HUAWEI TECHNOLOGIES CO., LTD.

Application For Certification

FCC ID: QISF285

Fixed Wireless Terminal

Model: F285, PCDF285DPC

2.4GHz Transceiver

Report No.: 130425033SZN-001

Prepared and Checked by:	Approved by:
Sign on file	Digitally signed by Billy Li Location: Intertek Testing Services
Eason He Engineer	Billy Li Supervisor Date: 15 May 2013

TRF No.: FCC 15C_TX_b

Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch
6F, D Block, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China
Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751 Website: www.china.intertek-etlsemko.com

LIST OF EXHIBITS

INTERTEK TESTING SERVICES

MEASUREMENT/TECHNICAL REPORT

HUAWEI TECHNOLOGIES CO., LTD.

Model: F285, PCDF285DPC

FCC ID: QISF285

15 May 2013

This report concerns (check one:) Original Grant ___X___ Class II Change _____

Equipment Type: DSS - Part 15 Spread Spectrum Transmitter

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes _____ No __X__

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes _____ No __X__

If no, assumed Part 15, Subpart C for intentional radiator – the new 47 CFR [10-1-12 Edition] provision.

Report prepared by:

Billy Li
Intertek Testing Services Shenzhen Ltd.
Kejiyuan Branch
6F, Block D, Huahan Building, Langshan Road,
Nanshan District, Shenzhen, P. R. China
Phone: (86 755) 8614 0645
Fax: (86 755) 8614 6751

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Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Operational Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
External Photos	External Photo	external photos.pdf
Internal Photos	Internal Photo	internal photos.pdf
ID Label/Location Info	Label Artwork and Location	label.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
Users Manual	User Manual	manual.pdf
Cover Letter	Letter of Agency	letter of agency.pdf
RF Exposure	RF Exposure	RF Exposure.pdf

EXHIBIT 1

GENERAL DESCRIPTION

1.0 General Description

1.1 Product Description

The Equipment under Test (EUT) is a Fixed Wireless Terminal model: F285, PCDF285DPC. It is powered by 3.7V from internal rechargeable battery and can be charged by AC/DC adapter with output voltage of DC 5V.

Antenna Type: Integral antenna

Modulation Type: FHSS.

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

1.2 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4: 2009 and DA 00-705. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.3 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, Block D, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: 242492).

EXHIBIT 2

SYSTEM TEST CONFIGURATION

2.0 System Test Configuration

2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4: 2009.

The EUT was powered by a fully charged 3.7V internal rechargeable battery which was charged by AC/DC adapter through AC 120V/60Hz (AC 120V/60Hz is for AC/DC adapter) during the test. Only the worst case data was reported.

The EUT have modulation types GFSK. Only the worst data was reported in this report

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Exhibit 3.

The EUT was centered laterally (left to right facing the tabletop) on the Tabletop, and its rear was flush with the rear of the table when powered by internal rechargeable battery and charged by adapter.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on a turn table, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

2.2 EUT Exercising Software

No software is used.

2.3 Special Accessories

No Special Accessory attached.

2.4 Equipment Modification

Any modifications installed previous to testing by HUAWEI TECHNOLOGIES CO., LTD. will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch.

2.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

2.6 Support Equipment List and Description

This product was tested in the following configuration:

Refer List:

Description	Manufacturer	Model No.
AC/DC Adapter	Huawei	Adapter Model: HW-050100U6W Input Voltage :100-240V ~50/60Hz, 0.2A Output Voltage: ⎓ 5.0V 1.0A
Hand DECT	Huawei	FH285

EXHIBIT 3

TEST RESULTS

3.0 **Test Results**

Data is included worst-case configuration (the configuration which resulted in the highest emission levels).

3.1 **Radiated Test Results**

A sample calculation, configuration photographs and data tables of the emissions are included.

3.1.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD + AV

Where FS = Field Strength in dBµV/m
RA = Receiver Amplitude (including preamplifier) in dBµV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
PD = Pulse Desensitization in dB
AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD + AV

Assume a receiver reading of 62.0 dBµV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dBµV/m. This value in dBµV/m was converted to its corresponding level in µV/m.

RA = 62.0 dBµV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB

AV = -10 dB

FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 dBµV/m

Level in µV/m = Common Antilogarithm [(32 dBµV/m)/20] = 39.8 µV/m

3.1.2 Radiated Emission Data and Configuration Photograph - FCC section 15.209

Worst Case Radiated Emission
At
196.907 MHz

Judgement: Passed by 4.0 dB

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.pdf.

TEST PERSONNEL:

Sign on file

Eason He, Engineer
Typed / Printed Name

May 12, 2013
Date

Applicant: HUAWEI TECHNOLOGIES CO., LTD. Date of Test: May 12, 2013
Model: F285, PCDF285DPC
Worst Case Operating Mode: Data transmit+AC charge

Table 1

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	196.907	51.4	20.0	8.1	39.5	43.5	-4.0
Horizontal	331.670	43.3	20.0	15.5	38.8	46.0	-7.2
Horizontal	414.605	41.1	20.0	17.0	38.1	46.0	-7.9
Vertical	46.005	45.2	20.0	10.1	35.3	40.0	-4.7
Vertical	116.330	42.9	20.0	7.2	30.1	43.5	-13.4
Vertical	165.800	42.1	20.0	10.1	32.2	43.5	-11.3

NOTES: 1. Quasi-Peak detector is used except for others stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. All emissions are below the QP limit.

Test Engineer: Eason He

3.1.3 Transmitter Spurious Emissions (Radiated) - FCC section 15.209

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Worst Case Radiated Emission
at
2483.550 MHz

Judgement: Passed by 1.2 dB

TEST PERSONNEL:

Sign on file

Eason He, Engineer
Typed/Printed Name

May 12, 2013
Date

Applicant: HUAWEI TECHNOLOGIES CO., LTD. Date of Test: May 12, 2013
Model: F285, PCDF285DPC
Mode: TX-CH00 (2401MHz)

Table 2

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4802.000	59.5	36.1	34.1	57.5	74.0	-16.5
Horizontal	*2389.950	74.0	36.7	27.2	64.5	74.0	-9.5

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4802.000	34.7	36.1	34.1	32.7	54.0	-21.3
Horizontal	*2389.950	58.7	36.7	27.2	49.2	54.0	-4.8

NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Eason He

Applicant: HUAWEI TECHNOLOGIES CO., LTD. Date of Test: May 12, 2013
Model: F285, PCDF285DPC
Mode: TX-CH46 (2440MHz)

Table 3

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4880.000	62.4	36.1	34.5	60.8	74.0	-13.2
Horizontal	*7320.000	53.3	35.6	37.1	54.8	74.0	-19.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4880.000	36.0	36.1	34.5	34.4	54.0	-19.6
Horizontal	*7320.000	36.5	35.6	37.1	38.0	54.0	-16.0

NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Eason He

Applicant: HUAWEI TECHNOLOGIES CO., LTD. Date of Test: May 12, 2013
Model: F285, PCDF285DPC
Mode: TX-CH94 (2482MHz)

Table 4

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4964.000	64.6	36.1	34.7	63.2	74.0	-10.8
Horizontal	*2483.550	81.8	36.7	27.7	72.8	74.0	-1.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4964.000	35.4	36.1	34.7	34.0	54.0	-20.0
Horizontal	*2483.550	60.6	36.7	27.7	51.6	54.0	-2.4

NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Eason He

3.2 **Conducted Emission at Mains Terminal**

3.2.1 Conducted Emissions and Data Configuration Photograph

Worst Case Conducted Configuration
at
0.362 MHz

Judgement: Passed by 12.5 dB

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

TEST PERSONNEL:

Sign on file

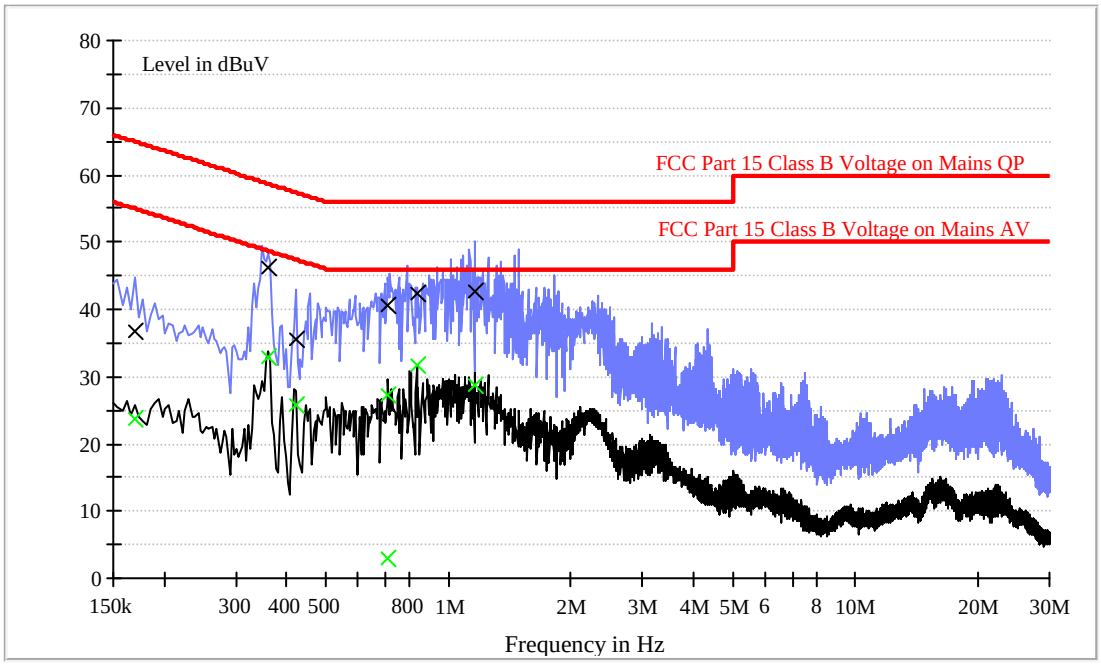
Eason He, Engineer
Typed/Printed Name

May 12, 2013
Date

Company: HUAWEI TECHNOLOGIES CO., LTD. Date of Test: May 12, 2013
Model: F285, PCDF285DPC
Worst Case Operating Mode: Data transmit+AC charge

Conducted Emission Test – FCC

Pursuant to 15.207 Emissions Requirement



Result Table QP

Frequency (MHz)	QuasiPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.170	36.7	L1	9.6	28.3	65.0
0.362	46.2	L1	9.6	12.5	58.7
0.422	35.5	L1	9.6	21.9	57.4
0.710	40.6	L1	9.6	15.4	56.0
0.834	42.4	L1	9.6	13.6	56.0
1.162	42.8	L1	9.7	13.2	56.0

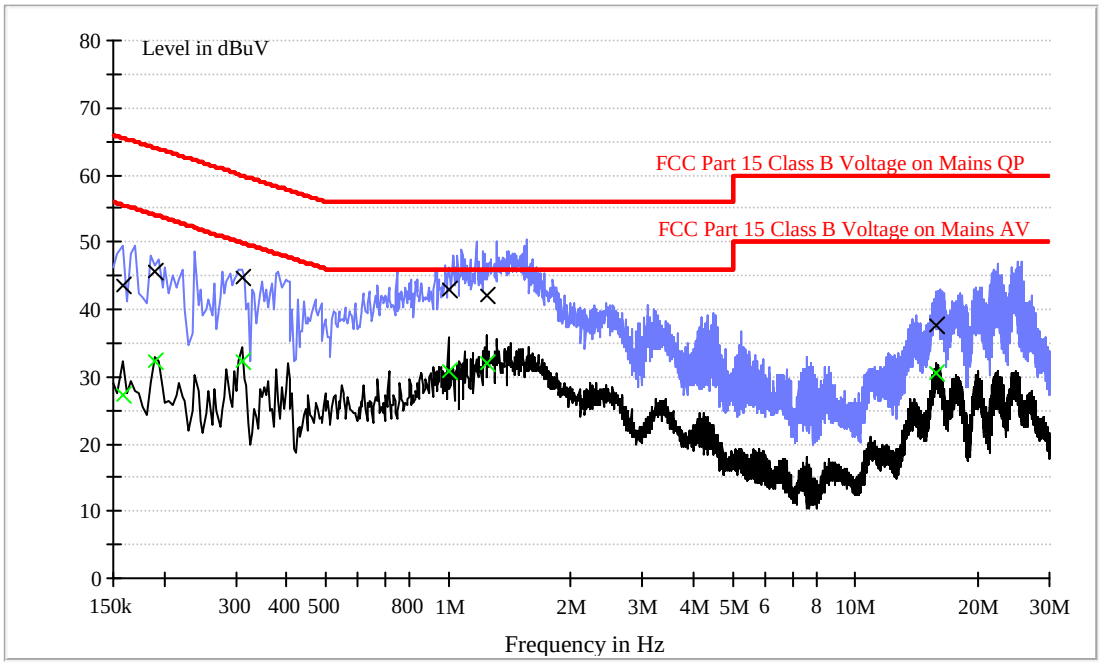
Result Table AV

Frequency (MHz)	Average (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.170	23.6	L1	9.6	31.4	55.0
0.362	33.0	L1	9.6	15.7	48.7
0.422	25.9	L1	9.6	21.5	47.4
0.710	27.3	L1	9.6	18.7	46.0
0.834	31.6	L1	9.6	14.4	46.0
1.162	28.6	L1	9.7	17.4	46.0

Company: HUAWEI TECHNOLOGIES CO., LTD. Date of Test: May 12, 2013
Model: F285, PCDF285DPC
Worst Case Operating Mode: Data transmit+AC charge

Conducted Emission Test – FCC

Pursuant to 15.207 Emissions Requirement



Result Table QP

Frequency (MHz)	QuasiPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.158	43.7	N	9.7	21.9	65.6
0.190	45.5	N	9.6	18.5	64.0
0.310	44.8	N	9.6	15.2	60.0
1.002	43.0	N	9.9	13.0	56.0
1.242	42.0	N	9.8	14.0	56.0
15.806	37.7	N	10.3	22.3	60.0

Result Table AV

Frequency (MHz)	Average (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.158	27.3	N	9.7	28.3	55.6
0.190	32.2	N	9.6	21.8	54.0
0.310	32.2	N	9.6	17.8	50.0
1.002	30.9	N	9.9	15.1	46.0
1.242	31.9	N	9.8	14.1	46.0
15.806	30.5	N	10.3	19.5	50.0

3.3 **Peak Power**

Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(1)

The antenna port of the EUT was connected to the input of a spectrum analyzer. The analyzer was set for RBW > 20dB bandwidth and power was read directly in dBm.

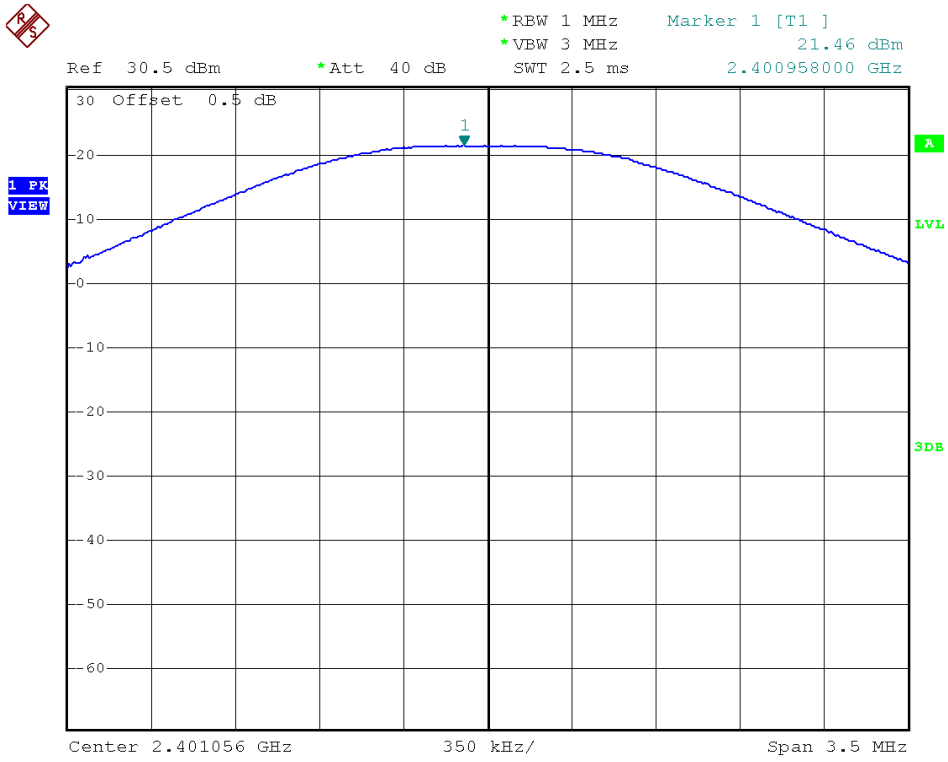
For antenna with gains of 6dBi or less, maximum allowed transmitter output power as below:

For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1 watt.

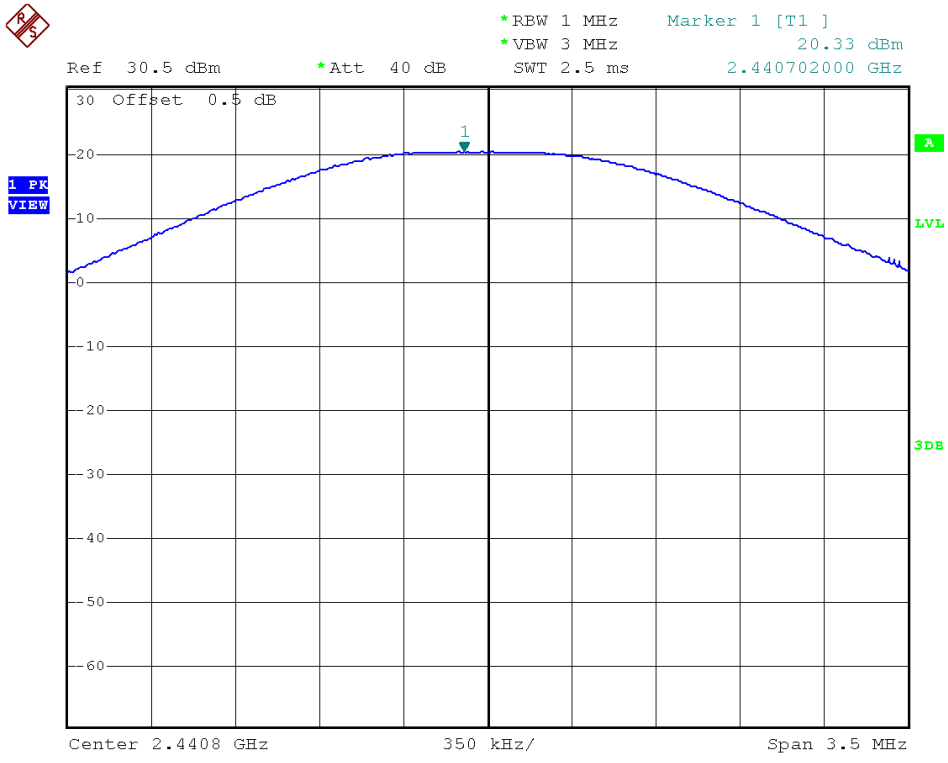
Antenna Gain = 2dBi			
Modulation Type	Frequency (MHz)	Output Power (dBm)	Output Power (mW)
GFSK	2401	21.46	139.96
	2440	20.33	107.89
	2482	19.18	82.79

Modulation Type: GFSK

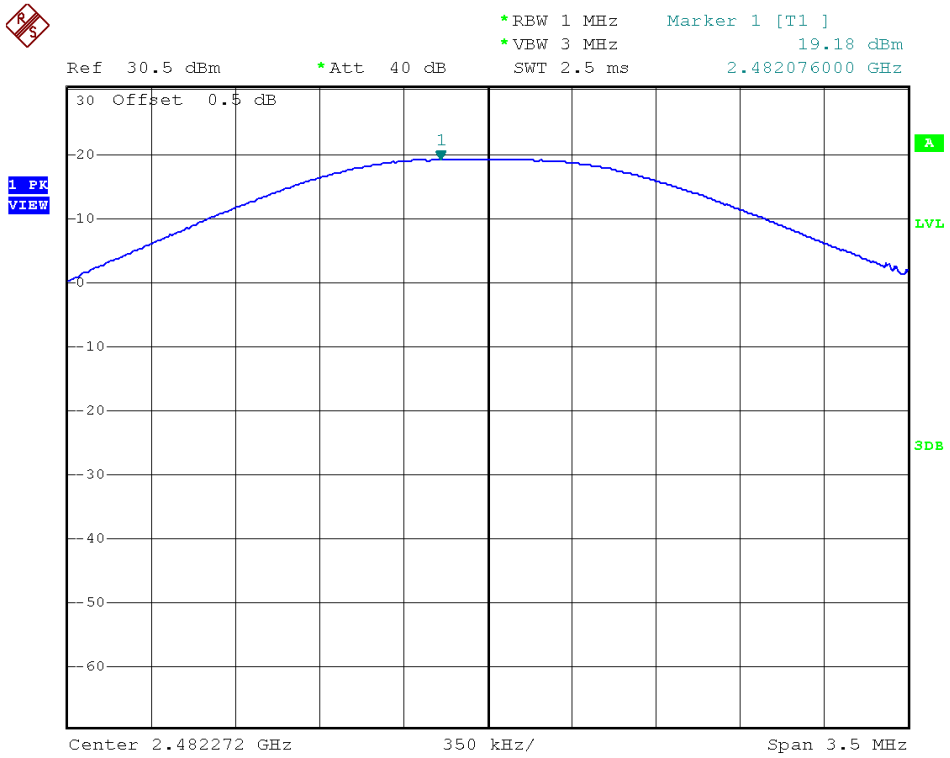
CH00



CH46



CH94


*RBW 1 MHz
Marker 1 [T1]
*VBW 3 MHz
19.18 dBm
Ref 30.5 dBm
*Att 40 dB
SWT 2.5 ms
2.482076000 GHz
30 Offset 0.5 dB
1 PK
VIEW
A
LVL
3DB
Center 2.482272 GHz
350 kHz/
Span 3.5 MHz

3.4 **20dB Bandwidth**

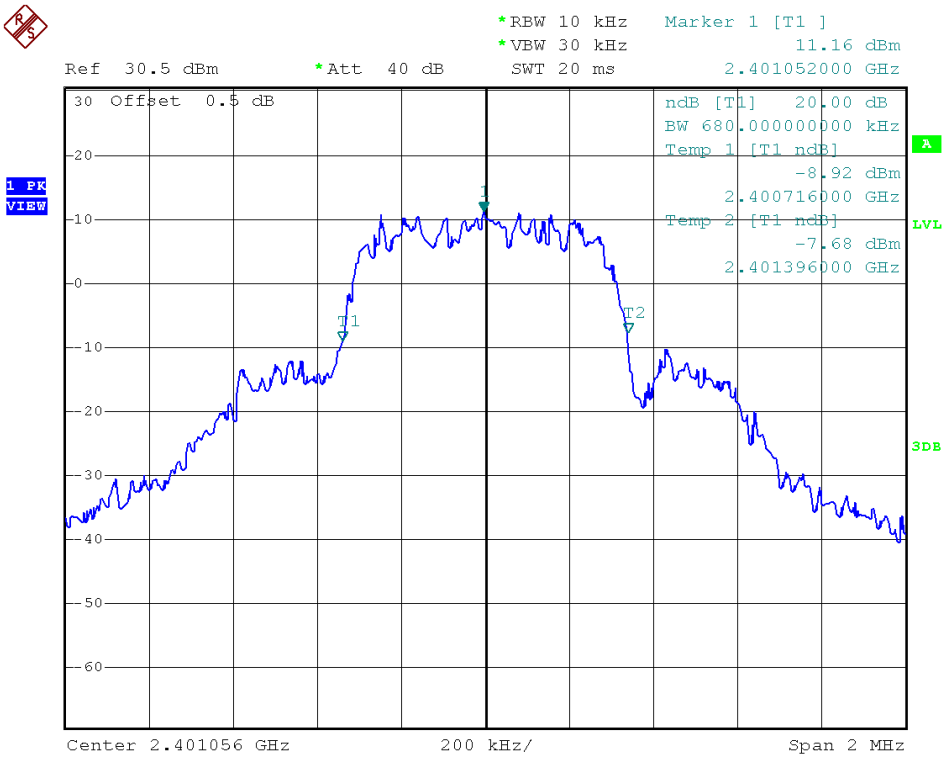
Maximum 20dB RF Bandwidth, FCC Rule 15.247(a) (1):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW was chosen so that the display was a result of the hopping channel modulation. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. Use the spectrum 20dB down delta function to measure the bandwidth.

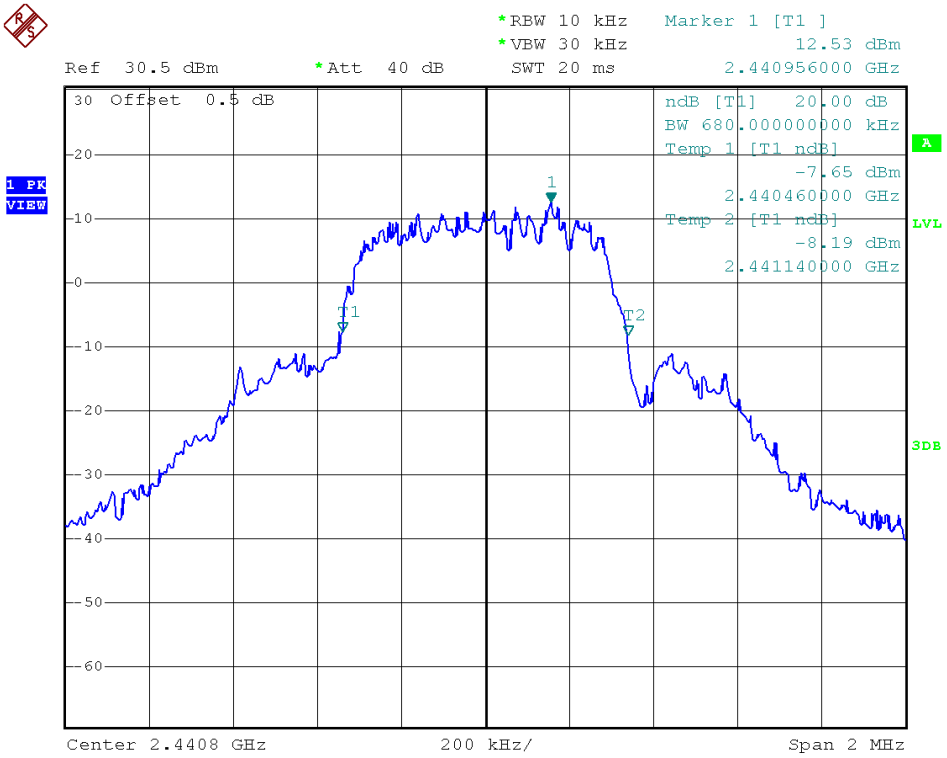
Frequency (MHz)	20 dB Bandwidth (MHz)
2401	0.680
2440	0.680
2482	0.684

Modulation Type: GFSK

CH00



CH46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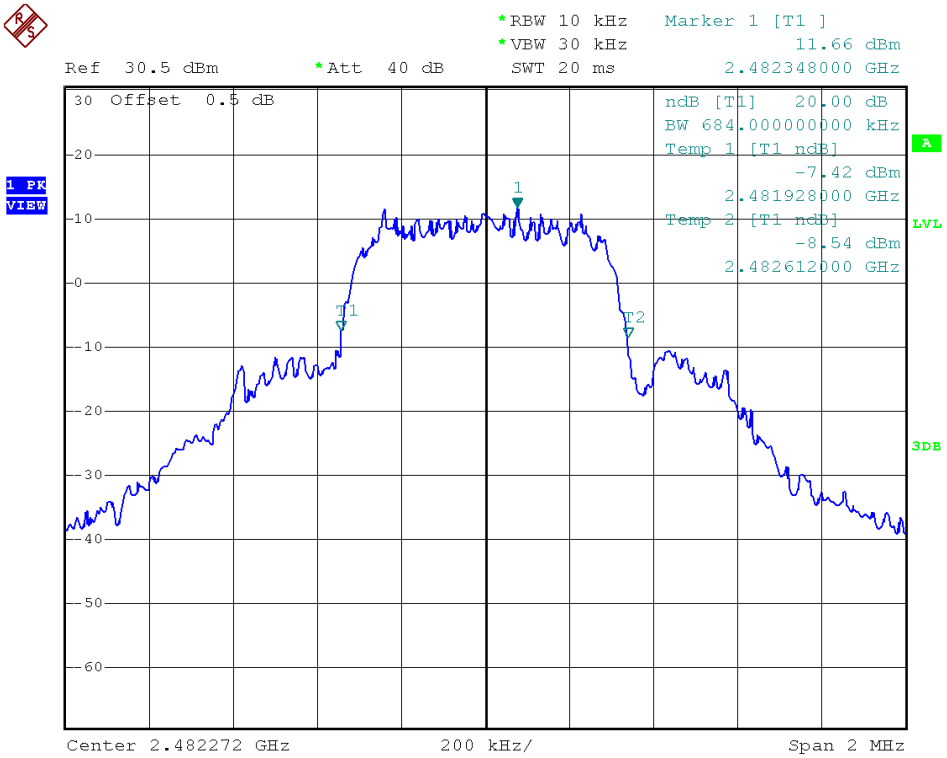
*VBW 30 kHz
Ref 30.5 dBm
*Att 40 dB
SWT 20 ms
Marker 1 [T1]
12.53 dBm
2.440956000 GHz
30 Offset 0.5 dB
ndB [T1] 20.00 dB
BW 680.000000000 kHz
Temp 1 [T1 ndB]
-7.65 dBm
2.440460000 GHz
Temp 2 [T1 ndB]
-8.19 dBm
2.441140000 GHz
1 PK
VIEW
A
LVL
3DB
T1
T2
Center 2.4408 GHz
200 kHz/
Span 2 MHz

CH94


*RBW 10 kHz
*VBW 30 kHz
Ref 30.5 dBm
*Att 40 dB
SWT 20 ms
Marker 1 [T1]
11.66 dBm
2.482348000 GHz
30 Offset 0.5 dB
ndB [T1] 20.00 dB
BW 684.000000000 kHz
Temp 1 [T1 ndB]
-7.42 dBm
2.481928000 GHz
Temp 2 [T1 ndB]
-8.54 dBm
2.482612000 GHz
1 PK
VIEW
A
LVL
3DB
T1
T2
Center 2.482272 GHz
200 kHz/
Span 2 MHz

3.5 Channel Number (Number of Hopping Frequencies)

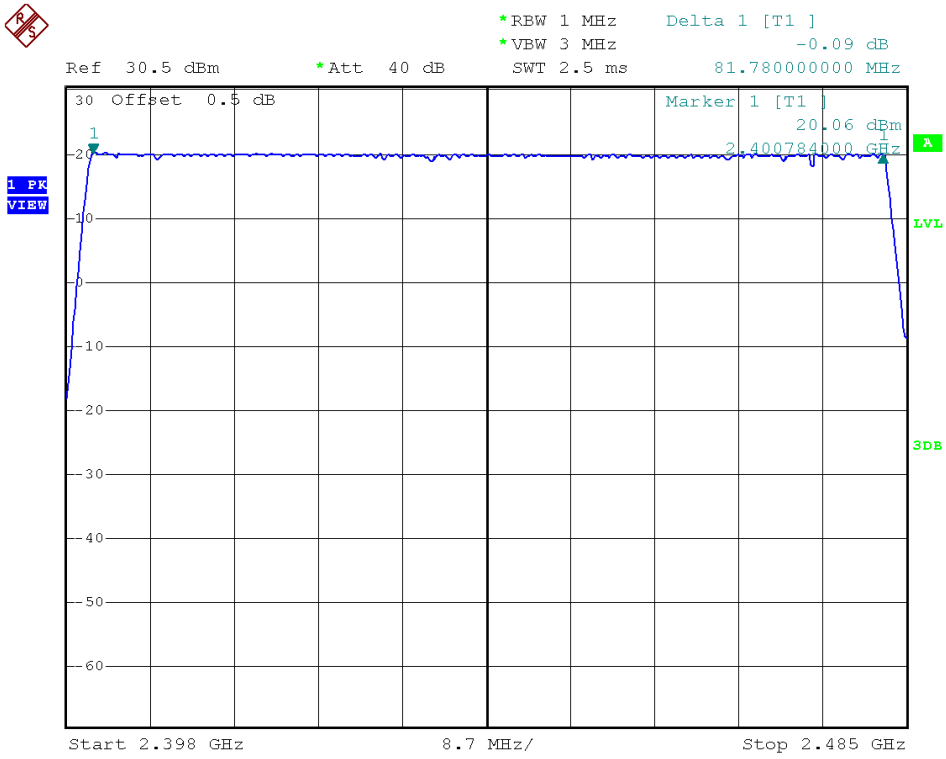
Minimum Number of Hopping Frequencies, FCC Rule 15.247(a) (1) (iii):

The RF passband of the EUT was divided into 5 approximately equal bands. With the analyzer set to MAX HOLD readings were taken for 2-3 minutes. The channel peaks so recorded were added together, and the total number compared to the minimum number of channels required in the regulation.

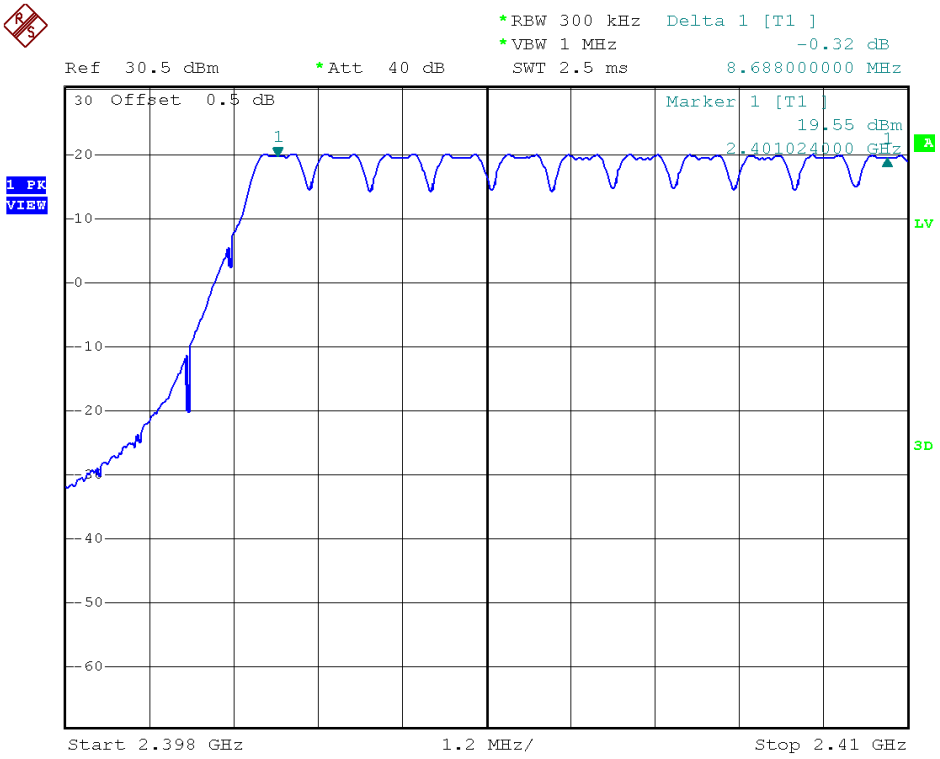
Number of hopping channels =	95

Modulation Type: GFSK

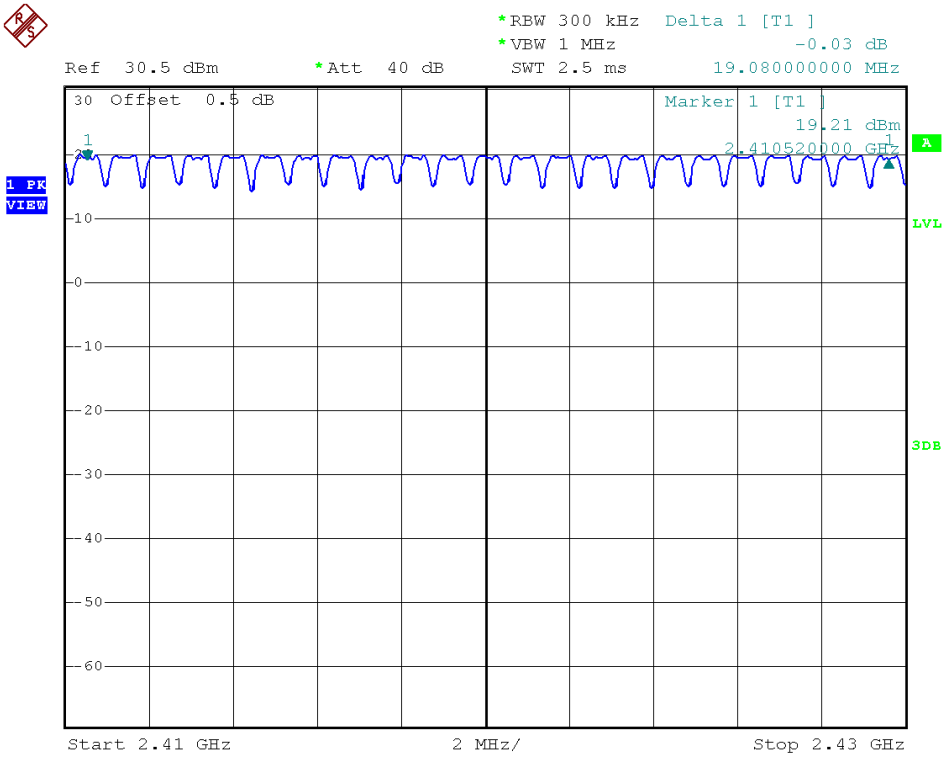
CH00-CH94



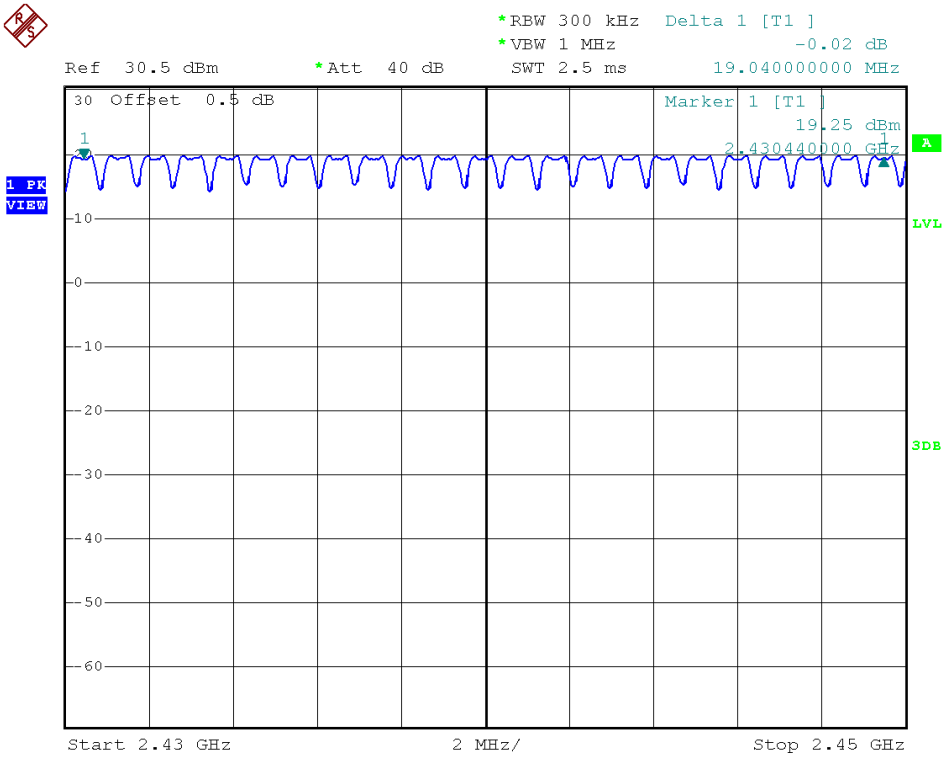
CH00-CH10



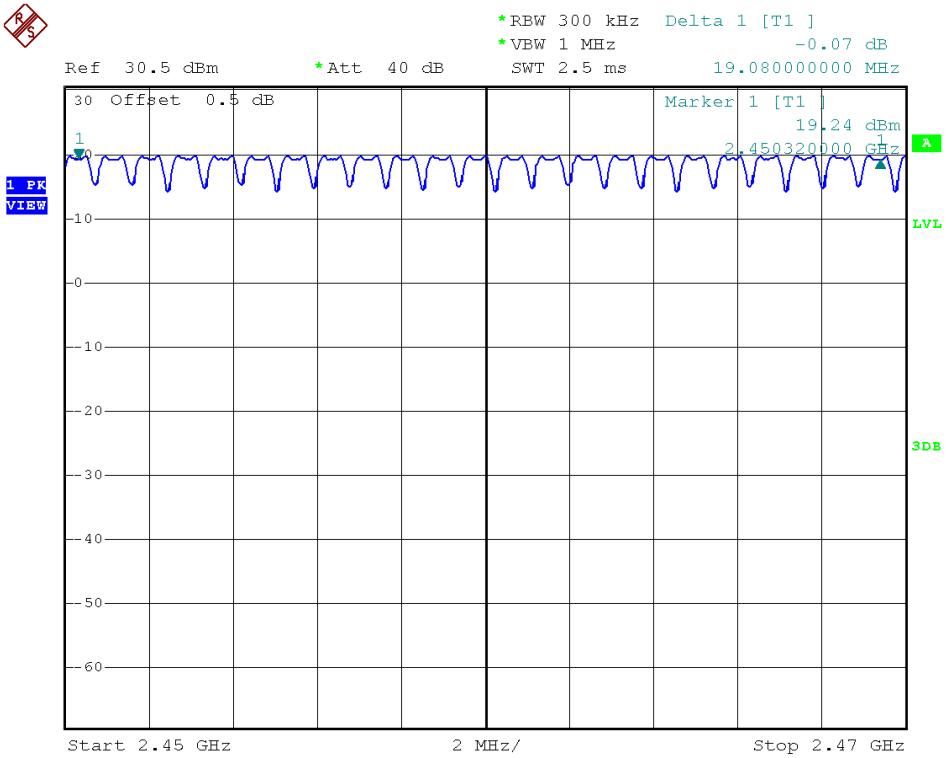
CH11-CH33



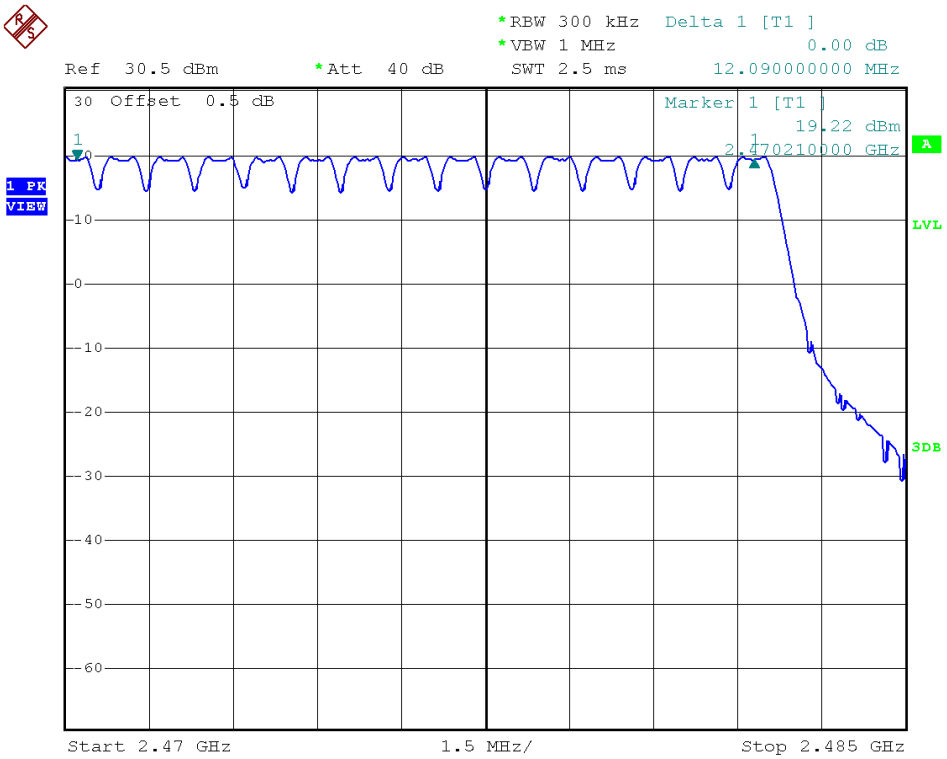
CH34-CH56



CH57-CH79



CH80-CH94


*RBW 300 kHz
Delta 1 [T1]
*VBW 1 MHz
0.00 dB
Ref 30.5 dBm
*Att 40 dB
SWT 2.5 ms
12.090000000 MHz
30 Offset 0.5 dB
Marker 1 [T1]
19.22 dBm
2.470210000 GHz
1 PK
VIEW
A
LVL
3DB
20
10
0
-10
-20
-30
-40
-50
-60
Start 2.47 GHz
1.5 MHz/
Stop 2.485 GHz

3.6 Channel Separation (Carrier Frequency Separation)

Minimum Hopping Channel Carrier Frequency Separation, FCC Ref: 15.247(a)(1):

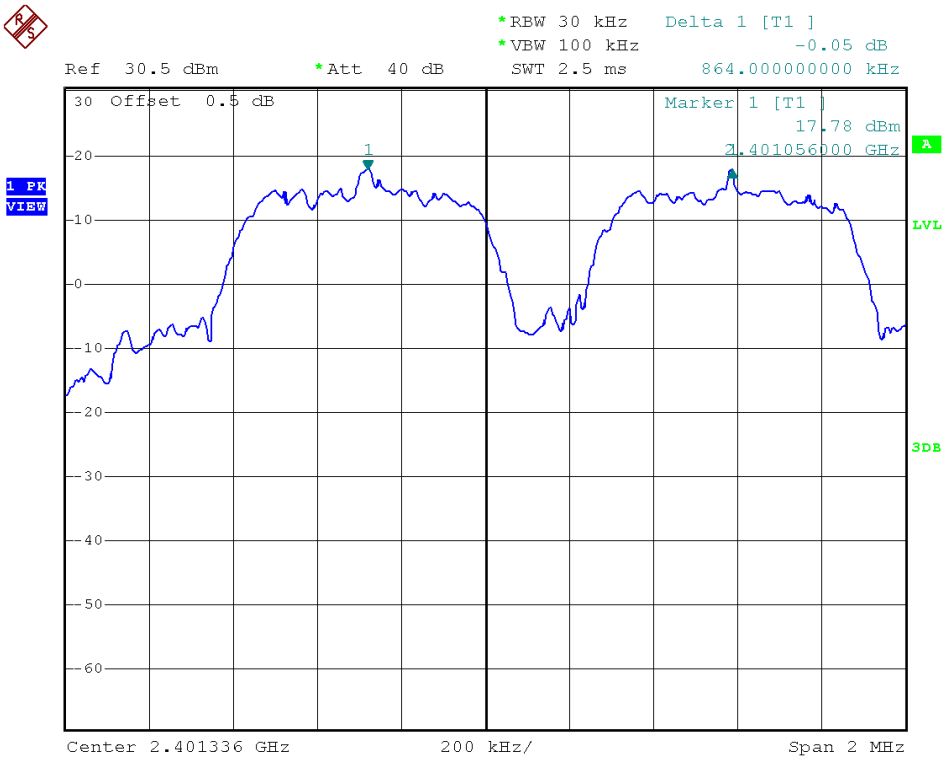
Using the DELTA MARKER function of the analyzer, the frequency separation between two adjacent channels was measured and compared against the limit:

Not less than 2/3 of 20dB bandwidth of hopping channel: 0.684× 2/3 = 0.456 MHz

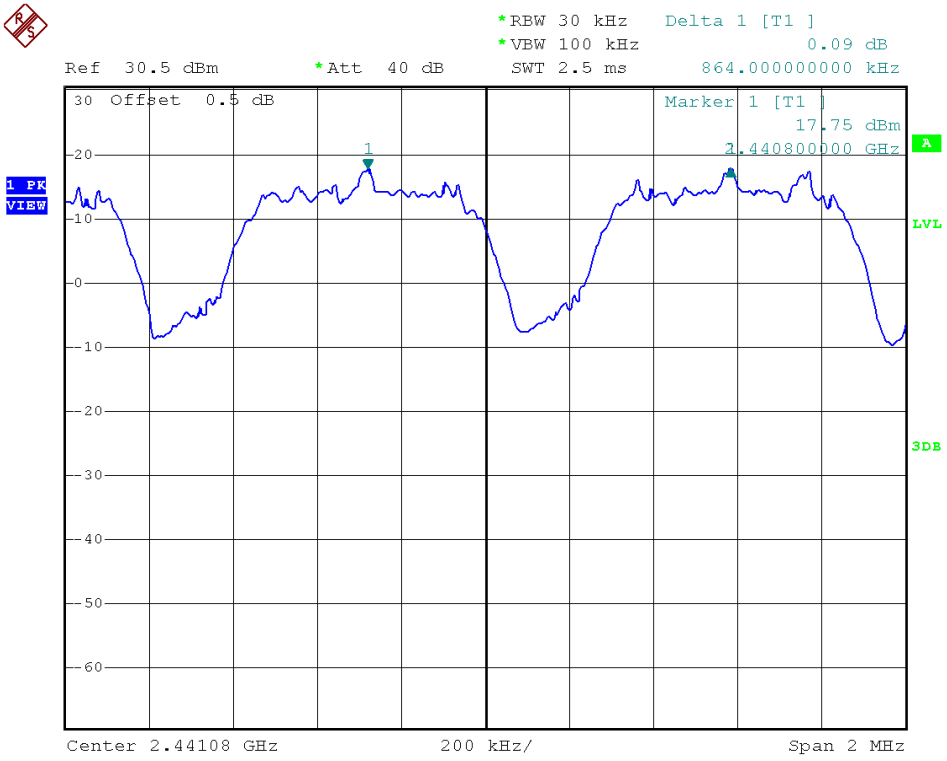
Channel Separation	0.864 MHz

Modulation Type: GFSK

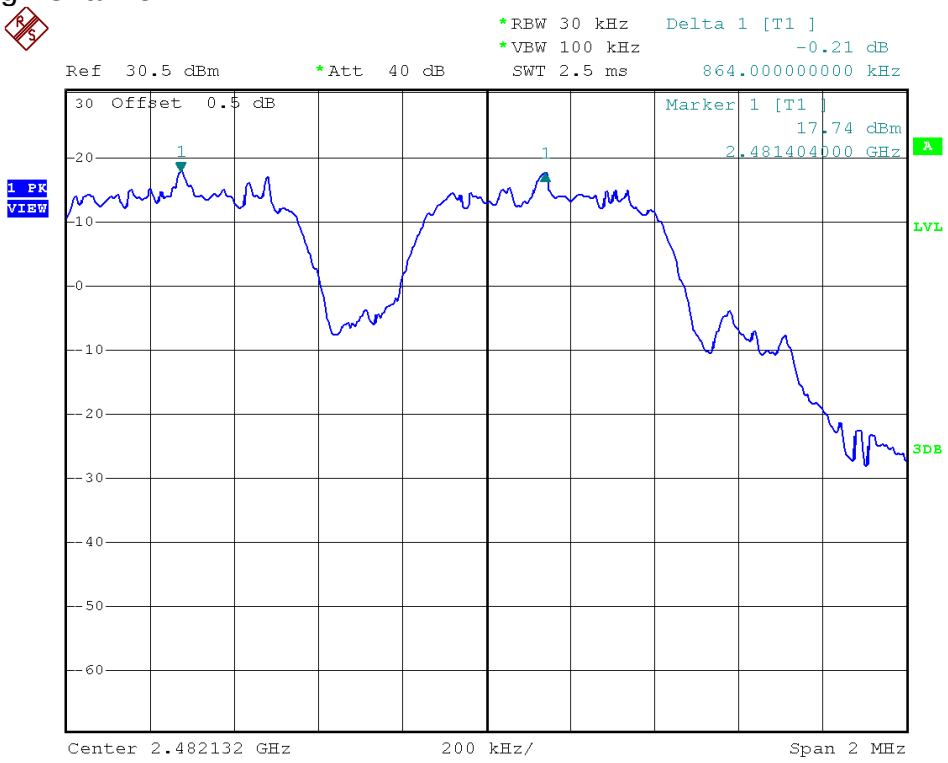
Low Channel



Middle Channel



High Channel



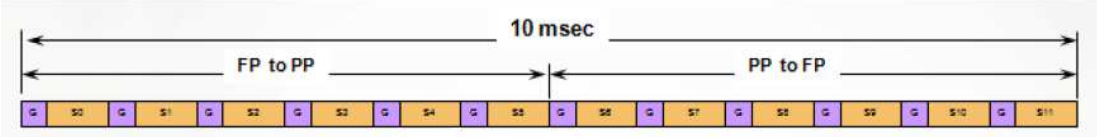
3.7 Dwell Time (Time of Occupancy)

Average Channel Occupancy Time, FCC Ref: 15.247(a)(1)(iii):

The spectrum analyzer center frequency was set to one of the known hopping channels. The SWEEP was set to 10ms, the SPAN was set to ZERO SPAN, and the TRGGER was set to VIDEO. The time duration of the transmissions so captured was measured with the MARKER DELTA function.

The SWEEP was then set to the time required by the regulation (0.4s x number of hopping channels employed for 2400-2483.5 MHz). The analyzer was set to SINGLE SWEEP, the total ON time was added and compared against the limit (0.4s)

The EUT frame structure is like below. A10ms's frames include 12 time slots. The former 6 slots are used for transmission from base to handset (downlink) and the later 6 slots are used for transmission form handset to base (Uplink).

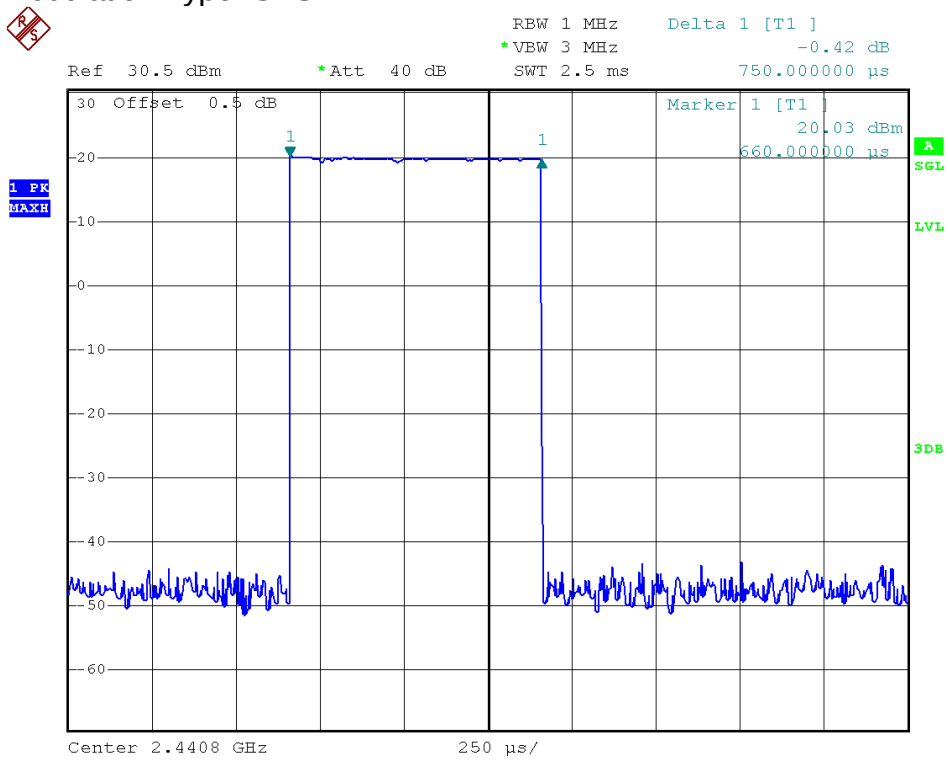


The EUT have transmitted 100 times in 1s. The calculate formula is below.
1s/10ms=100

The maximum number of hopping channels in 38s for
=100 / 95*38=40

Modulation Type	Worst Case Max Dwell Time	Limit (s)	Result
GFSK	0.75*40=30 ms	0.4	Pass

Modulation Type: GFSK



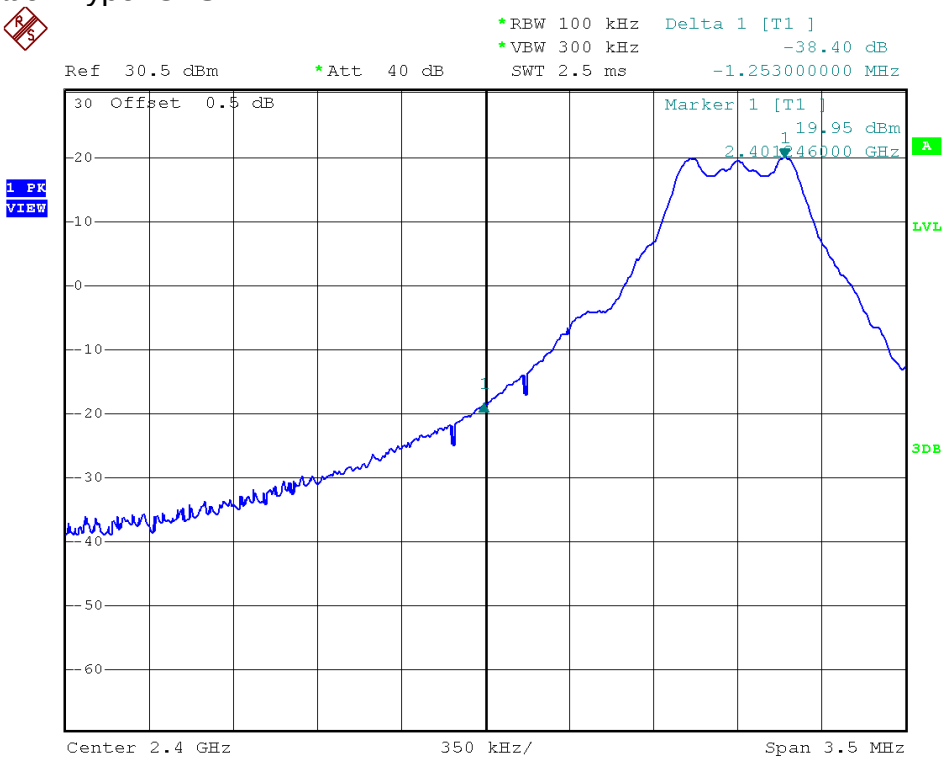
3.8 **Band Edge**

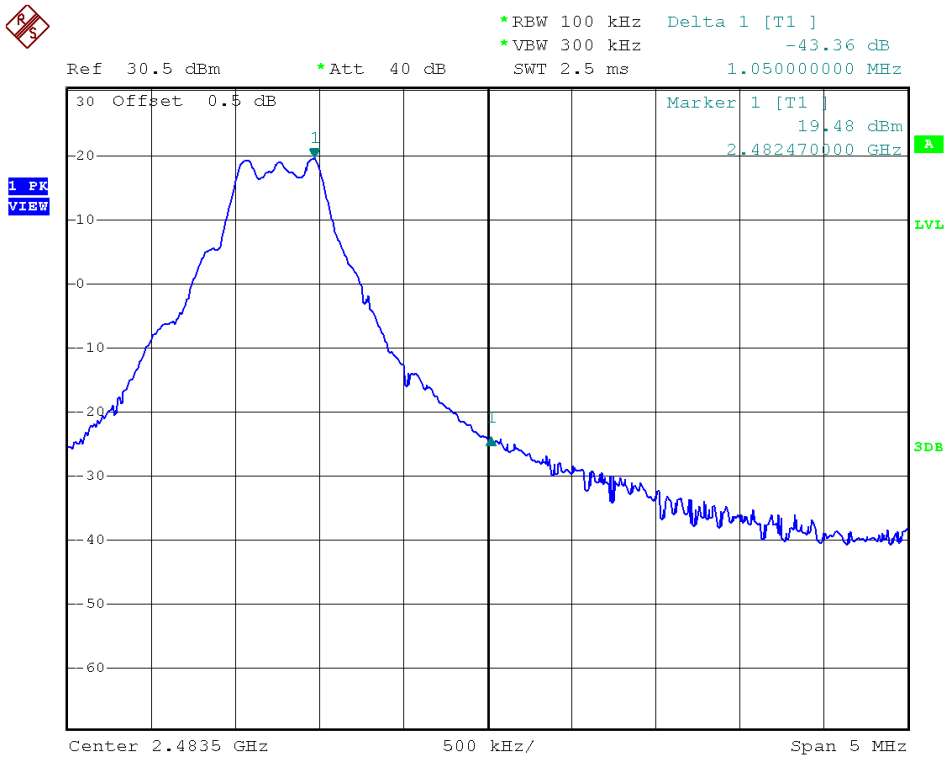
Out of Band Conducted Emissions, FCC Rule 15.247(d):

In any 100 KHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, or else shall meet the general limits for radiated emissions at frequencies outside the passband, whichever results in lower attenuation.

Furthermore, delta measurement technique for measuring bandage emissions was shown as below:

Modulation Type: GFSK





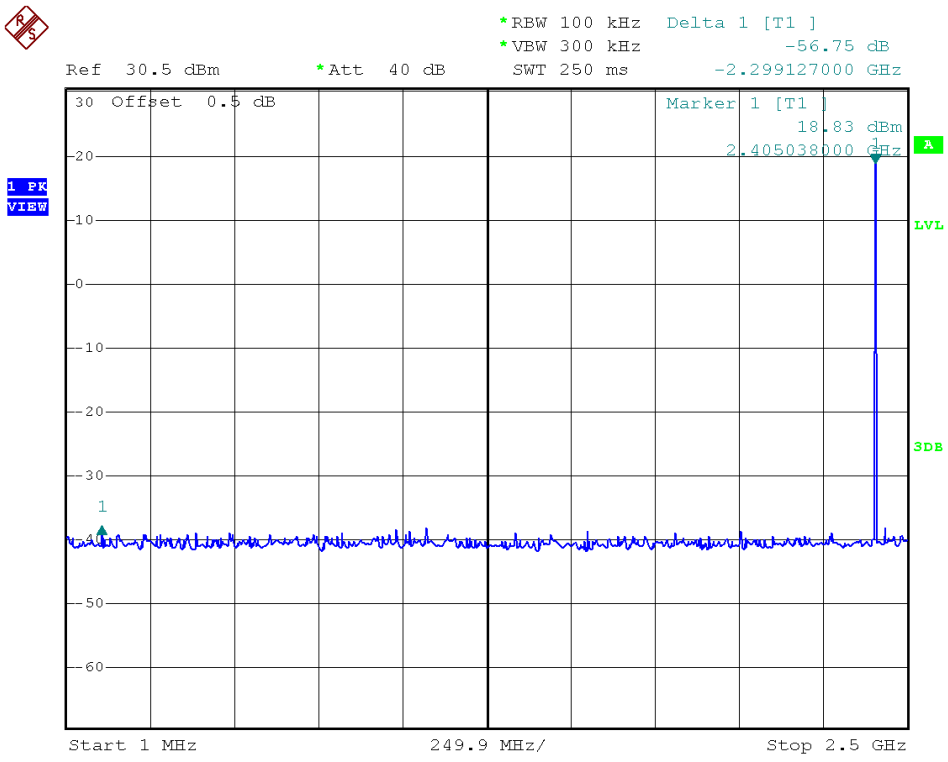
3.9 Transmitter Spurious Emissions (Conducted)

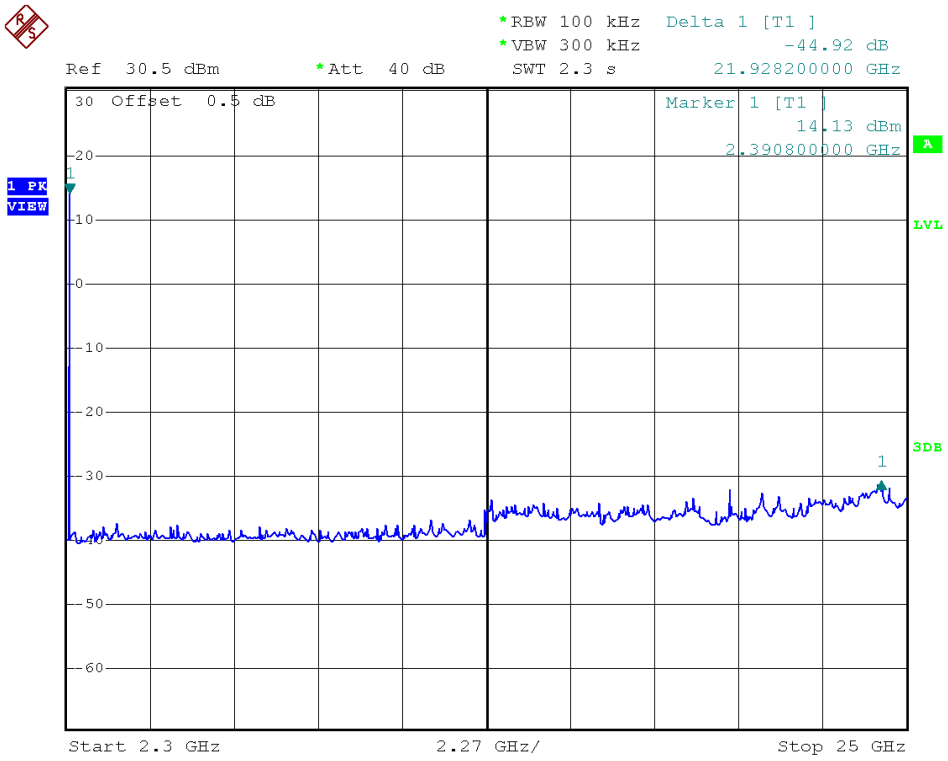
Out of Band Conducted Spurious Emissions, FCC Rule 15.247(d):

All spurious emission and up to the tenth harmonic was measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

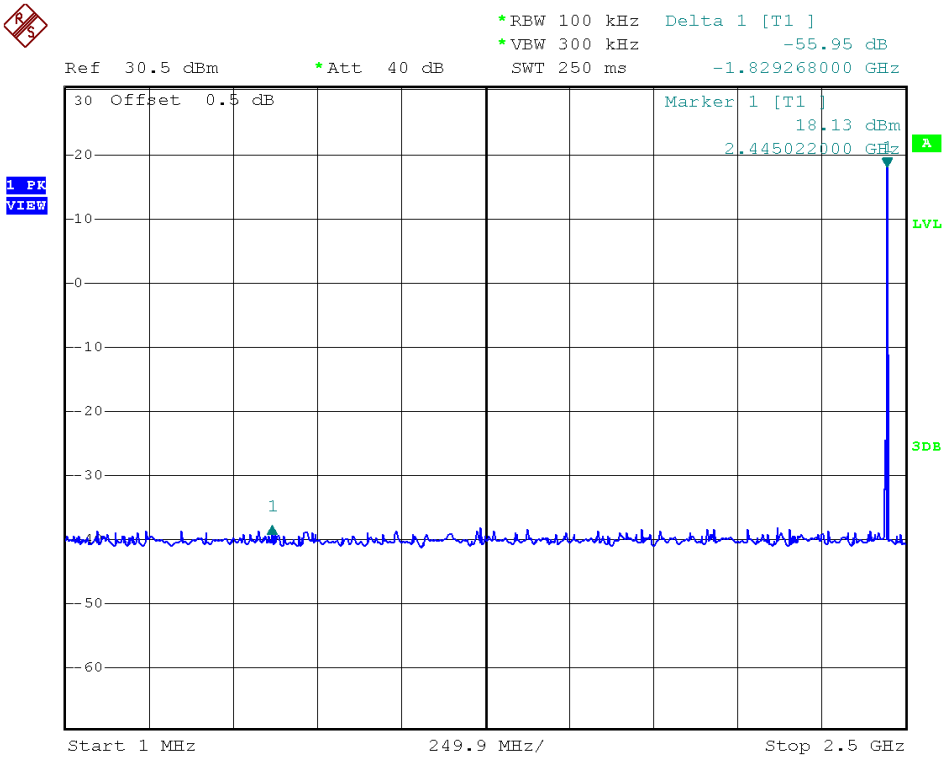
Modulation Type: GFSK

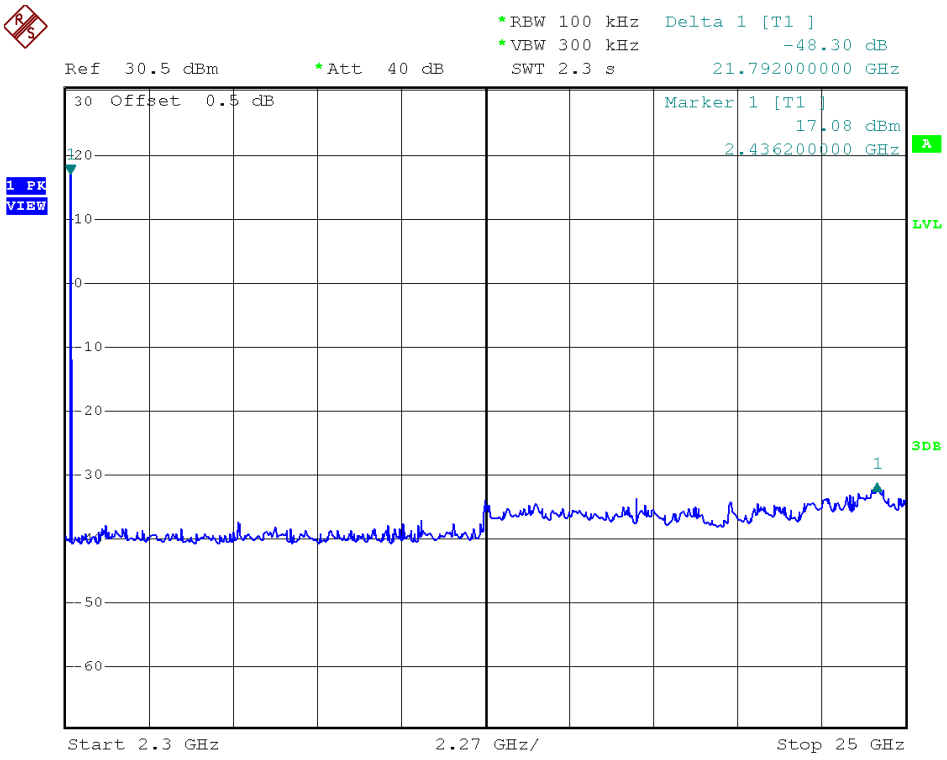
CH00



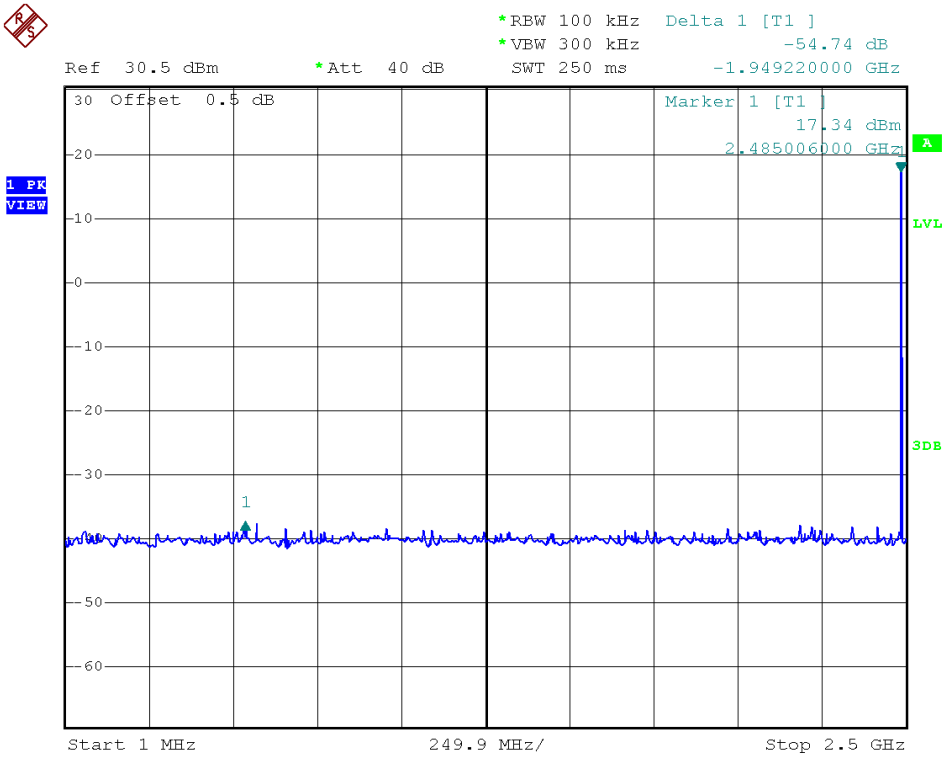


CH46


*RBW 100 kHz
*VBW 300 kHz
SWT 250 ms
Delta 1 [T1]
-55.95 dB
-1.829268000 GHz
Ref 30.5 dBm
*Att 40 dB
30 Offset 0.5 dB
Marker 1 [T1]
18.13 dBm
2.445022000 GHz
1 PK
VIEW
A
LVL
3DB
Start 1 MHz
249.9 MHz/
Stop 2.5 GHz


*RBW 100 kHz
*VBW 300 kHz
SWT 2.3 s
Delta 1 [T1]
-48.30 dB
21.792000000 GHz
Ref 30.5 dBm
*Att 40 dB
30 Offset 0.5 dB
Marker 1 [T1]
17.08 dBm
2.436200000 GHz
1 PK
VIEW
A
LVL
3DB
Start 2.3 GHz
2.27 GHz/
Stop 25 GHz

CH94


*RBW 100 kHz
*VBW 300 kHz
SWT 250 ms
Delta 1 [T1]
-54.74 dB
-1.949220000 GHz
Ref 30.5 dBm
*Att 40 dB
30 Offset 0.5 dB
Marker 1 [T1]
17.34 dBm
2.485006000 GHz
1 PK
VIEW
A
LVL
3DB
Start 1 MHz
249.9 MHz/
Stop 2.5 GHz

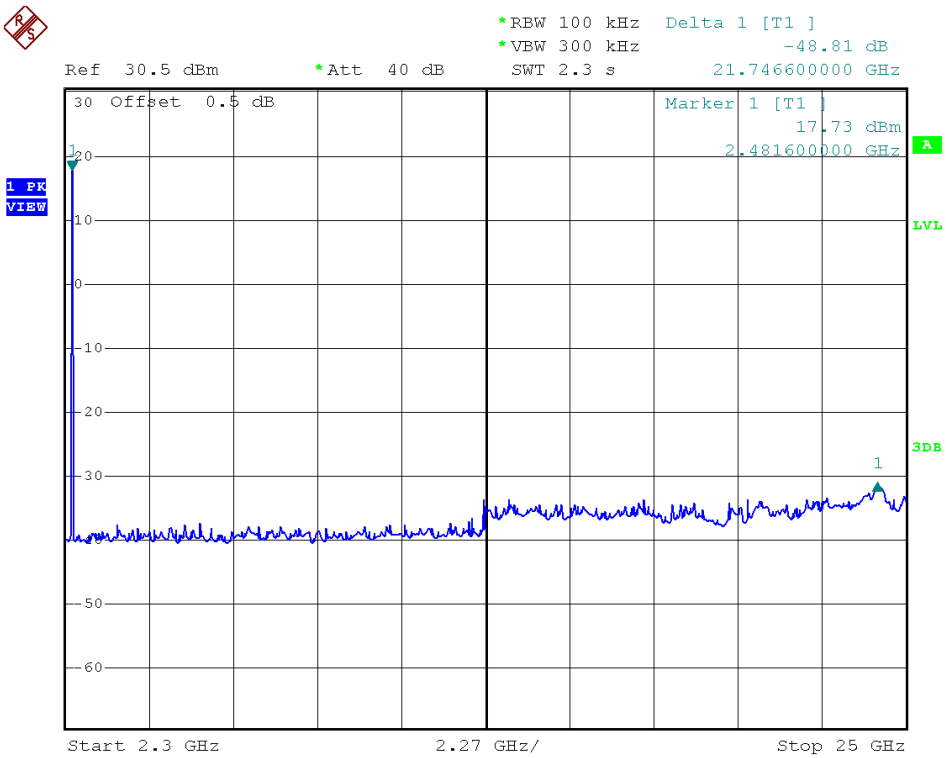

*RBW 100 kHz
*VBW 300 kHz
SWT 2.3 s
Delta 1 [T1]
-48.81 dB
21.746600000 GHz
Ref 30.5 dBm
*Att 40 dB
30 Offset 0.5 dB
Marker 1 [T1]
17.73 dBm
2.481600000 GHz
1 PK
VIEW
A
LVL
3DB
Start 2.3 GHz
2.27 GHz/
Stop 25 GHz

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

4.0 **Equipment Photographs**

For electronic filing, the photographs of the tested EUT are saved with filename: external photos.pdf & internal photos.pdf.

EXHIBIT 5

PRODUCT LABELLING

5.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

EXHIBIT 6

TECHNICAL SPECIFICATIONS

6.0 Technical Specifications

For electronic filing, the block diagram and schematics of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

EXHIBIT 7

INSTRUCTION MANUAL

7.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

EXHIBIT 8

MISCELLANEOUS INFORMATION

8.0 Miscellaneous Information

This miscellaneous information includes details of the measured bandedge, the test procedure and calculation of factor such as pulse desensitization.

8.1 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitters operating under Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4: 2009.

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjust through all three orthogonal axes to obtain maximum emission levels. The antenna height and polarization are varied during the testing to search for maximum signal levels.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower. For line conducted emissions, the range scanned is 150 kHz to 30 MHz.

8.1 **Emissions Test Procedures (cont'd)**

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements are made as described in ANSI C63.4: 2009.

The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 kHz for emission from 30 MHz to 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the restricted bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, but those measurements taken at a closer distance are so marked.

EXHIBIT 9

TEST EQUIPMENT LIST

9.0 Test Equipment List

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Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	30-Jun-12	30-Jun-13
SZ185-01	EMI Receiver	R&S	ESCI	100547	12-Mar-13	12-Mar-14
SZ061-08	Horn Antenna	ETS	3115	00092346	3-Nov-12	3-Nov-13
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	12-Mar-13	12-Mar-14
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	21-May-12	21-May-13
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	26-Feb-13	26-Aug-13
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	12-Mar-13	12-Mar-14
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	2-Mar-13	2-Mar-14
SZ062-02	RF Cable	RADIALL	RG 213U	--	26-Feb-13	26-Aug-13
SZ062-12	RF Cable	RADIALL	R288531262	--	26-Feb-13	26-Aug-13
SZ062-19	RF Cable	HUBER+SUHNER	SF104	--	26-Feb-13	26-Aug-13
SZ067-04	Notch Filter	Micro-Tronics	BRM50702-02	--	11-Jun-12	11-Jun-13
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	5-Nov-12	5-Nov-13
SZ187-01	Two-Line V-Network	R&S	ENV216	100072	5-Nov-12	5-Nov-13
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	5-Nov-12	5-Nov-13
SZ188-03	Shielding Room	ETS	RFD-100	4100	10-Sep-12	10-Sep-13