of limit
15.247(a)(2)	Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	PASS	Meet the requirement of limit
15.247(b)	Maximum Peak Output Power Spec.: max. 125mW	PASS	Meet the requirement of limit
15.247(c)	Transmitter Radiated Emissions Spec.: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is -3.15dB at 74.60MHz
15.247(c)	Conducted Out-Band Emissions Measurement	PASS	Meet the requirement of limit
15.203	Antenna Requirement	PASS	Antenna connector is SMT connector.

2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.45 dB
Radiated emissions (30MHz-1GHz)	3.94 dB
Radiated emissions (1GHz ~18GHz)	2.49 dB
Radiated emissions (18GHz ~40GHz)	2.70 dB



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3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Mobile Computer
MODEL NO.	MC9190
FCC ID	UZ7MC9190
POWER SUPPLY	DC 7.4V from battery, DC 12V to cradle or DC 12V to connection adapter
MODULATION TYPE	for WLAN : CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM for Bluetooth : GFSK, $\pi/4$ -DQPSK, 8DPSK
MODULATION TECHNOLOGY	for WLAN : DSSS, OFDM for Bluetooth : FHSS
TRANSFER RATE	for WLAN : 802.11b: 11 / 5.5 / 2 / 1Mbps 802.11a/g: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps for Bluetooth : DH 1, DH 3, DH 5 +EDR
FREQUENCY RANGE	for WLAN 15.407: 802.11a: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.7GHz for WLAN 15.247: 802.11b & 802.11g: 2.412 ~ 2.472GHz 802.11a: 5.745 ~ 5.825GHz for Bluetooth : 2.402GHz ~ 2.48GHz
NUMBER OF CHANNEL	for WLAN 15.407: 19 for 802.11a, for WLAN 15.247(2.4GHz) 13 for 802.11b, 802.11g, for WLAN 15.247(5GHz) 5 for 802.11a for Bluetooth : 79



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CHANNEL SPACING	for WLAN : 802.11b/g: 5MHz 802.11a: 20MHz
	for Bluetooth : 1 MHz
MAXIMUM OUTPUT POWER	for WLAN 15.407 802.11a: 27.5mW
	for WLAN 15.247(2.4GHz) 802.11b: 41.7mW 802.11g: 147.9mW
	for WLAN 15.247(5GHz) 802.11a: 131.8mW
	for Bluetooth : GFSK: 3.7 mW $\pi/4$ – DQPSK: 2.2 mW 8DPSK: 2.5 mW
ANTENNA TYPE	Please see note 2
ANTENNA CONNECTOR	Please see note 2
DATA CABLE	RS232 cable x 1 (Part No.: 25-62164-01R)
	USB cable x 1 (Part No.: 25-62166-01R)
I/O PORTS	Audio port x 1, SD slot port x 1
ASSOCIATED DEVICES	Battery x 1 (Part No.: 21-65587-03)
	Cable adapters (Part No.: ADP9000-100R, ADP9000-110R)
	Holster (Part No.: SG-MC9121112-01R)
	Heated boot (Part No.: SG-MC9024242-01R)
	Snap on Mag Stripe Reader (Part No.: MSR9001-100R)
	Modem Module - Dongle (Part No.: MDM9000-100R)
	Headsets (Part No.:50-11300-050R, RCH50)

NOTE:

1. There are Bluetooth technology (BT2.1+EDR) and WLAN technology used for the EUT.
<the WLAN test data please refer "RF990809E03-1 & RF990809E03-2">



2. There are three antennas provided to this EUT, please refer to the following table:

WLAN								
No.	Brand	Model No.	Antenna Type	Gain (dBi)	Connector Type	Frequency range (MHz)	Cable Loss (dB)	Cable Length
1	WhaYu	Main (Tx & Rx)	PIFA	4.34 (2.4G) 5.54 (5G)	IPX	2400~2500 4900~5850	0.1	35mm
2	WhaYu	Aux (Rx only)	PIFA	3.83 (2.4G) 5.51 (5G)	IPX	2400~2500 4900~5850	0.24	85mm

Bluetooth						
No.	Brand	Model	Antenna Type	Gain (dBi)	Connector Type	Frequency range (MHz)
1	TY	AH104F2650S1-T	Chip	-3.73	SMT	2400~2500

3. The EUT configuration list:

	EUT_1	EUT_2	EUT_3	EUT_4	EUT_5	EUT_6
OS	WM6.5	WM6.5	WM6.5	WM6.5	WM6.5	WM6.5
CPU	806MHz	806MHz	806MHz	806MHz	806MHz	806MHz
RAM	256MB	256MB	256MB	256MB	256MB	256MB
Flash	1G	1G	1G	1G	1G	1G
Keypad	28/43/53keys	28/43/53keys	28/43/53keys	28/43/53keys	28/43/53keys	28/43/53keys
Battery	SYMBOL	SYMBOL	SYMBOL	SYMBOL	SYMBOL	SYMBOL
Scan	SE960	-	SE1524	-	-	-
Imager	-	SE4500-STD	-	SE4600-LR	SE4500-DL	SE4500-DPM
WLAN (a/b/g)	V	V	V	V	V	V
BT	V	V	V	V	V	V

The above configurations are available also with CR (Condensation Resistant).

The worst case is determined to be as **EUT_3** (53keys), base on the investigation by measuring radiation emission and its data was recorded in this report.

4. The EUT could be supplied with a Cradle, power adapter and battery as below table:

Cradle 1 (1-slot, not for sale together)	
Brand:	SYMBOL
Model No.:	CRD9000-1000
Part No.:	CRD9000-1001SR
Input power :	+12V ----- 9A
I/O Ports:	USB Port x 1 RS232 Port x 1
Associated Devices	USB cable (Part No.:25-64396-01R) RS232 cable (Part No.:25-63852-01R) Adapter x 2 (Adapter 1: Part No.: 50-14000-148R) (Adapter 2: Part No.: PWRS-14000-148R)
Cradle 2 (4-slot, not for sale together)	
Brand:	SYMBOL
Model No.	CHS9000-4000C
Part No.:	CHS9000-4001CR
Input power :	+12V ----- 4A
Associated Devices	US AC line cord (Part No.: 23844-00-00R) DC Line Cord for Four Slot Cradles (Part No.: 50-16002-029) Adapter x 2 (Adapter 3: Part No.: 50-14000-241R) (Adapter 4: Part No.: PWRS-14000-241R)
Cradle 3 (4-slot, not for sale together)	
Brand:	SYMBOL
Model No.:	CRD9000-4000E
Part No.:	CRD9000-4001ER
Input power :	+12V ----- 4A
I/O Ports:	Ethernet Port x 1
Associated Devices	US AC line cord (Part No.: 23844-00-00R) DC Line Cord for Four Slot Cradles (Part No.: 50-16002-029) Adapter x 2 (Adapter 3: Part No.: 50-14000-241R) (Adapter 4: Part No.: PWRS-14000-241R)



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Adapter 1 (not for sale together)	
Brand:	HIPRO
Model No.:	HP-O2040D43
Part No.:	50-14000-148R
Input power :	100-240V, 50-60Hz, 1.5A
Output power :	+12V ----- 3.33A DC output cable (unshielded, 1.8m with one core)
Adapter 2 (not for sale together)	
Brand:	HIPRO
Model No.:	HP-A0502R3D
Part No.:	PWRS-14000-148R
Input power :	100-240V, 50-60Hz, 2.4A
Output power :	+12V ----- 4.16A DC output cable (unshielded, 1.8m with one core)
Adapter 3 (only for Cradle 2, 3 use, not for sale together)	
Brand:	Motorola
Model No.:	50-14000-241R ver1 (level IV)
Input power :	100-240V, 50-60Hz, 3A
Output power :	+12V ----- 9A DC output cable (Part No.: 25-72614-01R)
Adapter 4 (only for Cradle 2, 3 use, not for sale together)	
Brand:	MOTOROLA
Model No.:	50-14000-241R ver2 (level V, p/n PWRS-14000-241R)
Input power :	100-240V, 50-60Hz, 3A
Output power :	+12V ----- 9A DC output cable (Part No.: 25-72614-01R)
Battery	
Brand:	SYMBOL
Part No.:	21-65587-03
Rating:	7.4V, 2200mAh, 16.3Wh



5. The EUT was pre-tested in chamber under following test modes :

Pre-test Mode	Description
Mode A	X-Y plane: EUT_4 + Battery (21-65587-03) + Keypad: 53keys + ADP9000-100R connection adapter + 50-14000-148R PSU with its DC cord
Mode B	X-Y plane: EUT_4 + Battery (21-65587-03) + Keypad: 43keys + ADP9000-100R connection adapter + 50-14000-148R PSU with its DC cord
Mode C	X-Y plane: EUT_4 + Battery (21-65587-03) + Keypad: 24keys + ADP9000-100R connection adapter + 50-14000-148R PSU with its DC cord
Mode D	X-Y plane: EUT_2 + Battery (21-65587-03) + Keypad: 53keys + ADP9000-100R connection adapter + 50-14000-148R PSU with its DC cord
Mode E	X-Y plane: EUT_3 + Battery (21-65587-03) + Keypad: 53keys + ADP9000-100R connection adapter + 50-14000-148R PSU with its DC cord
Mode F	X-Y plane: EUT_1 + Battery (21-65587-03) + Keypad: 53keys + ADP9000-100R connection adapter + 50-14000-148R PSU with its DC cord
Mode G	X-Y plane: EUT_5 + Battery (21-65587-03) + Keypad: 53keys + ADP9000-100R connection adapter + 50-14000-148R PSU with its DC cord
Mode H	X-Y plane: EUT_6 + Battery (21-65587-03) + Keypad: 53keys + ADP9000-100R connection adapter + 50-14000-148R PSU with its DC cord
Mode I	X-Y plane: EUT_3 + Battery (21-65587-03) + Keypad: 53keys + MSR9001-100R snap on Mag strip reader + 50-14000-148R PSU with its DC cord
Mode J	X-Y plane: EUT_3 + Battery (21-65587-03) + Keypad: 53keys + MDM9001-C010R + 50-14000-148R PSU with its DC cord
Mode K	X-Y plane: EUT_3 + Battery (21-65587-03) + Keypad: 53keys
Mode L	EUT_3 + Battery (21-65587-03) + Keypad: 53keys + CRD9000-1001SR cradle + 50-14000-148R PSU with its DC cord
Mode M	EUT_3 + Battery (21-65587-03) + Keypad: 53keys + CHS9000-4001CR + 50-14000-241R DC Line cord



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Pre-test Mode	Description
Mode N	EUT_3 + Battery (21-65587-03) + Keypad: 53keys + ADP9000-100R connection adapter + PWRS-14000-148R PSU with its DC cord
Mode O	EUT_3 + Battery (21-65587-03) + Keypad: 53keys + CRD9000-1001SR cradle + PWRS-14000-148R PSU with its DC cord
Mode P	EUT_3 + Battery (21-65587-03) + Keypad: 53keys + CRD9000-4001ER + PWRS-14000-241R DC Line cord
Mode Q	EUT_3 + Battery (21-65587-03) + Keypad: 53keys + MDM9000-100R + PWRS-14000-148R PSU with its DC cord
Mode R	X-Z plane: EUT_3 + Battery (21-65587-03) + Keypad: 53keys + ADP9000-100R connection adapter + 50-14000-148R PSU with its DC cord
Mode S	Y-Z plane: EUT_3 + Battery (21-65587-03) + Keypad: 53keys + ADP9000-100R connection adapter + 50-14000-148R PSU with its DC cord

The worse spurious emission (Below 1GHz) was found in **Mode P**. And the spurious emission (Above 1GHz) was found in **Mode S**. Therefore only the test data of the modes were recorded in this report.

6. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a, 802.11b, 802.11g and Bluetooth technology.
7. The above EUT information was declared by the manufacturer and for more detailed feature descriptions, please refer to the manufacturer's specifications or User's Manual.



3.2 DESCRIPTION OF TEST MODES

Seventy-nine channels are provided to this EUT.

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		



3.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	
A	√		√	√	Y-Z plane: EUT_3 + Battery (21-65587-03) + Keypad: 53keys + ADP9000-100R connection adapter + 50-14000-148R PSU with its DC cord
B	√				Y-Z plane: EUT_3 + Battery (21-65587-03) + Keypad: 53keys + MSR9001-100R snap on Mag strip reader + 50-14000-148R PSU with its DC cord
C	√				Y-Z plane: EUT_3 + Battery (21-65587-03) + Keypad: 53keys + MDM9001-C010R + 50-14000-148R PSU with its DC cord
D	√				EUT_3 + Battery (21-65587-03) + Keypad: 53keys + CRD9000-1001SR cradle + 50-14000-148R PSU with its DC cord
E	√				EUT_3 + Battery (21-65587-03) + Keypad: 53keys + CHS9000-4001CR + 50-14000-241R PSU with its DC cord
F	√				Y-Z plane: EUT_3 + Battery (21-65587-03) + Keypad: 53keys + ADP9000-100R connection adapter + PWRS-14000-148R PSU with its DC cord
G	√				Y-Z plane: EUT_3 + Battery (21-65587-03) + Keypad: 53keys + MSR9001-100R snap on Mag strip reader + PWRS-14000-148R PSU with its DC cord
H	√				Y-Z plane: EUT_3 + Battery (21-65587-03) + Keypad: 53keys + MDM9001-C010R + PWRS-14000-148R PSU with its DC cord
I	√				EUT_3 + Battery (21-65587-03) + Keypad: 53keys + CRD9000-1001SR cradle + PWRS-14000-148R PSU with its DC cord
J	√	√			EUT_3 + Battery (21-65587-03) + Keypad: 53keys + CRD9000-4001ER + PWRS-14000-241R PSU with its DC cord

Where **PLC**: Power Line Conducted Emission
RE ≥ 1G: Radiated Emission above 1GHz

RE < 1G: Radiated Emission below 1GHz
APCM: Antenna Port Conducted Measurement

**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	CONFIGURE MODE
WORST CHANNEL	-	-	-	-	A ~ J

Radiated Emission Test (Below 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type	CONFIGURE MODE
0 to 78	0	FHSS	GFSK	DH5	J

Radiated Emission Test (Above 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

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

Conducted Out-Band Emission Measurement:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

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

Antenna Port Conducted Measurement:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type	CONFIGURE MODE
0 to 78	0, 39, 78	FHSS	GFSK	DH5	A
0 to 78	0, 39, 78	FHSS	8DPSK	DH5	A
0 to 78	0, 39, 78	FHSS	$\pi/4$ -DQPSK	DH5	A



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TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE ³ 1G	25deg. C, 66%RH, 1013 hPa	120Vac, 60Hz	Kent Liu
RE<1G	22deg. C, 63%RH, 1013 hPa	120Vac, 60Hz	Wen Yu
PLC	26deg. C, 68%RH, 1013 hPa	120Vac, 60Hz	Moris Lin / Timmy Hu
APCM	25deg. C, 60%RH, 1013 hPa	120Vac, 60Hz	Kent Liu

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)

ANSI C63.4 : 2003

ANSI C63.10-2009

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

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



3.5 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.

Conducted test mode A~B, F~G / Radiated emission (above 1GHz) / Other test items					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	HEADSET	MOTOROLA	RCH50	NA	NA
2	CONNECTION 1	SYMBOL	P/N:ADP9000-100R	NA	NA
3	NOTEBOOK COMPUTER (for conducted test)	DELL	PP27L	7YLB32S	FCC DOC
	NOTEBOOK COMPUTER (for other test items)	DELL	D531	CN-0XM006-486 43-86L-4472	QDS-BRCM1019
4	CONNECTION 3	SYMBOL	P/N:MSR9001-100R	NA	NA
5	iPod	APPLE	A1199	YM712NHUVQ5	FCC DoC

No.	Signal cable description
1	0.9 m wrapped unshielded wire, terminated via drain wire, with 3.5 mm phone plug, w/o core.
2	NA
3	1.8 m foil shielded wire, RS232 to USB connector, w/o core.
4	NA
5	1.0 m shielded cable, terminated with USB connector, w/o core.

Conducted test mode C & H					
No.	Product	Brand	Model No.	Serial No.	FCC ID
6	HEADSET	MOTOROLA	RCH50	NA	NA
7	TELEPHONE	WONDER	WD-303	6C17FA00681	NA
8	CONNECTION 2	SYMBOL	P/N:MDM9001-C010R	NA	NA

No.	Signal cable description
6	0.9 m wrapped unshielded wire, terminated via drain wire, with 3.5 mm phone plug, w/o core.
7	1.6 m unshielded cable, RJ11 connector, w/o core.
8	NA



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Conducted test mode D					
No.	Product	Brand	Model No.	Serial No.	FCC ID
9	PERSONAL COMPUTER	DELL	DCSM	G84QL1S	FCC DoC
10	MONITOR	DELL	E2210Hc	CN-OG337R-6418 0-97S-OQDS	FCC DoC
11	PRINTER	EPSON	LQ-300+	DCGY017097	FCC DoC
12	MODEM	ACEEX	1414	0206026775	IFAXDM1414
13	KEYBOARD	DELL	SK-8115	CN-0J4635-71616- 53A-0CH2	FCC DoC
14	MOUSE	DELL	MO71KC	345011086	FCC DoC
15	HEADSET	MOTOROLA	RCH50	NA	NA

Conducted test mode I					
No.	Product	Brand	Model No.	Serial No.	FCC ID
9	PERSONAL COMPUTER	DELL	DCSCMF	9KKB32S	FCC DoC
10	MONITOR	DELL	E2210Hc	CN-OG337R-6418 0-97S-OQDS	FCC DoC
11	PRINTER	EPSON	LQ-300+II	G88Y074083	FCC DoC
12	MODEM	ACEEX	1414	0206026778	IFAXDM1414
13	KEYBOARD	DELL	SK-8115	MY-0DJ325-71619- 99B-0476	FCC DoC
14	MOUSE	DELL	MOC5UO	I1401LVG	FCC DoC
15	HEADSET	MOTOROLA	RCH50	NA	NA

No.	Signal cable description
9	NA
10	1.8 m braid shielded wire, terminated with VGA connector via metallic frame, with two cores
11	1.8 m braid shielded wire, terminated with DB25 and USB connector via metallic frame, w/o core
12	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
13	1.9 m foil shielded wire, USB connector, w/o core.
14	1.8 m foil shielded wire, USB connector, w/o core.
15	0.9 m wrapped unshielded wire, terminated via drain wire, with 3.5 mm phone plug, w/o core.



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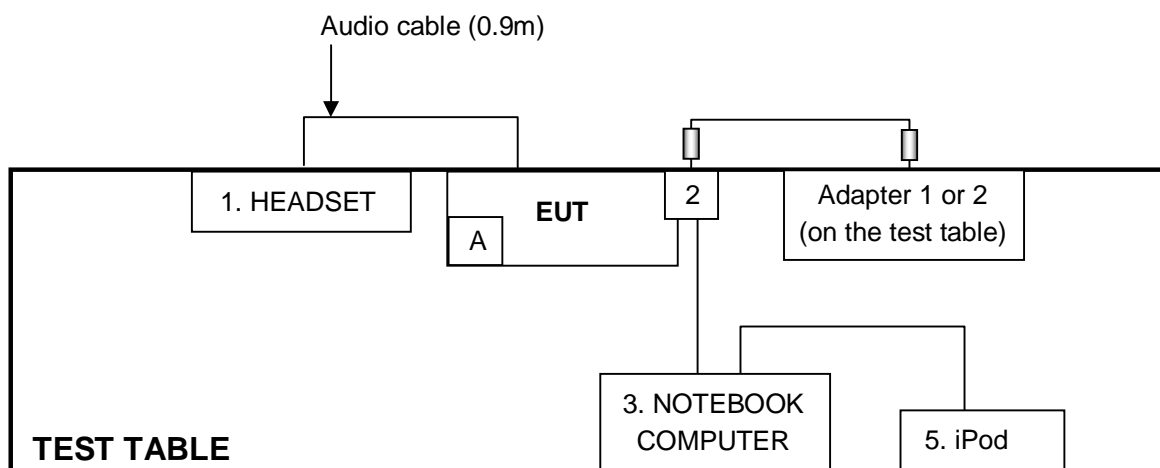
Conducted test mode J / radiated emission (below 1GHz)					
No.	Product	Brand	Model No.	Serial No.	FCC ID
16	DSL Wireless Router	ABOCOM	WR224GR	060500749P	FCC
17	NOTEBOOK COMPUTER	DELL	PP21L	CN-0GD366-70166-5 B3-09ZX	QDS-BRCM1016

No.	Signal cable description
16	10 m UTP cable.
17	3.0 m UTP cable.

Note: 1. All power cords of the above support units are unshielded (1.8m).

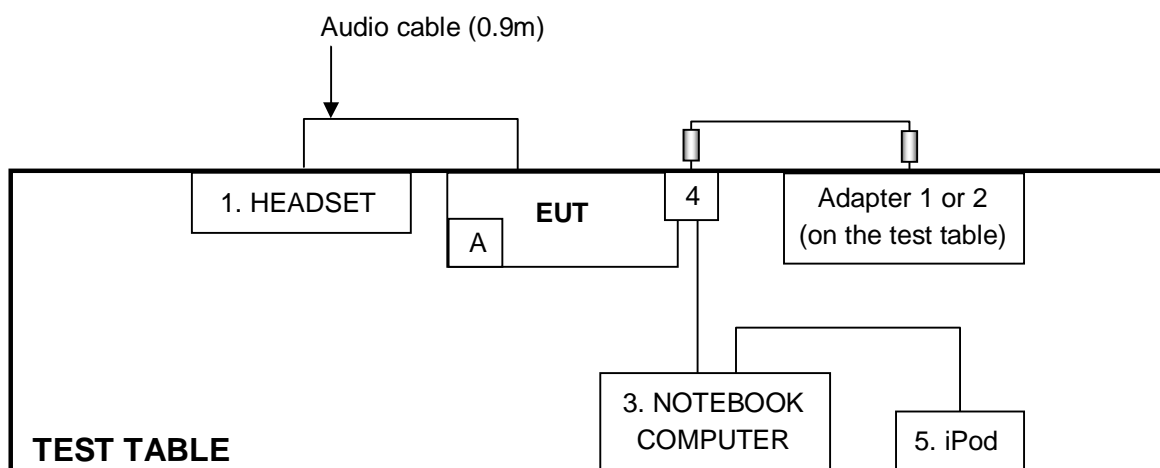
3.6 CONFIGURATION OF SYSTEM UNDER TEST

For conducted test mode A & F / radiated emission (above 1GHz) / other test items:



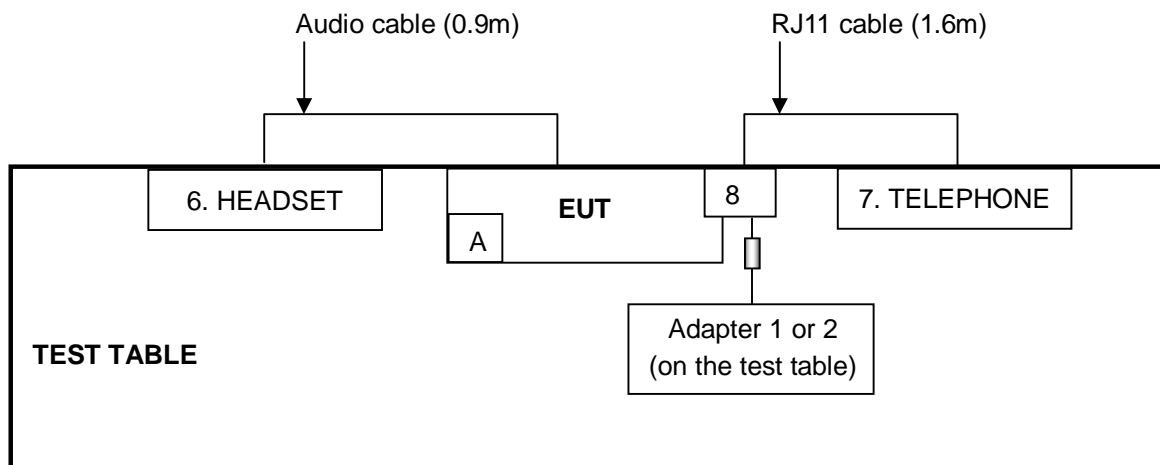
NOTE: 1. Item A is the SD Card.
2. Item 2 is the Connection 1.

For conducted test mode B & G:



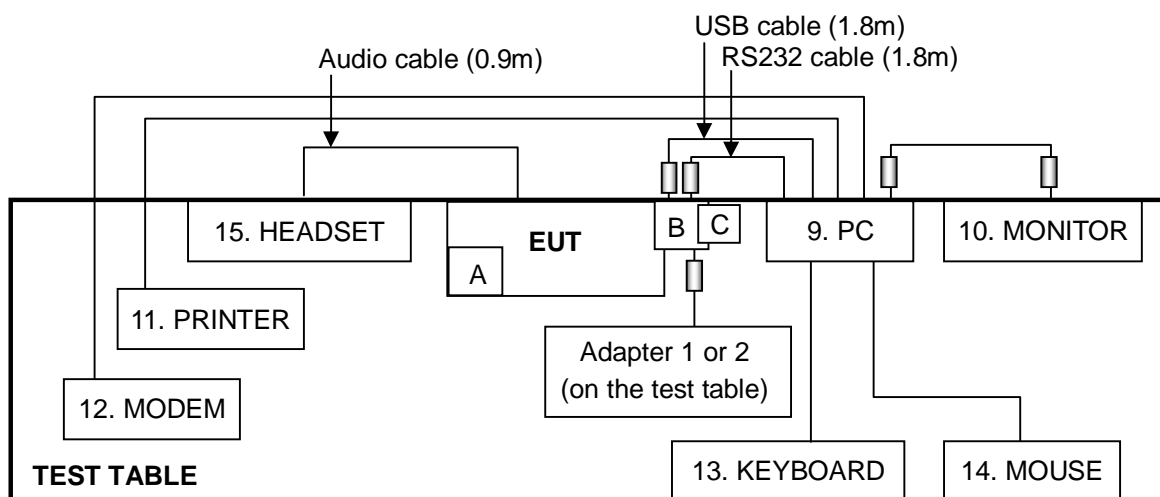
NOTE: 1. Item A is the SD Card.
2. Item 4 is the Connection 3.

For conducted test mode C & H:



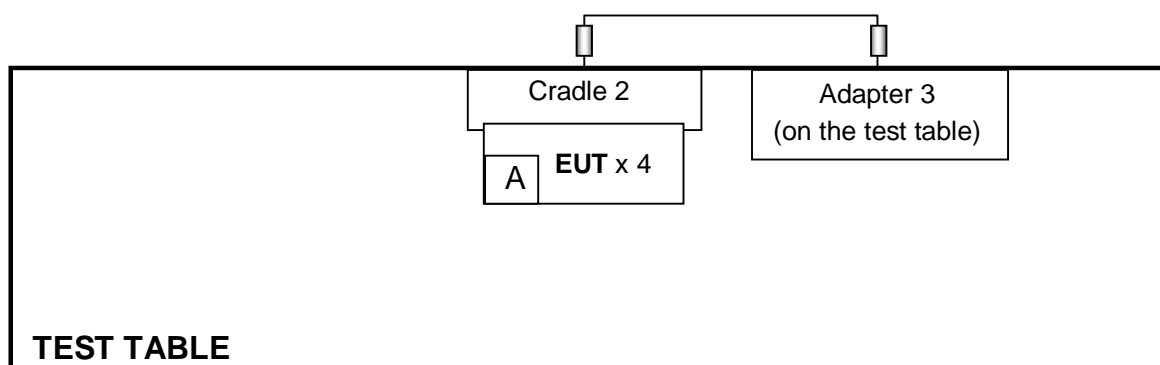
- NOTE:** 1. Item A is the SD Card.
 2. Item 8 is the Connection 2.

For conducted test mode D & I:



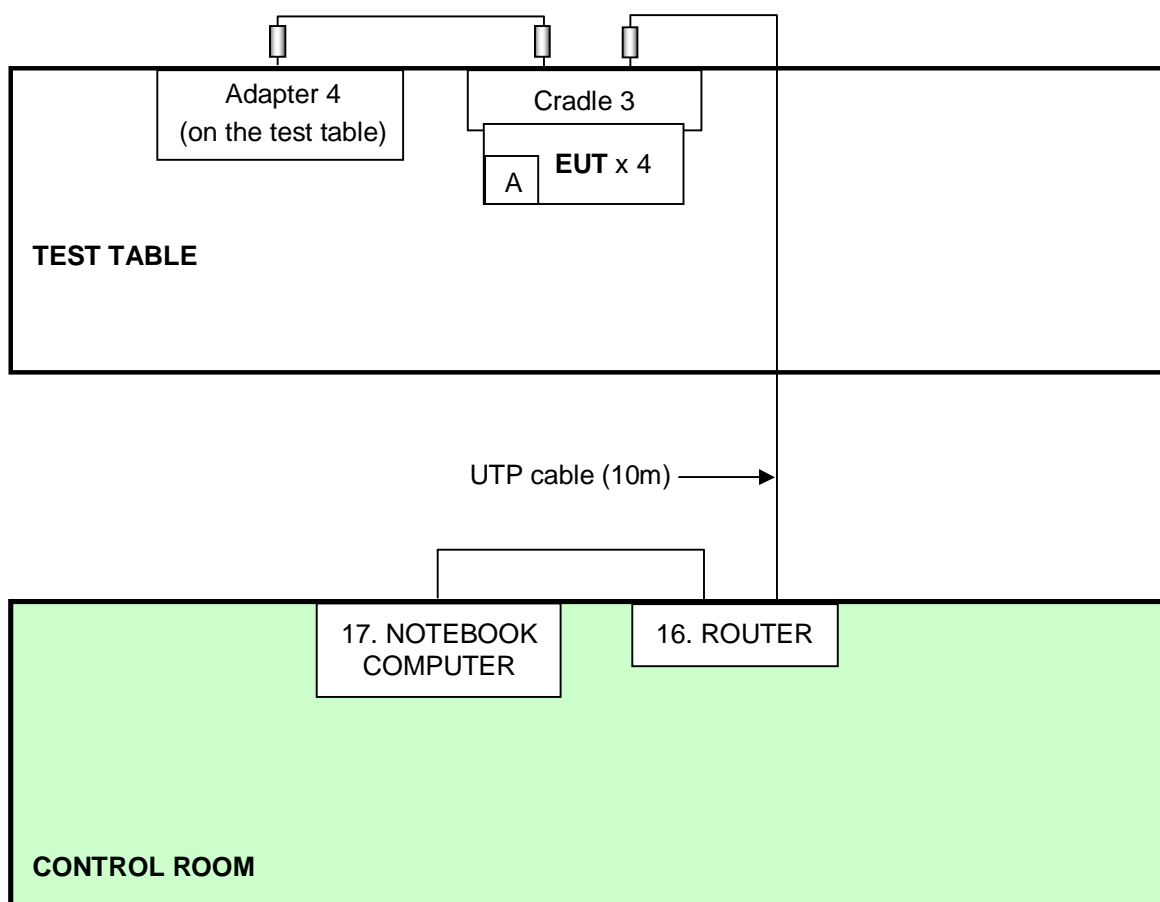
- NOTE:** 1. Item A is the SD Card.
 2. Item B is the Cradle 1.
 3. Item C is the battery.

For conducted test mode E:



NOTE: 1. Item A is the SD Card.

For conducted test mode J / radiated emission (below 1GHz) test:



NOTE: 1. Item A is the SD Card.

4 TEST PROCEDURES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. All emanations from a class B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

For test mode A-E, tested data: Aug. 12-26

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 09, 2010	Mar. 08, 2011
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-522	Sep. 23, 2009	Sep. 22, 2010
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Oct. 26, 2009	Oct. 25, 2010
RF Cable (JYEBAO)	5DFB	COBCAB-001	Nov. 24, 2009	Nov. 23, 2010
50 ohms Terminator	50	3	Oct. 28, 2009	Oct. 27, 2010
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

Note:

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



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For test mode F~H, tested data: Sep. 30

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 09, 2010	Mar. 08, 2011
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-522	Sep. 08, 2010	Sep. 07, 2011
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Oct. 26, 2009	Oct. 25, 2010
RF Cable (JYEBAO)	5DFB	COCCAB-002	Aug. 30, 2010	Aug. 29, 2011
50 ohms Terminator	50	3	Oct. 28, 2009	Oct. 27, 2010
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

Note:

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

For test mode I~J, tested data: Sep. 30

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 01, 2010	Feb. 28, 2011
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-523	Sep. 17, 2010	Sep. 16, 2011
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100072	June 11, 2010	June 10, 2011
RF Cable (JYEBAO)	5DFB	COACAB-001	Dec. 14, 2009	Dec. 13, 2010
50 ohms Terminator	50	3	Oct. 28, 2009	Oct. 27, 2010
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

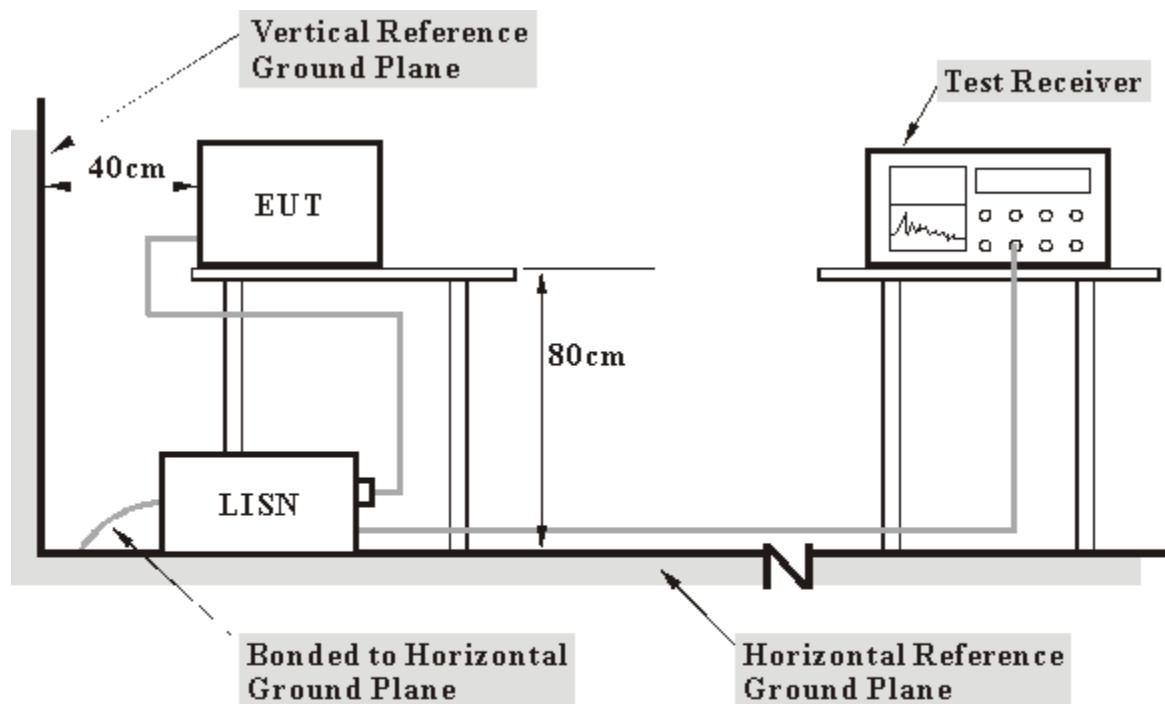
Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
- 3 The VCCI Con A Registration No. is C-817.

4.1.3 TEST PROCEDURES

- The EUT/HOST was placed 0.4 meters from the conducting wall of the shielded room with EUT/HOST 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.
- Both lines of the power mains connected to the EUT/HOST were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

4.1.4 TEST SETUP



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

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

4.1.5 EUT OPERATING CONDITIONS

- a. Turn on the power of EUT.
- b. The EUT run test program “BTRegTest_ver3.5” to enable EUT under transmission / receiver condition continuously at specific channel frequency.



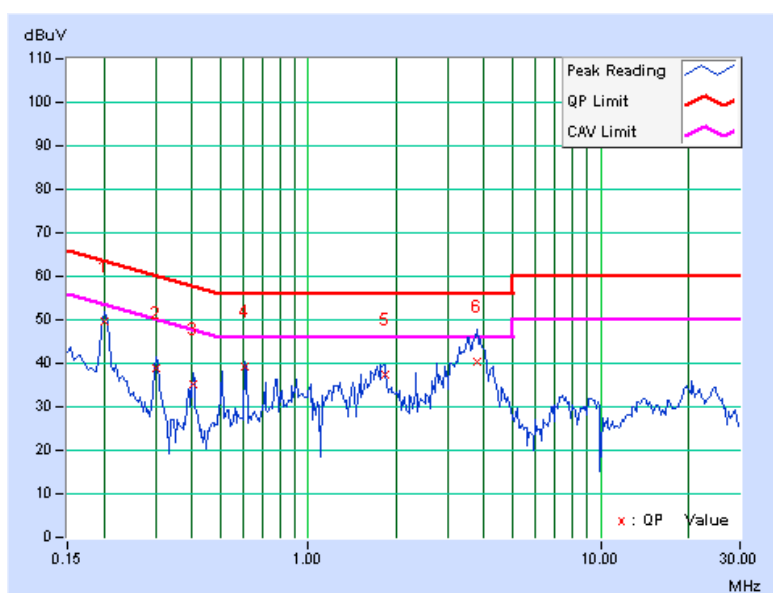
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4.1.6 TEST RESULTS (MODE A)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.05	49.51	-	49.56	-	63.58	53.58	-14.02	-
2	0.302	0.06	38.97	-	39.03	-	60.18	50.18	-21.15	-
3	0.404	0.06	35.18	-	35.24	-	57.77	47.77	-22.53	-
4	0.607	0.07	39.24	-	39.31	-	56.00	46.00	-16.69	-
5	1.824	0.12	37.14	-	37.26	-	56.00	46.00	-18.74	-
6	3.770	0.18	40.03	-	40.21	-	56.00	46.00	-15.79	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



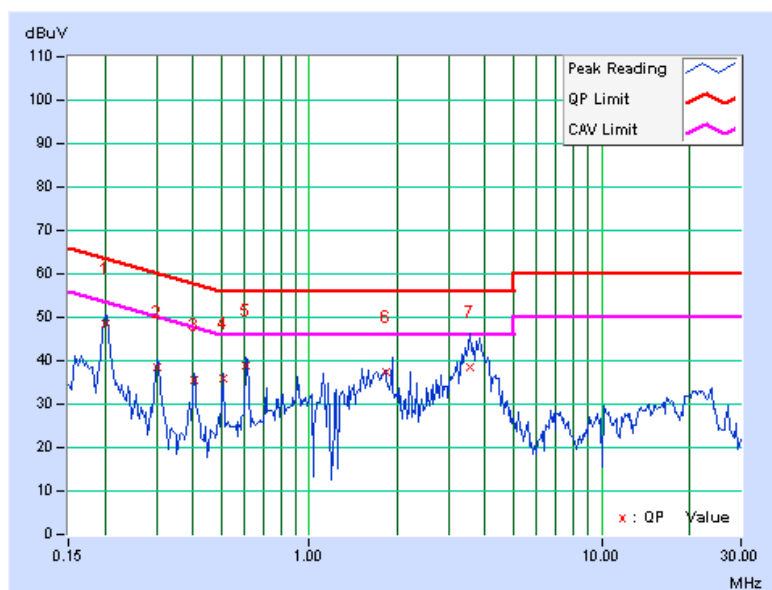


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PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.06	48.58	-	48.64	-	63.58	53.58	-14.94	-
2	0.302	0.07	38.47	-	38.54	-	60.18	50.18	-21.64	-
3	0.404	0.07	35.50	-	35.57	-	57.77	47.77	-22.20	-
4	0.505	0.08	35.67	-	35.75	-	56.00	46.00	-20.25	-
5	0.607	0.08	39.80	-	38.98	-	56.00	46.00	-17.02	-
6	1.824	0.13	37.28	-	37.41	-	56.00	46.00	-18.59	-
7	3.540	0.19	38.44	-	38.63	-	56.00	46.00	-17.37	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.

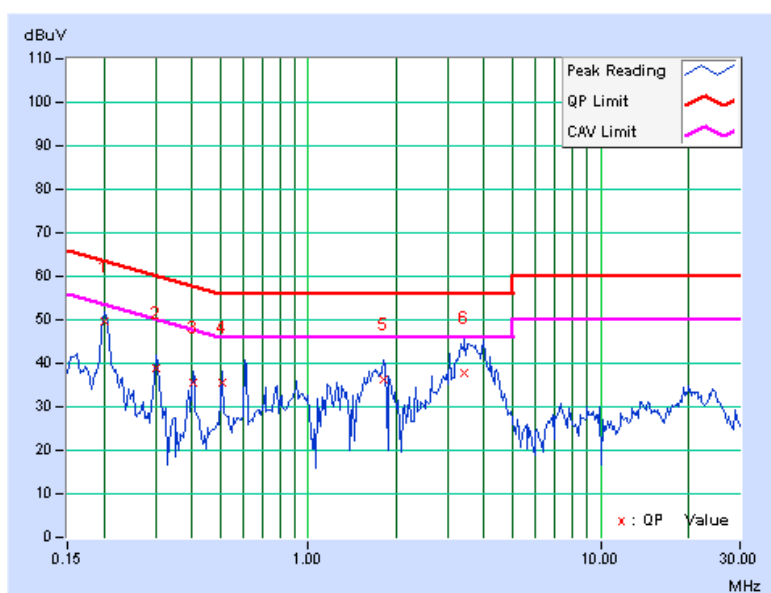


4.1.7 TEST RESULTS (MODE B)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.05	49.65	-	49.70	-	63.58	53.58	-13.88	-
2	0.302	0.06	38.99	-	39.05	-	60.18	50.18	-21.13	-
3	0.404	0.06	35.36	-	35.42	-	57.77	47.77	-22.35	-
4	0.505	0.07	35.61	-	35.68	-	56.00	46.00	-20.32	-
5	1.820	0.12	36.15	-	36.27	-	56.00	46.00	-19.73	-
6	3.438	0.17	37.78	-	37.95	-	56.00	46.00	-18.05	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



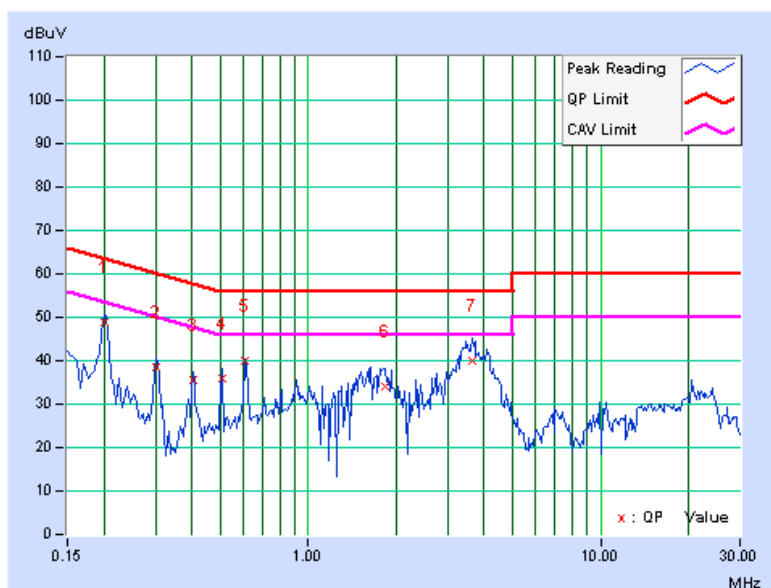


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PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.06	48.66	-	48.72	-	63.58	53.58	-14.86	-
2	0.302	0.07	38.53	-	38.60	-	60.18	50.18	-21.58	-
3	0.404	0.07	35.44	-	35.51	-	57.77	47.77	-22.26	-
4	0.505	0.08	35.87	-	35.95	-	56.00	46.00	-20.05	-
5	0.607	0.08	39.92	-	40.00	-	56.00	46.00	-16.00	-
6	1.832	0.13	33.77	-	33.90	-	56.00	46.00	-22.10	-
7	3.645	0.19	39.93	-	40.12	-	56.00	46.00	-15.88	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.





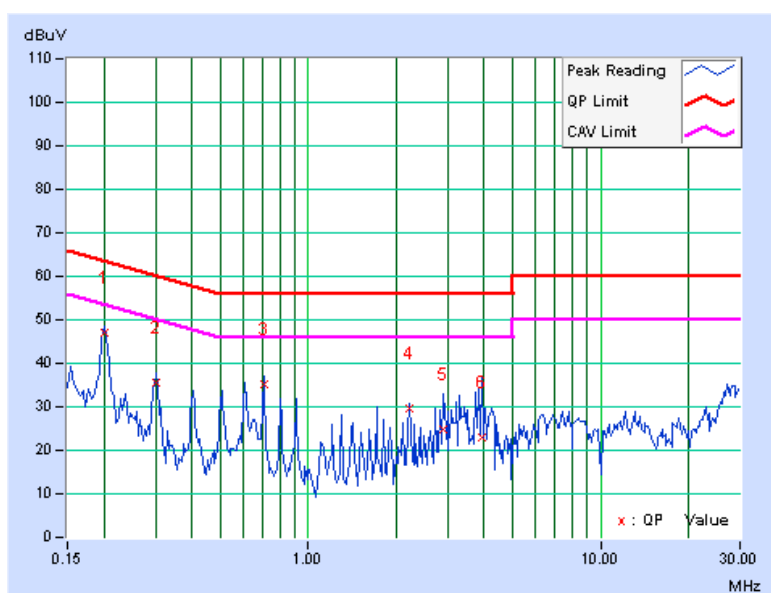
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4.1.8 TEST RESULTS (MODE C)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.05	47.10	-	47.15	-	63.58	53.58	-16.43	-
2	0.302	0.06	35.39	-	35.45	-	60.18	50.18	-24.73	-
3	0.705	0.08	35.19	-	35.27	-	56.00	46.00	-20.73	-
4	2.215	0.14	29.33	-	29.47	-	56.00	46.00	-26.53	-
5	2.910	0.16	24.51	-	24.67	-	56.00	46.00	-31.33	-
6	3.930	0.19	22.63	-	22.82	-	56.00	46.00	-33.18	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



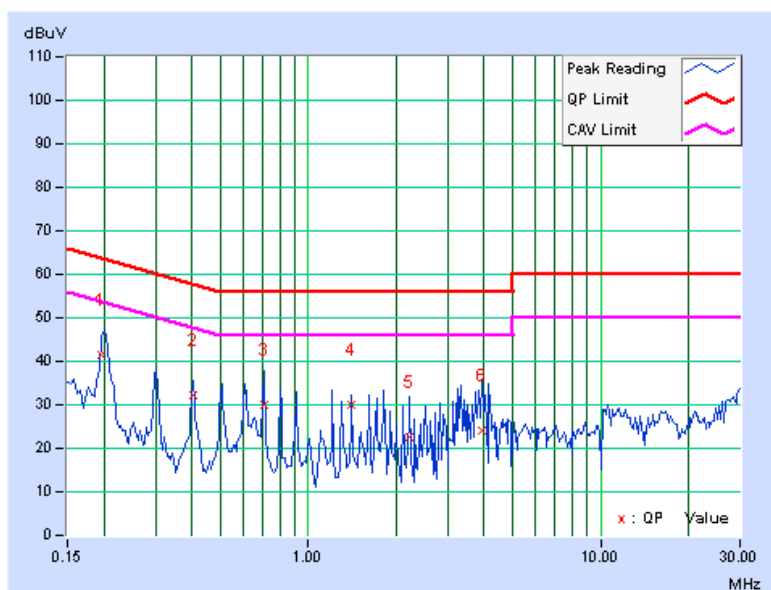


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PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.06	41.24	-	41.30	-	63.74	53.74	-22.44	-
2	0.404	0.07	32.23	-	32.30	-	57.77	47.77	-25.47	-
3	0.709	0.09	29.79	-	29.88	-	56.00	46.00	-26.12	-
4	1.410	0.12	29.94	-	30.06	-	56.00	46.00	-25.94	-
5	2.215	0.15	22.47	-	22.62	-	56.00	46.00	-33.38	-
6	3.922	0.20	23.87	-	24.07	-	56.00	46.00	-31.93	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.





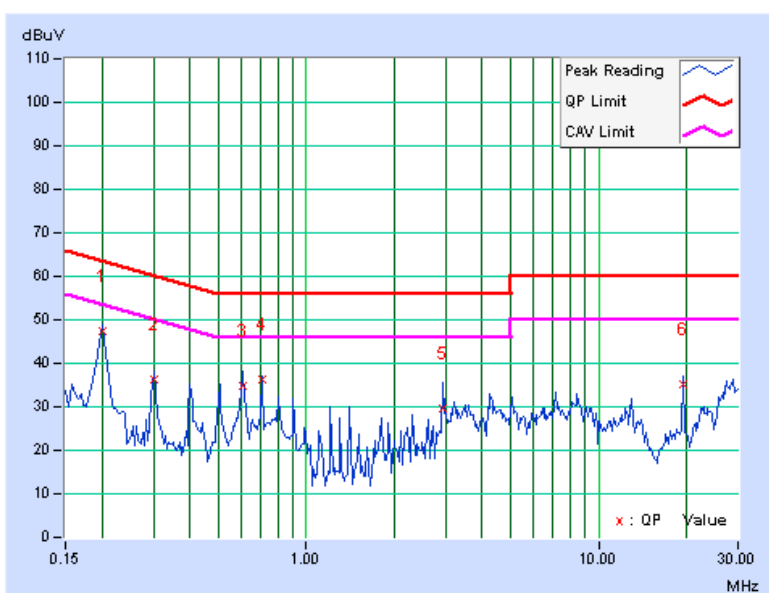
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4.1.9 TEST RESULTS (MODE D)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.05	47.24	-	47.29	-	63.58	53.58	-16.29	-
2	0.302	0.06	36.21	-	36.27	-	60.18	50.18	-23.91	-
3	0.603	0.07	34.67	-	34.74	-	56.00	46.00	-21.26	-
4	0.705	0.08	36.14	-	36.22	-	56.00	46.00	-19.78	-
5	2.922	0.16	29.62	-	29.78	-	56.00	46.00	-26.22	-
6	19.500	0.50	34.81	-	35.31	-	60.00	50.00	-24.69	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



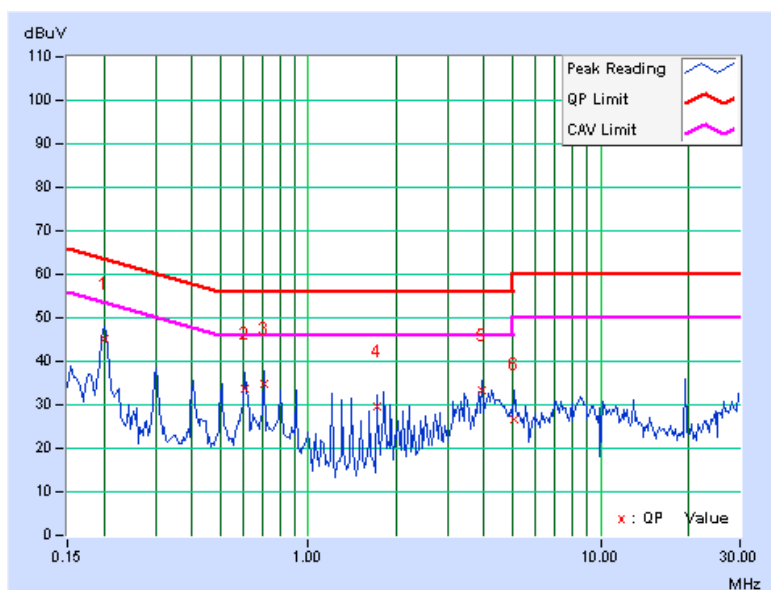


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PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.06	45.19	-	45.25	-	63.58	53.58	-18.33	-
2	0.607	0.08	33.44	-	33.52	-	56.00	46.00	-22.48	-
3	0.705	0.09	34.77	-	34.86	-	56.00	46.00	-21.14	-
4	1.711	0.13	29.38	-	29.51	-	56.00	46.00	-26.49	-
5	3.926	0.20	33.00	-	33.20	-	56.00	46.00	-22.80	-
6	5.063	0.23	26.27	-	26.50	-	60.00	50.00	-33.50	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.

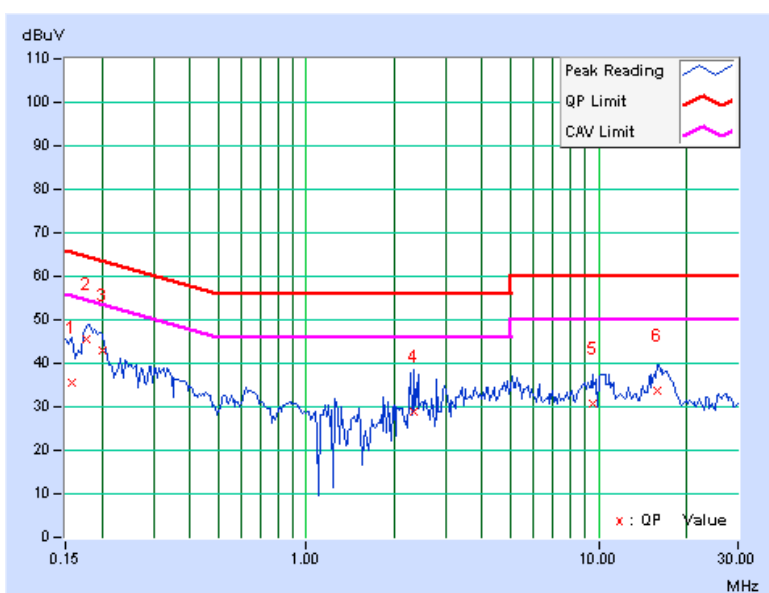


4.1.10 TEST RESULTS (MODE E)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.05	35.61	-	35.66	-	65.58	55.58	-29.91	-
2	0.177	0.05	45.33	-	45.38	-	64.61	54.61	-19.23	-
3	0.201	0.05	42.92	-	42.97	-	63.58	53.58	-20.61	-
4	2.336	0.14	28.64	-	28.78	-	56.00	46.00	-27.22	-
5	9.508	0.34	30.44	-	30.78	-	60.00	50.00	-29.22	-
6	15.840	0.44	33.09	-	33.53	-	60.00	50.00	-26.47	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



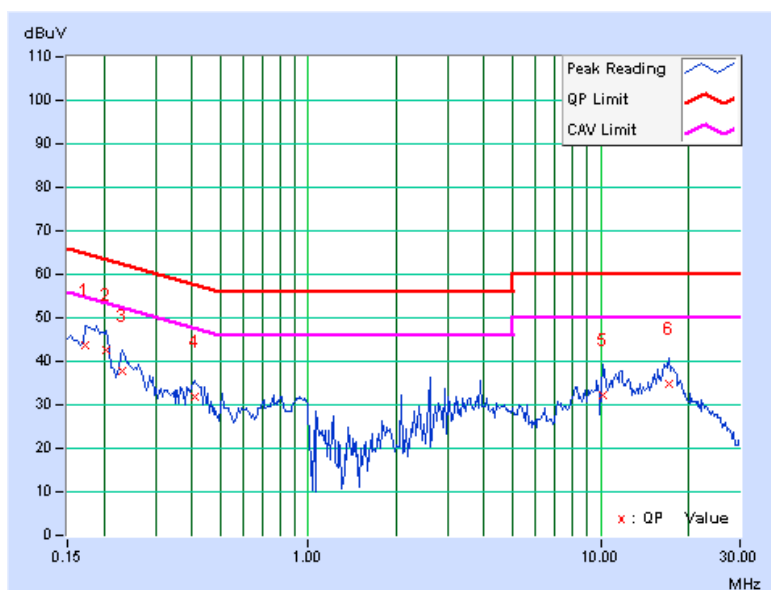


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PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.173	0.06	43.61	-	43.67	-	64.79	54.79	-21.12	-
2	0.205	0.06	42.53	-	42.59	-	63.42	53.42	-20.83	-
3	0.232	0.06	37.73	-	37.79	-	62.38	52.38	-24.59	-
4	0.408	0.07	31.69	-	31.76	-	57.69	47.69	-25.93	-
5	10.207	0.36	31.70	-	32.06	-	60.00	50.00	-27.94	-
6	17.137	0.47	34.39	-	34.86	-	60.00	50.00	-25.14	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.





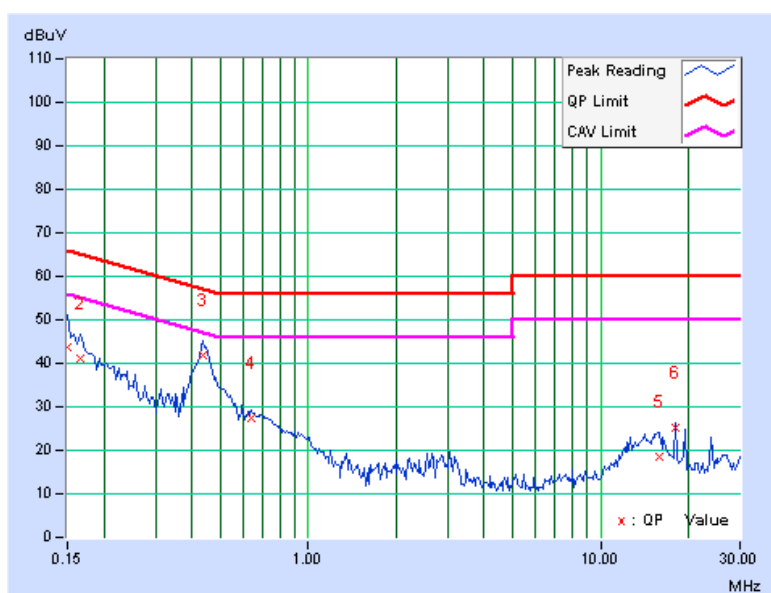
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4.1.11 TEST RESULTS (MODE F)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.04	43.71	-	43.75	-	66.00	56.00	-22.25	-
2	0.166	0.04	41.25	-	41.29	-	65.17	55.17	-23.88	-
3	0.435	0.05	41.96	-	42.01	-	57.15	47.15	-15.14	-
4	0.642	0.07	27.35	-	27.42	-	56.00	46.00	-28.58	-
5	15.828	0.53	17.94	-	18.47	-	60.00	50.00	-41.53	-
6	18.027	0.54	24.49	-	25.03	-	60.00	50.00	-34.97	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



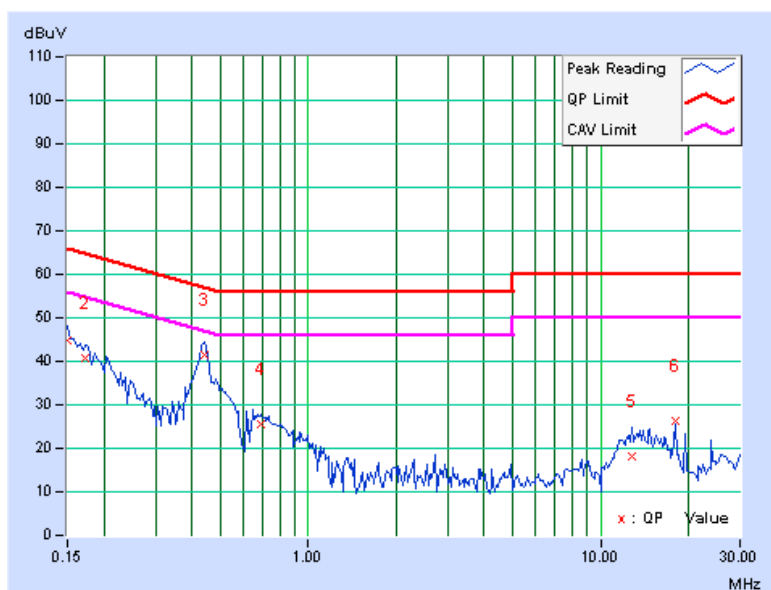


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PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.05	44.76	-	44.81	-	66.00	56.00	-21.19	-
2	0.173	0.05	40.79	-	40.84	-	64.79	54.79	-23.95	-
3	0.443	0.06	41.26	-	41.32	-	57.01	47.01	-15.68	-
4	0.689	0.08	25.61	-	25.69	-	56.00	46.00	-30.31	-
5	12.797	0.42	17.86	-	18.28	-	60.00	50.00	-41.72	-
6	18.031	0.55	25.82	-	26.37	-	60.00	50.00	-33.63	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.





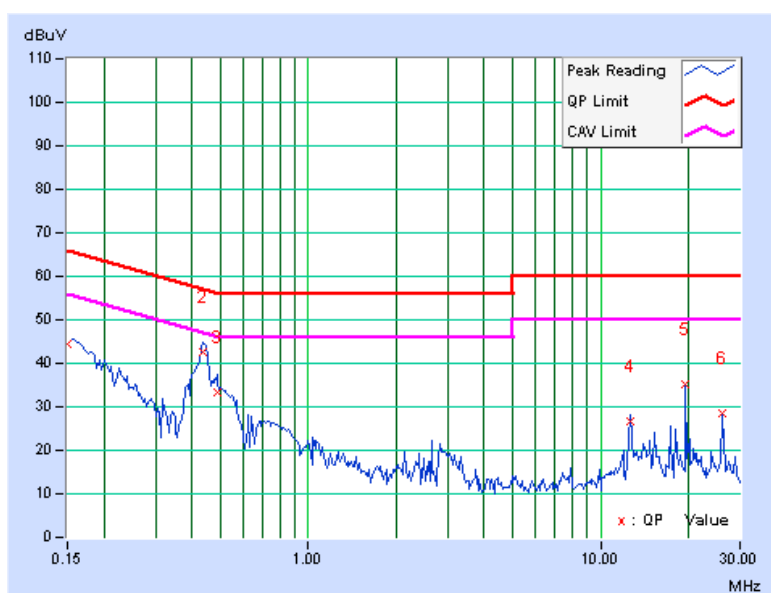
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4.1.12 TEST RESULTS (MODE G)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.04	44.52	-	44.56	-	66.00	56.00	-21.44	-
2	0.435	0.05	42.68	-	42.73	-	57.15	47.15	-14.42	-
3	0.486	0.06	33.10	-	33.16	-	56.24	46.24	-23.08	-
4	12.629	0.40	29.86	-	30.26	-	60.00	50.00	-29.74	-
5	19.500	0.54	34.72	-	35.26	-	60.00	50.00	-24.74	-
6	26.000	0.80	27.84	-	28.64	-	60.00	50.00	-31.36	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



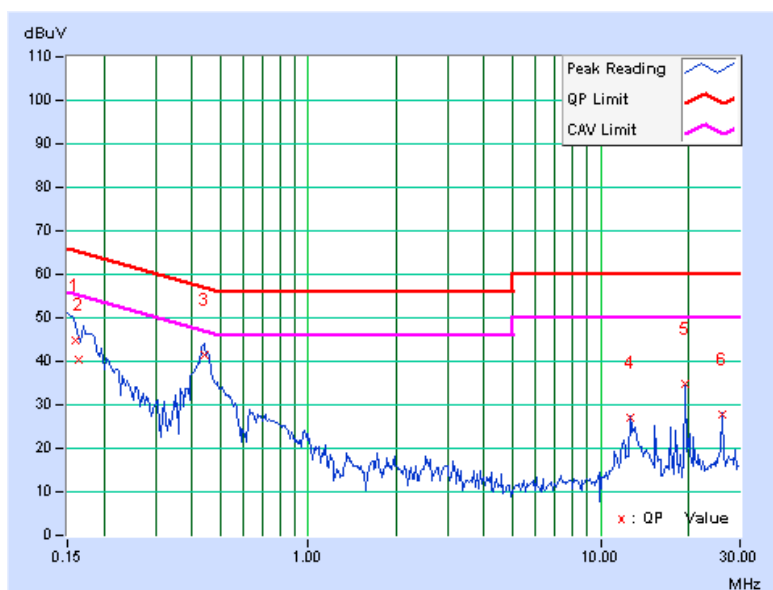


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PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.160	0.05	44.86	-	44.91	-	65.46	55.46	-20.55	-
2	0.165	0.05	40.35	-	40.40	-	65.22	55.22	-24.82	-
3	0.442	0.06	41.35	-	41.41	-	57.02	47.02	-15.60	-
4	12.615	0.41	26.55	-	26.96	-	60.00	50.00	-33.04	-
5	19.500	0.55	34.28	-	34.83	-	60.00	50.00	-25.17	-
6	26.000	0.81	27.15	-	27.96	-	60.00	50.00	-32.04	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.





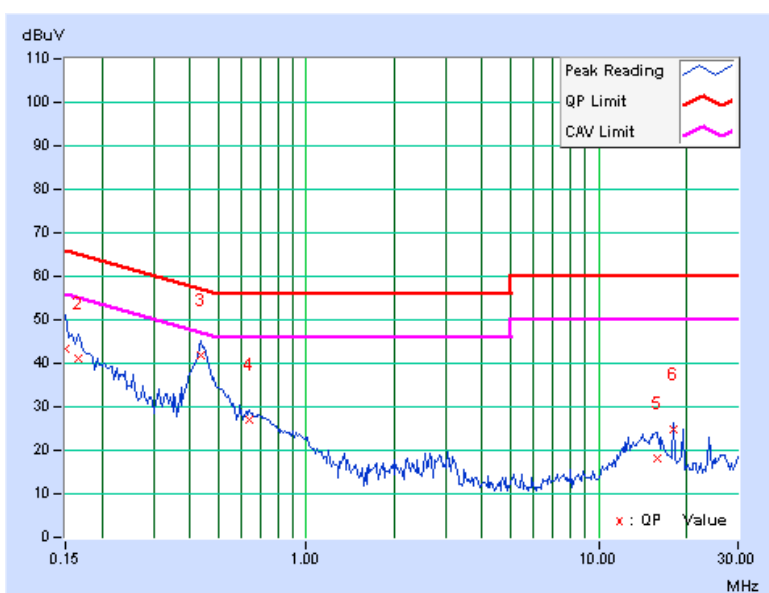
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4.1.13 TEST RESULTS (MODE H)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.04	43.25	-	43.29	-	66.00	56.00	-22.71	-
2	0.166	0.04	41.12	-	41.16	-	65.18	55.18	-24.02	-
3	0.435	0.05	41.75	-	41.80	-	57.15	47.15	-15.35	-
4	0.642	0.07	27.05	-	27.12	-	56.00	46.00	-28.88	-
5	15.828	0.53	17.54	-	18.07	-	60.00	50.00	-41.93	-
6	18.027	0.54	24.22	-	24.76	-	60.00	50.00	-35.24	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



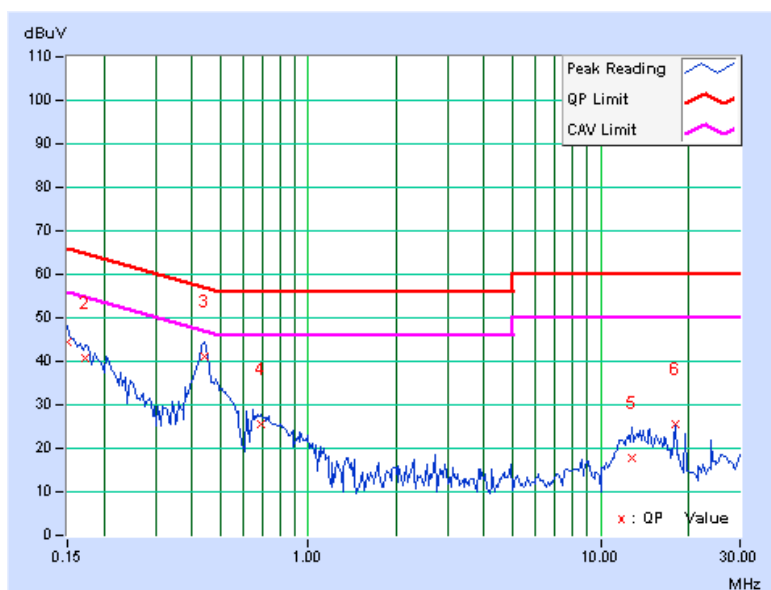


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PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.05	44.32	-	44.37	-	66.00	56.00	-21.63	-
2	0.173	0.05	40.52	-	40.57	-	64.79	54.79	-24.22	-
3	0.443	0.06	41.15	-	41.21	-	57.01	47.01	-15.79	-
4	0.689	0.08	25.32	-	25.40	-	56.00	46.00	-30.60	-
5	12.797	0.42	17.25	-	17.67	-	60.00	50.00	-42.33	-
6	18.031	0.55	25.15	-	25.70	-	60.00	50.00	-34.30	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.





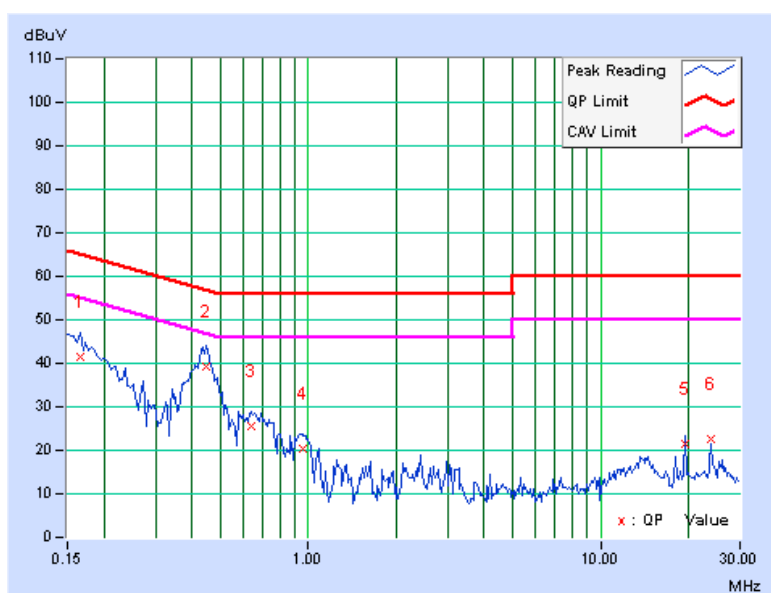
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4.1.14 TEST RESULTS (MODE I)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.166	0.04	41.55	-	41.59	-	65.18	55.18	-23.59	-
2	0.447	0.05	39.24	-	39.29	-	56.93	46.93	-17.64	-
3	0.642	0.07	25.57	-	25.64	-	56.00	46.00	-30.36	-
4	0.955	0.10	20.31	-	20.41	-	56.00	46.00	-35.59	-
5	19.500	0.54	21.12	-	21.66	-	60.00	50.00	-38.34	-
6	24.016	0.70	22.03	-	22.73	-	60.00	50.00	-37.27	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



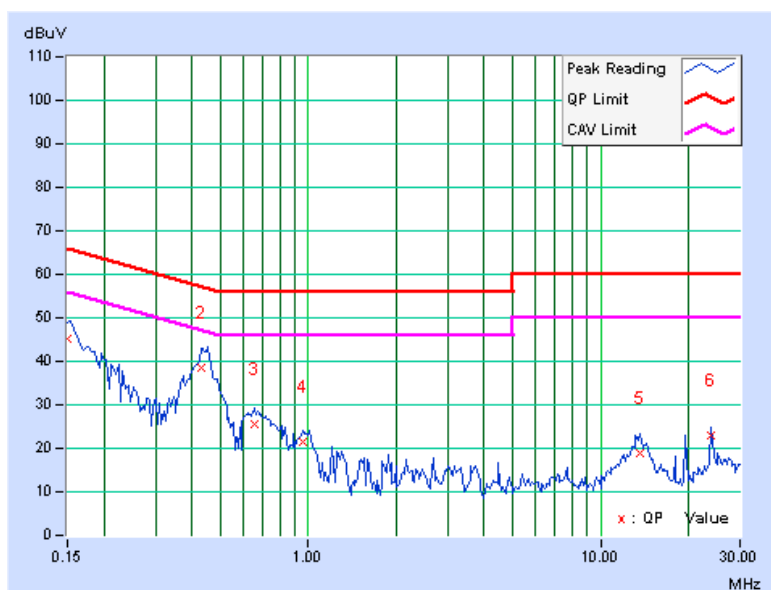


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PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.05	45.21	-	45.26	-	66.00	56.00	-20.74	-
2	0.431	0.06	38.42	-	38.48	-	57.23	47.23	-18.75	-
3	0.658	0.08	25.63	-	25.71	-	56.00	46.00	-30.29	-
4	0.955	0.11	21.55	-	21.66	-	56.00	46.00	-34.34	-
5	13.586	0.46	18.25	-	18.71	-	60.00	50.00	-41.29	-
6	24.016	0.71	22.35	-	23.06	-	60.00	50.00	-36.94	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.





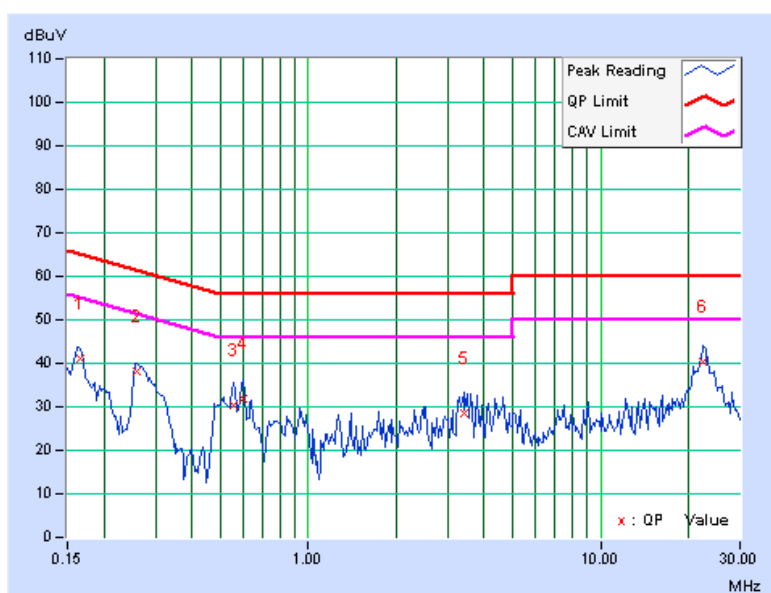
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4.1.15 TEST RESULTS (MODE J)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.166	0.04	41.25	-	41.29	-	65.18	55.18	-23.89	-
2	0.259	0.04	38.12	-	38.16	-	61.45	51.45	-23.29	-
3	0.556	0.06	30.35	-	30.41	-	56.00	46.00	-25.59	-
4	0.599	0.07	31.67	-	31.74	-	56.00	46.00	-24.26	-
5	3.398	0.13	28.22	-	28.35	-	56.00	46.00	-27.65	-
6	22.508	0.64	39.65	-	40.29	-	60.00	50.00	-19.71	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



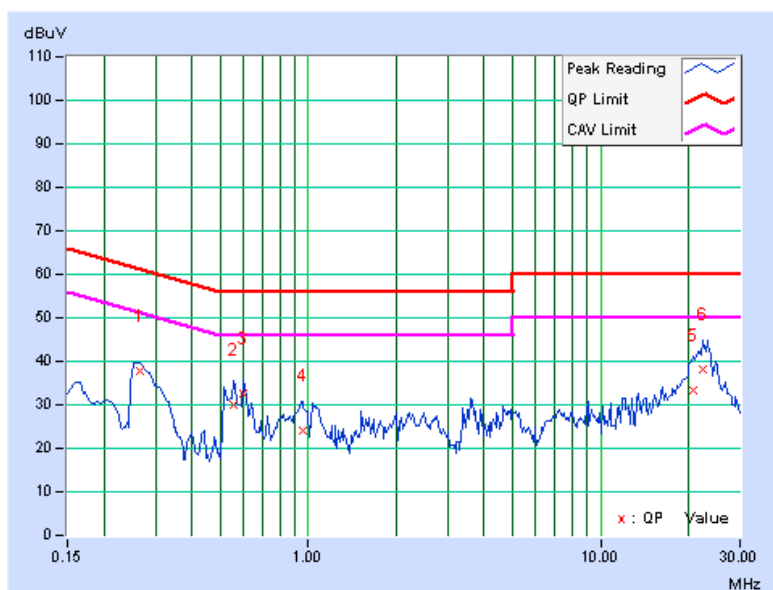


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PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.267	0.05	37.68	-	37.73	-	61.20	51.20	-23.47	-
2	0.556	0.07	30.11	-	30.18	-	56.00	46.00	-25.82	-
3	0.599	0.08	32.62	-	32.70	-	56.00	46.00	-23.30	-
4	0.955	0.11	24.08	-	24.19	-	56.00	46.00	-31.81	-
5	20.859	0.58	32.65	-	33.23	-	60.00	50.00	-26.77	-
6	22.266	0.64	37.54	-	38.18	-	60.00	50.00	-21.82	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



4.2 NUMBER OF HOPPING FREQUENCY USED

4.2.1 LIMIT OF HOPPING FREQUENCY USED

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
PSA Seviess Spectrum Analyzer	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010

NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.2.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. 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.
3. 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.
4. Set the SA on View mode and then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

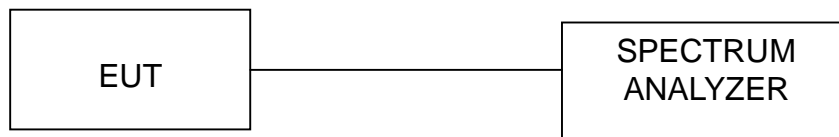
NOTE:

The EUT was setup to ANSI C63.4, tested to FHSS test procedure of DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



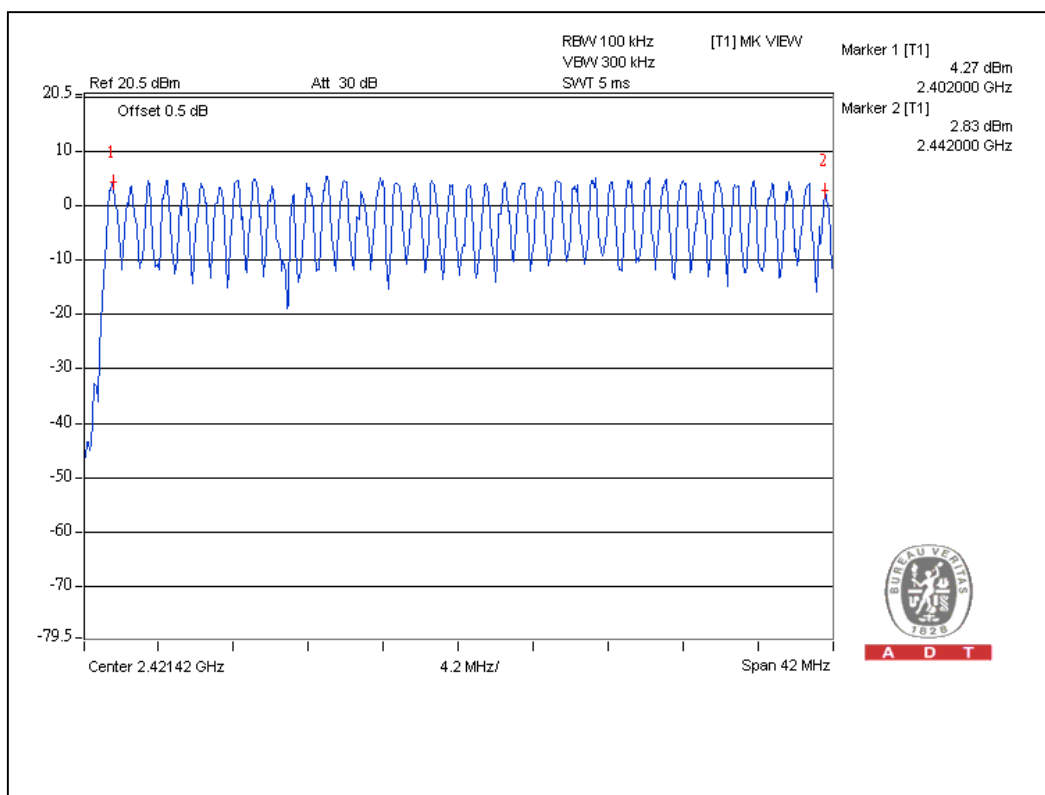
4.2.6 TEST RESULTS

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

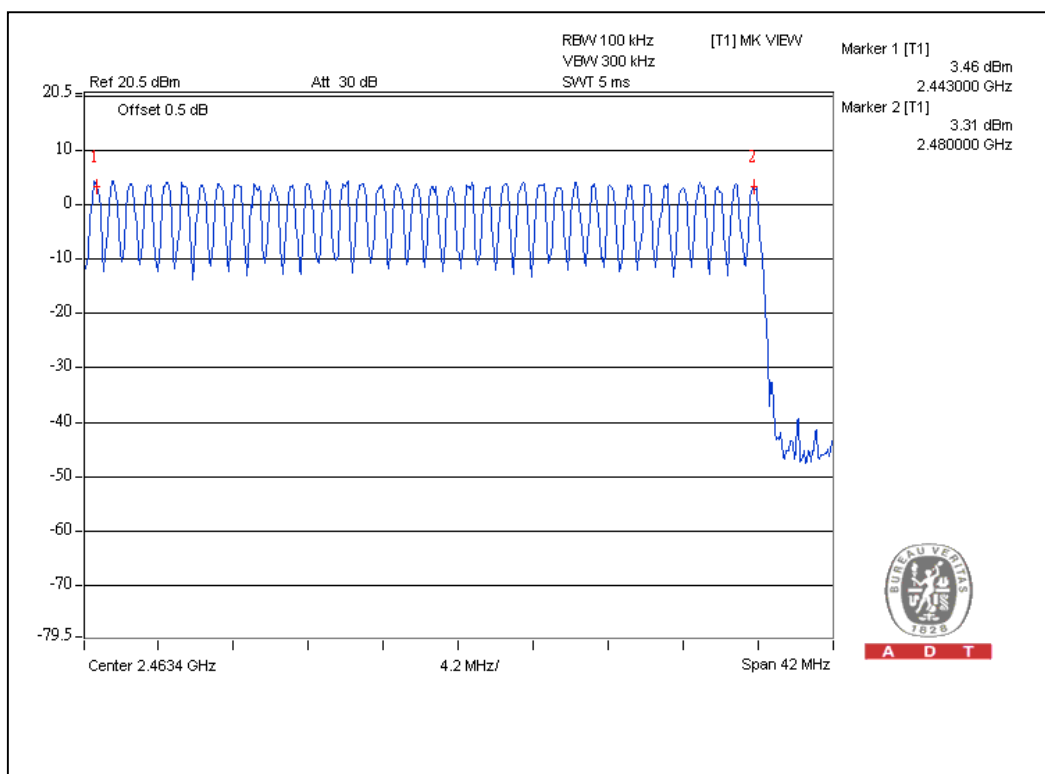


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For GFSK:



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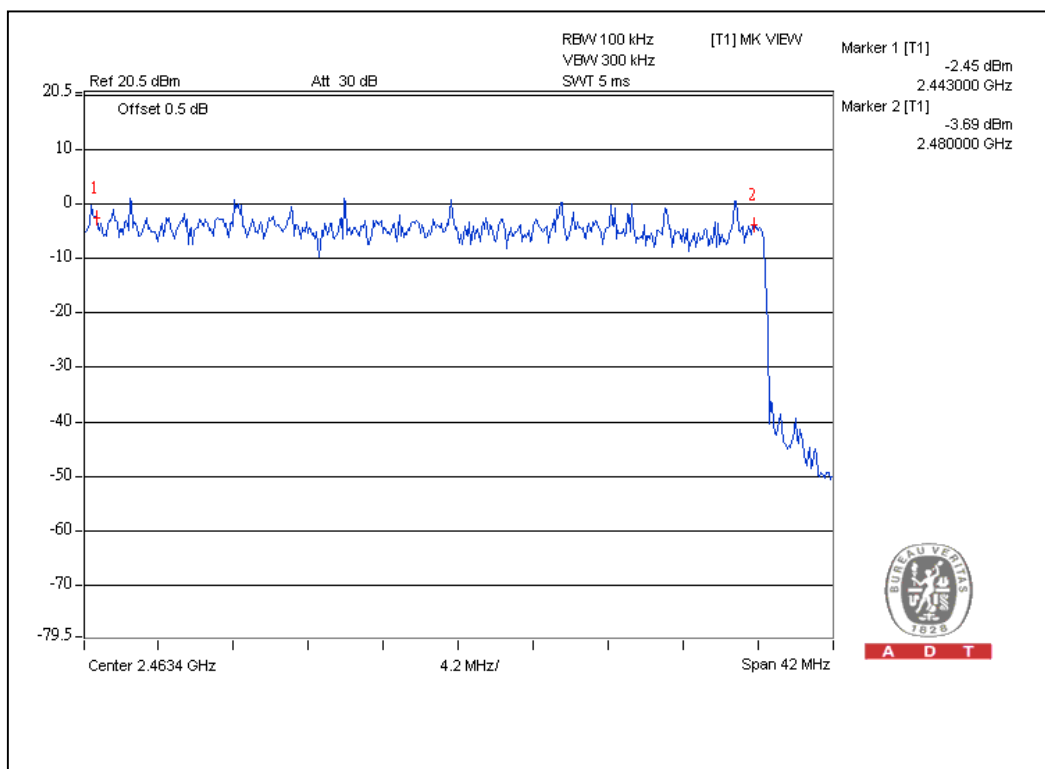
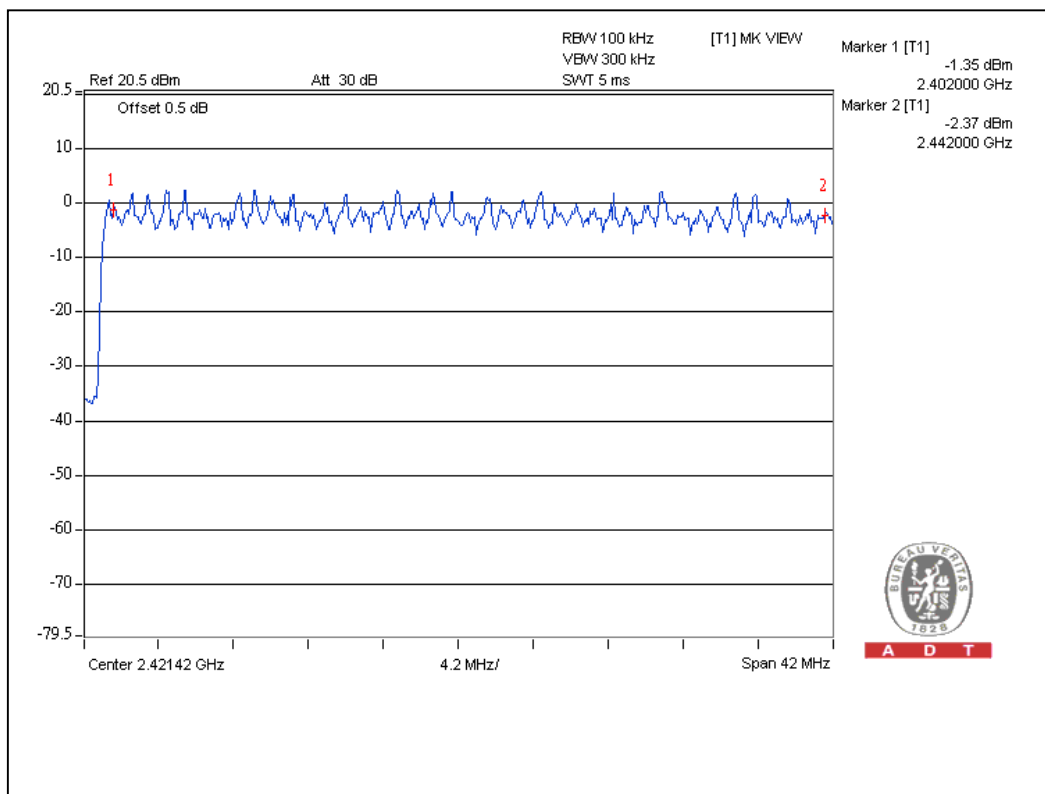


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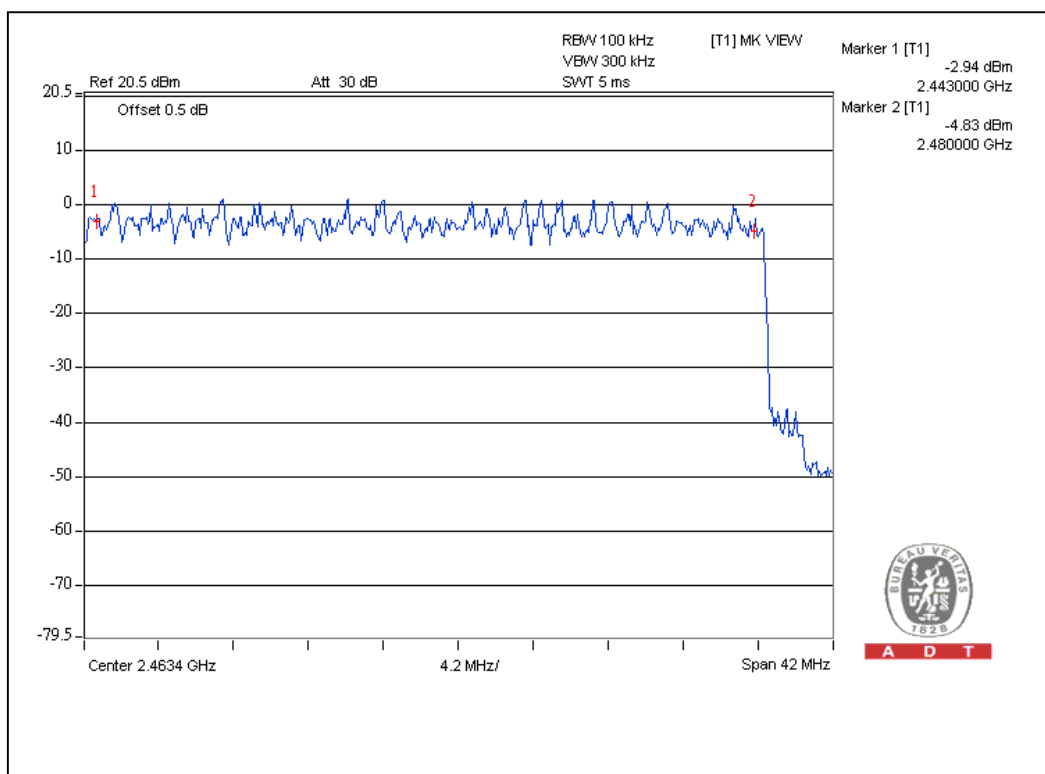
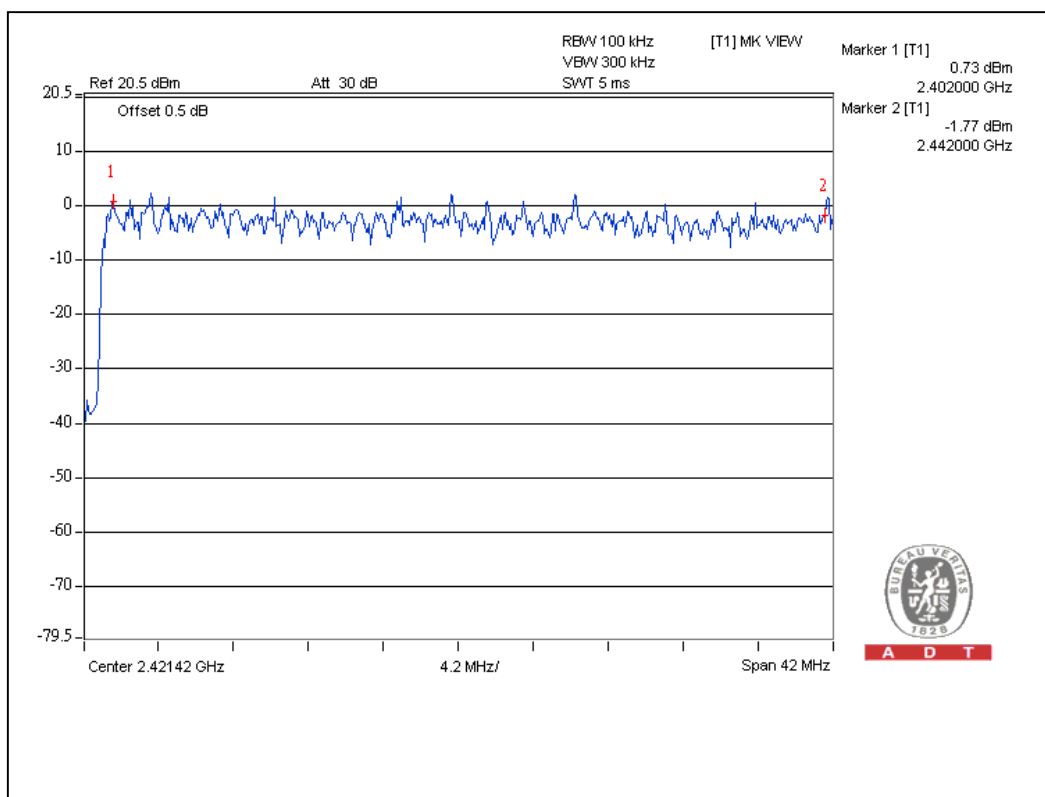
For $\pi/4$ -DQPSK :





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For 8DPSK:



4.3 DWELL TIME ON EACH CHANNEL

4.3.1 LIMIT OF DWELL TIME USED

For FHSS, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 31.6 second period. For hybrid systems, the average time of occupancy on any frequency should not exceed 0.4 seconds within a time period in seconds equal to the number of hopping frequencies employed multiplied by 0.4.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
PSA Seviess Spectrum Analyzer	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010

NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. 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.
3. 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.
4. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
5. Repeat above procedures until all frequencies measured were complete.

NOTE:

The EUT was setup to ANSI C63.4, tested to FHSS test procedure of DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 TEST RESULTS

For GFSK:

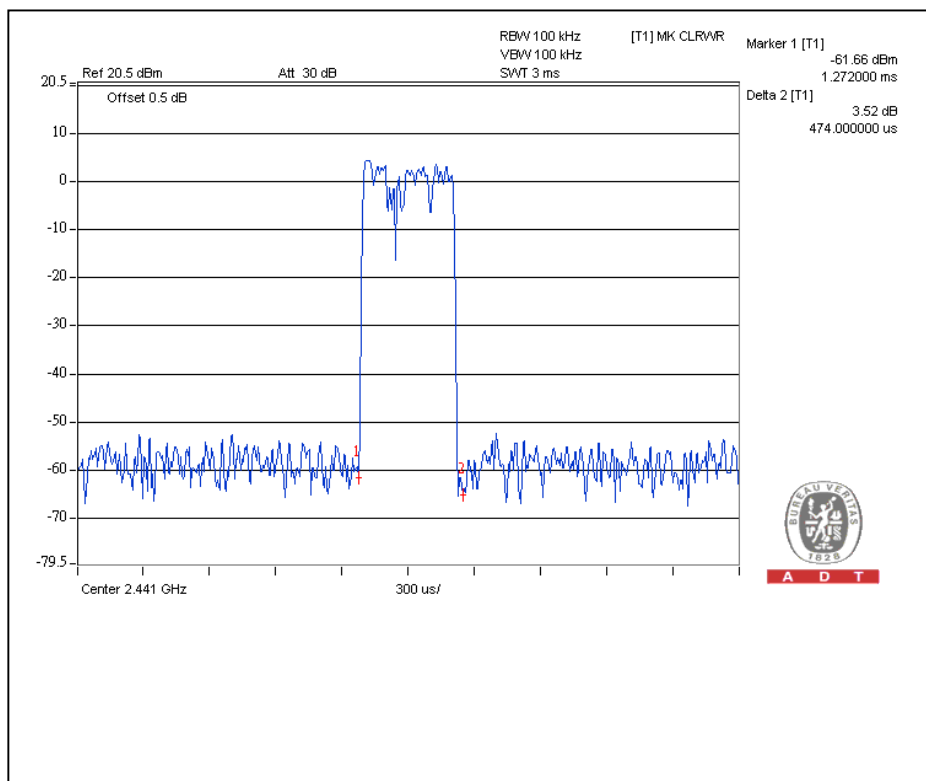
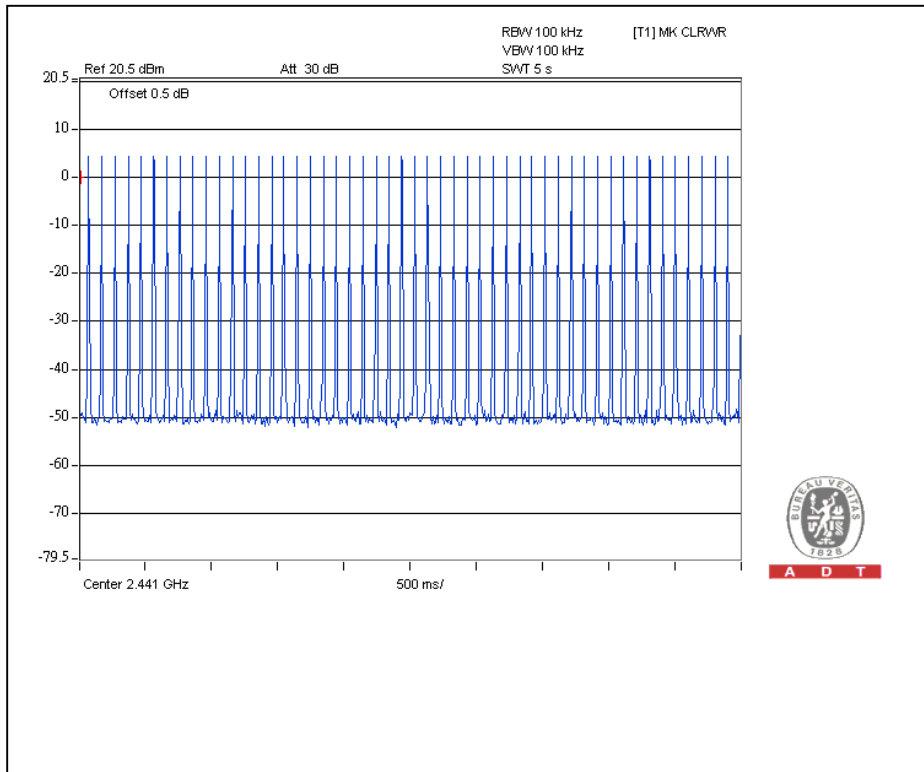
Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	50 (times / 5 sec) *6.32=316 times	0.474	149.8	400
DH3	17 (times / 5 sec) *6.32=107.44 times	1.716	184.4	400
DH5	10 (times / 5 sec) *6.32=63.2 times	3.01	190.2	400

Test plots of the transmitting time slot are shown on next three pages.



A D T

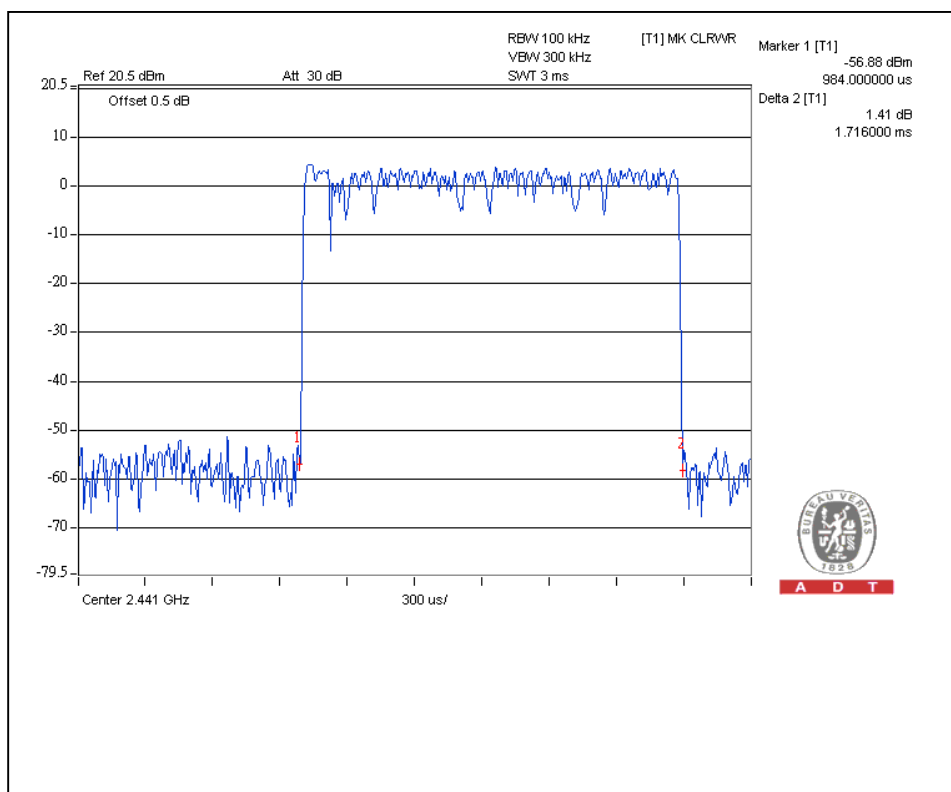
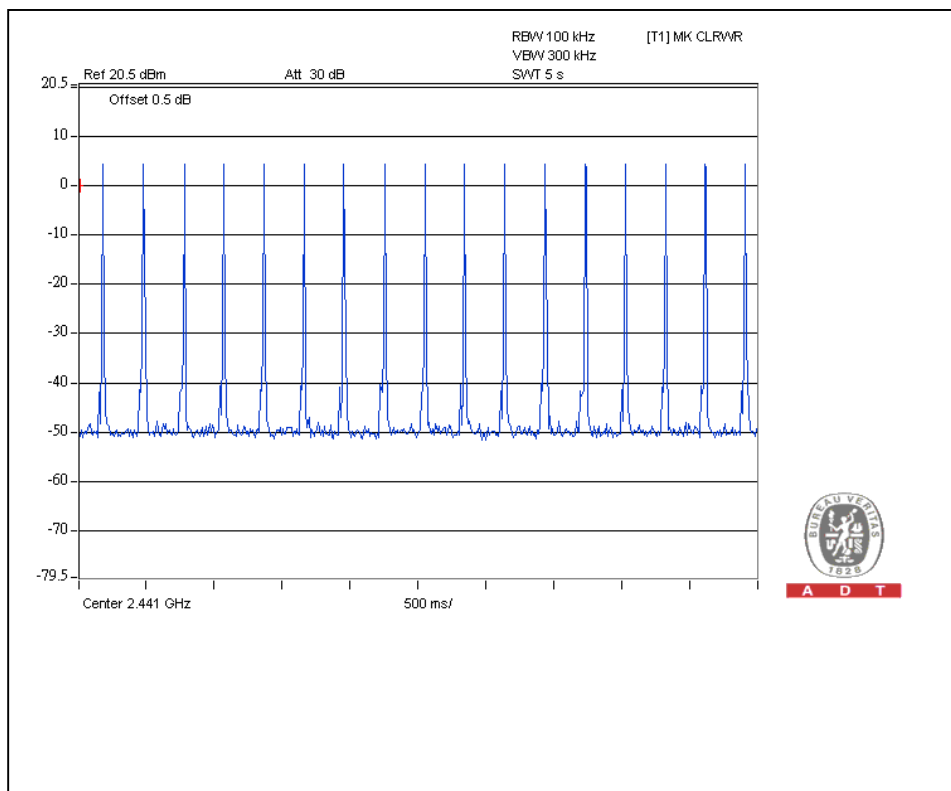
DH1





A D T

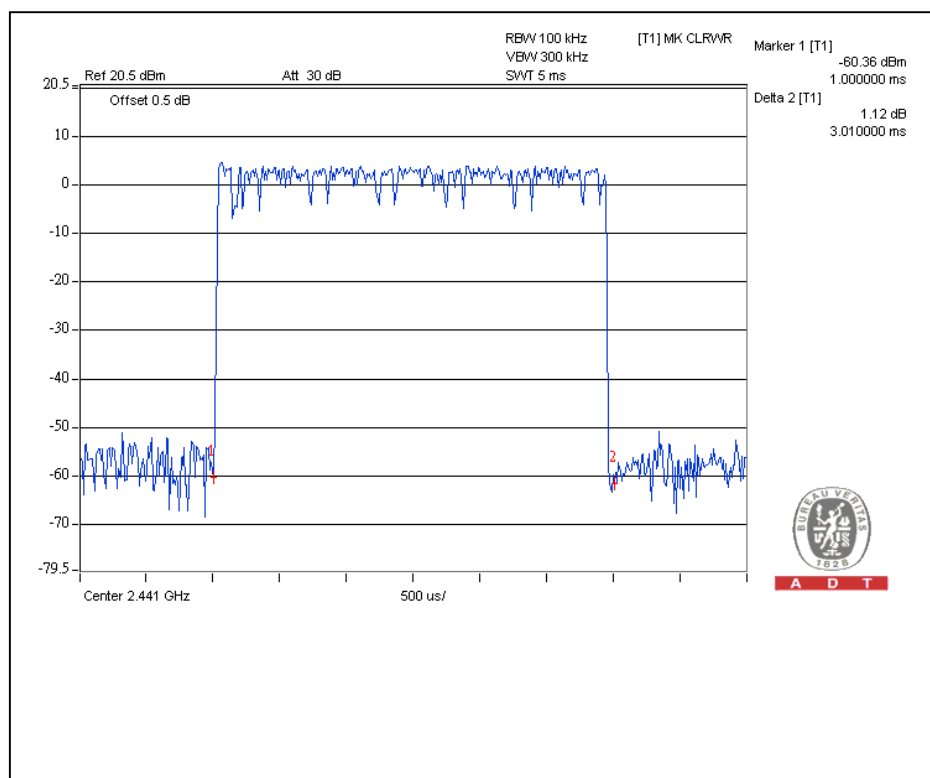
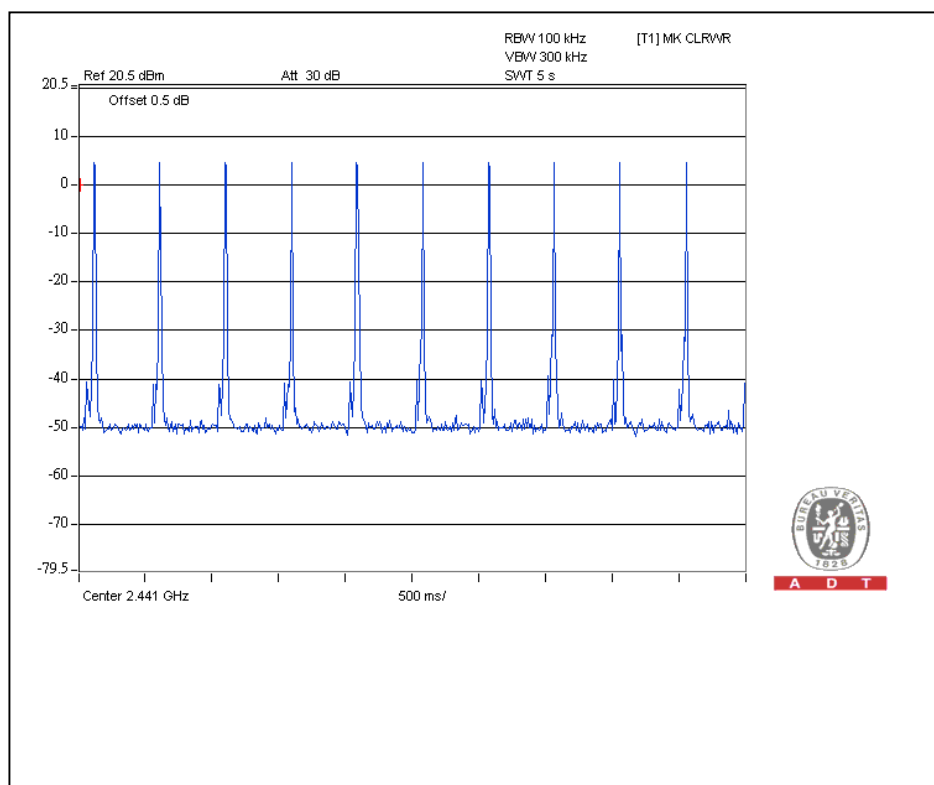
DH3





A D T

DH5



For $\pi/4$ -DQPSK :

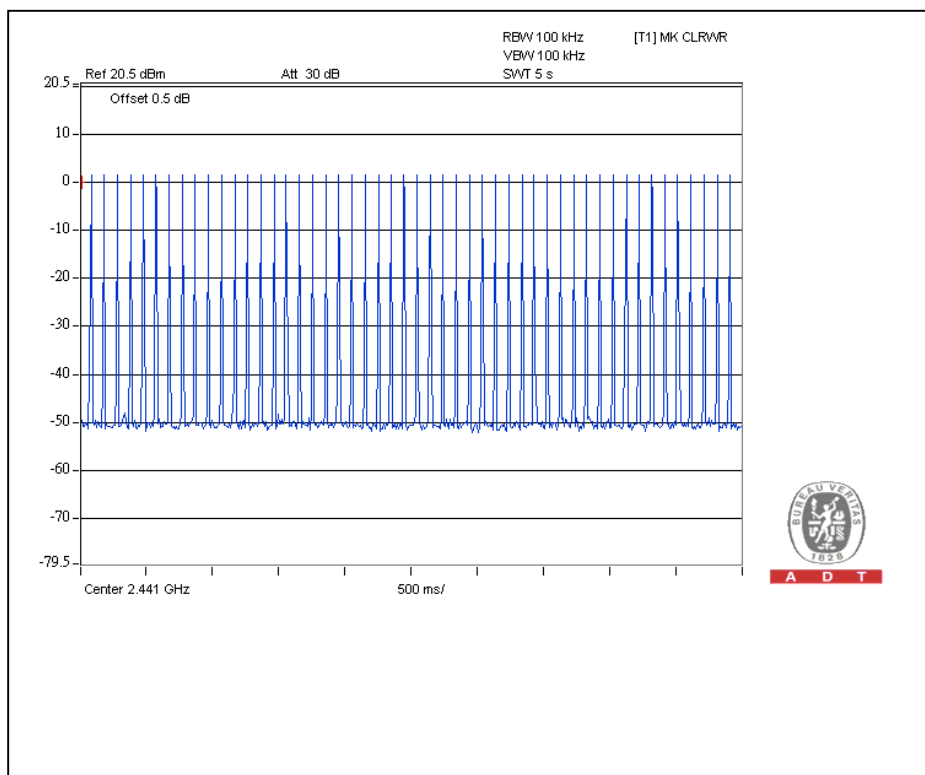
Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	50 (times / 5 sec) *6.32=316 times	0.462	146	400
DH3	16 (times / 5 sec) *6.32=101.12 times	1.722	174.1	400
DH5	10 (times / 5 sec) *6.32=63.2 times	3.06	193.4	400

Test plots of the transmitting time slot are shown on next three pages.

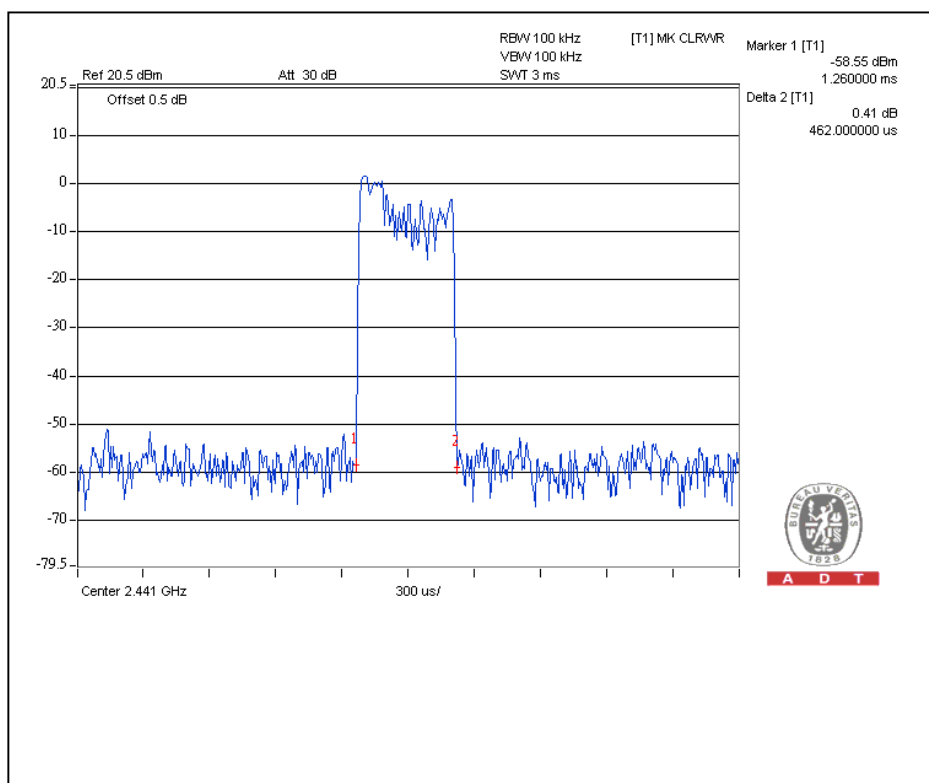


A D T

DH1



A D T

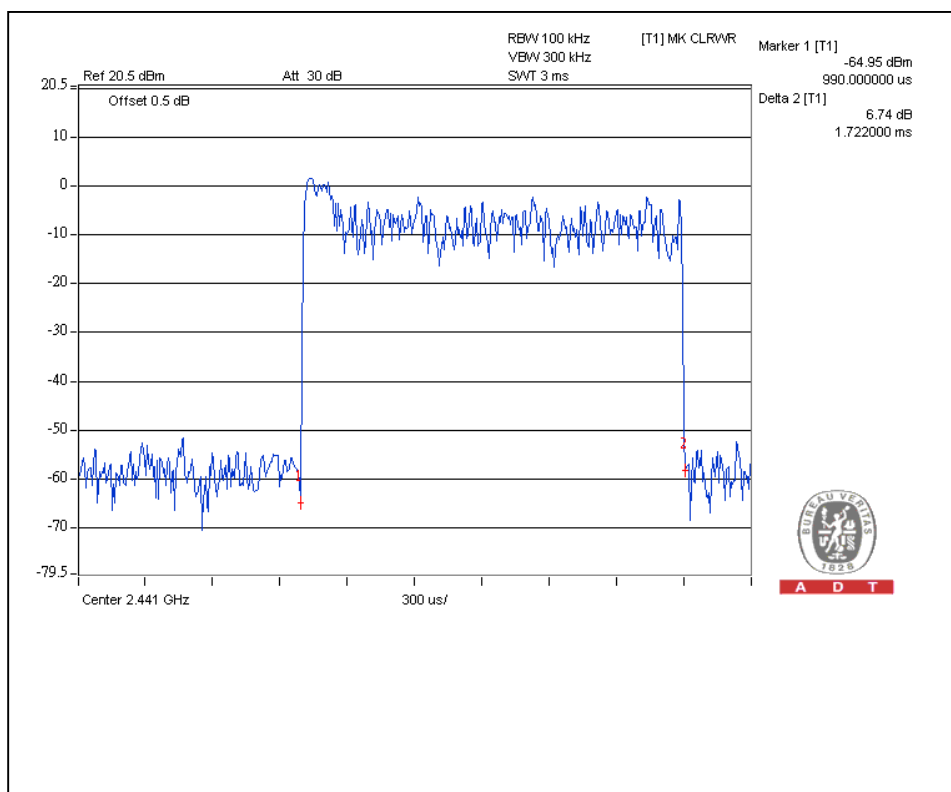
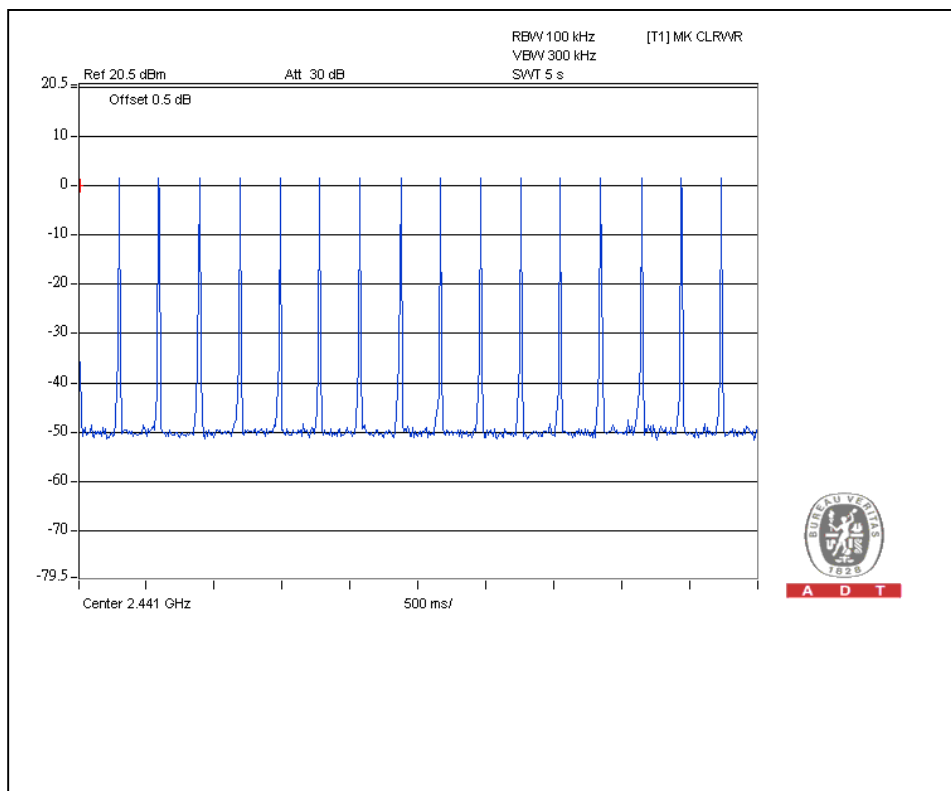


A D T



A D T

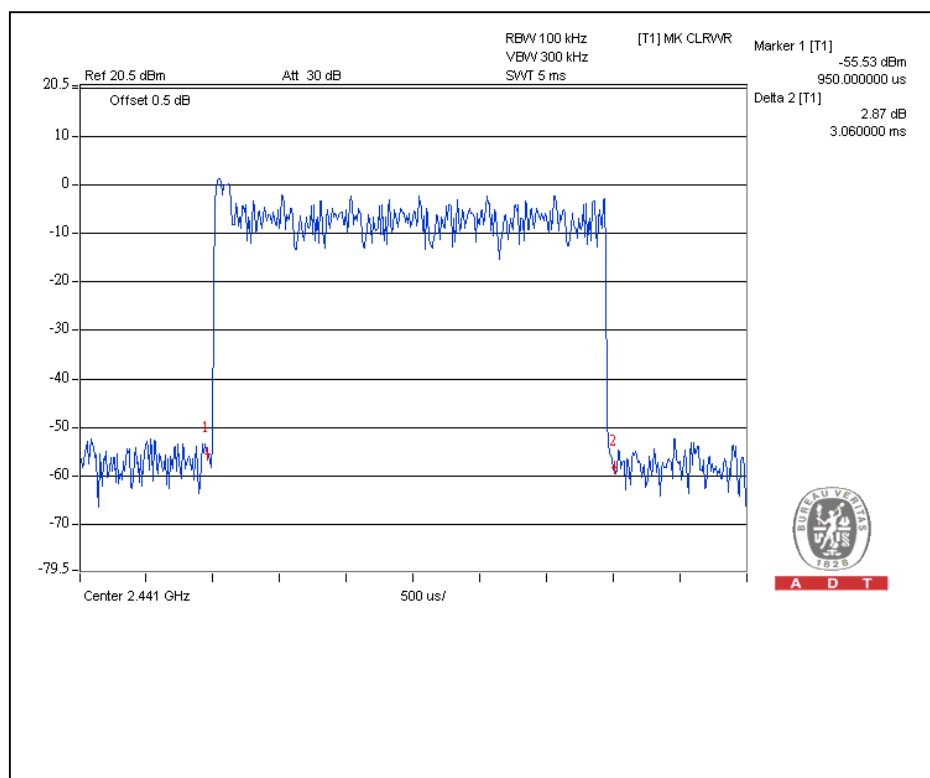
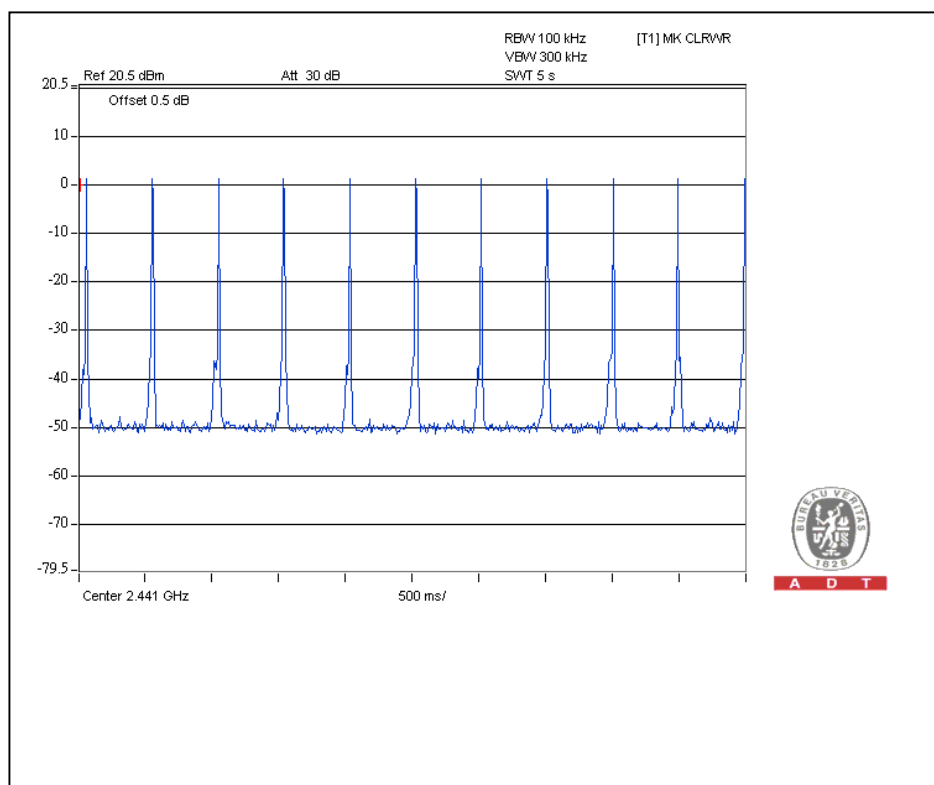
DH3





A D T

DH5





A D T

For 8DPSK:

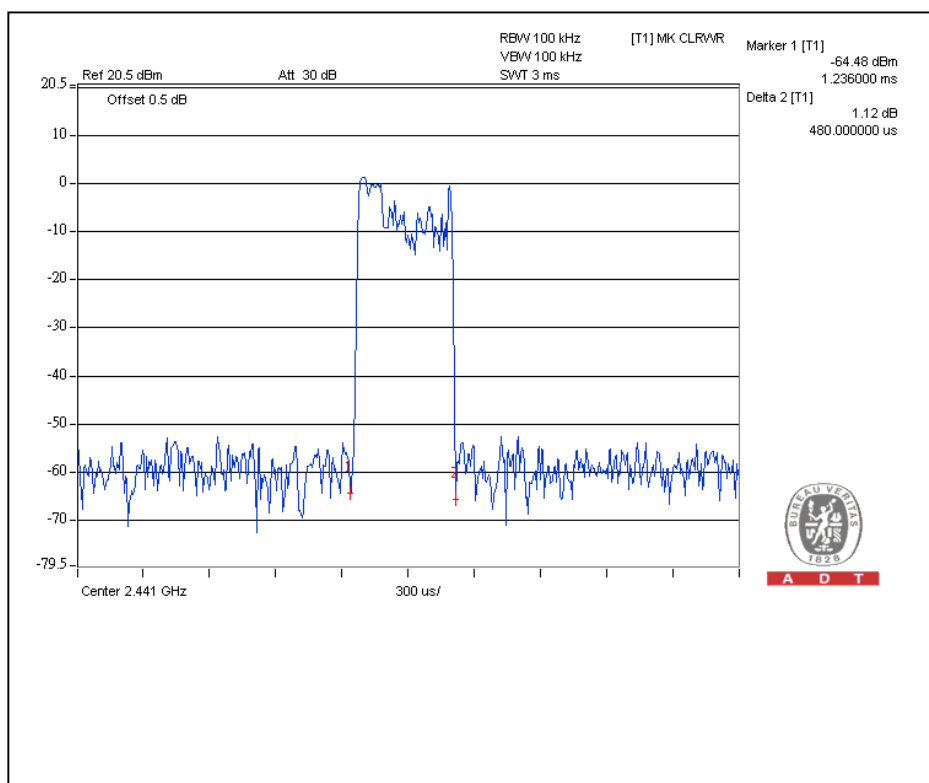
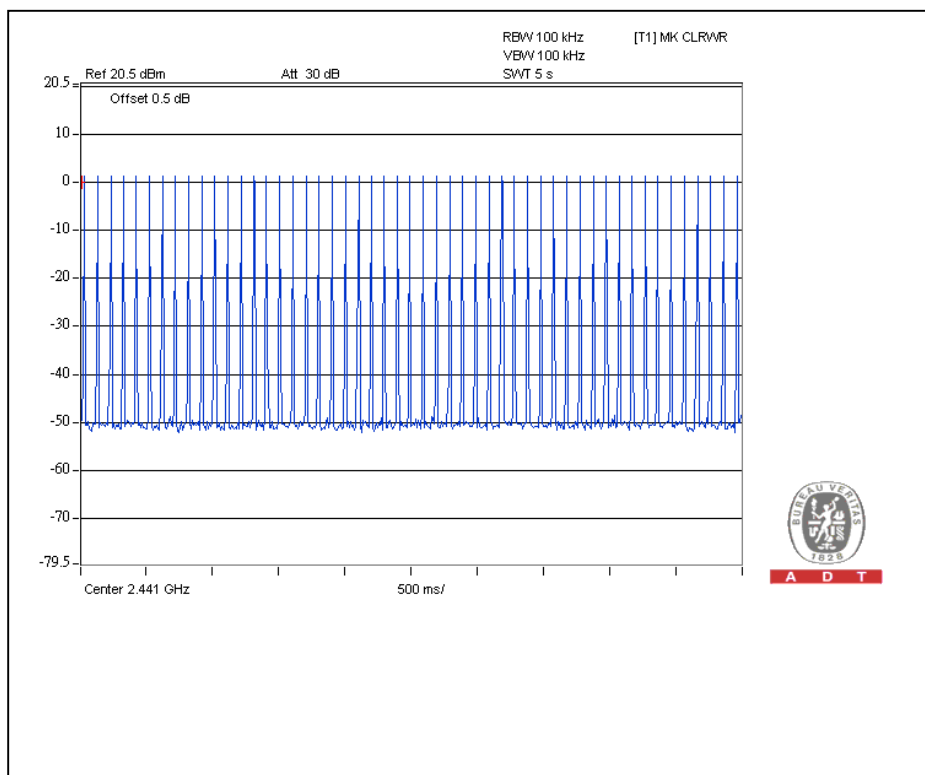
Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	51 (times / 5 sec) *6.32=322.32 times	0.48	154.7	400
DH3	16 (times / 5 sec) *6.32=101.12 times	1.74	175.9	400
DH5	10 (times / 5 sec) *6.32=63.2 times	3.02	190.9	400

Test plots of the transmitting time slot are shown on next three pages.



A D T

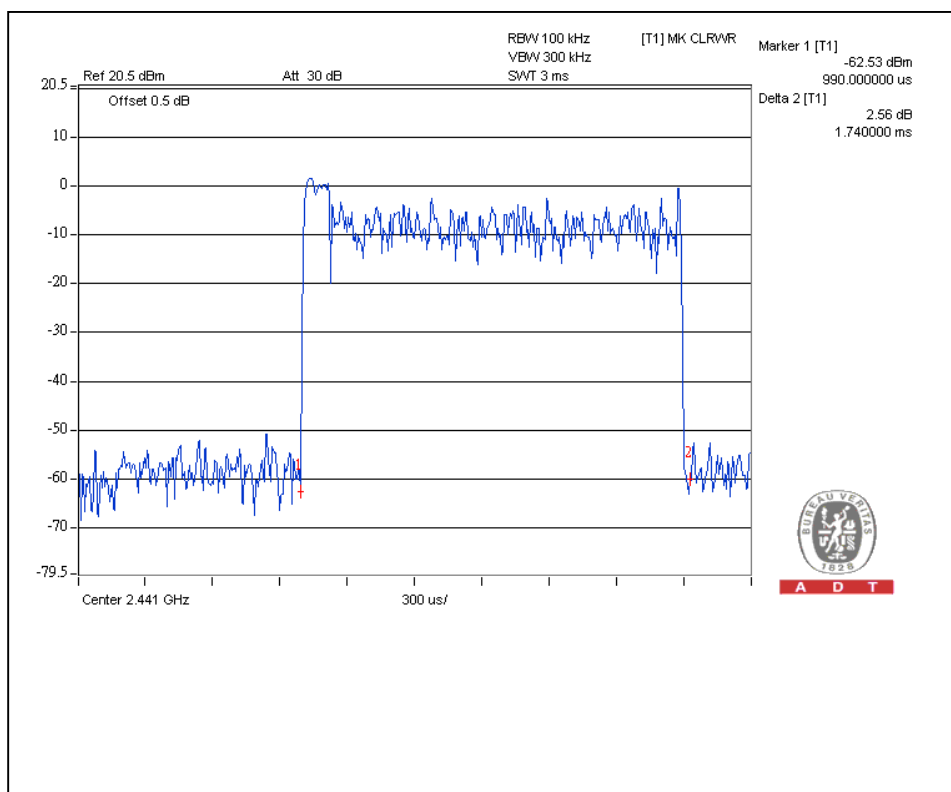
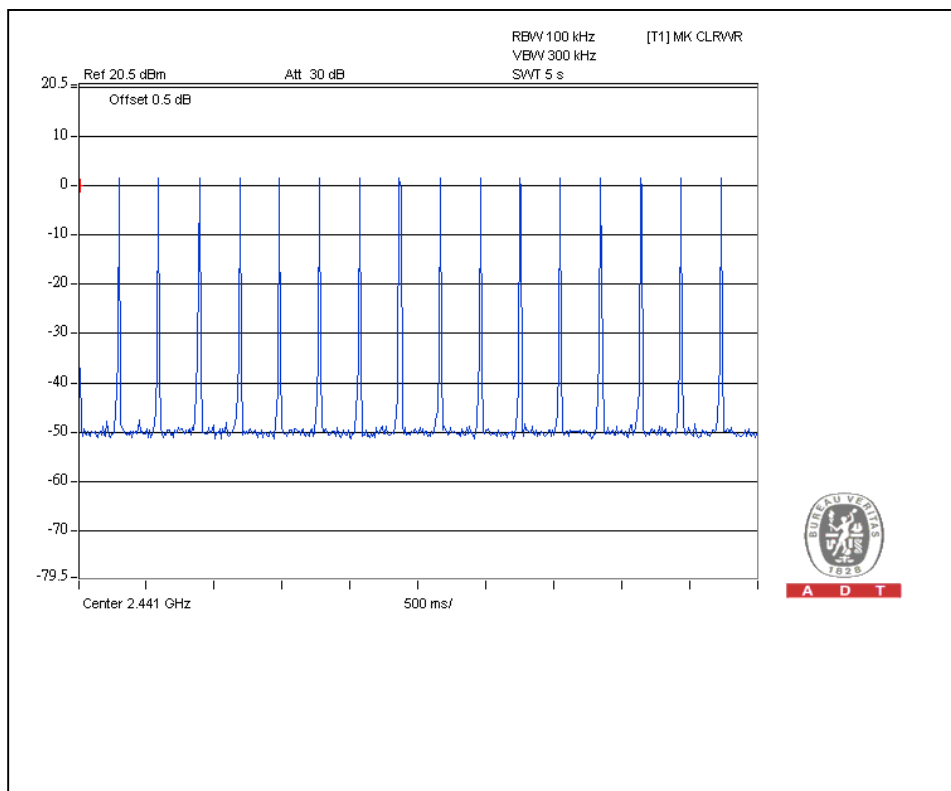
DH1





A D T

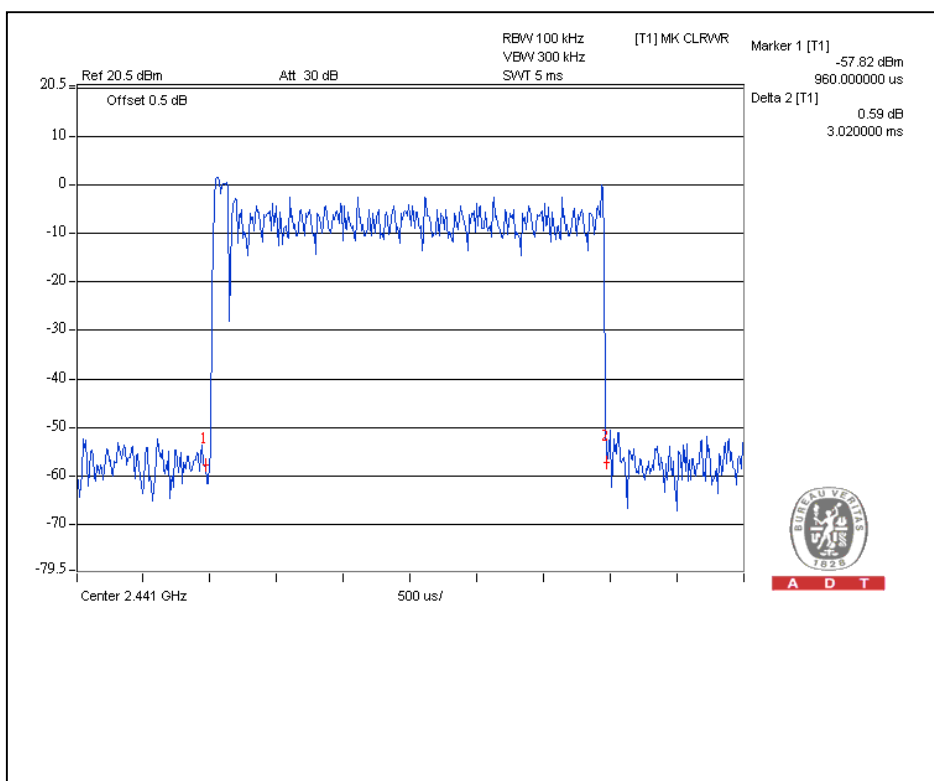
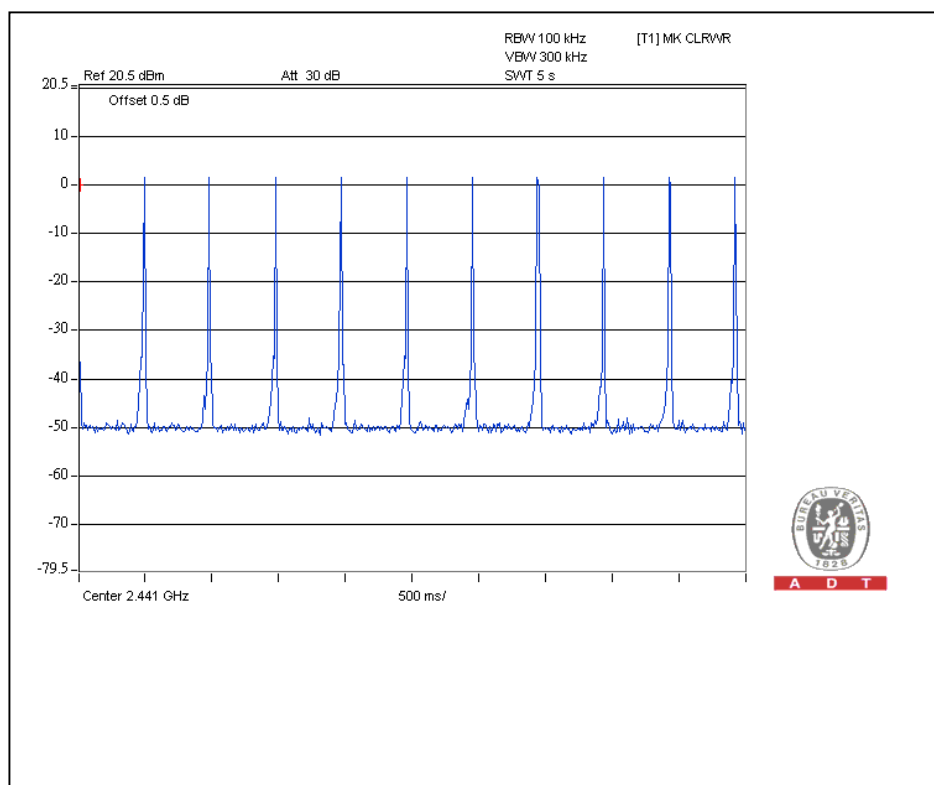
DH3





A D T

DH5



4.4 CHANNEL BANDWIDTH

4.4.1 LIMITS OF CHANNEL BANDWIDTH

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

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
PSA Series Spectrum Analyzer	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.4.3 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. 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.
3. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

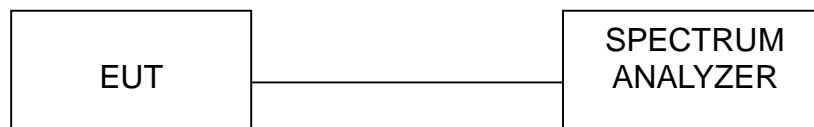
NOTE:

The EUT was setup to ANSI C63.4, tested to FHSS test procedure of DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITION

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



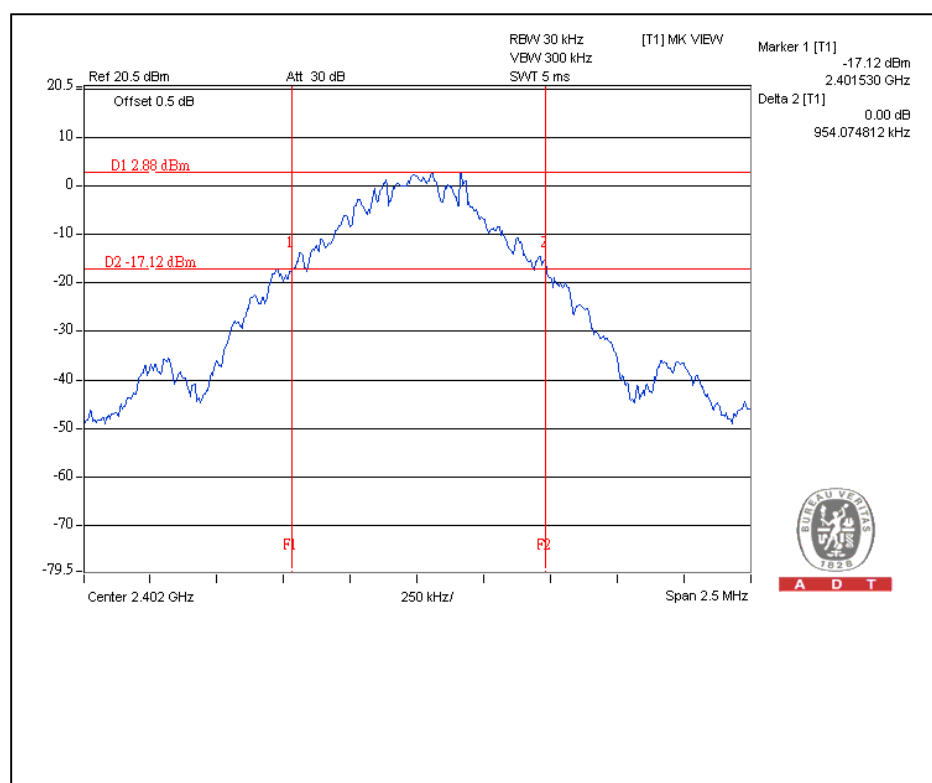
A D T

4.4.7 TEST RESULTS

For GFSK:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	0.95
39	2441	0.93
78	2480	0.93

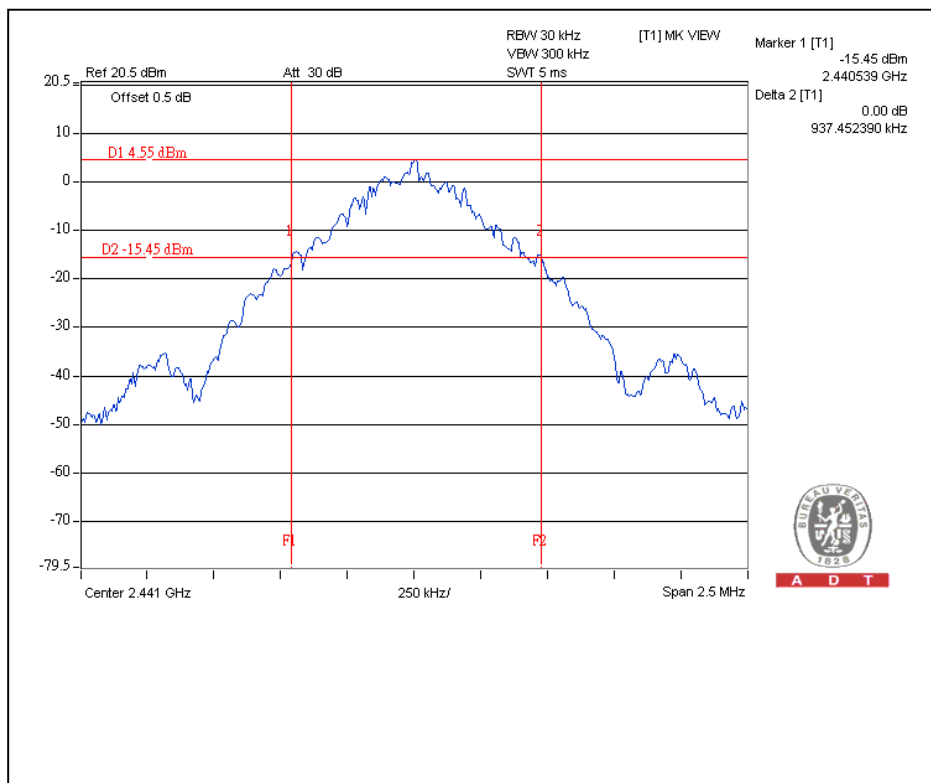
Channel 0



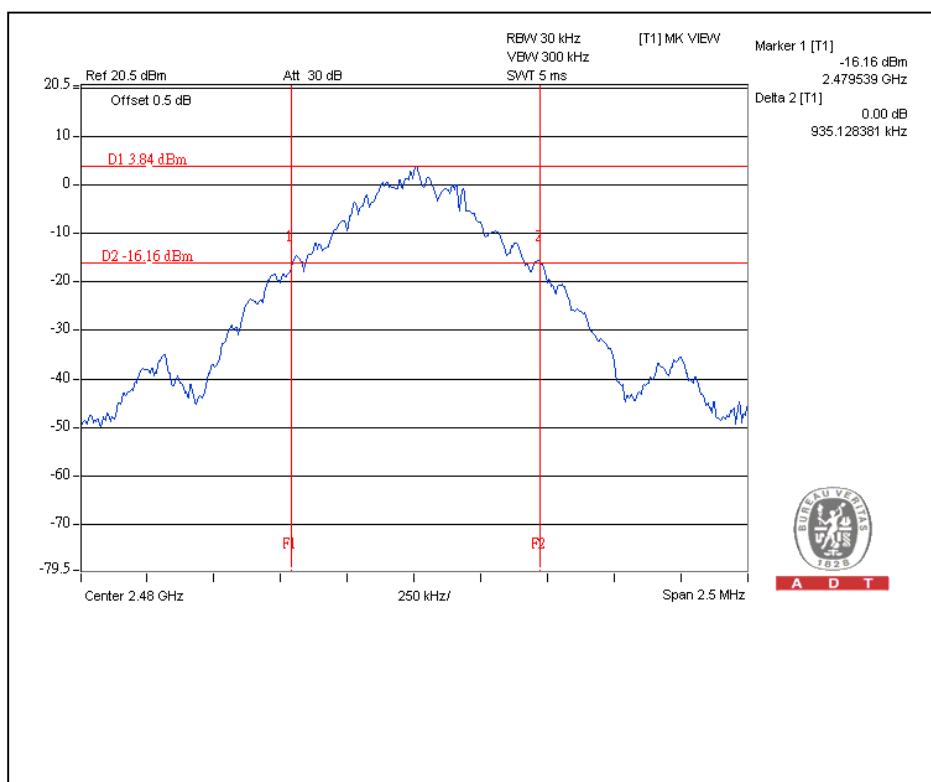


A D T

Channel 39



Channel 78



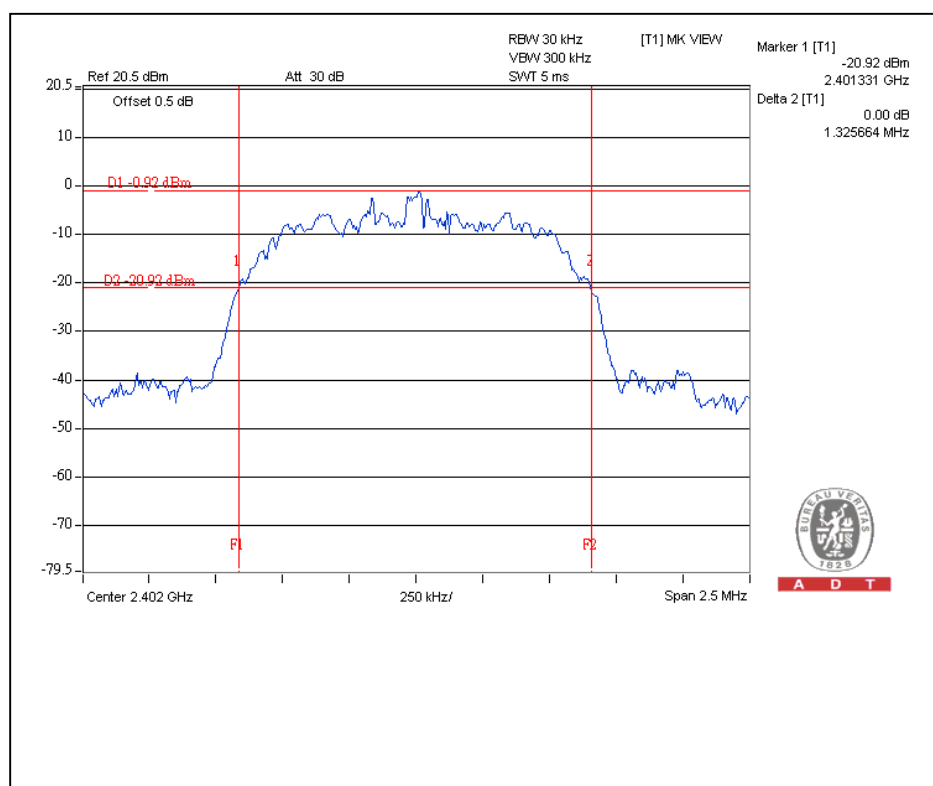


A D T

For $\pi/4$ -DQPSK:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	1.32
39	2441	1.32
78	2480	1.31

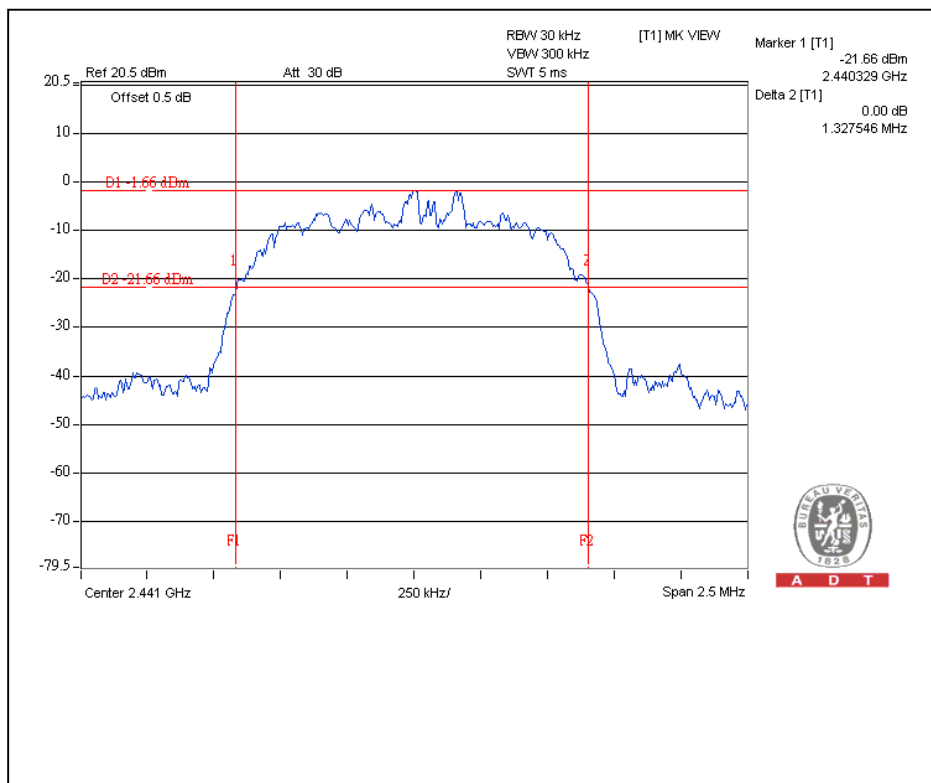
Channel 0



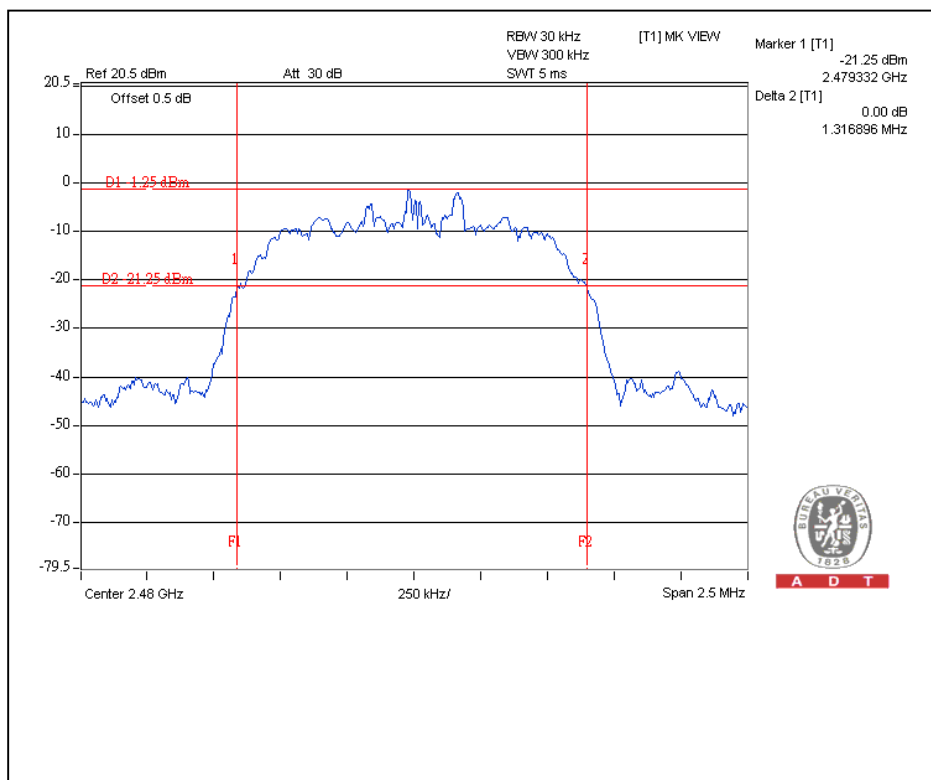


A D T

Channel 39



Channel 78



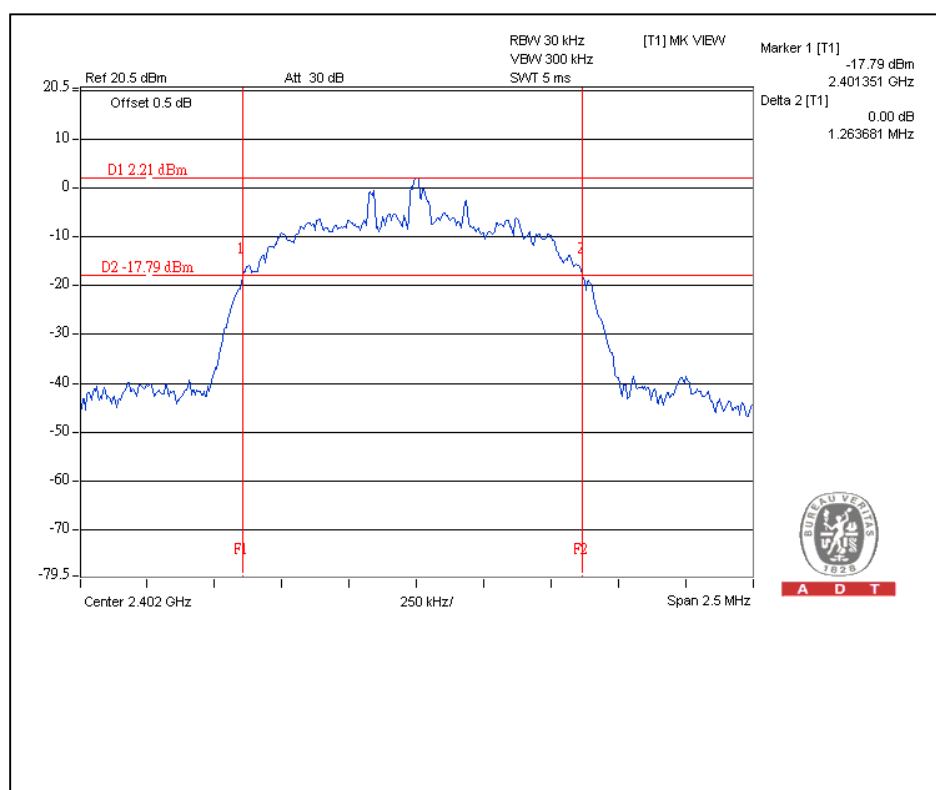


A D T

For 8DPSK:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	1.26
39	2441	1.25
78	2480	1.29

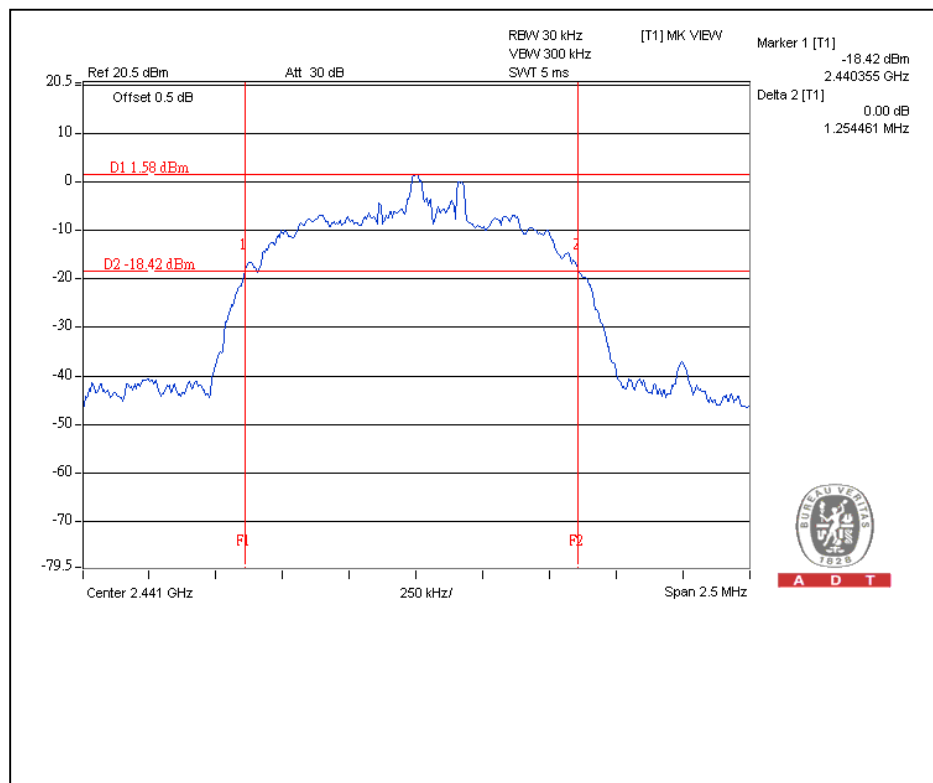
Channel 0



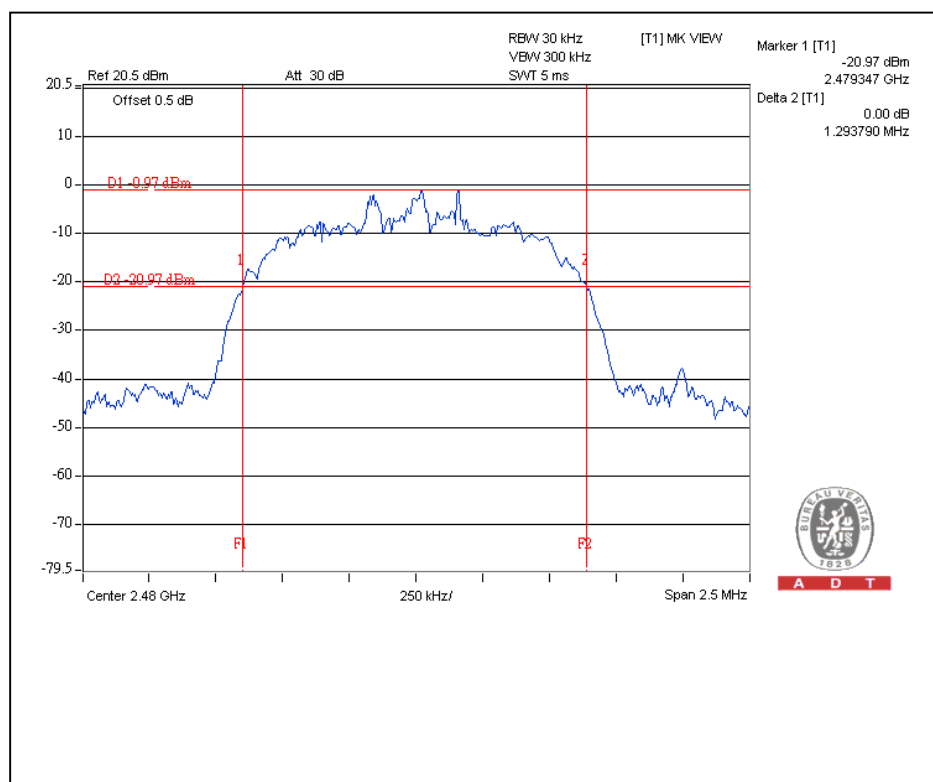


A D T

Channel 39



Channel 78



4.5 HOPPING CHANNEL SEPARATION

4.5.1 LIMIT OF HOPPING CHANNEL SEPARATION

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

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
PSA Sevius Spectrum Analyzer	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.5.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. By using the MaxHold function record the separation of two adjacent channels.
4. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

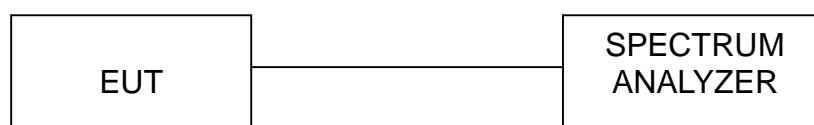
NOTE:

The EUT was setup to ANSI C63.4, tested to FHSS test procedure of DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP





A D T

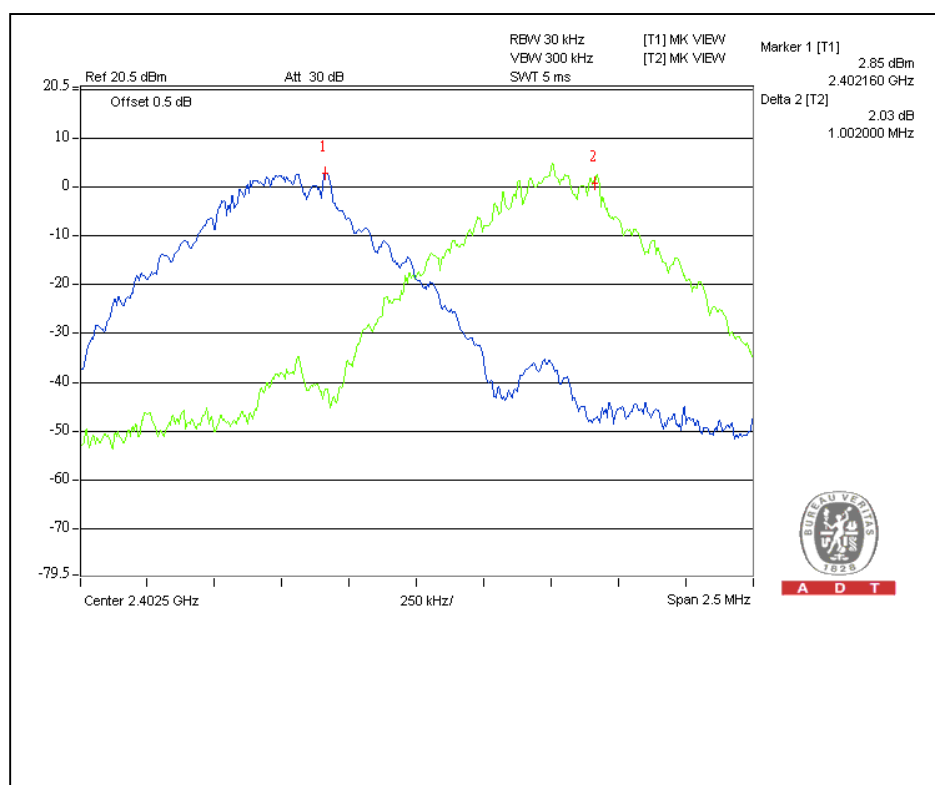
4.5.6 TEST RESULTS

For GFSK

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.002	0.633	PASS
39	2441	1.003	0.620	PASS
78	2480	1.003	0.620	PASS

The minimum limit is two-thirds of 20dB bandwidth. Test results please refer to below pages.

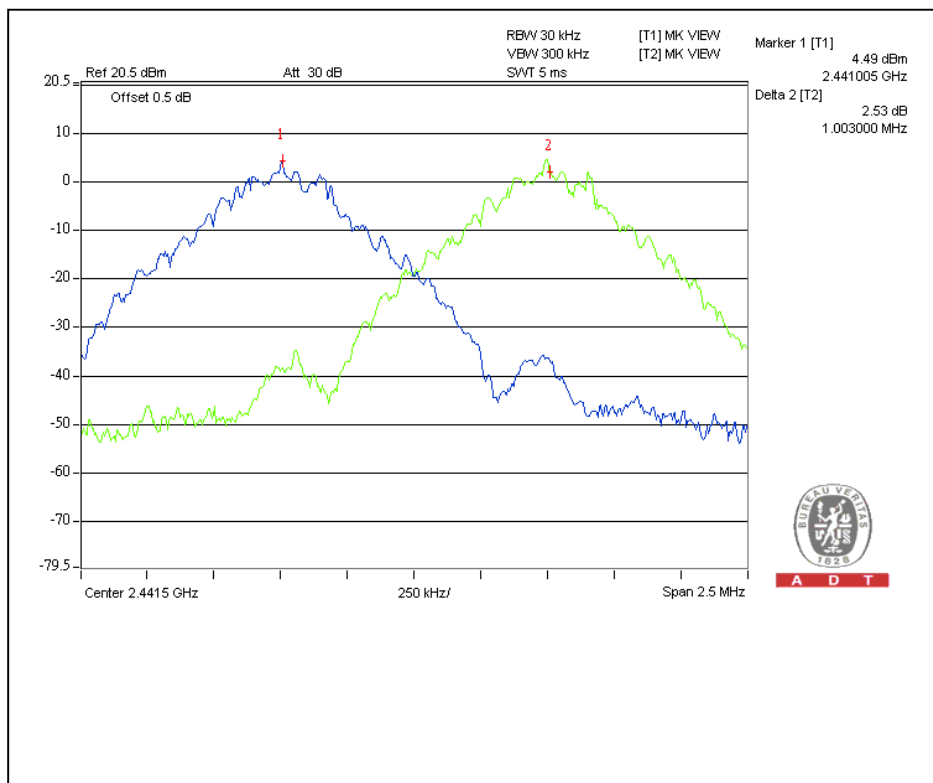
Channel 0



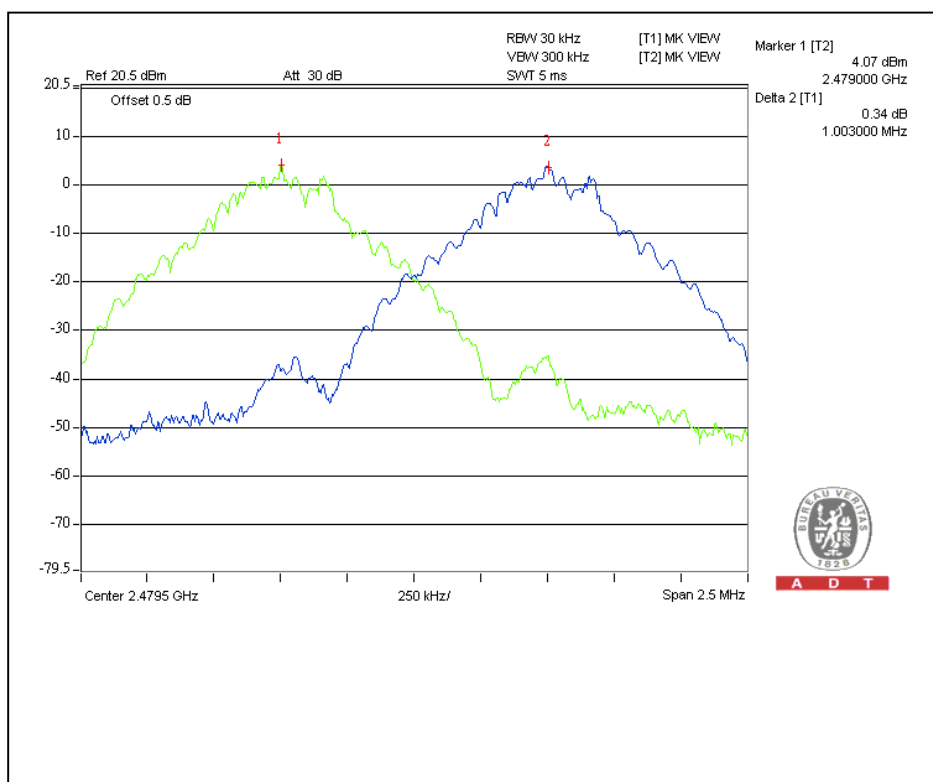


A D T

Channel 39



Channel 78





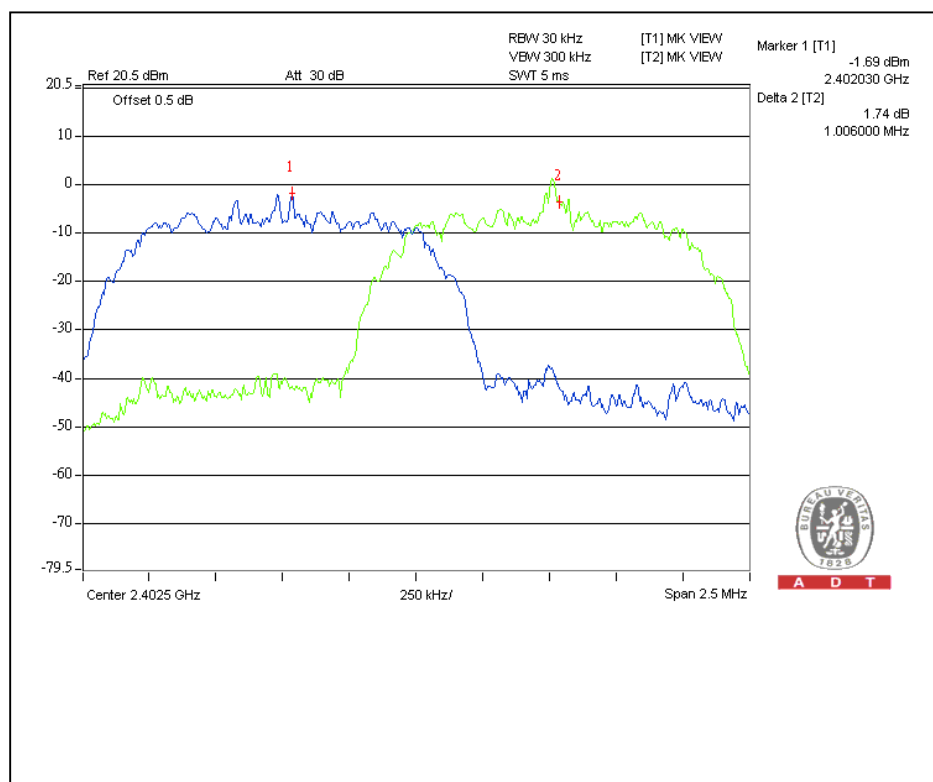
A D T

For $\pi/4$ -DQPSK

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.006	0.880	PASS
39	2441	1.005	0.880	PASS
78	2480	1.000	0.873	PASS

The minimum limit is two-thirds of 20dB bandwidth. Test results please refer to below pages.

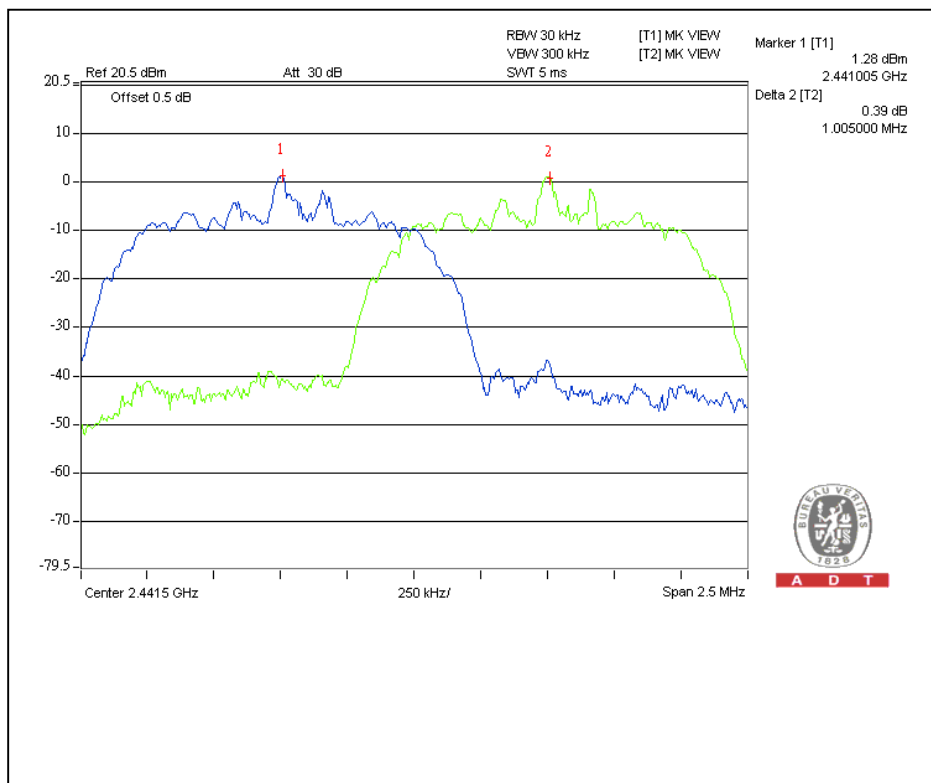
Channel 0



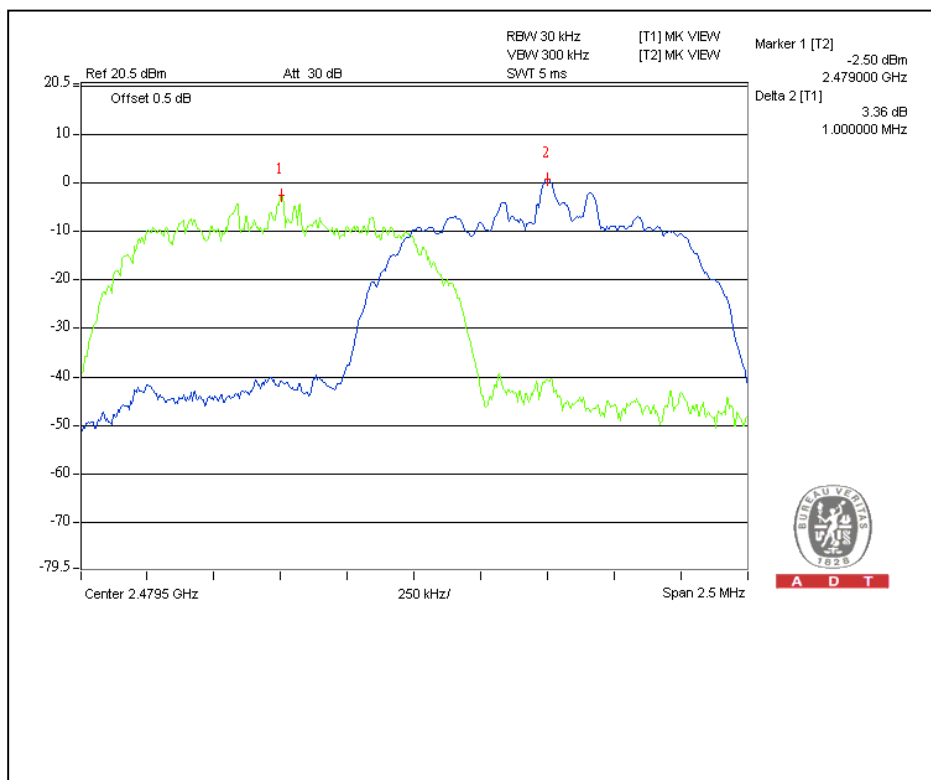


A D T

Channel 39



Channel 78





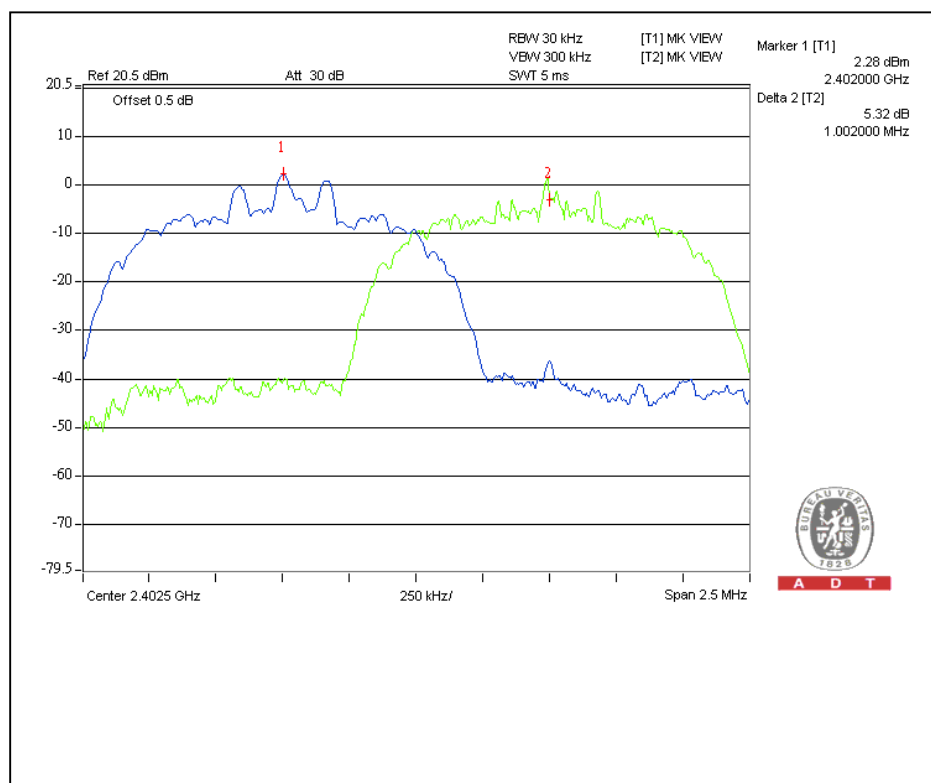
A D T

For 8DPSK

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.002	0.840	PASS
39	2441	1.008	0.833	PASS
78	2480	1.004	0.860	PASS

The minimum limit is two-thirds of 20dB bandwidth. Test results please refer to below pages.

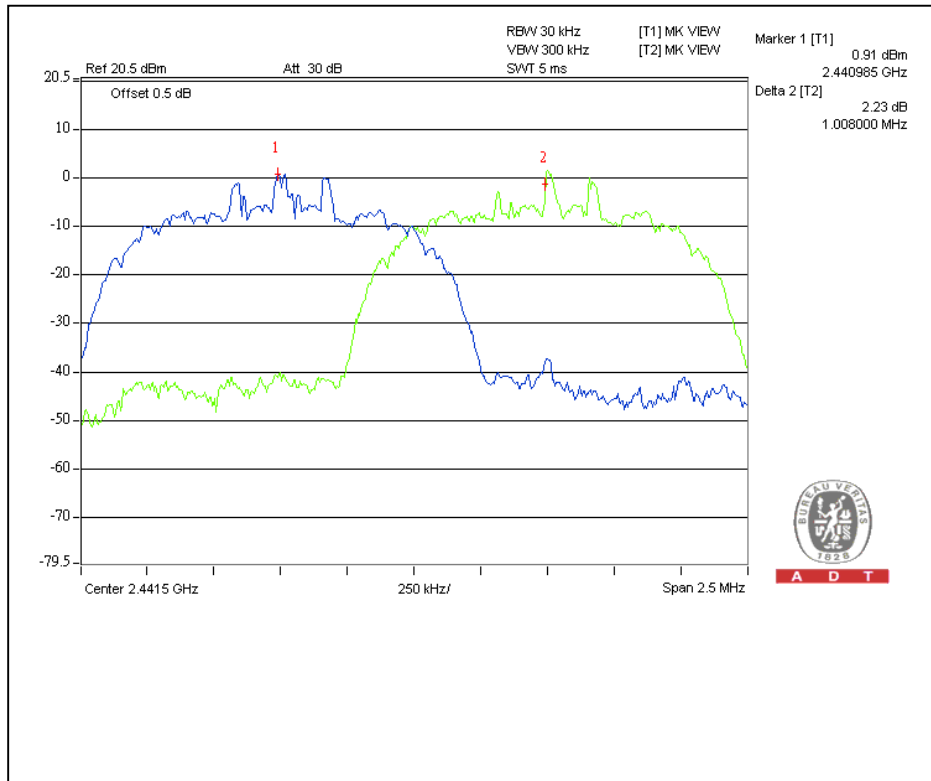
Channel 0



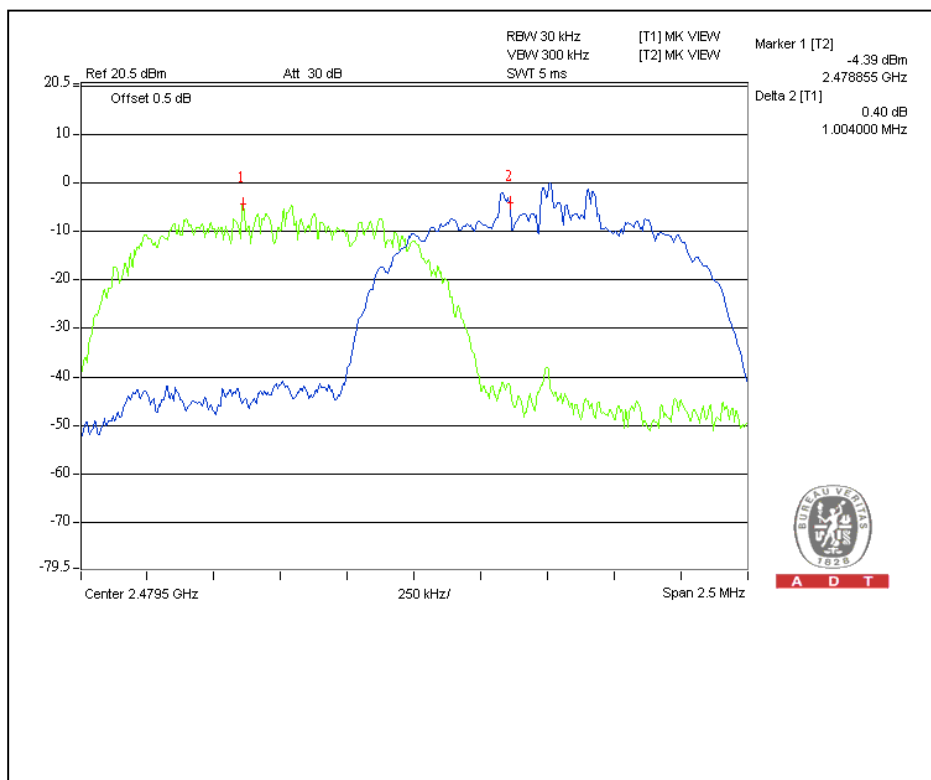


A D T

Channel 39



Channel 78



4.6 MAXIMUM PEAK OUTPUT POWER

4.6.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Limit is 125mW.

4.6.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
PSA Seviés Spectrum Analyzer	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.6.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. 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.
3. The center frequency of the spectrum analyzer is set to the fundamental frequency and using 3 MHz RBW and 10 MHz VBW.
4. Measure the captured power within the band and recording the plot.
5. Repeat above procedures until all frequencies measured were complete.

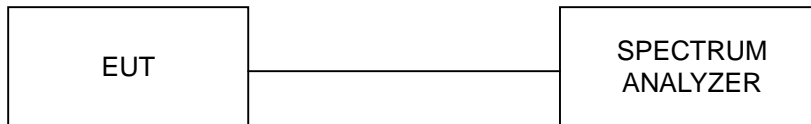
NOTE:

The EUT was setup to ANSI C63.4, tested to FHSS test procedure of DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



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

4.6.6 EUT OPERATING CONDITION

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



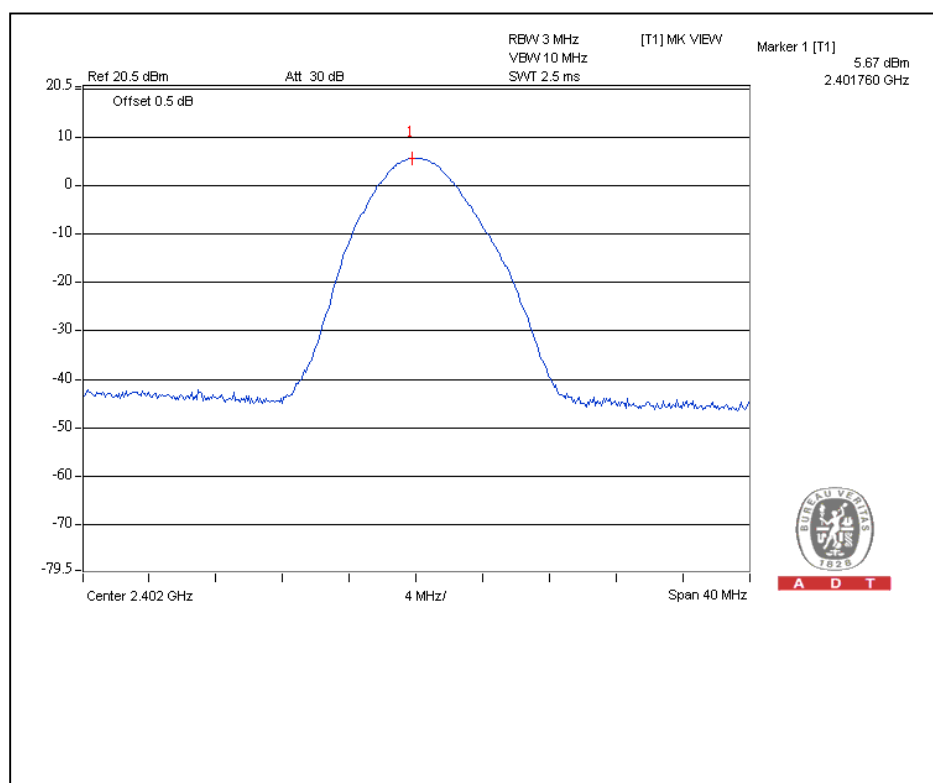
A D T

4.6.7 TEST RESULTS

For GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	2402	5.7	3.7	125	PASS
39	2441	5.2	3.3	125	PASS
78	2480	4.6	2.9	125	PASS

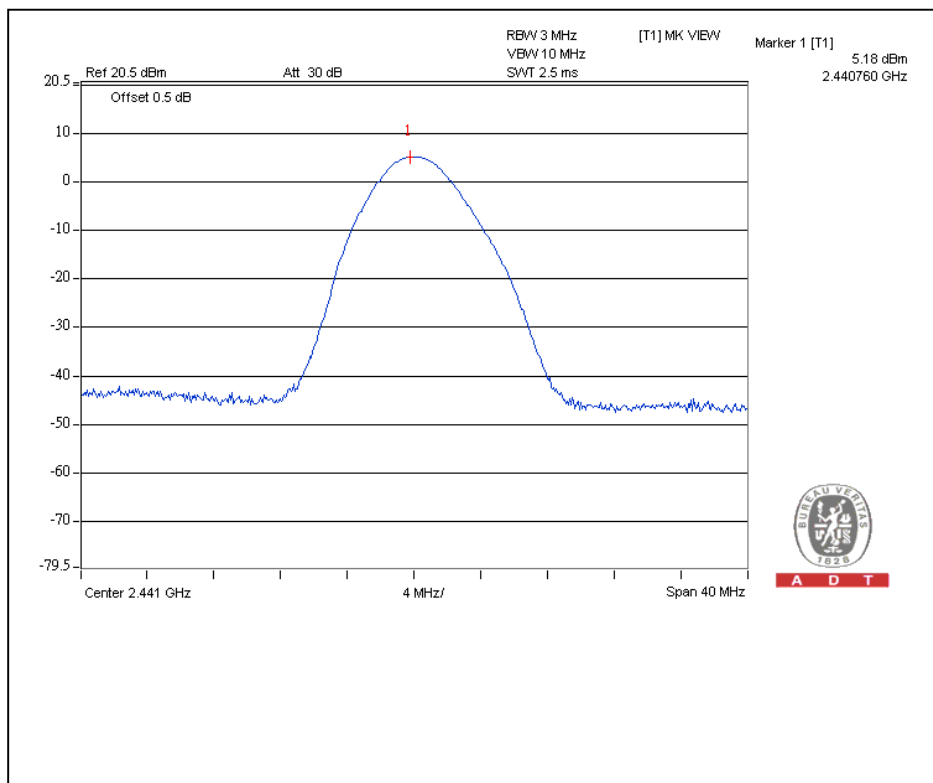
Channel 0



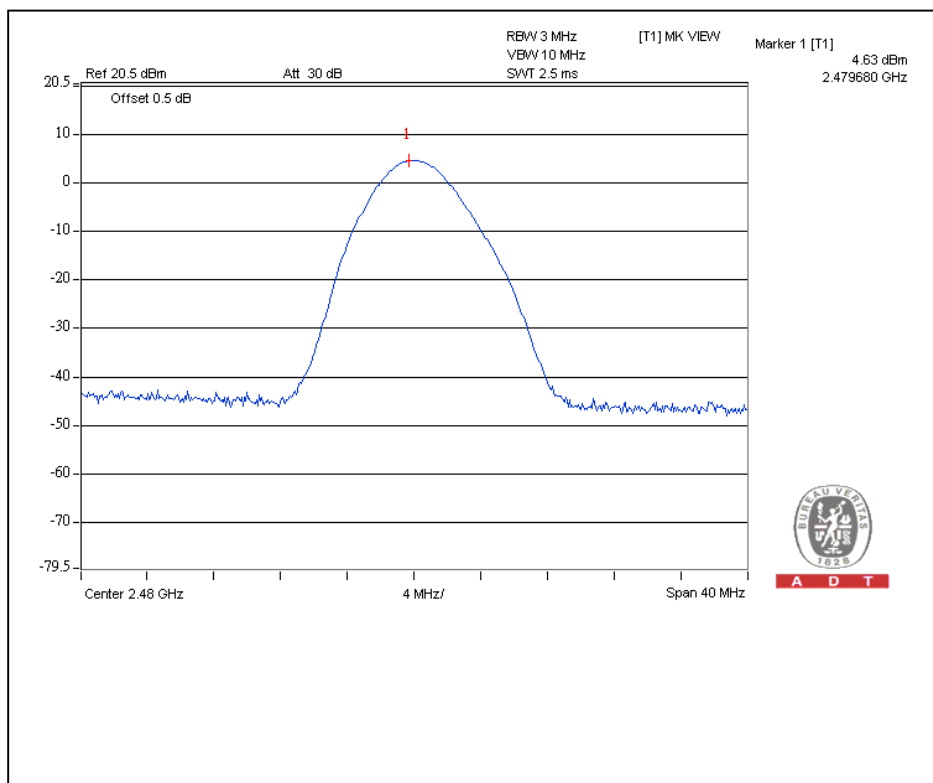


A D T

Channel 39



Channel 78



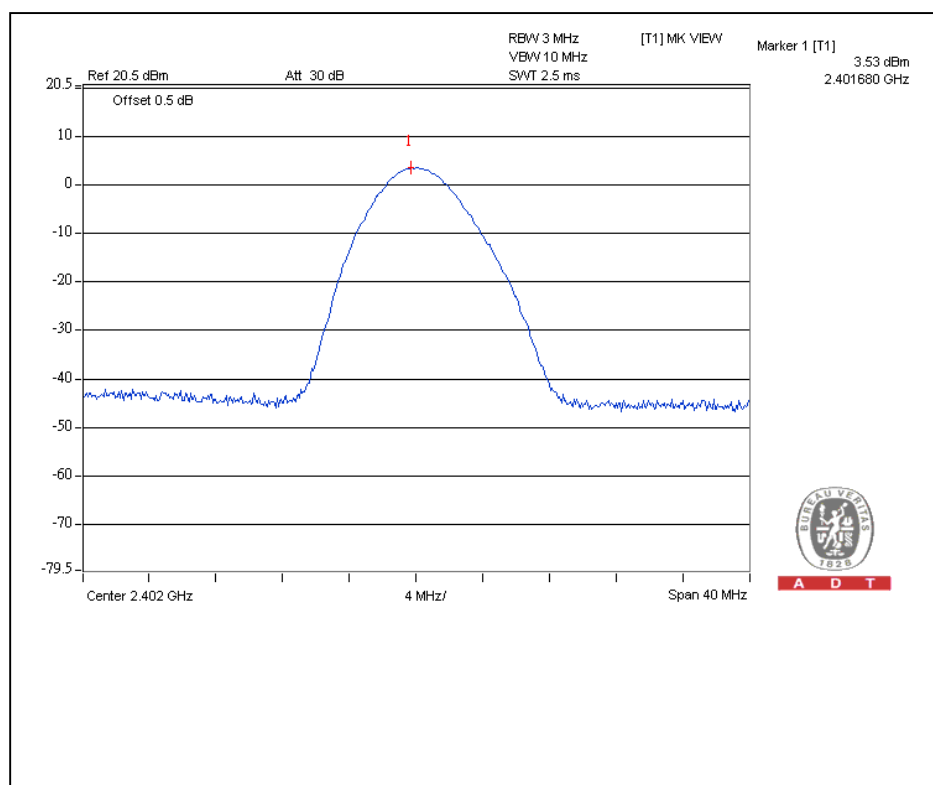


A D T

For $\pi/4$ -DQPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	2402	3.5	2.2	125	PASS
39	2441	3	2.0	125	PASS
78	2480	2.3	1.7	125	PASS

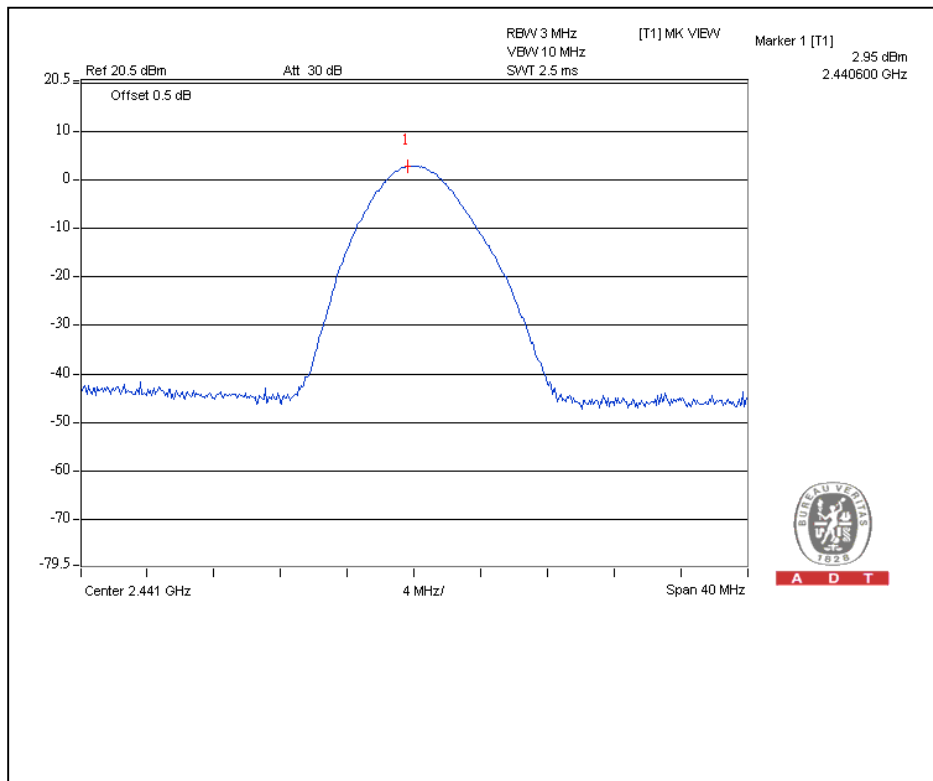
Channel 0



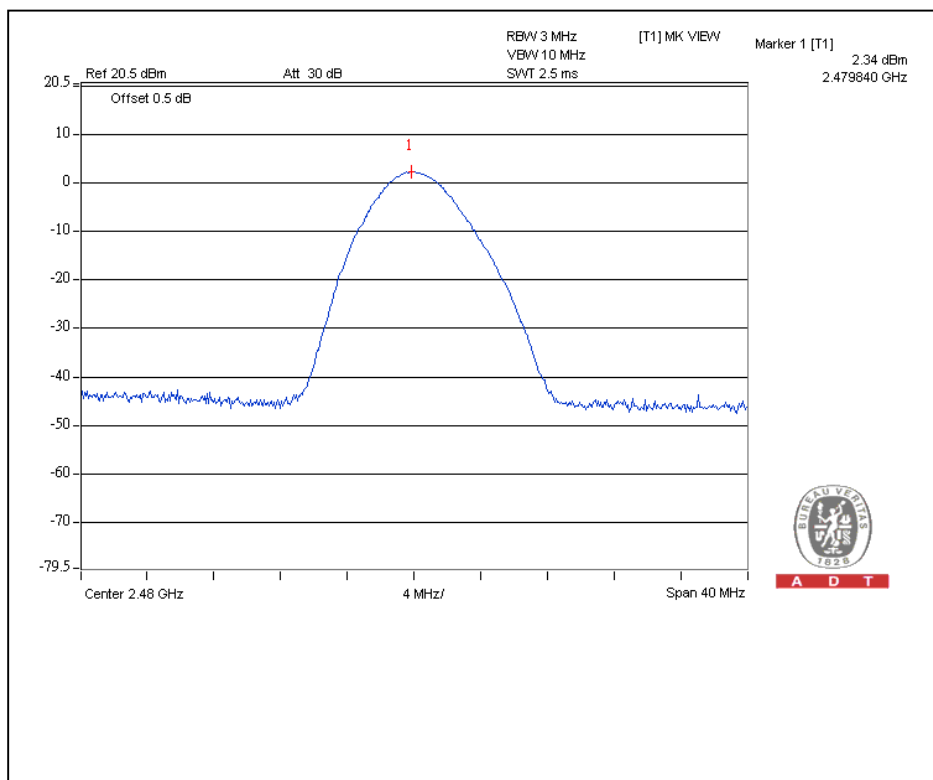


A D T

Channel 39



Channel 78



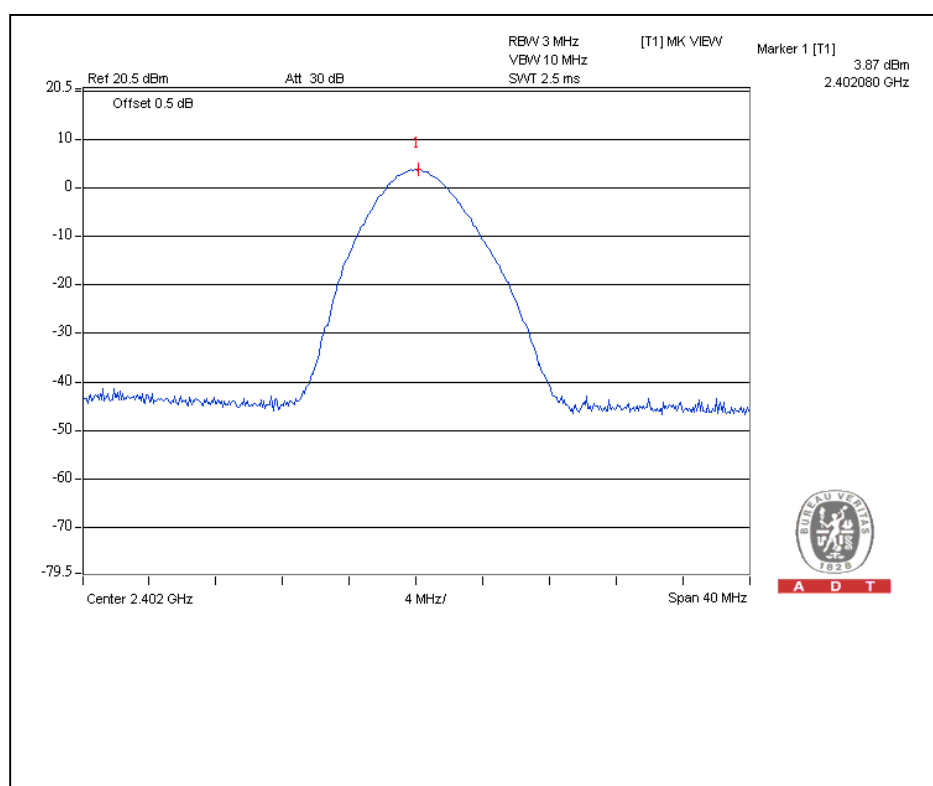


A D T

For 8DPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	2402	3.9	2.5	125	PASS
39	2441	3.3	2.1	125	PASS
78	2480	2.6	1.8	125	PASS

Channel 0

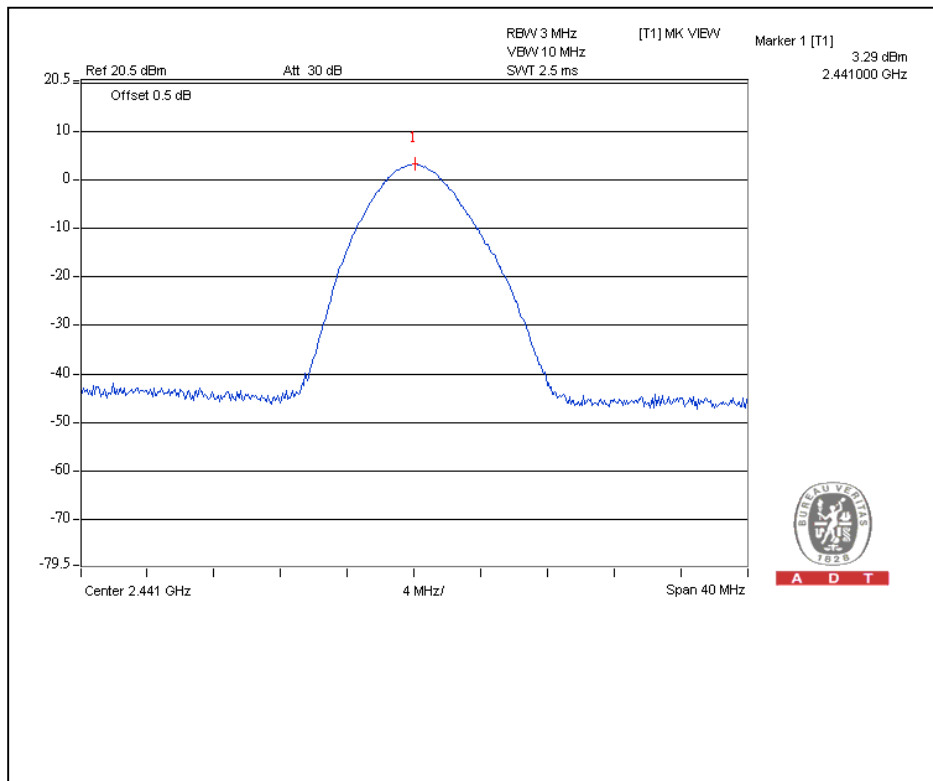


A D T

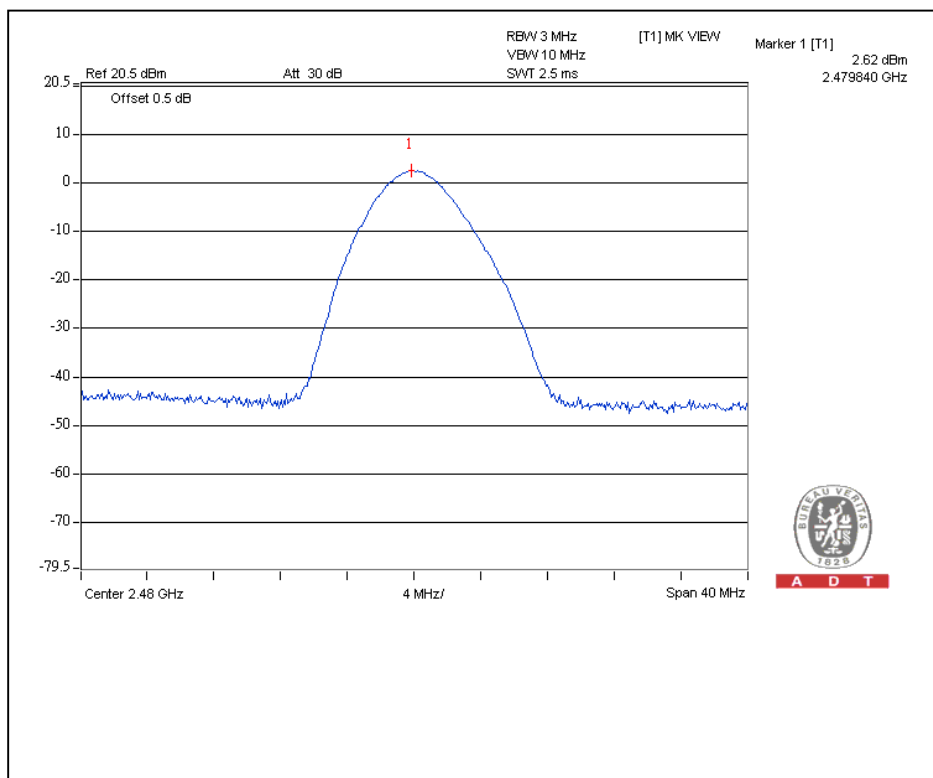


A D T

Channel 39



Channel 78



4.7 RADIATED EMISSION MEASUREMENT

4.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

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

1. As shown in 15.35(b), 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.
2. Section 15.205 restricted bands of operation shall compliance with the limits in Section 15.209.



4.7.2 TEST INSTRUMENTS

For below 1GHz test, tested data: Nov. 17

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010
Agilent PSA Spectrum Analyzer	E4446A	MY46180622	May 12 , 2010	May 11 , 2011
HP Pre_Amplifier	8449B	300801923	Nov. 01, 2010	Oct. 31, 2011
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 03, 2010	Sep. 02, 2011
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 28, 2010	Apr. 27, 2011
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 18, 2009	Dec. 17, 2010
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 22, 2010	Jan. 21, 2011
R&S Loop Antenna	HFH2-Z2	100070	Feb. 03, 2010	Feb. 02, 2012
RF Switches	EMH-011	1001	NA	NA
RF CABLE (Chaintek)	Sucoflex 104+ Sucoflex 106	RF104-101+R F106-101	Aug. 24, 2010	Aug. 23, 2011
RF Cable	8DFB	STCCAB-30M- 1GHz	NA	NA
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The horn antenna, preamplifier (model: 8449B) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.
 3. The test was performed in Open Site No. C.
 4. The FCC Site Registration No. is 656396.
 5. The VCCI Site Registration No. is R-1626.
 6. The CANADA Site Registration No. is IC 7450G-3.



A D T

Above 1GHz test, tested data: Aug. 24

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010
Agilent PSA Spectrum Analyzer	E4446A	MY46180622	May 12 , 2010	May 11 , 2011
HP Pre_Amplifier	8449B	300801923	Nov. 02, 2009	Nov. 01, 2010
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Aug. 28, 2009	Aug. 27, 2010
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 28, 2010	Apr. 27, 2011
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 18, 2009	Dec. 17, 2010
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 22, 2010	Jan. 21, 2011
R&S Loop Antenna	HFH2-Z2	100070	Feb. 03, 2010	Feb. 02, 2011
RF Switches	EMH-011	1001	NA	NA
RF CABLE (Chaintek)	Sucoflex 106	28077	Aug. 14, 2010	Aug. 13, 2011
RF Cable	8DFB	STCCAB-30M-1GHz	NA	NA
Software	ADT_Radiated_V7.6.15.9.2	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The horn antenna, preamplifier (model: 8449B) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.

3. The test was performed in Open Site No. C.

4. The FCC Site Registration No. is 656396.

5. The VCCI Site Registration No. is R-1626.

6. The CANADA Site Registration No. is IC 7450G-3.

4.7.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 10 meters open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

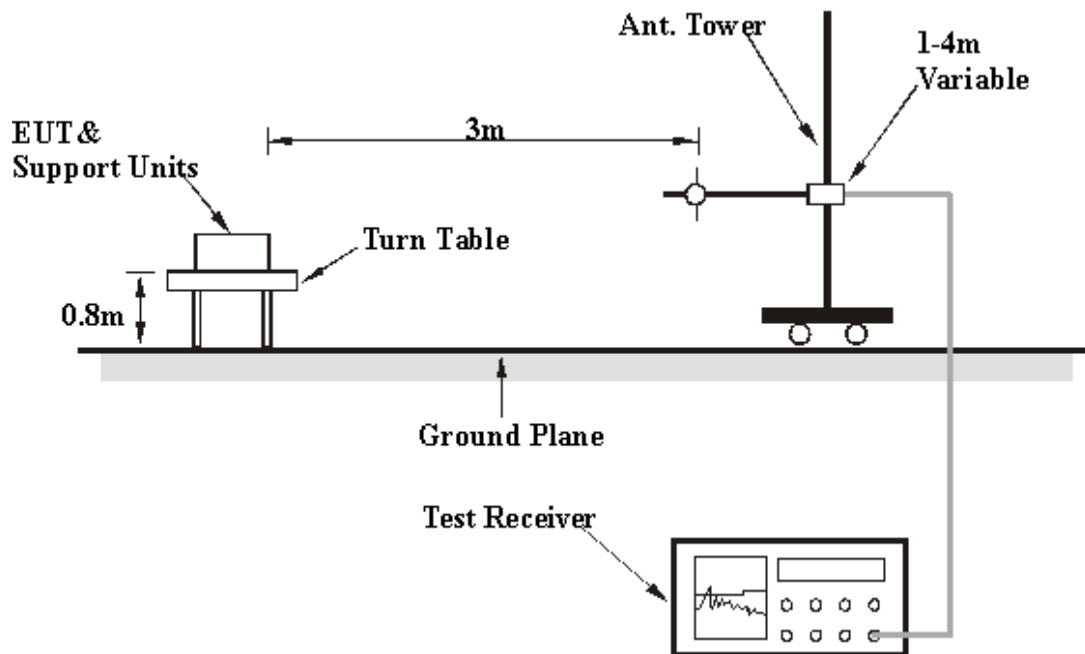
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz.

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



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

4.7.6 TEST RESULTS

BELOW 1GHz WORST-CASE DATA : GFSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 63%RH 1013 hPa	TESTED BY	Wen Yu

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	125.03	36.68 QP	43.50	-6.82	1.51 H	225	23.81	12.87
2	144.00	37.88 QP	43.50	-5.62	1.44 H	120	23.34	14.54
3	223.35	36.64 QP	46.00	-9.36	1.33 H	257	24.47	12.17
4	250.00	41.52 QP	46.00	-4.48	1.14 H	319	27.95	13.57
5	375.00	40.26 QP	46.00	-5.74	1.10 H	162	22.71	17.55
6	500.00	40.87 QP	46.00	-5.13	1.00 H	49	20.11	20.76
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	74.60	36.85 QP	40.00	-3.15	1.00 V	51	25.93	10.92
2	113.11	34.74 QP	43.50	-8.76	1.00 V	271	23.60	11.14
3	143.24	36.31 QP	43.50	-7.19	1.00 V	261	21.71	14.60
4	250.00	40.15 QP	46.00	-5.85	1.00 V	165	26.58	13.57
5	600.00	42.59 QP	46.00	-3.41	1.33 V	10	19.32	23.27
6	1000.00	42.25 QP	54.00	-11.75	1.50 V	31	13.64	28.61

- 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).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.



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ABOVE 1GHz WORST-CASE DATA

GFSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH 1013 hPa	TESTED BY	Kent Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	53.7 PK	74.0	-20.3	1.61 H	145	23.64	30.06
2	2390.00	23.6 AV	54.0	-30.4	1.61 H	145	-6.46	30.06
3	*2402.00	93.4 PK			1.61 H	145	63.29	30.11
4	*2402.00	63.3 AV			1.61 H	145	33.19	30.11
5	4804.00	34.3 PK	74.0	-39.7	1.37 H	67	-1.09	35.39
6	4804.00	4.2 AV	54.0	-49.8	1.37 H	67	-31.19	35.39
7	#7206.00	42.7 PK	73.4	-30.7	1.58 H	29	0.94	41.76
8	#7206.00	12.6 AV	43.3	-30.7	1.58 H	29	-29.16	41.76

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	54.1 PK	74.0	-19.9	1.50 V	237	24.04	30.06
2	2390.00	24.0 AV	54.0	-30.0	1.50 V	237	-6.06	30.06
3	*2402.00	88.2 PK			1.50 V	237	58.09	30.11
4	*2402.00	58.1 AV			1.50 V	237	27.99	30.11
5	4804.00	34.1 PK	74.0	-39.9	1.33 V	215	-1.29	35.39
6	4804.00	4.0 AV	54.0	-50.0	1.33 V	215	-31.39	35.39
7	#7206.00	42.3 PK	68.2	-25.9	1.68 V	309	0.54	41.76
8	#7206.00	12.2 AV	38.1	-25.9	1.68 V	309	-29.56	41.76

- 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).
 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: $20\log(3.125 / 100) = -30.1 \text{ dB}$.
 7. Average value = peak reading + $20\log(\text{duty cycle})$.
 8. "#":The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH 1013 hPa	TESTED BY	Kent Liu

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	92.9 PK			1.54 H	146	62.64	30.26
2	*2441.00	62.8 AV			1.54 H	146	32.54	30.26
3	4882.00	34.6 PK	74.0	-39.4	1.36 H	66	-0.94	35.54
4	4882.00	4.5 AV	54.0	-49.5	1.36 H	66	-31.04	35.54
5	7323.00	42.9 PK	74.0	-31.1	1.51 H	24	0.92	41.98
6	7323.00	12.8 AV	54.0	-41.2	1.51 H	24	-29.18	41.98

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	89.1 PK			1.48 V	238	58.84	30.26
2	*2441.00	59.0 AV			1.48 V	238	28.74	30.26
3	4882.00	34.3 PK	74.0	-39.7	1.32 V	211	-1.24	35.54
4	4882.00	4.2 AV	54.0	-49.8	1.32 V	211	-31.34	35.54
5	7323.00	42.7 PK	74.0	-31.3	1.66 V	305	0.72	41.98
6	7323.00	12.6 AV	54.0	-41.4	1.66 V	305	-29.38	41.98

- 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).
 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: $20\log(3.125 / 100) = -30.1$ dB.
 7. Average value = peak reading + $20\log(\text{duty cycle})$.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH 1013 hPa	TESTED BY	Kent Liu

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	92.8 PK			1.51 H	146	62.39	30.41
2	*2480.00	62.7 AV			1.51 H	146	32.29	30.41
3	2483.50	54.2 PK	74.0	-19.8	1.51 H	145	23.77	30.43
4	2483.50	24.1 AV	54.0	-29.9	1.51 H	145	-6.33	30.43
5	4960.00	34.2 PK	74.0	-39.8	1.37 H	64	-1.48	35.68
6	4960.00	4.1 AV	54.0	-49.9	1.37 H	64	-31.58	35.68
7	7440.00	42.5 PK	74.0	-31.5	1.51 H	20	0.30	42.20
8	7440.00	12.4 AV	54.0	-41.6	1.51 H	20	-29.80	42.20

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	89.5 PK			1.46 V	237	59.09	30.41
2	*2480.00	59.4 AV			1.46 V	237	28.99	30.41
3	2483.50	54.9 PK	74.0	-19.1	1.46 V	237	24.47	30.43
4	2483.50	24.8 AV	54.0	-29.2	1.46 V	237	-5.63	30.43
5	4960.00	34.4 PK	74.0	-39.6	1.34 V	210	-1.28	35.68
6	4960.00	4.3 AV	54.0	-49.7	1.34 V	210	-31.38	35.68
7	7440.00	42.6 PK	74.0	-31.4	1.64 V	341	0.40	42.20
8	7440.00	12.5 AV	54.0	-41.5	1.64 V	341	-29.70	42.20

- REMARKS:**
- Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 - Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 - The other emission levels were very low against the limit.
 - Margin value = Emission level – Limit value.
 - “ * “: Fundamental frequency.
 - 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: $20\log(3.125 / 100) = -30.1$ dB.
 - Average value = peak reading + $20\log(\text{duty cycle})$.



8DPSK MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH 1013 hPa	TESTED BY	Kent Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.0 PK	74.0	-20.0	1.58 H	143	23.94	30.06
2	2390.00	23.9 AV	54.0	-30.1	1.58 H	143	-6.16	30.06
3	*2402.00	93.6 PK			1.58 H	143	63.49	30.11
4	*2402.00	63.5 AV			1.58 H	143	33.39	30.11
5	4804.00	34.8 PK	74.0	-39.2	1.38 H	71	-0.59	35.39
6	4804.00	4.7 AV	54.0	-49.3	1.38 H	71	-30.69	35.39
7	#7206.00	43.0 PK	73.6	-30.6	1.51 H	36	1.24	41.76
8	#7206.00	12.9 AV	43.5	-30.6	1.51 H	36	-28.86	41.76

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	54.3 PK	74.0	-19.7	1.00 V	248	24.24	30.06
2	2390.00	24.2 AV	54.0	-29.8	1.00 V	248	-5.86	30.06
3	*2402.00	88.7 PK			1.00 V	248	58.59	30.11
4	*2402.00	58.6 AV			1.00 V	248	28.49	30.11
5	4804.00	34.3 PK	74.0	-39.7	1.36 V	208	-1.09	35.39
6	4804.00	4.2 AV	54.0	-49.8	1.36 V	208	-31.19	35.39
7	#7206.00	42.5 PK	68.7	-26.2	1.70 V	317	0.74	41.76
8	#7206.00	12.4 AV	38.6	-26.2	1.70 V	317	-29.36	41.76

- REMARKS:**
- Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 - Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 - The other emission levels were very low against the limit.
 - Margin value = Emission level – Limit value.
 - " * ": Fundamental frequency.
 - 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: $20\log(3.125 / 100) = -30.1$ dB.
 - Average value = peak reading + $20\log(\text{duty cycle})$.
 - "#": The radiated frequency is out the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH 1013 hPa	TESTED BY	Kent Liu

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	93.4 PK			1.54 H	147	63.14	30.26
2	*2441.00	63.3 AV			1.54 H	147	33.04	30.26
3	4882.00	34.6 PK	74.0	-39.4	1.35 H	69	-0.94	35.54
4	4882.00	4.5 AV	54.0	-49.5	1.35 H	69	-31.04	35.54
5	7323.00	42.3 PK	74.0	-31.7	1.50 H	31	0.32	41.98
6	7323.00	12.2 AV	54.0	-41.8	1.50 H	31	-29.78	41.98

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	89.3 PK			1.48 V	238	59.04	30.26
2	*2441.00	59.2 AV			1.48 V	238	28.94	30.26
3	4882.00	34.6 PK	74.0	-39.4	1.34 V	216	-0.94	35.54
4	4882.00	4.5 AV	54.0	-49.5	1.34 V	216	-31.04	35.54
5	7323.00	42.5 PK	74.0	-31.5	1.71 V	308	0.52	41.98
6	7323.00	12.4 AV	54.0	-41.6	1.71 V	308	-29.58	41.98

- 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).
 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: $20\log(3.125 / 100) = -30.1$ dB.
 7. Average value = peak reading + $20\log(\text{duty cycle})$.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH 1013 hPa	TESTED BY	Kent Liu

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	93.3 PK			1.50 H	146	62.89	30.41
2	*2480.00	63.2 AV			1.50 H	146	32.79	30.41
3	2483.50	53.5 PK	74.0	-20.5	1.50 H	146	23.07	30.43
4	2483.50	23.4 AV	54.0	-30.6	1.50 H	146	-7.03	30.43
5	4960.00	34.7 PK	74.0	-39.3	1.35 H	66	-0.98	35.68
6	4960.00	4.6 AV	54.0	-49.4	1.35 H	66	-31.08	35.68
7	7440.00	43.1 PK	74.0	-30.9	1.54 H	24	0.90	42.20
8	7440.00	13.0 AV	54.0	-41.0	1.54 H	24	-29.20	42.20

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	90.2 PK			1.45 V	238	59.79	30.41
2	*2480.00	60.1 AV			1.45 V	238	29.69	30.41
3	2483.50	54.2 PK	74.0	-19.8	1.45 V	238	23.77	30.43
4	2483.50	24.1 AV	54.0	-29.9	1.45 V	238	-6.33	30.43
5	4960.00	34.3 PK	74.0	-39.7	1.34 V	211	-1.38	35.68
6	4960.00	4.2 AV	54.0	-49.8	1.34 V	211	-31.48	35.68
7	7440.00	42.9 PK	74.0	-31.1	1.63 V	343	0.70	42.20
8	7440.00	12.8 AV	54.0	-41.2	1.63 V	343	-29.40	42.20

- 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).
 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: $20\log(3.125 / 100) = -30.1$ dB.
 7. Average value = peak reading + $20\log(\text{duty cycle})$.



4.8 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.8.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

4.8.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
PSA Sevius Spectrum Analyzer	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.8.3 TEST PROCEDURE

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

NOTE:

The EUT was setup to ANSI C63.4, tested to FHSS test procedure of DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

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.

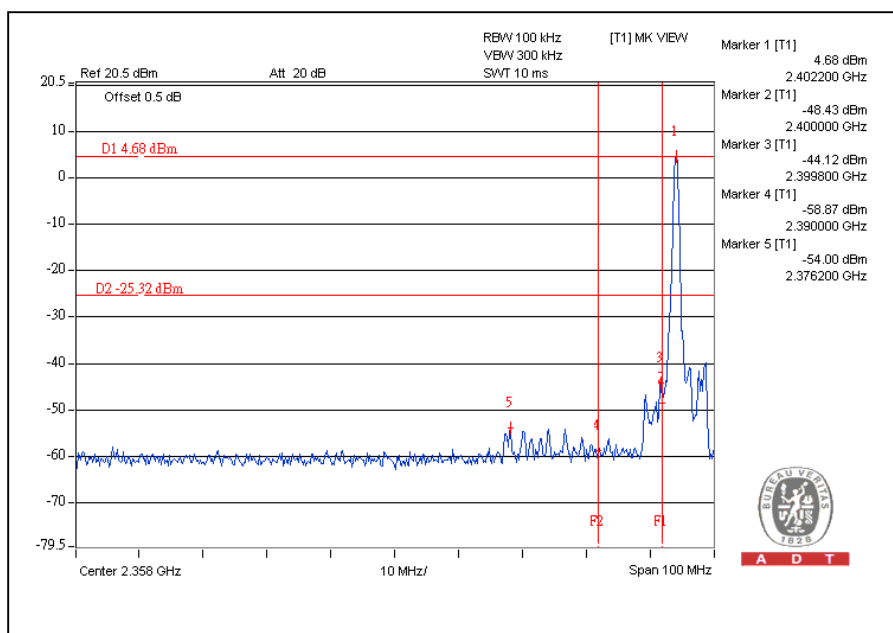


A D T

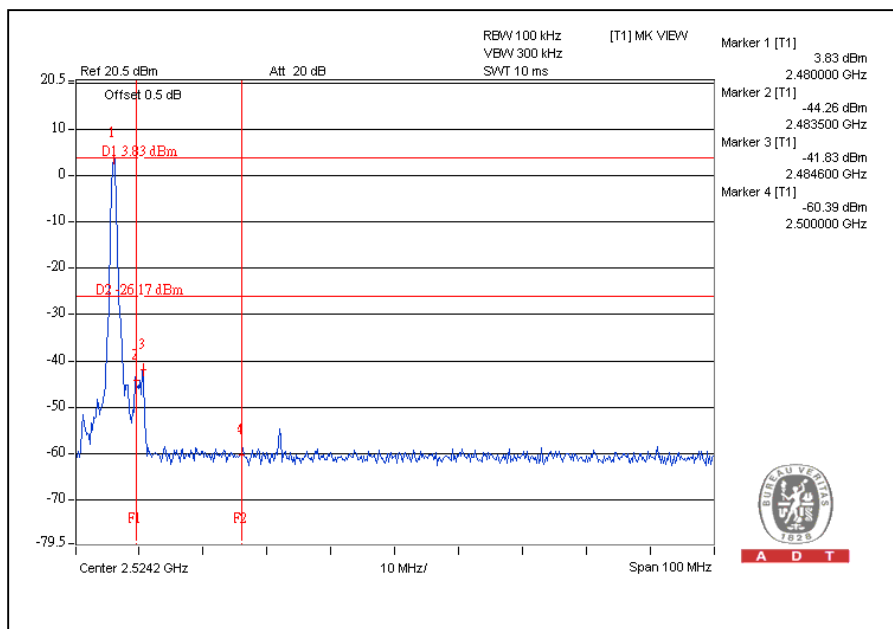
4.8.6 TEST RESULTS

For GFSK Modulation Type:

CH0



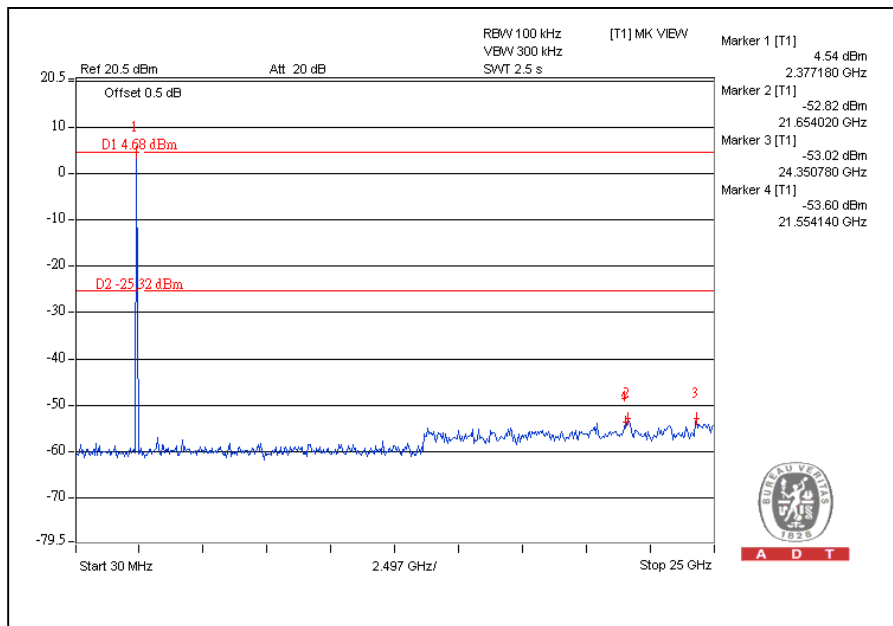
CH78





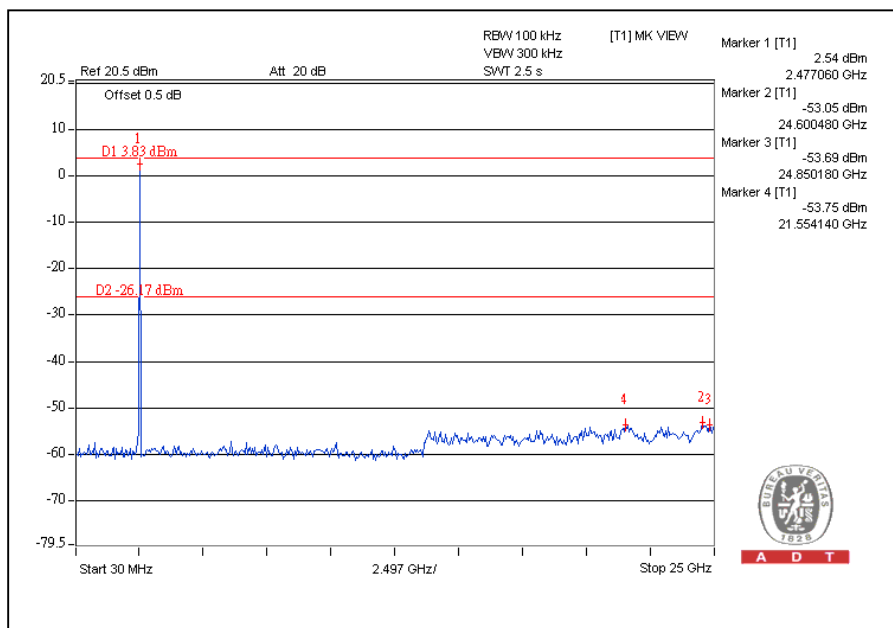
A D T

CH0



A D T

CH78



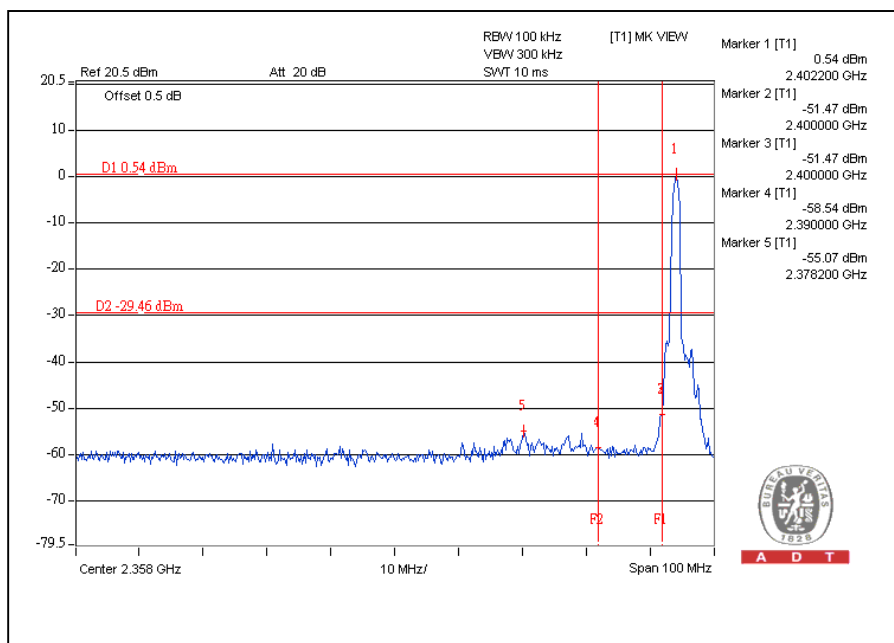
A D T



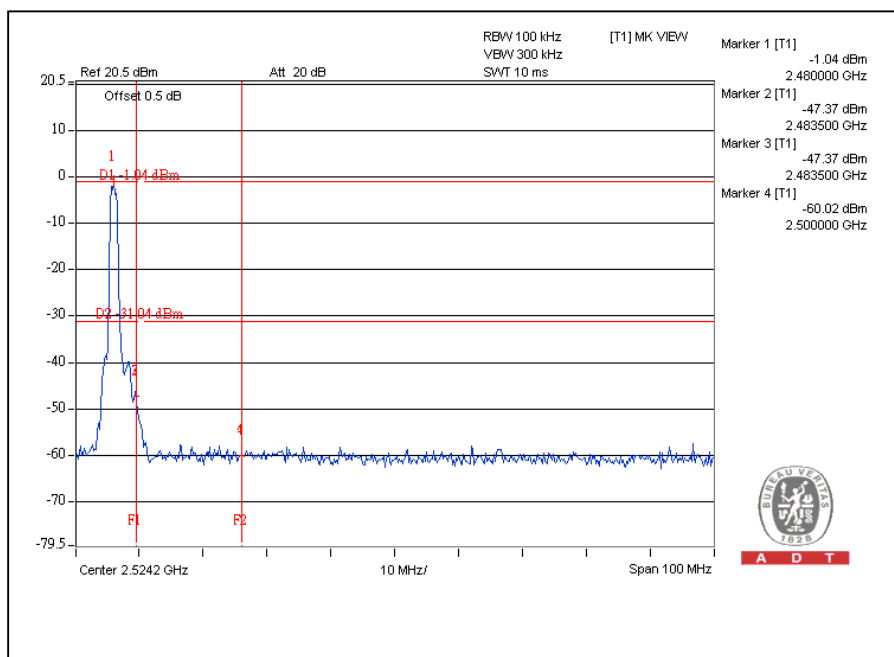
A D T

For 8DPSK Modulation Type:

CH0



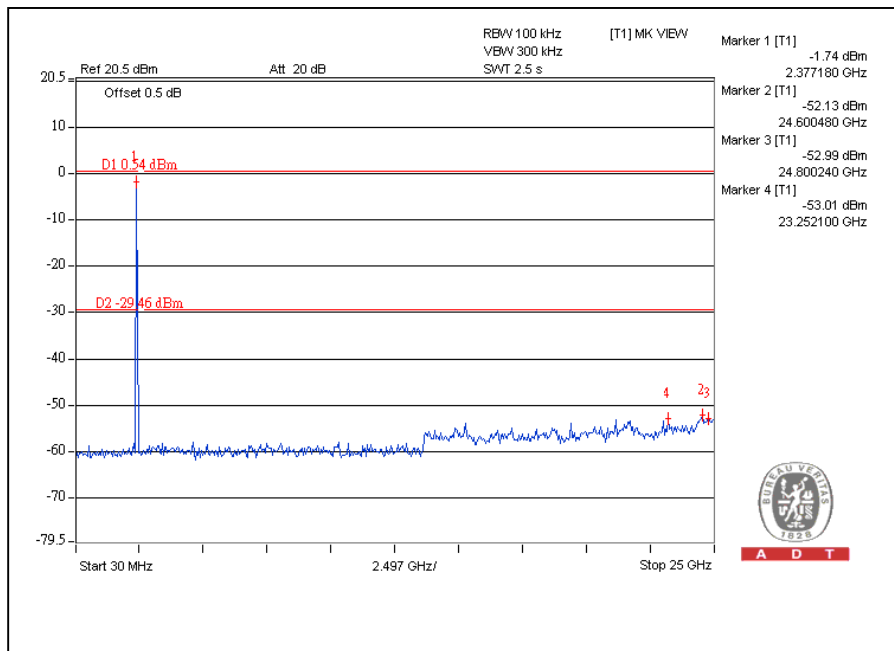
CH78



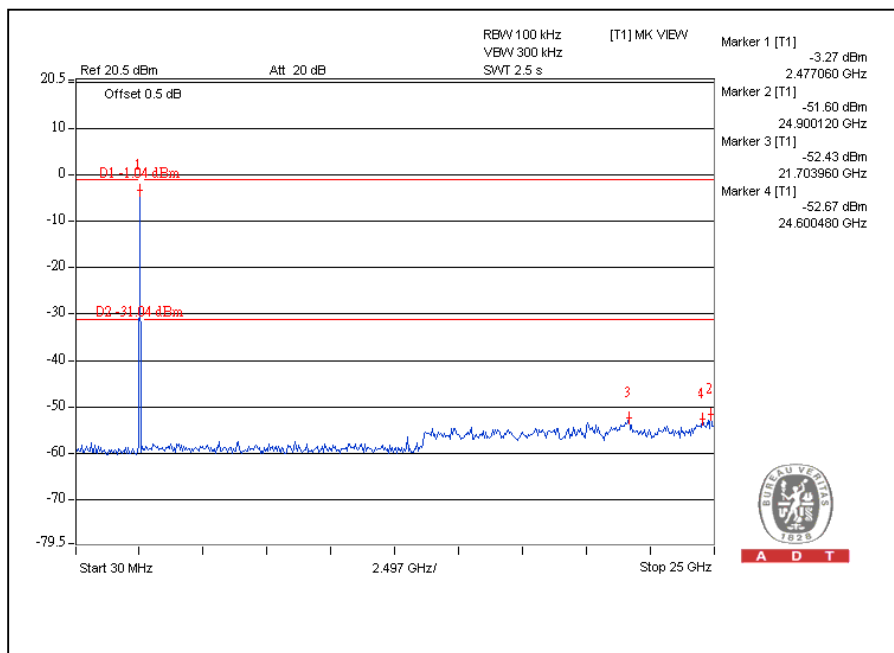


A D T

CH0



CH78





5 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:

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml.
If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Email: service@adt.com.tw

Web Site: www.adt.com.tw

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

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

No any modifications are made to the EUT by the lab during the test.

--- END ---