Certification Test Report

FCC ID: AZ492FT6012
IC: 109U-92FT6012

FCC Rule Part: 15.247
IC Radio Standards Specification: RSS-210

ACS Report Number: 13-2171.W06.1A

Applicant: Motorola Solutions SDNBHD
Model: PMMN4097A

Test Begin Date: **April 4, 2014**
Test End Date: **April 14, 2014**

Report Issue Date: April 17, 2014

FOR THE SCOPE OF ACCREDITATION UNDER CERTIFICATE NUMBER AT-1533

This report must not be used by the client to claim product certification, approval, or endorsement by ACLASS, ANSI, or any agency of the Federal Government.

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This report contains 37 pages

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1 GENERAL

1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations and Industry Canada's Radio Standards Specification RSS-210.

1.2 Product Description

The Motorola Solutions Model PMMN4097A is a mobile microphone for TX audio only with Bluetooth Gateway incorporated for Bluetooth pairing with Wireless RSM and Wireless Pod. Per the applicant, the equipment only supports the GFSK modulation for the 2.4 GHz Bluetooth radio. The equipment also incorporates a 125 kHz radio for near field communications.

Table1.3-1: Bluetooth Radio Properties

Mode of Operation	Frequency Range (MHz)	Number of Channels	Channel Separation (kHz)	Data Rates Supported (kbps)
GFSK	2402 - 2480	79	1000	1000

1.3 Manufacturer Information

Applicant
Motorola Solutions Malaysia Sdn Bhd
Plot 2, Bayan Lepas,
Technoplex Industrial Park,
Mukim 12, SWD (CSC)
11900 Bayan Lepas, Penang Malaysia

Manufacturer
Temco
2-21-4 Honan, Suginamu-Ku
Tokyo 168-062 Japan

Model Number: PMMN4097A

Test Sample Serial Number(s): ACS#1 (Radiated), ACS#2 (RF Conducted),

Test Sample Condition: The samples were in good conditions with no observable physical damages.

1.4 Test Methodology and Considerations

The EUT was evaluated for RF conducted, radiated emissions for the 2.4 GHz Bluetooth transceiver. The EUT is only installed in vehicles and is exempted from the power line conducted emissions requirements.

The RF conducted measurements were performed with the EUT configured with a temporary SMA connector at the RF port.

The radiated emissions evaluation was performed with the EUT powered through a mobile radio. The emissions were investigated up to the 10th harmonic of the fundamental frequency, with the EUT set in 3 orthogonal orientations. The final measurements were performed with the EUT set vertically, which led o the highest emissions as compared to the limits. The EUT was also evaluated for intermodulation product for the co-located Bluetooth and 125 kHz transceivers transmitting at the same time. All intermodulation products were found to be compliant the limits of FCC Section 15.209 and RSS-Gen.

The Bluetooth radio was configured using the CSR BlueTest3 Software. The test power settings were selected as listed below.

GFSK: Power (1, 42)

The frequencies and data rates used during the evaluation are provided below.

Table 1.4-1: Bluetooth Radio Test configuration

Mode of Operations	Frequency (MHz)	Data Rate (kbps)
GFSK	2402	1000
	2441	1000
	2480	1000

The EUT was also evaluated for unintentional emissions and for the 125 kHz radio. The results are documented separately.

2 TEST FACILITIES

2.1 Location

The radiated and conducted emissions test sites are located at the following address:

Advanced Compliance Solutions, Inc.
3998 FAU Blvd, Suite 310
Boca Raton, Florida 33431
Phone: (561) 961-5585
Fax: (561) 961-5587
www.acstestlab.com

FCC Test Firm Registration #: 475089
Industry Canada Lab Code: 4175C

2.2 Laboratory Accreditations/Recognitions/Certifications

ACS is accredited to ISO/IEC 17025 by ANSI-ASQ National Accreditation Board under their ACLASS program and has been issued certificate number AT-1533 in recognition of this accreditation. Unless otherwise specified, all test methods described within this report are covered under the ISO/IEC 17025 scope of accreditation.

2.3 Radiated & Conducted Emissions Test Site Description

2.3.1 Semi-Anechoic Chamber Test Site

The EMC radiated test facility consists of an RF-shielded enclosure. The interior dimensions of the indoor semi-anechoic chamber are approximately 48 feet (14.6 m) long by 36 feet (10.8 m) wide by 24 feet (7.3 m) high and consist of rigid, 1/8 inch (0.32 cm) steel-clad, wood core modular panels with steel framing. In the shielded enclosure, the faces of the panels are galvanized and the chamber is self-supporting. 8-foot RF absorbing cones are installed on 4 walls and the ceiling. The steel-clad ground plane is covered with vinyl floor.

The turntable is driven by pneumatic motor, which is capable of supporting a 2000 lb. load. The turntable is flushed with the chamber floor which it is connected to, around its circumference, with a continuous metallic loaded spring. An EMCO Model 1050 Multi-device Controller controls the turntable position.

A pneumatic motor is used to control antenna polarizations and height relative to the ground. The height information is displayed on the control unit EMCO Model 1050.

The control room is an RF shielded enclosure attached to the semi-anechoic chamber with two bulkhead panels for connecting RF, and control cables. The dimension of the room is 7.3 m x 4.9 m x 3 m high and the entrance doors of both control and conducted rooms are 3 feet (0.91 m) by 7 feet (2.13 m).

A diagram of the Semi-Anechoic Chamber Test Site is shown in Figure 2.3.1-1 below:

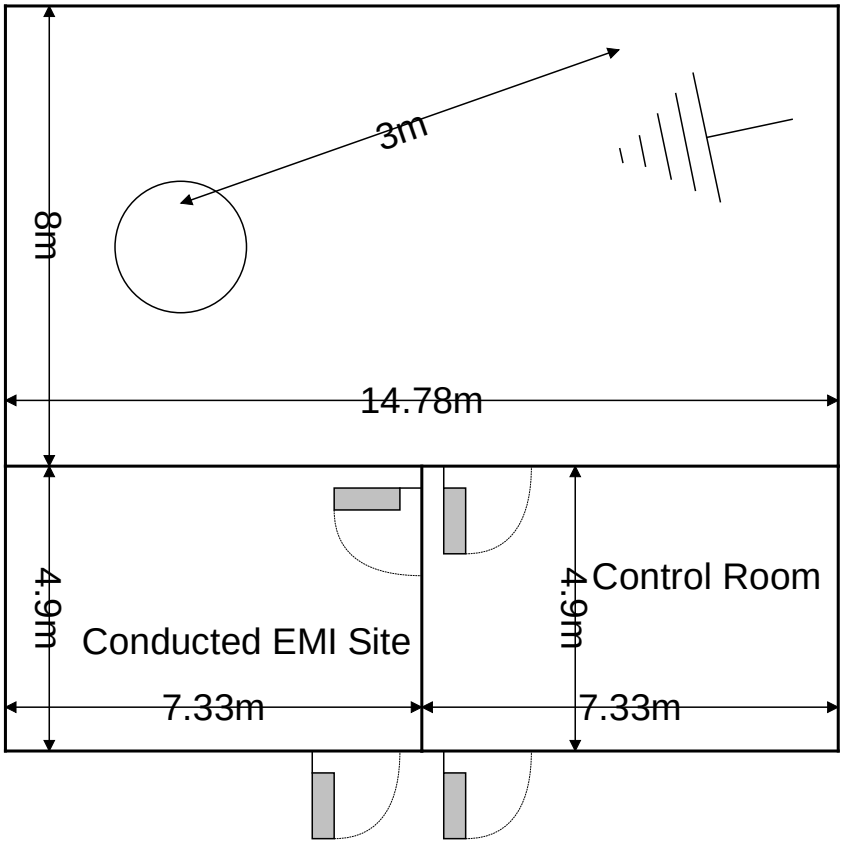

Figure 2.3.1-1: Semi-Anechoic Chamber Test Site

2.3.2 Conducted Emissions Test Site Description

The dimensions of the shielded conducted room are 7.3 x 4.9 x 3 m^3. As per ANSI C63.4 2003 requirements, the data were taken using two LISNs; a Solar Model 8028-50 50 Ω/50 µH and an EMCO Model 3825, which are installed as shown in Photograph 3. For 220 V, 50 Hz, a Polarad LISN (S/N 879341/048) is used in conjunction with a 1 kVA, 50 Hz/220 V EDGAR variable frequency generator, Model 1001B, to filter conducted noise from the generator.

A diagram of the room is shown below in figure 2.3.2-1:

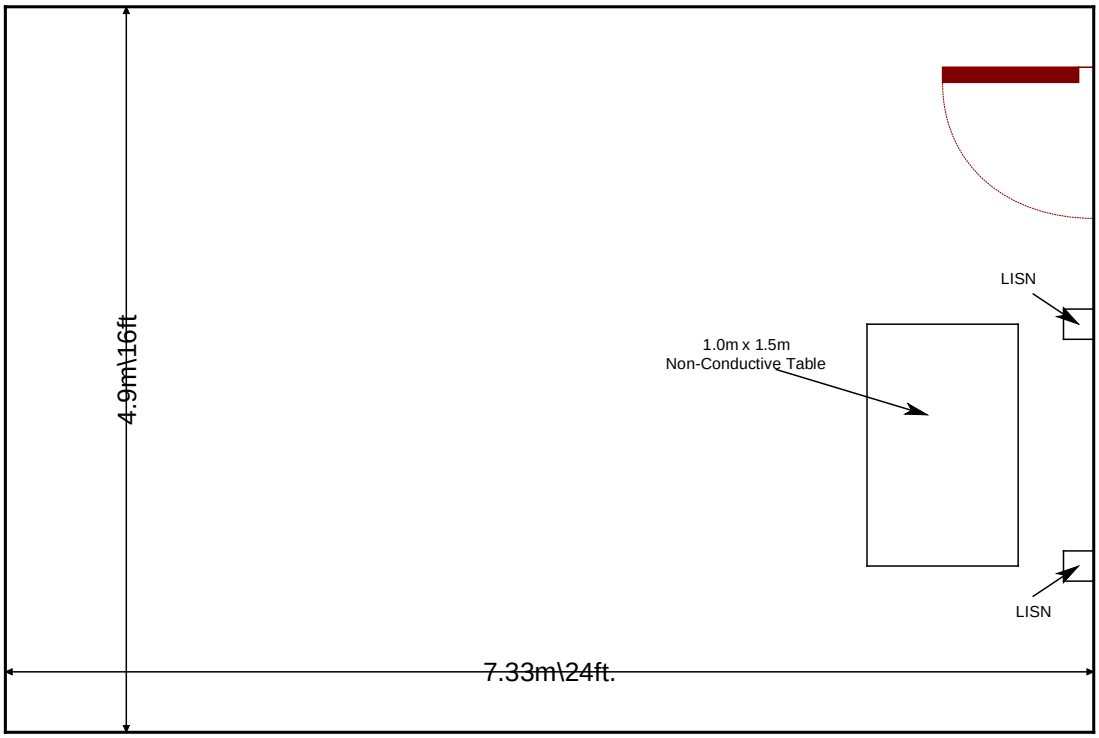

Figure 2.3.2-1: AC Mains Conducted EMI Site

3 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ANSI C63.4-2003: Method of Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the 9KHz to 40GHz
- ANSI C63.10-2009: American National Standard for Testing Unlicensed Wireless Devices
- US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2014
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2014
- FCC Public Notice DA 00-705 - Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems, March 30, 2000
- Industry Canada Radio Standards Specification: RSS-210 - Low-power License-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment, Issue 8 December 2010.
- Industry Canada Radio Standards Specification: RSS-GEN – General Requirements and Information for the Certification of Radiocommunication Equipment, Issue 3, December 2010.

4 LIST OF TEST EQUIPMENT

The calibration interval of test equipment is annually or the manufacturer's recommendations. Where the calibration interval deviates from the annual cycle based on the instrument manufacturer's recommendations, it shall be stated below.

Table 4-1: Test Equipment List

AssetID	Manufacturer	Model #	Equipment Type	Serial #	Last Calibration Date	Calibration Due Date
523	Agilent	E7405	Spectrum Analyzers	MY45103293	1/8/2013	1/8/2015
2002	EMCO	3108	Antennas	2147	11/22/2013	11/22/2015
2004	EMCO	3146	Antennas	1385	11/22/2013	11/22/2015
2006	EMCO	3115	Antennas	2573	4/24/2013	4/24/2015
2008	COM-Power	AH-826	Antennas	81009	NCR	NCR
2011	Hewlett-Packard	HP 8447D	Amplifiers	2443A03952	12/31/2013	12/31/2014
2037	ACS Boca	Chamber EMI Cable Set	Cable Set	2037	2/27/2014	2/27/2015
2044	QMI	N/A	Cables	2044	12/31/2013	12/31/2014
2070	Mini Circuits	VHF-8400+	Filter	2070	1/1/2014	1/1/2015
2072	Mini Circuits	VHF-3100+	Filter	30737	1/1/2014	1/1/2015
2075	Hewlett Packard	8495B	Attenuators	2626A11012	1/2/2014	1/2/2015
2076	Hewlett Packard	HP5061-5458	Cables	2076	12/31/2013	12/31/2014
2082	Teledyne Storm Products	90-010-048	Cables	2082	5/31/2013	5/31/2014
2086	Merrimac	FAN-6-10K	Attenuators	23148-83-1	12/31/2013	12/31/2014
2089	Agilent Technologies, Inc.	83017A	Amplifiers	3123A00214	12/16/2013	12/16/2014
2095	ETS Lindgren	TILE4! - Version 4.2.A	Software	85242	NCR	NCR
3002	Rohde & Schwarz	ESU40	Receiver	100346	11/5/2013	11/5/2014

NCR=No Calibration Required

5 SUPPORT EQUIPMENT

Table 5-1: Support Equipment (Radiated Emissions)

Item #	Type Device	Manufacturer	Model/Part #	Serial #
1	EUT	Temco	PMMN4097A (BT Gateway)	ACS#1
2	GPS/PTT Antenna	Motorola	HAF4033A	N/A
3	Mobile Radio	Motorola	XPR5550 8/900 MHz (AAM28UMN9KA1AN)	203TQB0008
4	DC Power Supply	BK Precision	1692	S940035931
5	Laptop	Dell	Latitude D620	CN-0TD761-12961-68G-3106
6	Mouse	Dell	M-UAR DEL7	LZ9440C43W5

Table 5-2: Cable Description (Radiated Emissions)

Cable #	Cable Type	Length	Shield	Termination
A	Microphone cable	2 m	Yes	EUT to microphone
B	Coaxial	5.05 m	Yes	EUT to Antenna
C	Coaxial	5.16 m	Yes	EUT to Antenna
D	Power Cable	1.7 m	No	EUT to Power Supply
E	Power Cord	1.83 m	No	Power Supply to AC Mains
F	USB Data Cable	10 m	No	EUT to Laptop
G	USB Cable	1.8 m	No	Laptop to Mouse

Table 5-3: Support Equipment (RF Conducted Measurements)

Item #	Type Device	Manufacturer	Model/Part #	Serial #
1	EUT	Temco	PMMN4097A (BT Gateway)	ACS#2
2	Test Jig	Motorola	NA	N/A
3	Power Supply	MPJA	HY5003	003700278
4	Laptop	Dell	PP04X	CN-0XM006-48643-789-2125

Table 5-4: Cable Description (RF Conducted Measurements)

Cable #	Cable Type	Length	Shield	Termination
A	GCAI cable	2 m	Yes	EUT to Test Jig
B	Twisted Pair power leads	0.08 m	No	Test Jig to Power Supply
C	USB	1 m	No	Test Jig to Laptop
D	Power Cord	1.83 m	No	Power Supply to AC Mains

6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM

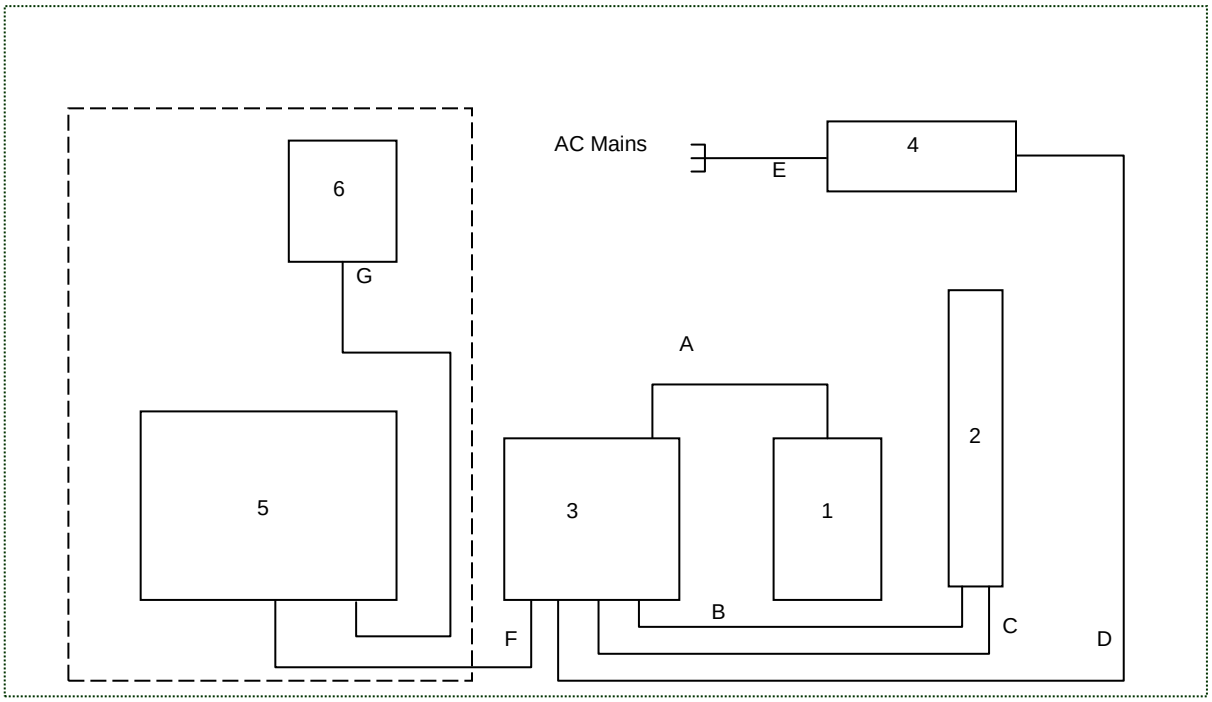

Figure 6-1: Radiated Emissions Setup

Notes:
The laptop was set outside of the test environment for the radiated emissions evaluation and was used to configure the mobile radio.

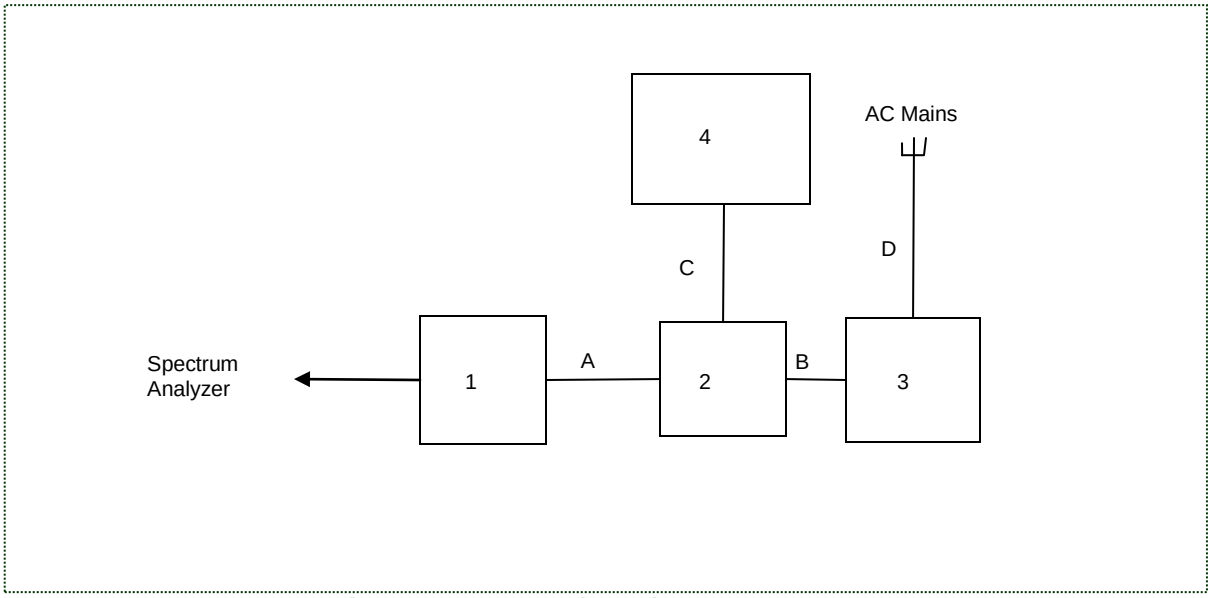

Figure 6-2: RF Conducted Measurement Setup

7 SUMMARY OF TESTS

Along with the tabular data shown below, plots were taken of all signals deemed important enough to document.

7.1 Antenna Requirement – FCC: Section 15.203

The EUT uses a internal Pulse Model W3108 1.5 dBi chip antenna which is soldered to the PCB. The antenna is not detachable and consequently meets the requirements of FCC Section 15.203.

7.2 Peak Output Power - FCC Section 15.247(b)(1) IC: RSS-210 A8.4(2)

7.2.1 Measurement Procedure (Conducted Method)

The RF output port of the EUT was directly connected to the input of the spectrum analyzer through suitable attenuation.

7.2.2 Measurement Results

Results are shown below.

Table 7.2.2-1: RF Output Power (GFSK)

Frequency (MHz)	Power (dBm)
2402	17.75
2441	17.92
2480	17.28

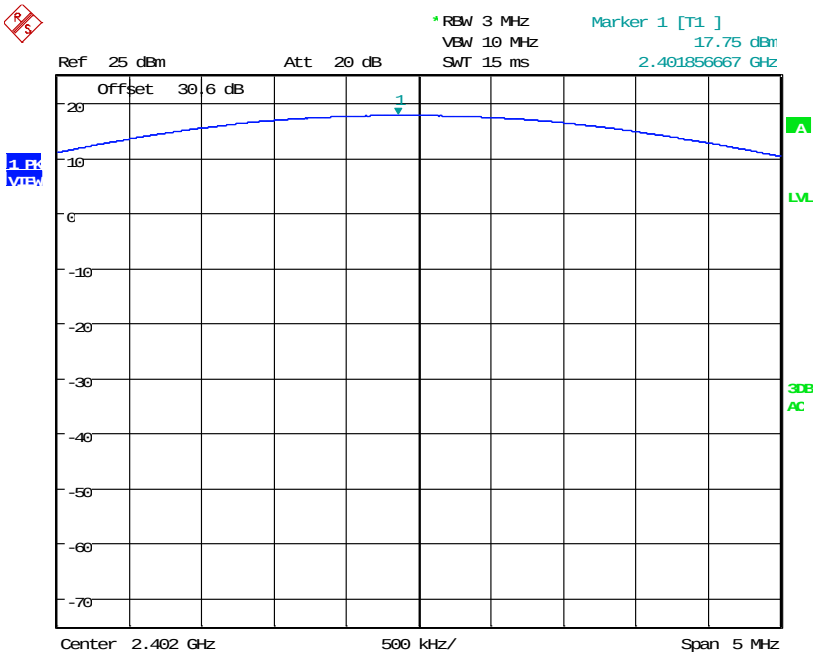

Figure 7.2.2-1: RF Output Power (GFSK) - Low Channel

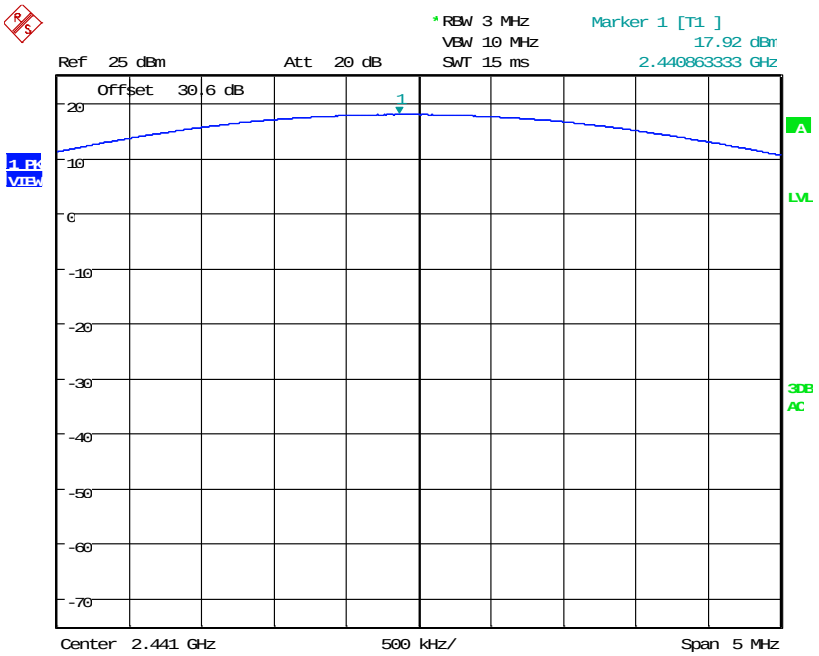

Figure 7.2.2-2: RF Output Power (GFSK) - Middle Channel

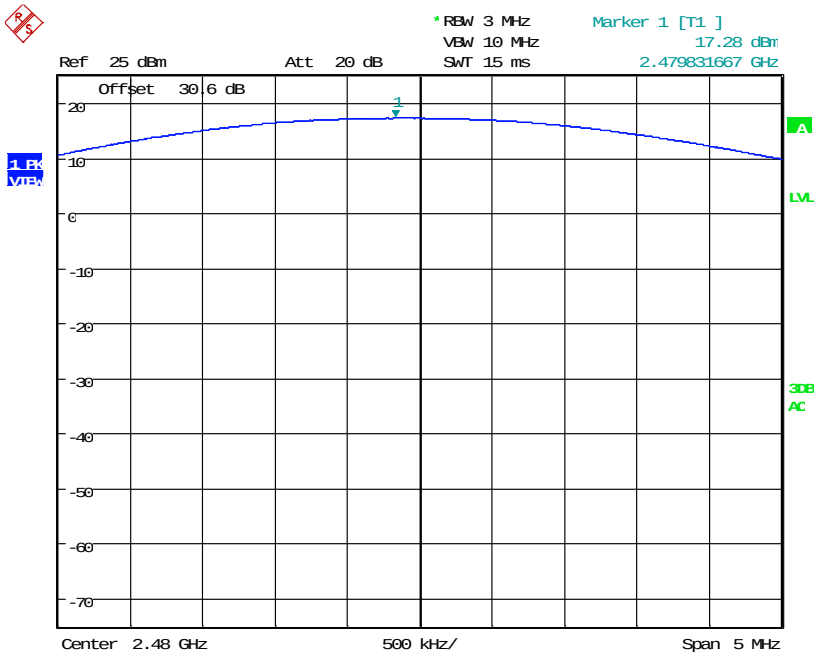

Figure 7.2.2-3: RF Output Power (GFSK) - High Channel

7.3 Channel Usage Requirements

7.3.1 Carrier Frequency Separation – FCC: Section 15.247(a)(1) IC: RSS-210 A8.1(b)

7.3.1.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The span of the spectrum analyzer was set wide enough to capture two adjacent peaks and the RBW and VBW were set to ≥ 1% of the span.

7.3.1.2 Measurement Results

Results are shown.

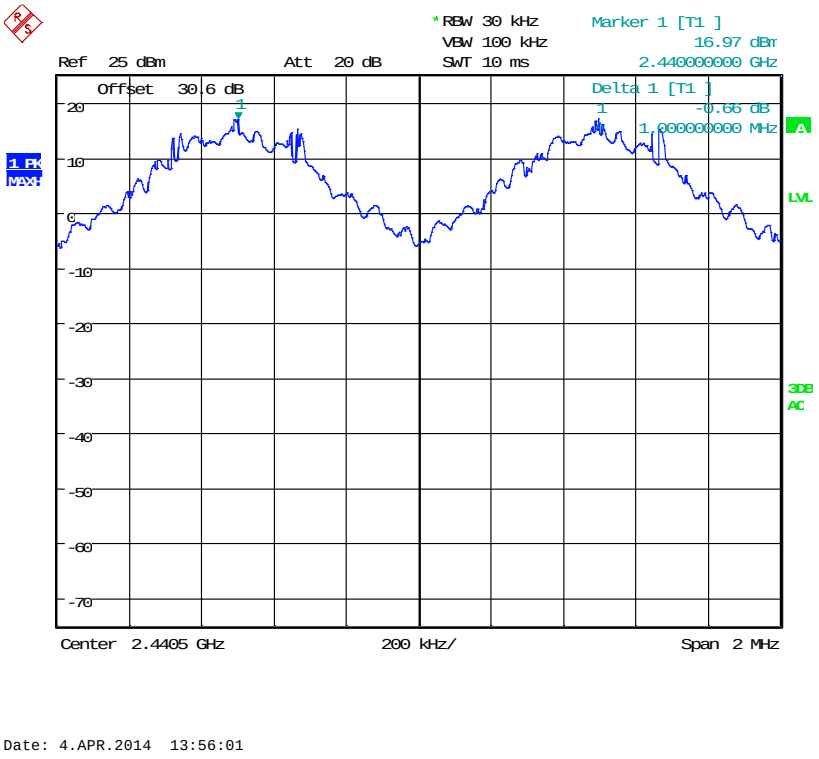

Figure 7.3.1.2-1: Carrier Frequency Separation

7.3.2 Number of Hopping Channels – FCC: Section 15.247(a)(1)(iii) IC: RSS-210 A8.1(d)

7.3.2.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The span of the spectrum analyzer was set wide enough to capture the number of hopping channels. The peak detector max hold function was enabled for the measurements.

7.3.2.2 Measurement Results

Results are shown below.

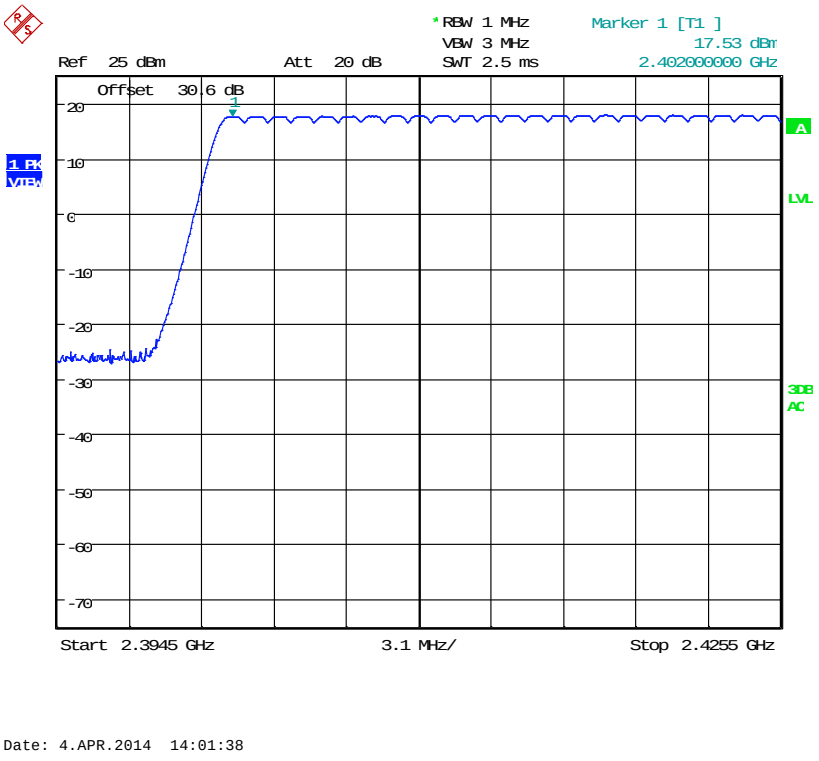

Figure 7.3.2.2-1: Number of Hopping Channels (1 – 24)

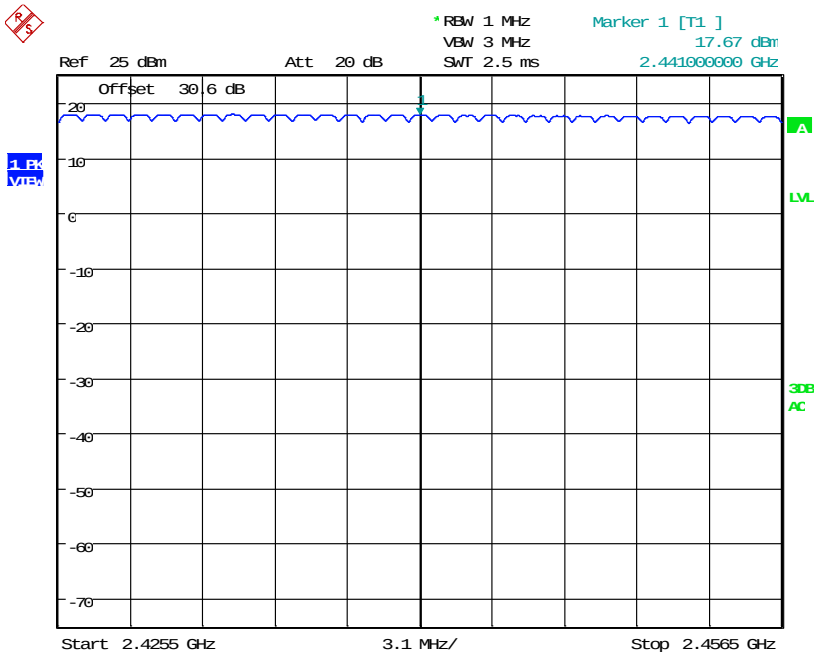

Figure 7.3.2.2-2: Number of Hopping Channels (25 – 55)

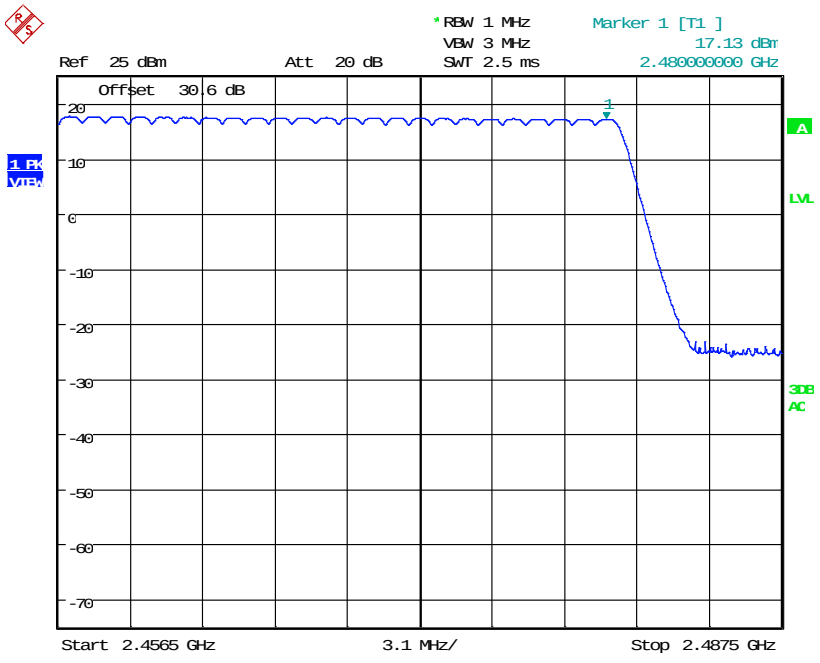

Figure 7.3.2.2-3: Number of Hopping Channels (56 – 79)

7.3.3 Channel Dwell Time – FCC: Section 15.247(a)(1)(iii) IC: RSS-210 A8.1(d)

7.3.3.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The span of the spectrum analyzer was set 0 Hz centered on a hopping channel. The RBW was set to 1 MHz and the sweep time adjusted to capture the entire dwell time per channel with peak detector max hold function.

7.3.3.2 Measurement Results

Results are shown below.

Table 7.3.3.2-1 Dwell Time on a 31.6 Second Cycle

Packet Format	Number of Hops Per Sec. (NHPS)	Number of Hops per Channel Per Sec. (NHPCPS)	Number of hops on a 31.6 s Cycle (NHPC)	Measured Dwell Times (ms)	Dwell Times on a 31.6 s Cycle	Limit (ms)	Status
DH1	800	10.13	320	0.5128	164.10	400	PASS
DH3	400	5.06	160	1.7740	283.85	400	PASS
DH5	266.67	3.38	106.67	3.0172	321.85	400	PASS

*Notes:

NHPS = (1600 /sec)/ (NT+NR) (where NT and NR are the number of transmit and receive packets, respectively)
NHPCPS = NHPS/79
NHPC = NHPCPS * 31.6s
Dwell Time per Cycle = NHPC* Measured Dwell Time

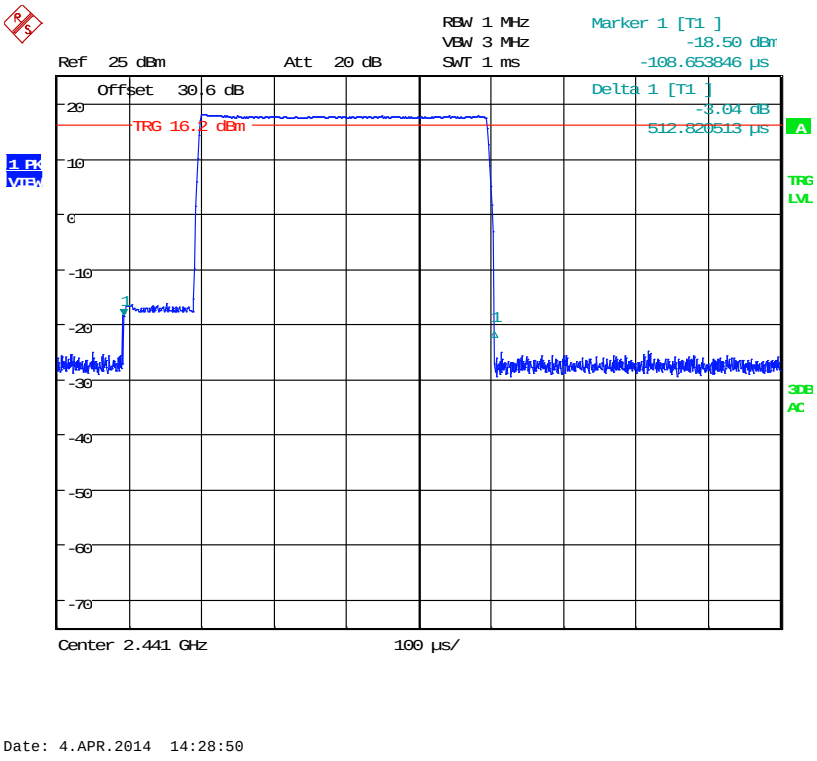

Figure 7.3.3.2-1: Channel Dwell Time – DH1

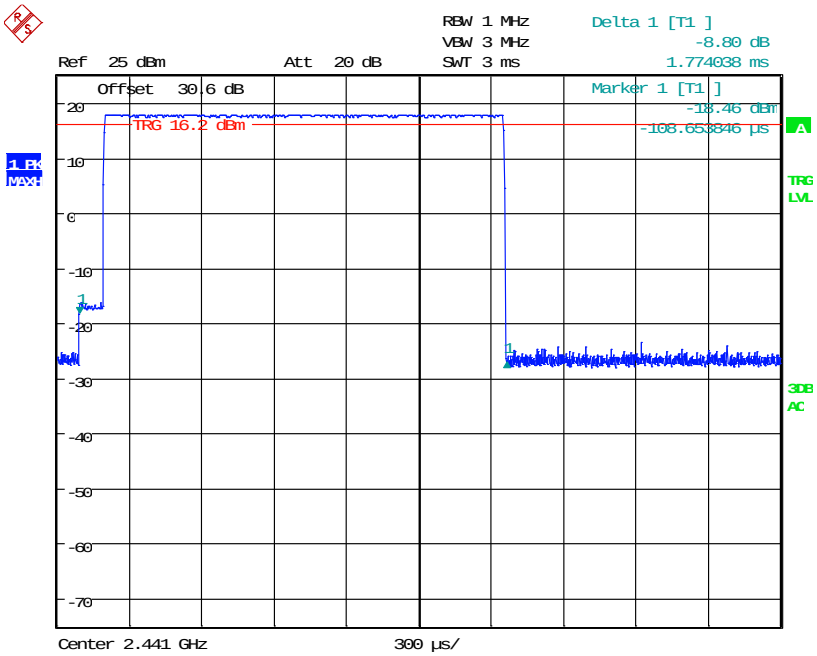

Figure 7.3.3.2-2: Channel Dwell Time – DH3

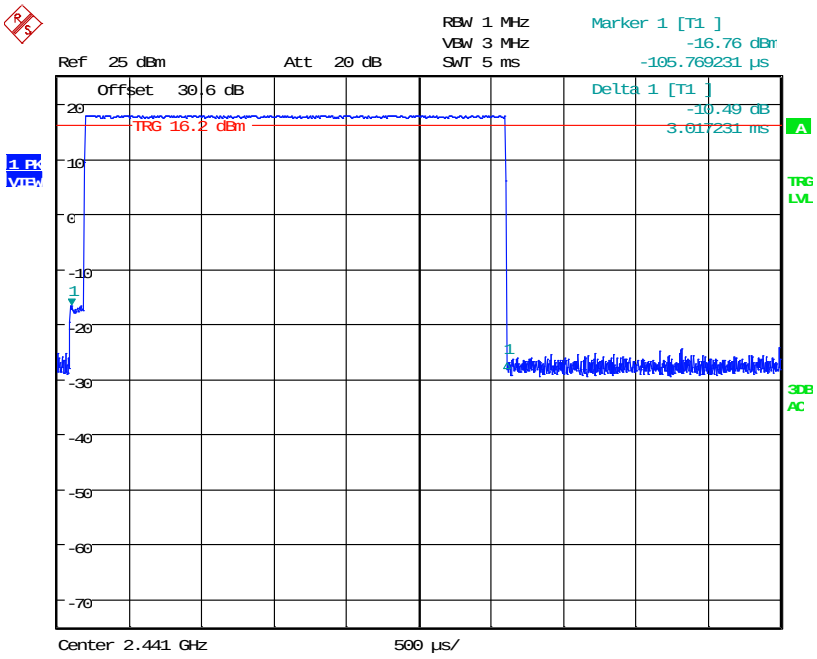

Figure 7.3.3.2-3: Channel Dwell Time – DH5

7.3.4 20dB / 99% Bandwidth - FCC: Section 15.247(a)(1)(i) IC: RSS-210 A8.1(a)

7.3.4.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The spectrum analyzer span was set to 2 to 3 times the estimated bandwidth of the emission. The RBW was to ≥ 1% of the estimated emission bandwidth. The trace was set to max hold with a peak detector active. The Delta function of the analyzer was utilized to determine the 20 dB bandwidth of the emission.

The 99% occupied bandwidth was measured with the spectrum analyzer span set to fully display the emission, including the emissions skirts. The RBW was to 1% of the span. . The occupied 99% bandwidth was measured by using a delta marker at the lower and upper frequencies leading to 0.5% of the total power.

7.3.4.2 Measurement Results

Results are shown below:

Table 7.3.4.2-1: 20dB / 99% Bandwidth

Frequency [MHz]	20dB Bandwidth [kHz]	99% Bandwidth [kHz]
2402	947.1154	881.6667
2442	945.3027	895.0000
2480	942.3077	883.3333

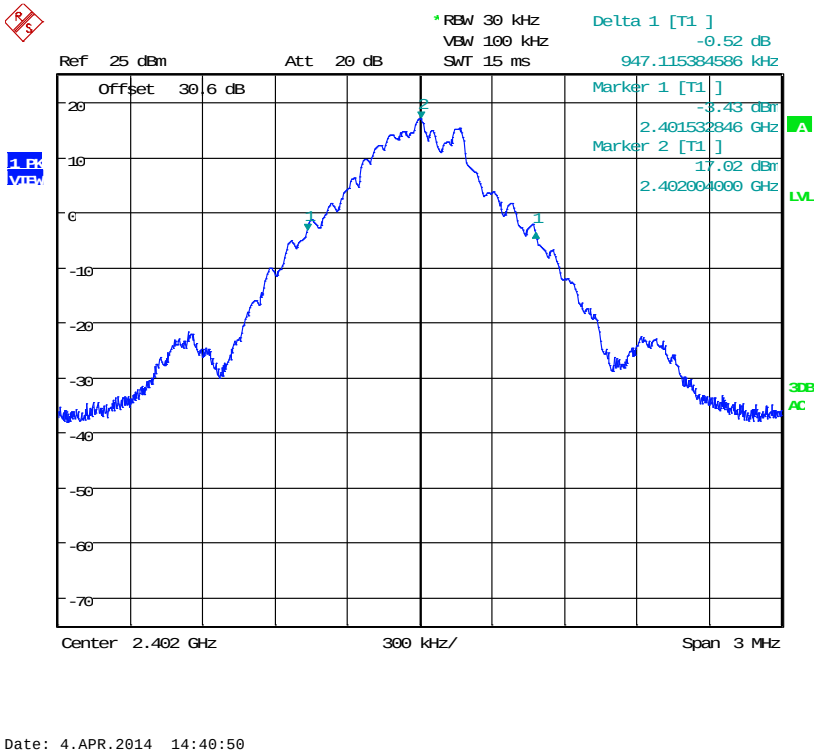

Figure 7.3.4.2-1: 20dB BW Low Channel (GFSK)

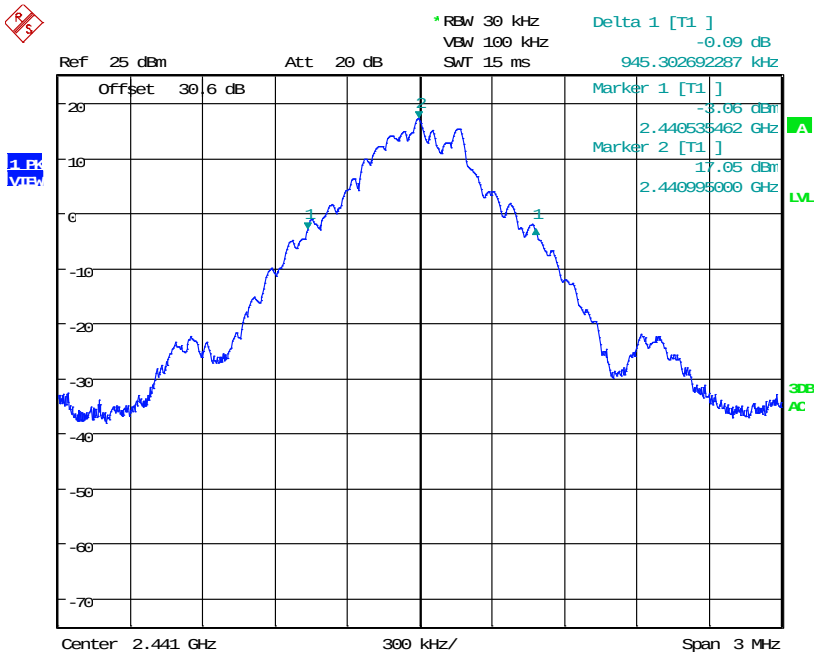

Figure 7.3.4.2-2: 20dB BW Middle Channel (GFSK)

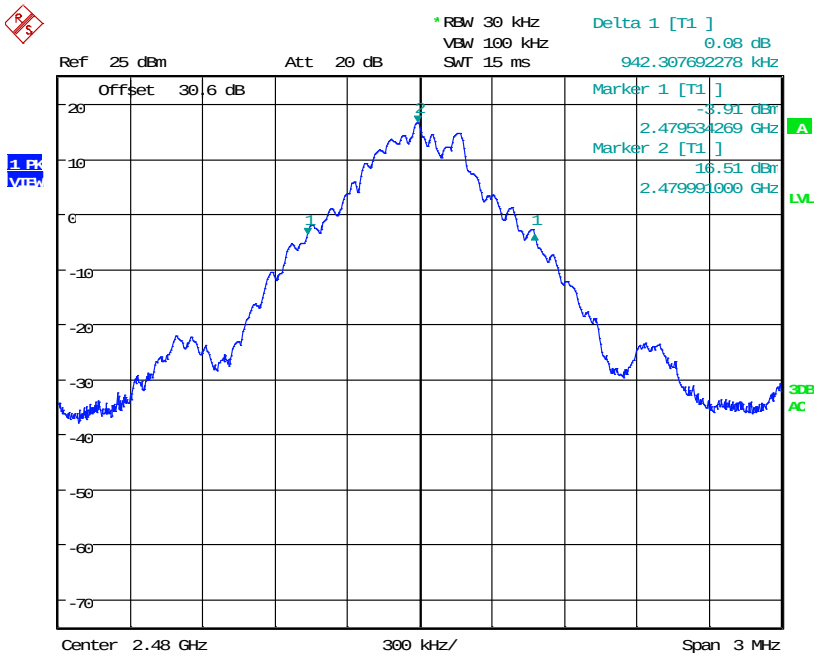

Figure 7.3.4.2-3: 20dB BW High Channel (GFSK)

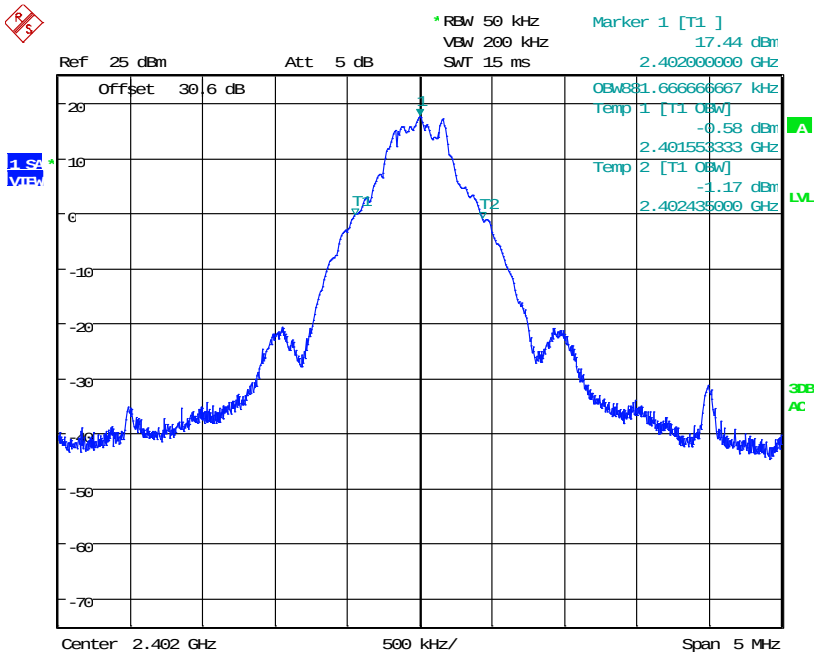

Figure 7.3.4.2-4: 99% OBW Low Channel (GFSK)

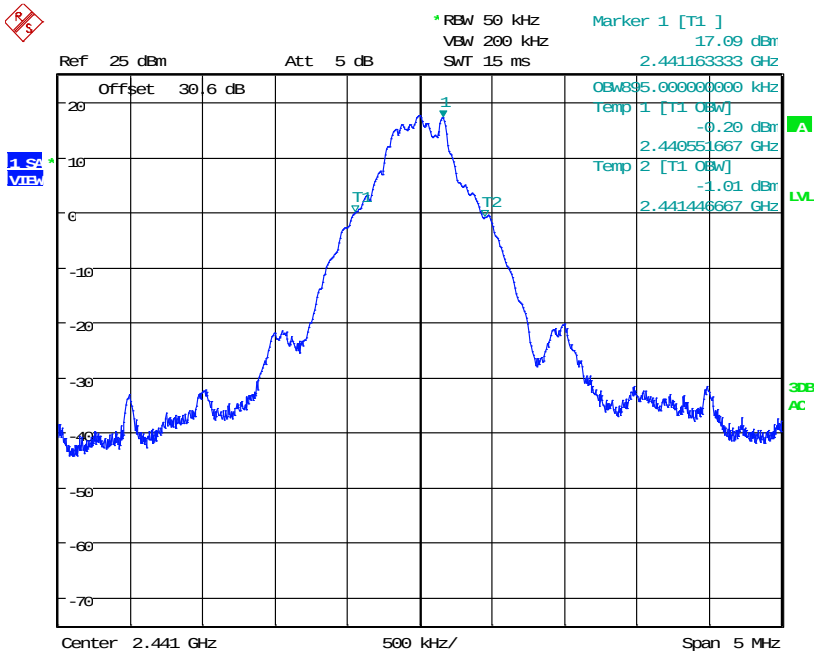

Figure 7.3.4.2-5: 99% OBW Middle Channel (GFSK)

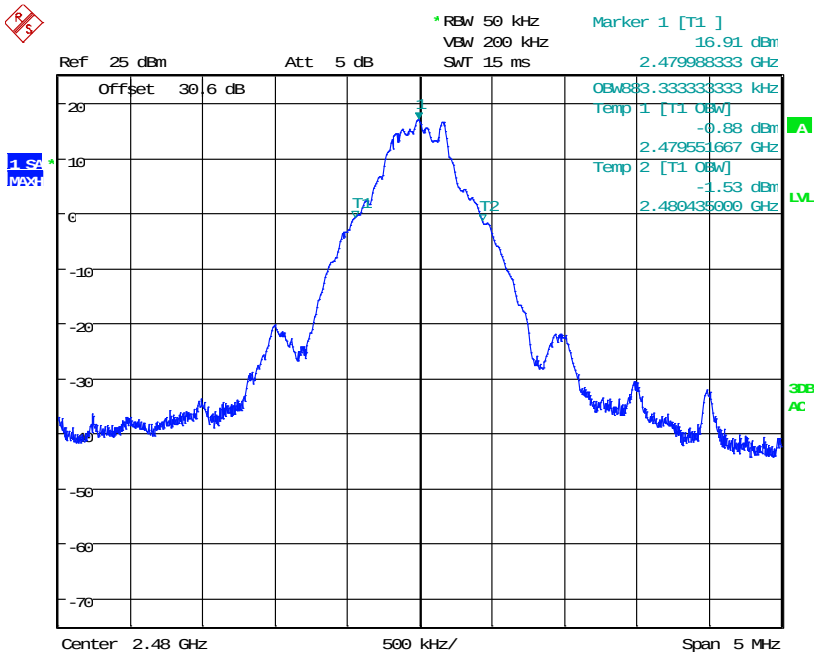

Figure 7.3.4.2-6: 99% OBW High Channel (GFSK)

7.4 Band-Edge Compliance and Spurious Emissions-FCC 15.247(d) IC: RSS-210 A8.5

7.4.1 Band-Edge Compliance of RF Conducted Emissions

7.4.1.1 Measurement Procedure

The RF output port of the EUT was connected to the input of the spectrum analyzer through suitable attenuation. The EUT was investigated at the lowest and highest channel available to determine band-edge compliance. For each measurement the spectrum analyzer's RBW was set to 100 kHz, which is ≥ 1% of the span, and the VBW was set to >= 300 kHz.

7.4.1.2 Measurement Results

Table 7.4.1.2-1: Conducted Band Edge - GFSK

	Measured Delta (dB)		Requirements	Band Edge	
	Single TX	Hopping Mode		Single TX	Hopping Mode
Lower Band-Edge	49.07	50.54	> 20 dB	Passed	Passed
Upper Band-Edge	49.58	49.68	>20dB	Passed	Passed

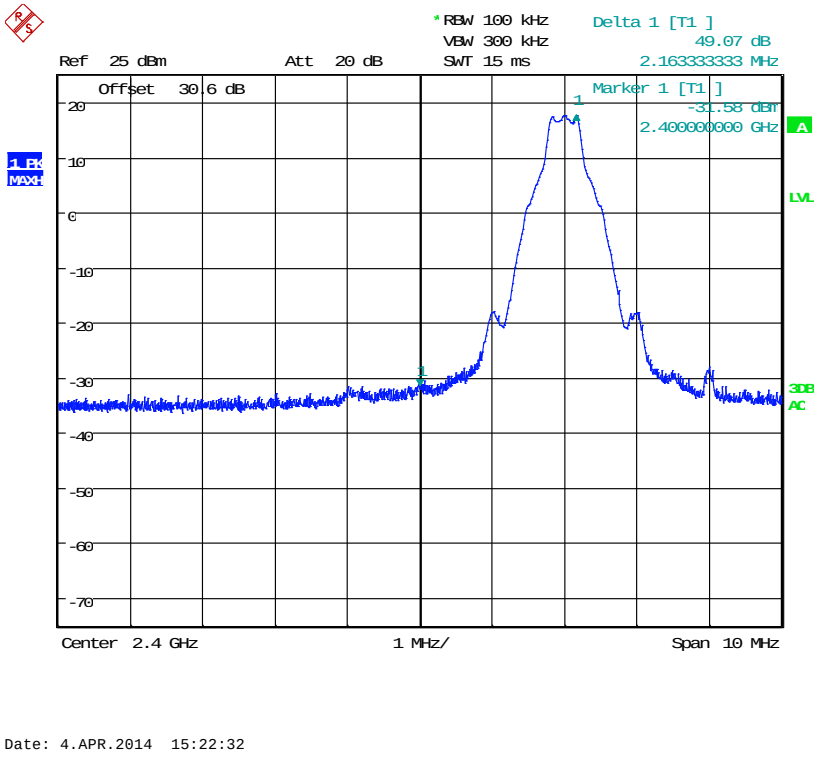

Figure 7.4.1.2-1: Lower Band-edge (GFSK)

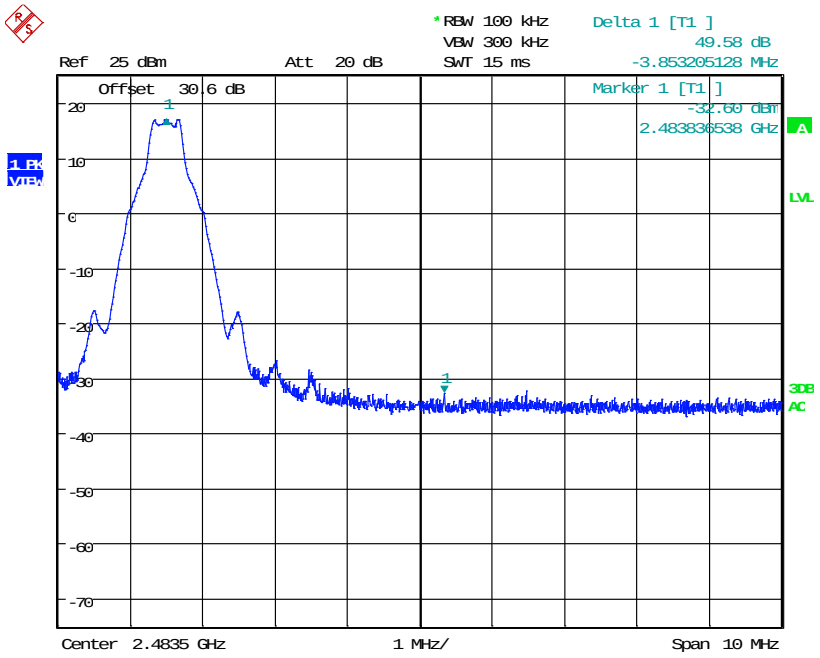

Figure 7.4.1.2-2: Upper Band-edge (GFSK)

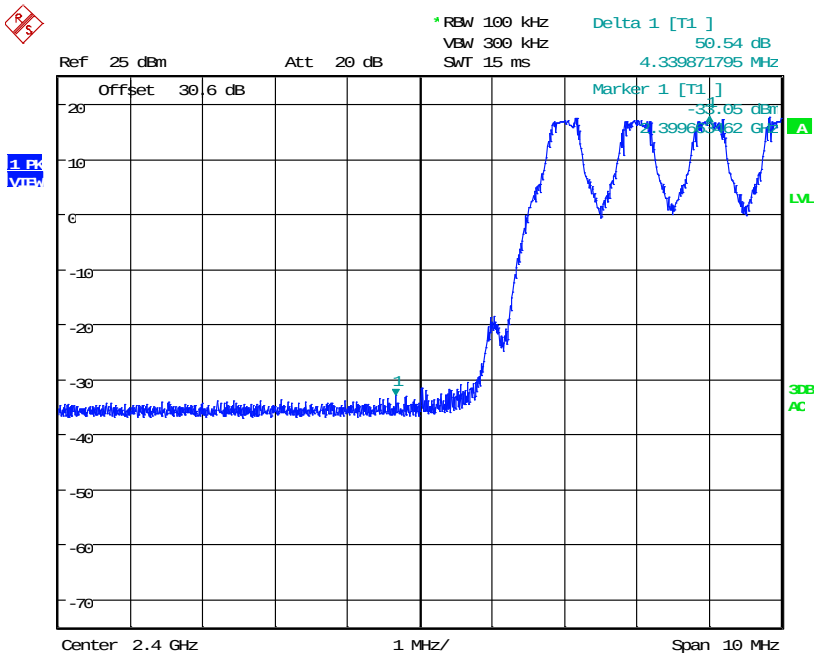

Figure 7.4.1.2-3: Lower Band-edge – Hopping Mode (GFSK)

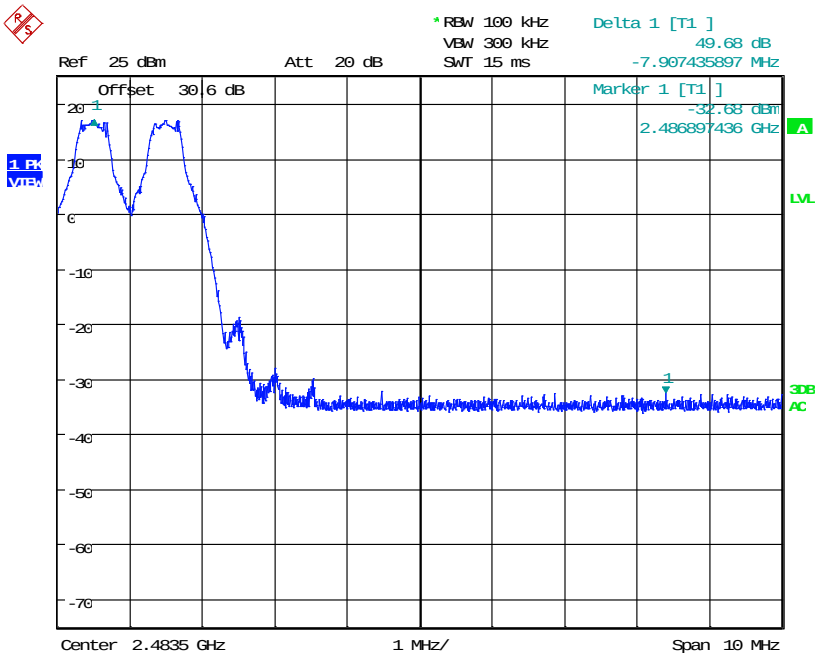

Figure 7.4.1.2-4: Upper Band-edge – Hopping Mode (GFSK)

7.4.2 RF Conducted Spurious Emissions

7.4.2.1 Measurement Procedure

The RF output port of the EUT was connected to the spectrum analyzer. The EUT was investigated for conducted spurious emissions from 30MHz to 26 GHz, 10 times the highest fundamental frequency. Measurements were made at the low, center and high channels of the EUT. For each measurement, the spectrum analyzer's RBW was set to 100 kHz. A peak detector function was used with the trace set to max hold. The levels were corrected for cable and attenuator losses.

7.4.2.2 Measurement Results

Results are shown below:

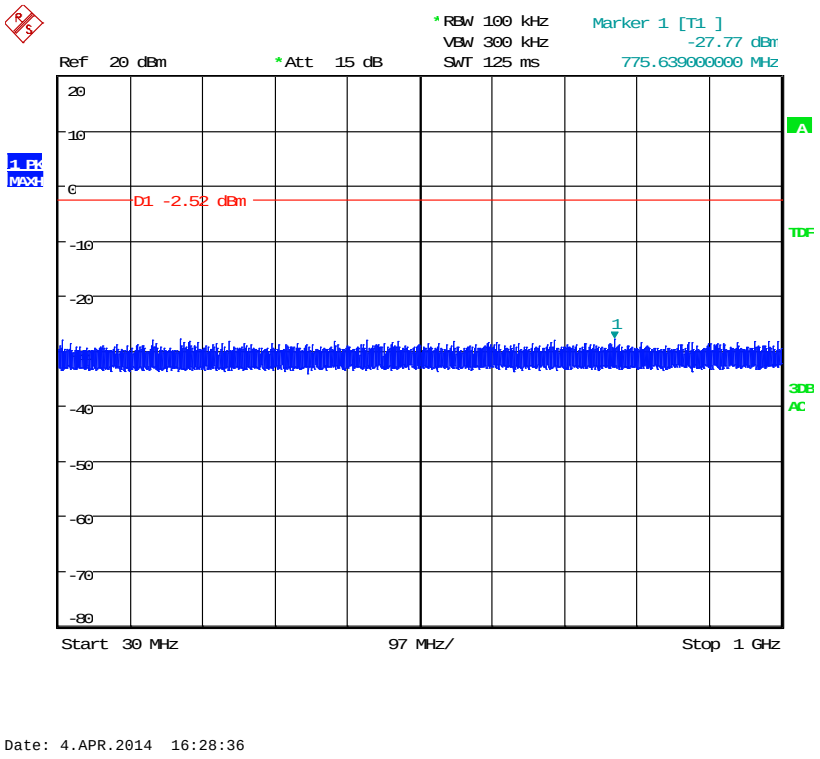

Figure 7.4.2.2-1: 30 MHz – 1 GHz – Low Channel (GFSK)

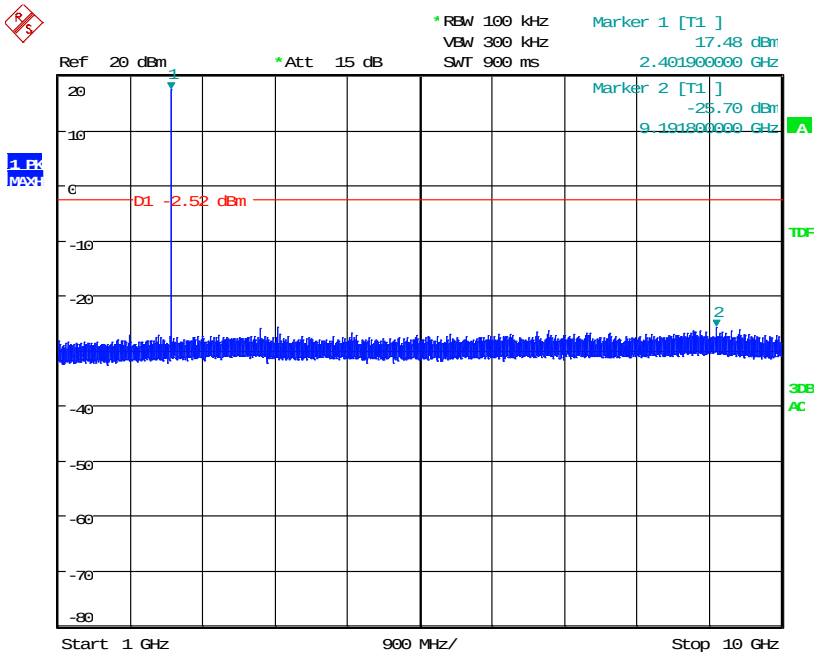

Figure 7.4.2.2-2: 1 GHz –10 GHz – Low Channel (GFSK)

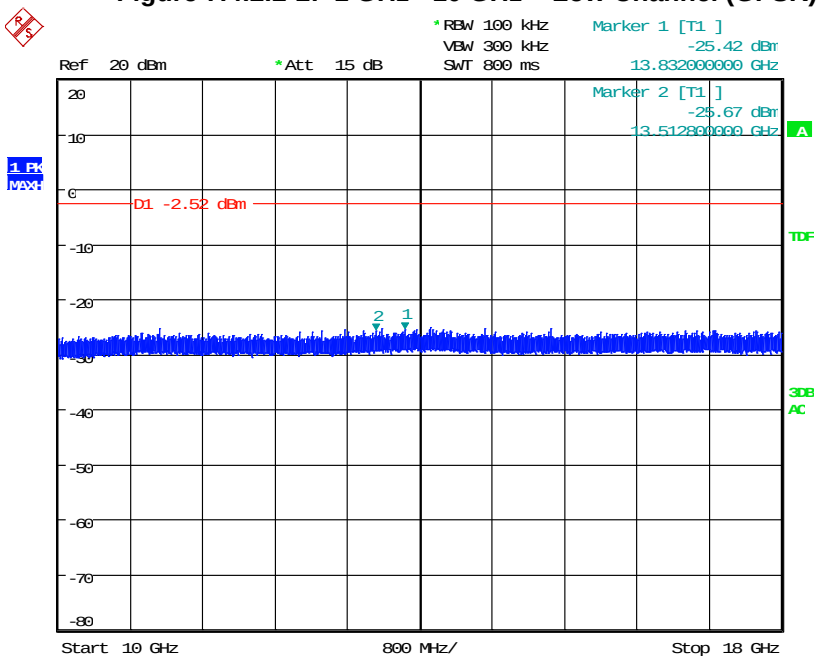

Figure 7.4.2.2-3: 10 GHz –18 GHz – Low Channel (GFSK)

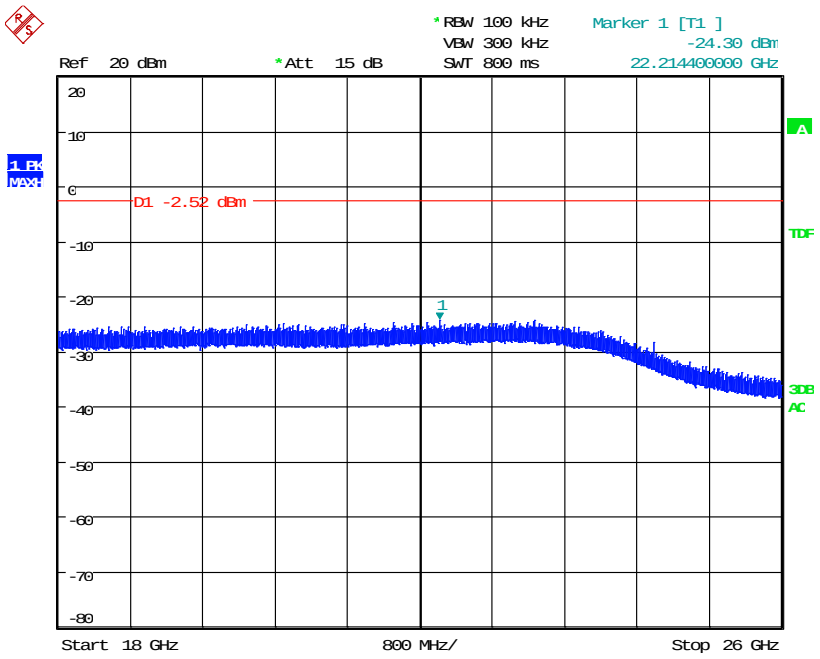

Figure 7.4.2.2-4: 18 GHz –26 GHz – Low Channel (GFSK)

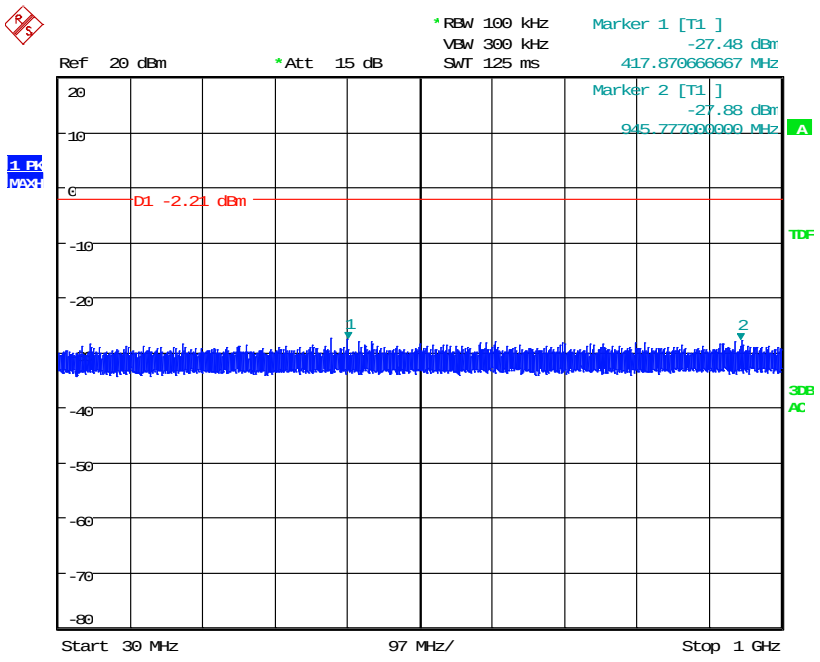

Figure 7.4.2.2-5: 30 MHz – 1 GHz –Middle Channel (GFSK)

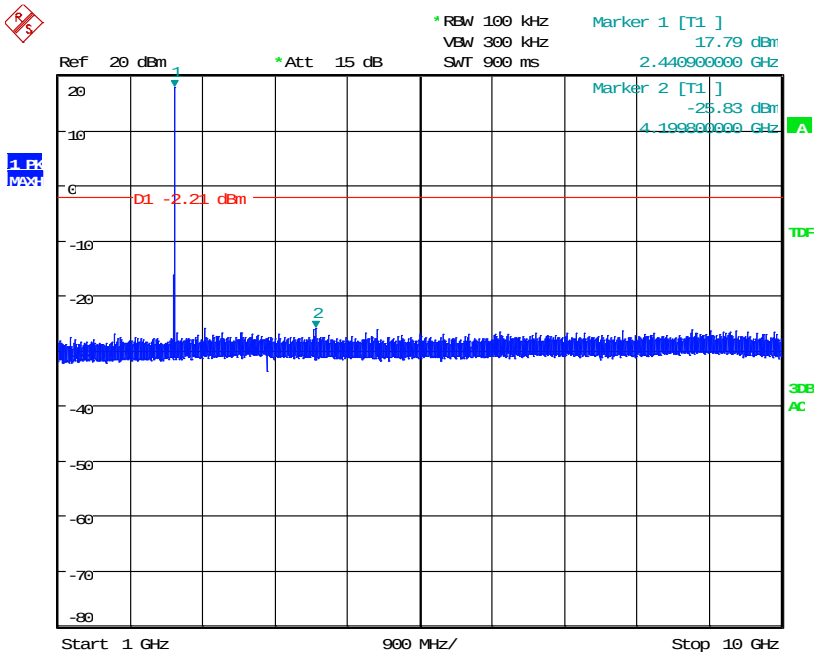

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Figure 7.4.2.2-6: 1 GHz –10 GHz – Middle Channel (GFSK)

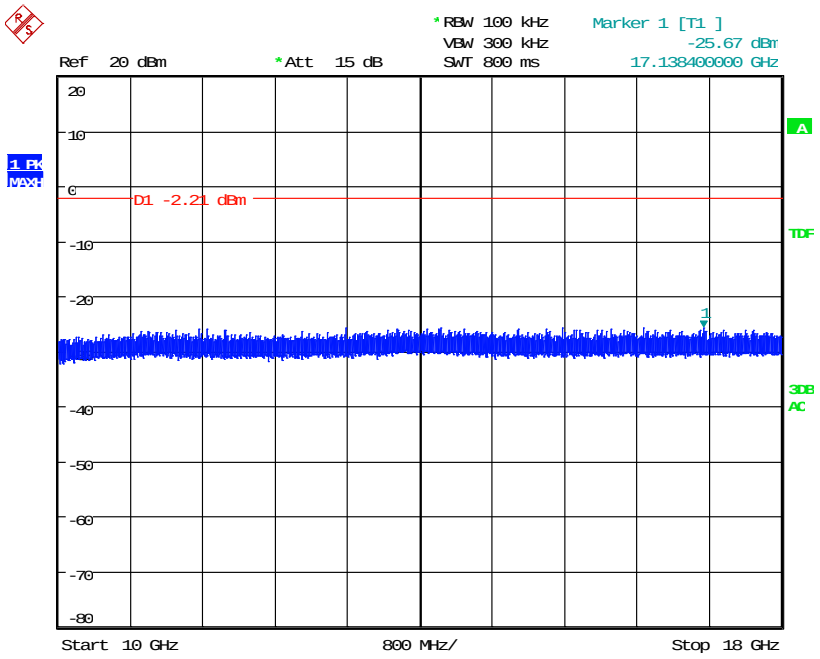

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Figure 7.4.2.2-7: 10 GHz –18 GHz – Middle Channel (GFSK)

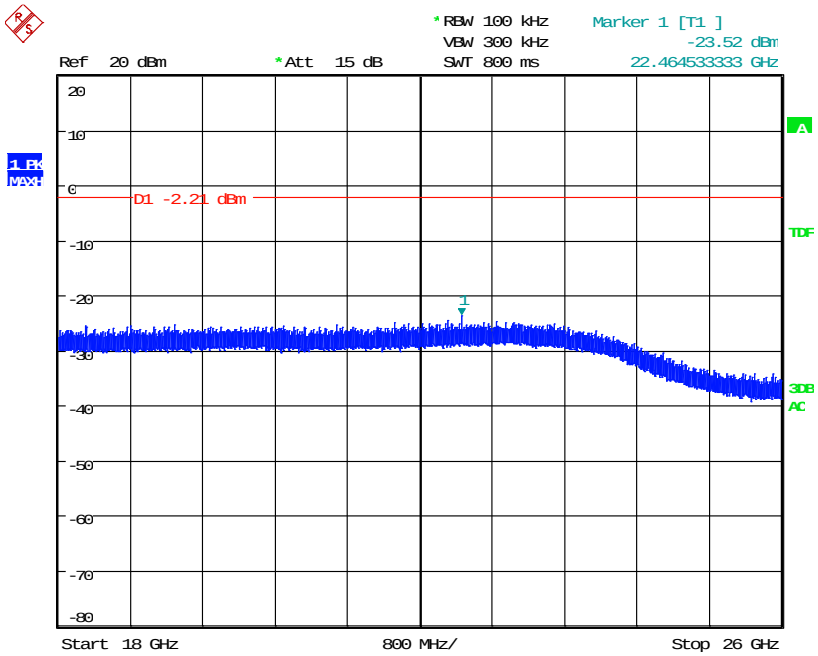

Figure 7.4.2.2-8: 18 GHz –26 GHz – Middle Channel (GFSK)

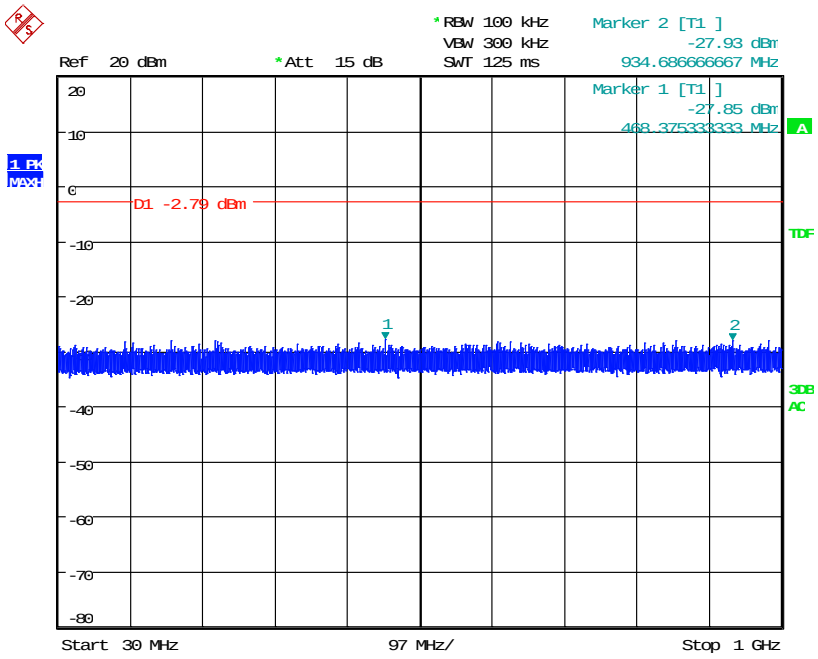

Figure 7.4.2.2-9: 30 MHz – 1 GHz – High Channel (GFSK)

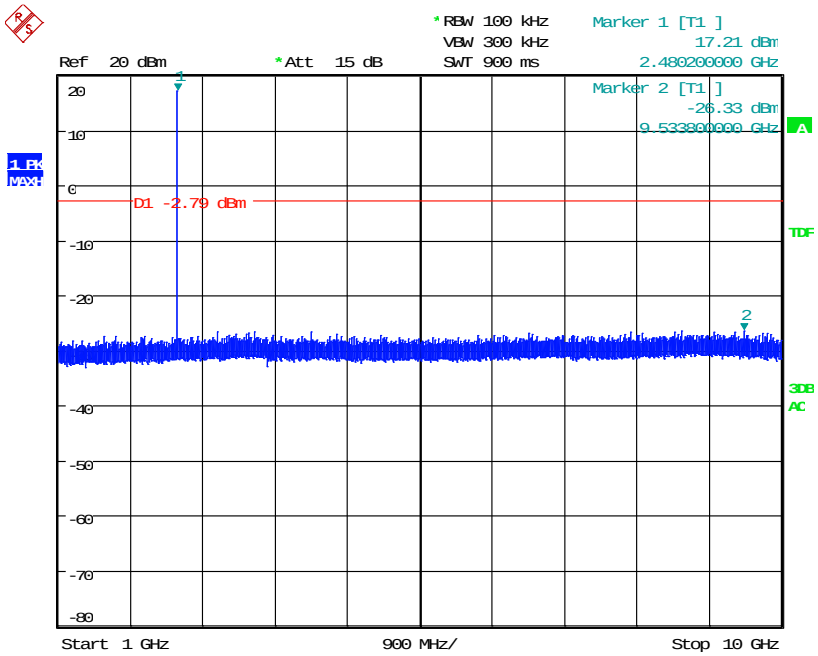

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Figure 7.4.2.2-10: 1 GHz –10 GHz –High Channel (GFSK)

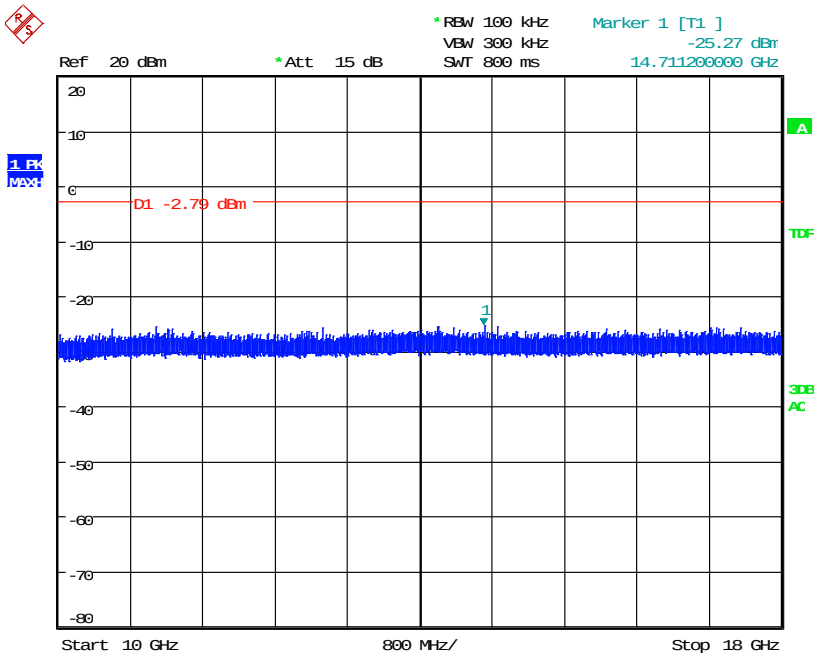

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Figure 7.4.2.2-11: 10 GHz –18 GHz – High Channel (GFSK)

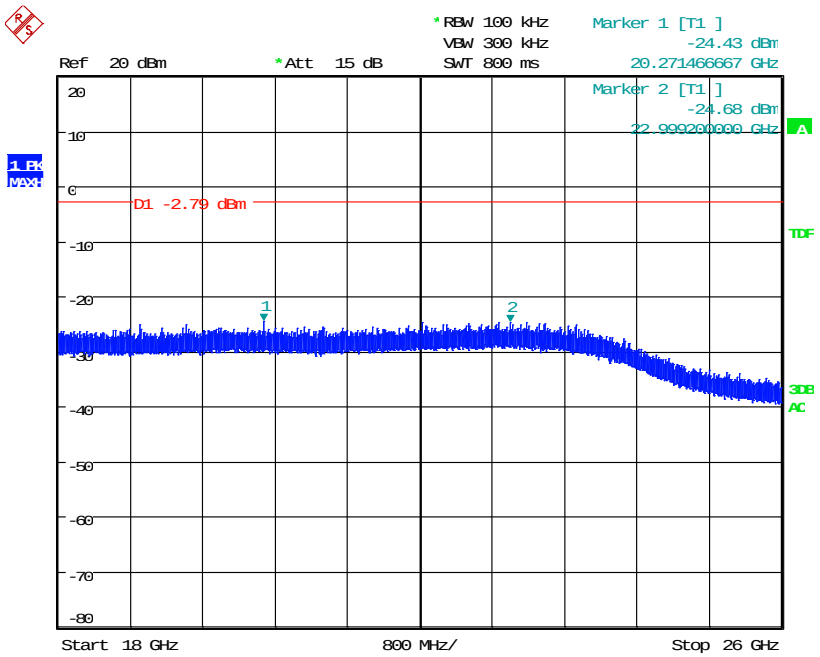

Figure 7.4.2.2-12: 18 GHz –26 GHz – High Channel (GFSK)

7.4.3 Radiated Spurious Emissions - FCC Section 15.205, 15.209; IC: RSS-Gen 7.2.2, 7.2.5

7.4.3.1 Measurement Procedure

Radiated emissions tests were made over the frequency range of 30 MHz to 26 GHz, 10 times the highest fundamental frequency for emissions falling within the restricted bands.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 120 kHz and a video bandwidth VBW of 300 kHz. For frequencies above 1000 MHz, peak measurements made with RBW and VBW of 1 MHz and 3 MHz respectively. Average measurements were collected in the linear amplitude scale with VBW of 30 Hz.

The EUT was caused to generate a continuous carrier signal on the hopping channel.

7.4.3.2 Measurement Results

Band-edge and radiated spurious emissions found in the restricted bands of 30MHz to 26 GHz are reported in the tables below.

Table 7.4.3.2-1: Radiated Spurious Emissions Tabulated Data - GFSK

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
3840	53.77	47.60	H	-1.73	52.04	45.87	74.0	54.0	22.0	8.1
3840	50.42	42.91	V	-1.73	48.69	41.18	74.0	54.0	25.3	12.8
4804	57.65	52.88	H	-0.27	57.38	22.20	74.0	54.0	16.6	31.8
4804	51.81	45.00	V	-0.27	51.54	14.32	74.0	54.0	22.5	39.7
12010	50.31	40.07	H	12.72	63.03	22.38	83.5	63.5	20.5	41.1
12010	48.28	37.56	V	12.72	61.00	19.87	83.5	63.5	22.5	43.6
Middle Channel										
3840	53.77	47.60	H	-1.73	52.04	45.87	74.0	54.0	22.0	8.1
3840	50.42	42.91	V	-1.73	48.69	41.18	74.0	54.0	25.3	12.8
4882	56.83	51.83	H	-0.04	56.79	21.39	74.0	54.0	17.2	32.6
4882	52.31	45.85	V	-0.04	52.27	15.41	74.0	54.0	21.7	38.6
7323	59.09	52.64	H	5.59	64.68	27.82	74.0	54.0	9.3	26.2
7323	55.76	48.60	V	5.59	61.35	23.78	74.0	54.0	12.7	30.2
12205	50.42	40.03	H	13.00	63.42	22.62	83.5	63.5	20.1	40.9
12205	48.15	36.22	V	13.00	61.15	18.81	83.5	63.5	22.4	44.7
High Channel										
2483.5	69.12	63.05	H	-7.61	61.51	25.03	74.0	54.0	12.5	29.0
2483.5	72.09	66.24	V	-7.61	64.48	28.22	74.0	54.0	9.5	25.8
3840	53.77	47.60	H	-1.73	52.04	45.87	74.0	54.0	22.0	8.1
3840	50.42	42.91	V	-1.73	48.69	41.18	74.0	54.0	25.3	12.8
4960	60.34	56.01	H	0.20	60.54	25.80	74.0	54.0	13.5	28.2
4960	57.41	52.38	V	0.20	57.61	22.17	74.0	54.0	16.4	31.8
7440	56.42	49.53	H	6.00	62.42	25.12	74.0	54.0	11.6	28.9
7440	53.25	45.16	V	6.00	59.25	20.75	74.0	54.0	14.8	33.3
12400	46.08	34.98	H	13.28	59.36	17.85	83.5	63.5	24.1	45.7
12400	46.37	34.28	V	13.28	59.65	17.15	83.5	63.5	23.9	46.4
19840	42.67	29.91	H	12.94	55.61	12.44	83.5	63.5	27.9	51.1
19840	42.03	29.68	V	12.94	54.97	12.21	83.5	63.5	28.5	51.3
22320	41.10	28.19	V	14.68	55.78	12.47	83.5	63.5	27.7	51.0

Notes:

- **A duty cycle correction factor equal to the logarithm of the dwell time over 100 ms was applied to the average measurements.**
- **The measurements above 10 GHz were performed at a distance of 1m.**
- **All the emissions above 22.32 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions at 3.84 GHz were generated by the mobile radio and were independent of the frequency of the EUT. No duty cycle correction was applied to these emissions.**

7.4.3.3 Sample Calculation:

$R_C = R_U + CF_T$

Where:

CF_T	=	Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
R_U	=	Uncorrected Reading
R_C	=	Corrected Level
AF	=	Antenna Factor
CA	=	Cable Attenuation
AG	=	Amplifier Gain
DC	=	Duty Cycle Correction Factor

Duty Cycle Correction Factor (DC): 20*log(3.0172/100) = -30.41 dB

Example Calculation: Peak
Corrected Level: 57.65+ (-0.27) = 57.38 dBµV/m
Margin: 74 dBµV/m – 57.38 dBµV/m = 16.6 dB

Example Calculation: Average
Corrected Level: 52.88 + (-0.27) – 30.41 = 22.2 dBµV/m
Margin: 54 dBµV/m – 22.2 dBµV/m = 31.8 dB

8 CONCLUSION

In the opinion of ACS, Inc., the PMMN4097A submitted by Motorola Solutions SDNBHD meets the requirements of FCC Part 15 subpart C and Industry Canada's Radio Standards Specification RSS-210.

END REPORT