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TEST REPORT

Report Number: 20110474HKG-002

Application for Original Grant of 47 CFR Part 15 Certification

Single New of RSS-247 Issue 2 Equipment

Transceiver

FCC ID: 2AX9X-PMP10072420

IC: 26722-PMP10072420

This report contains data of Bluetooth 3.0 only

Prepared and Checked by:	**Approved by:**
Signed On File Wong Cheuk Ho, Herbert Lead Engineer	Digitally signed by Kenneth Wong Location: Intertek Testing Services Hong Kong Limited Wong Kwok Yeung, Kenneth Senior Lead Engineer Date: November 27, 2020

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TEST REPORT

GENERAL INFORMATION

Applicant Name:	PM STUDIO PARIS
Applicant Address:	37 rue Marcel Dassault 92100 Boulogne-Billancourt France
FCC Specification Standard:	FCC Part 15, October 1, 2019 Edition
FCC ID:	2AX9X-PMP10072420
FCC Model(s):	BT-6055
IC Specification Standard:	RSS-247 Issue 2, February 2017 RSS-Gen Issue 5 Amendment 1, March 2019
IC:	26722-PMP10072420
HVIN:	BT-6055
PMN:	BT-6055
Type of EUT:	Transceiver
Description of EUT:	Azzaro Wanted By Night Headphones 2021
Serial Number:	N/A
Sample Receipt Date:	November 11, 2020
Date of Test:	November 11, 2020 to November 25, 2020
Report Date:	November 27, 2020
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%
Conclusion:	Test was conducted by client submitted sample. The submitted sample as received complied with the 47 CFR Part 15 / RSS-247 Issue 2 Certification.

TEST REPORT

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TEST REPORT

1.0 TEST RESULTS SUMMARY & STATEMENT OF COMPLIANCE

1.1 Summary of Test Results

Test Items	FCC Part 15 Section	RSS-247/ RSS-Gen# Section	Results	Details See Section
Antenna Requirement	15.203	7.1.2#	Pass	2.1
Max. Conducted Output Power	15.247(b)(1) & (4)	5.4(2)	Pass	4.1
Max. 20dB RF Bandwidth	15.247(a)(1)(iii)	5.1(1)	N/A	4.2
Min. No. of Hopping Frequencies	15.247(a)(1)(iii)	5.1(4)	Pass	4.3
Min. Hopping Channel Carrier Frequency Separation	15.247(a)(1)	5.1(2)	Pass	4.4
Average Time of Occupancy	15.247(a)(1)(iii)	5.1(4)	Pass	4.5
Out of Band Antenna Conducted Emission	15.247(d)	5.5	Pass	4.6
Radiated Emission in Restricted Bands and Spurious Emissions	15.247(d), 15.209 & 15.109	5.5	Pass	4.8
AC Power Line Conducted Emission	15.207 & 15.107	7.2.4#	Pass	4.9

Note: Pursuant to FCC Part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over expected variations in temperature and supply voltage were considered.

1.2 Statement of Compliance

The equipment under test is found to be complying with the following standards:

FCC Part 15, October 1, 2019 Edition
RSS-247 Issue 2, February 2017
RSS-Gen Issue 5 Amendment 1, March 2019

TEST REPORT

2.0 GENERAL DESCRIPTION

2.1 Product Description

The Equipment Under Test (EUT) is a Azzaro Wanted By Night Headphones 2021 with Bluetooth audio playback feature, which occupies a frequency range of 2402MHz to 2480MHz. The EUT supports Bluetooth 3.0 and BLE. The EUT is powered by 3.7V internal rechargeable battery (3.7VDC).

The antenna used in the EUT is integral, internal, and the test sample is a prototype.

The antenna(s) used in the EUT is integral, and the test sample is a prototype.

This report contains data of Bluetooth 3.0 only.

2.2 Test Methodology

The radiated emission measurement was performed according to the procedures in ANSI C63.10 (2013). Preliminary radiated scans and all radiated measurements were performed in radiated emission test sites. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application. Antenna port conducted measurements were performed according to ANSI C63.10 (2013). All other measurements were made in accordance with the procedures in 47 CFR Part 2 and RSS-Gen Issue 5 Amendment 1, March 2019.

2.3 Test Facility

The radiated emission test site and antenna port conducted measurement facility used to collect the radiated data and conductive data are at Intertek Testing Services Hong Kong Ltd., which is located at Workshop No. 3, G/F., World-Wide Industrial Centre, 43-47 Shan Mei Street, Fo Tan, Sha Tin, N.T., Hong Kong SAR, China. This test facility and site measurement data have been fully placed on file with FCC and Industry Canada No. 2042H.

TEST REPORT

3.0 SYSTEM TEST CONFIGURATION

3.1 Justification

For radiated emissions testing, the equipment under test (EUT) was setup to transmit / receive continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables (if any) were manipulated to produce worst case emissions.

The EUT was powered by 3.7VDC (1X 3.7V fully charged internal rechargeable battery).

For the measurements, the EUT was attached to a plastic stand if necessary and placed on the wooden turntable. If the base unit attached to peripherals, they were connected and operational (as typical as possible).

The signal was maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization were varied during the search for maximum signal level. The antenna height was varied from 1 to 4 meters. Radiated emissions were taken at three meters unless the signal level was too low for measurement at that distance. If necessary, a pre-amplifier was used and/or the test was conducted at a closer distance.

For any intentional radiator powered by AC power line, measurements of the radiated signal level of the fundamental frequency component of the emission was performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Radiated emission measurement for transmitter were performed 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 to 40 GHz, whichever is lower.

Emission that are directly caused by digital circuits in the transmit path and transmitter portion were measured, and the limit are according to FCC Part 15 Section 15.209 / RSS-247 2.5. Digital circuitries used to control additional functions other than the operation of the transmitter are subject to FCC Part 15 Section 15.109 / RSS-247 Section 5.5 Limits.

TEST REPORT

3.1 Justification - Cont'd

Detector function for radiated emissions was in peak mode. Average readings, when required, were taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings. A detailed description for the calculation of the average factor can be found in section 4.8.3.

Determination of pulse desensitization was made according to *Hewlett Packard Application Note 150-2, Spectrum Analysis... Pulsed RF.* The effective period (Teff) was referred to Exhibit 4.8.3. With the resolution bandwidth 3MHz and spectrum analyzer IF bandwidth 3dB, the pulse desensitization factor was 0dB.

For AC line conducted emission test, the EUT along with its peripherals were placed on a 1.0m(W)x1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN), which provided 50ohm coupling impedance for measuring instrument. The LISN housing, measuring instrument case, reference ground plane, and vertical ground plane were bounded together. The excess power cable between the EUT and the LISN was bundled.

All connecting cables of EUT and peripherals were manipulated to find the maximum emission.

All relevant operation modes and data rates have been tested, and the worst-case data is included in this report.

3.2 EUT Exercising Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

TEST REPORT

3.3 Details of EUT and Description of Accessories

Details of EUT:

(1) The EUT is powered by DC 3.7V (1X 3.7V fully charged internal rechargeable battery)

Description of Accessories:

(1) N/A

3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test at a level of confidence of 95% has been considered. The values of the Measurement uncertainty for radiated emission test and RF conducted measurement test are ± 5.3dB and ±0.99dB respectively. The value of the Measurement uncertainty for conducted emission test is ±4.2dB.

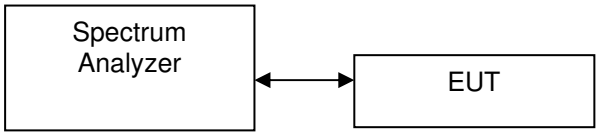
Uncertainty and Compliance - Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

TEST REPORT

4.0 TEST RESULTS

RF Conducted measurement Test Setup by a Spectrum Analyzer.

The figure below shows the test setup, which is utilized to make these measurements.



4.1 Maximum Conducted (peak) Output Power at Antenna Terminals

☐ The antenna power of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

☒ 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. External attenuation and cable loss were compensated for using the OFFSET function of the analyzer.

(1DH5) Antenna Gain = 0 dBi

Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2402	-0.48	0.90
Middle Channel: 2440	-0.56	0.88
High Channel: 2480	-1.02	0.79

(2DH5) Antenna Gain = 0 dBi

Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2402	12.0	1.32
Middle Channel: 2440	1.10	1.29
High Channel: 2480	1.04	1.27

(3DH5) Antenna Gain = 0 dBi

Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2402	1.52	1.42
Middle Channel: 2440	1.48	1.41
High Channel: 2480	1.24	1.33

TEST REPORT

Cable loss : 0.5 dB External Attenuation : 0 dB

Cable loss, external attenuation: ☒ included in OFFSET function
☐ added to SA raw reading

(1DH5) dBm max. output level = -0.48 dBm

(2DH5) dBm max. output level = 1.20 dBm

(1DH5) dBm max. output level = 1.52 dBm

Limits:
☒ 0.125W (21dBm) for antennas with gains of 6dBi or less

☐ 0.25W (24dBm) for antennas with gains of 6dBi or less

☐ 1W (30dBm) for antennas with gains of 6dBi or less

☐ ___W (___dBm) for antennas with gains more than 6dBi

The plots of conducted output power are saved as below.

TEST REPORT

4.2 Maximum 20 dB RF Bandwidth

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW 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. A PEAK output reading was taken, a DISPLAY line was drawn 20 dB lower than PEAK level. The 20 dB bandwidth was determined from where the channel output spectrum intersected the display line.

(1DH5)

Frequency (MHz)	20 dB Bandwidth (kHz)
Low Channel: 2402	888
Middle Channel: 2440	888
High Channel: 2480	888

(2DH5)

Frequency (MHz)	20 dB Bandwidth (kHz)
Low Channel: 2402	1308
Middle Channel: 2440	1302
High Channel: 2480	1302

(3DH5)

Frequency (MHz)	20 dB Bandwidth (kHz)
Low Channel: 2402	1320
Middle Channel: 2440	1320
High Channel: 2480	1320

Limits

☐ ≤500kHz for 902-928MHz

☒ N/A for 2400-2483.5MHz

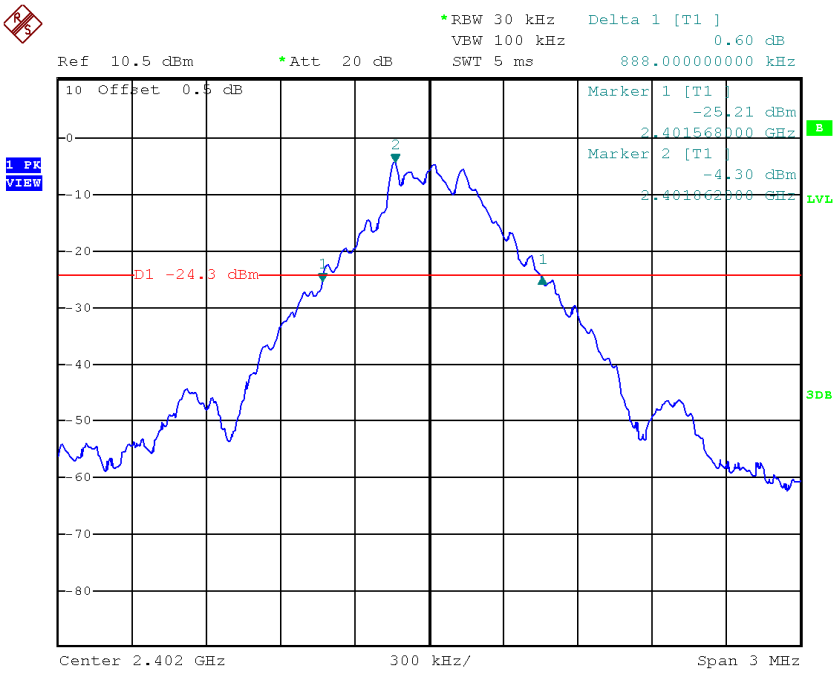
☐ ≤1MHz for 5725-5850MHz

The plots of 20dB RF bandwidth are saved as below.

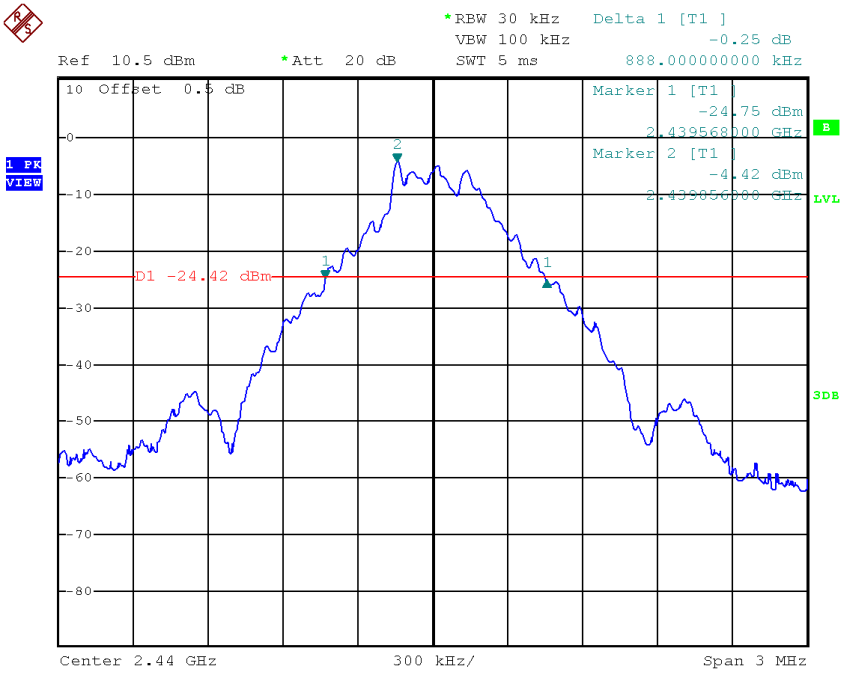
TEST REPORT

PLOTS OF 20dB RF BANDWIDTH (1DH5)

Lowest Channel



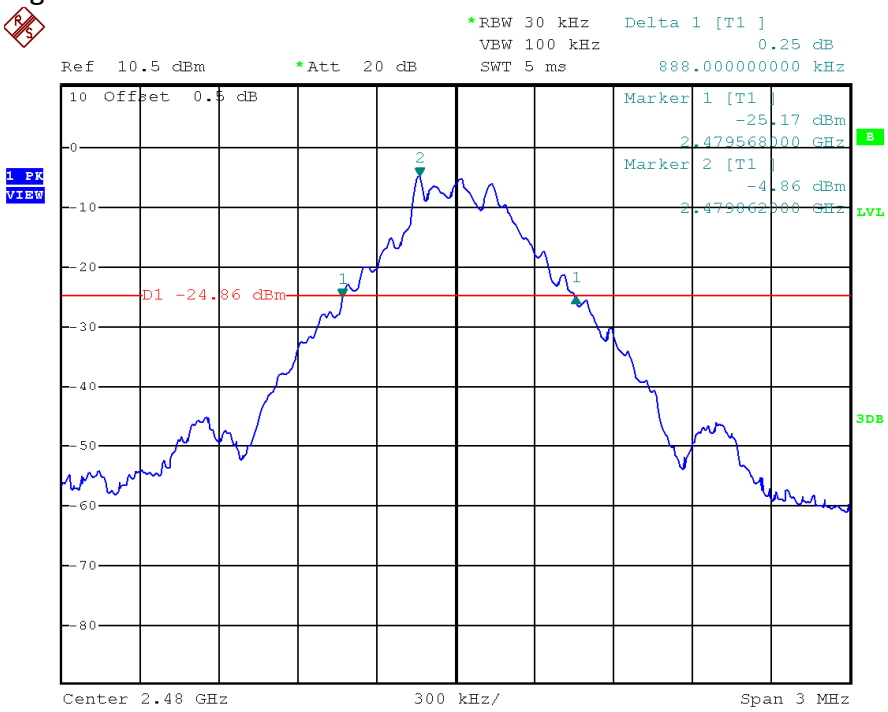
Middle Channel



TEST REPORT

PLOTS OF 20dB RF BANDWIDTH (1DH5)

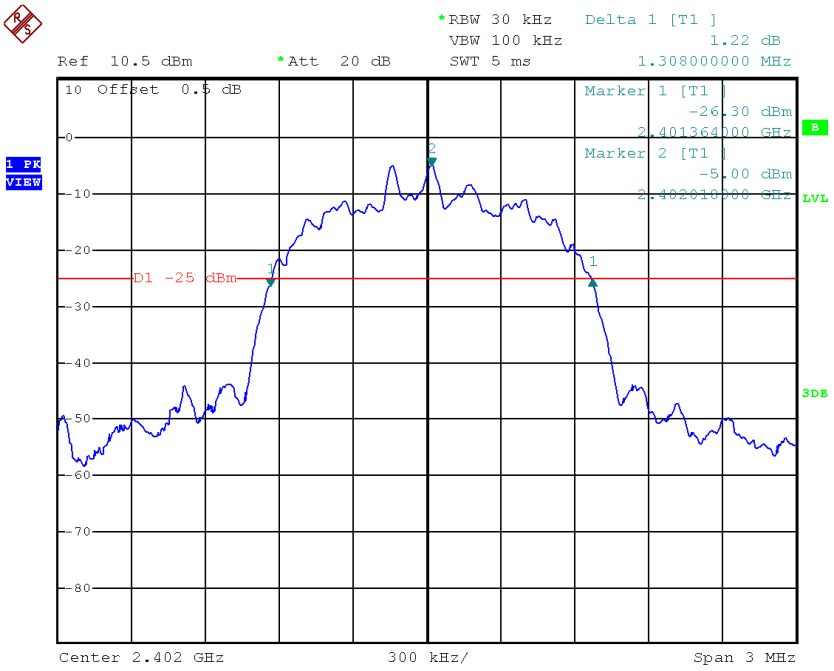
Highest Channel



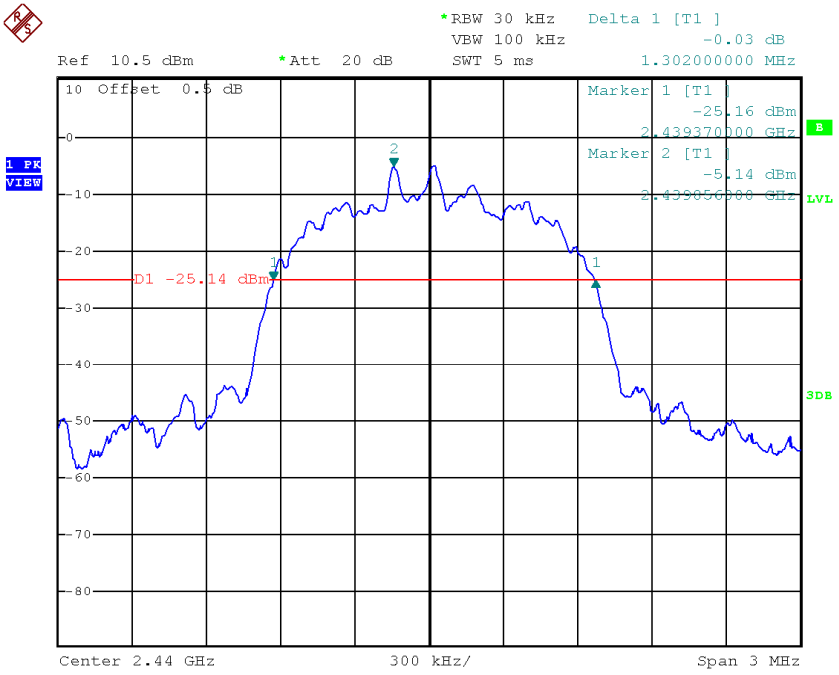
TEST REPORT

PLOTS OF 20dB RF BANDWIDTH (2DH5)

Lowest Channel



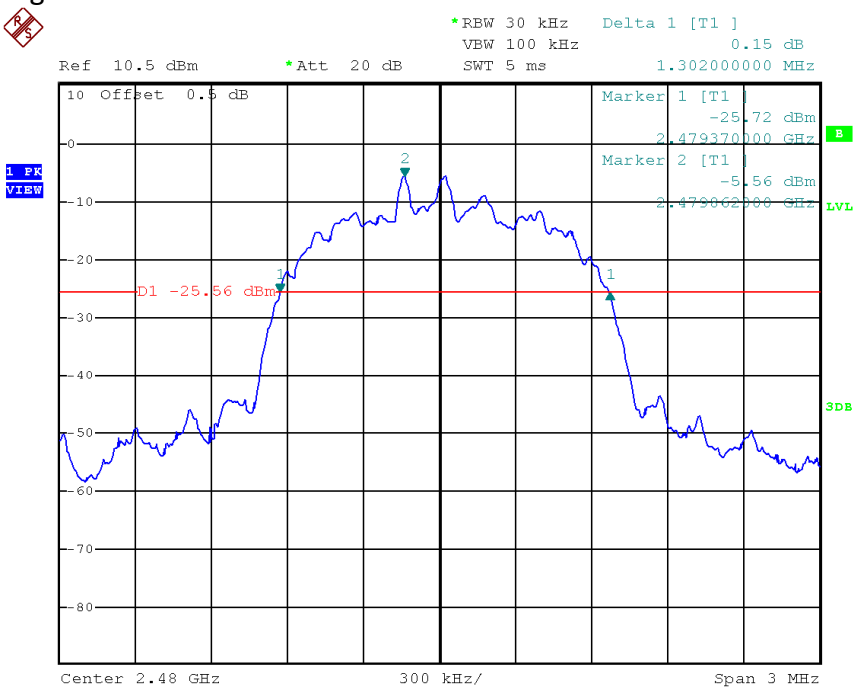
Middle Channel



TEST REPORT

PLOTS OF 20dB RF BANDWIDTH (2DH5)

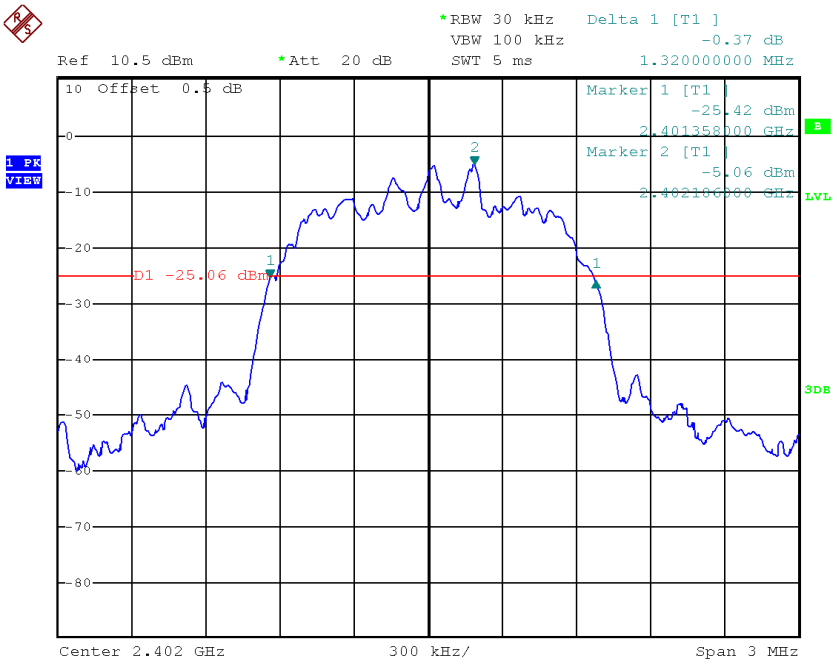
Highest Channel



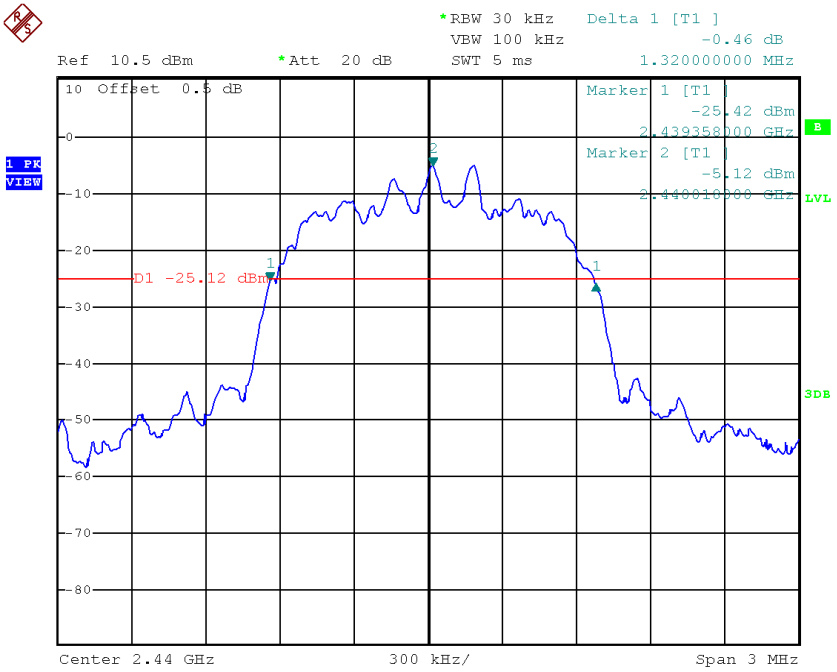
TEST REPORT

PLOTS OF 20dB RF BANDWIDTH (3DH5)

Lowest Channel



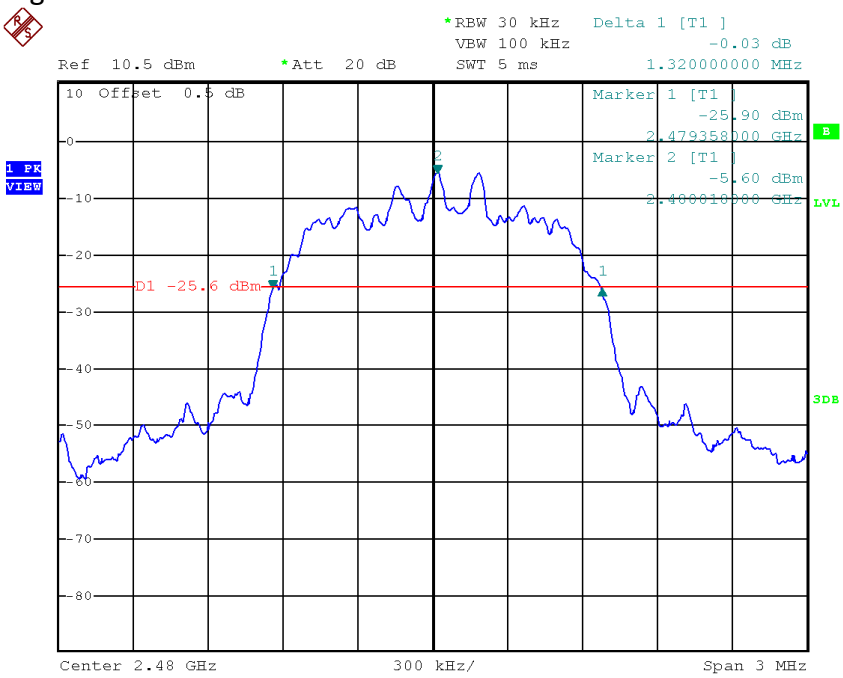
Middle Channel



TEST REPORT

PLOTS OF 20dB RF BANDWIDTH (3DH5)

Highest Channel



TEST REPORT

4.3 Minimum Number of Hopping Frequencies

With the analyzer set to MAX HOLD readings were taken for 2-3 minutes in each band. The channel peaks so recorded were added together, and the total number compared to the minimum number of channels required in the regulation.

No. of Hopping Channels	79

Minimum Requirements:

☐ at least 50 hopping channels for 902MHz-928MHz (20 dB bandwidth of hopping channel < 250kHz)

☐ at least 25 hopping channels for 902MHz-928MHz (20 dB bandwidth of hopping channel ≥ 250kHz)

☒ at least 15 hopping channels for 2400MHz-2483.5MHz.

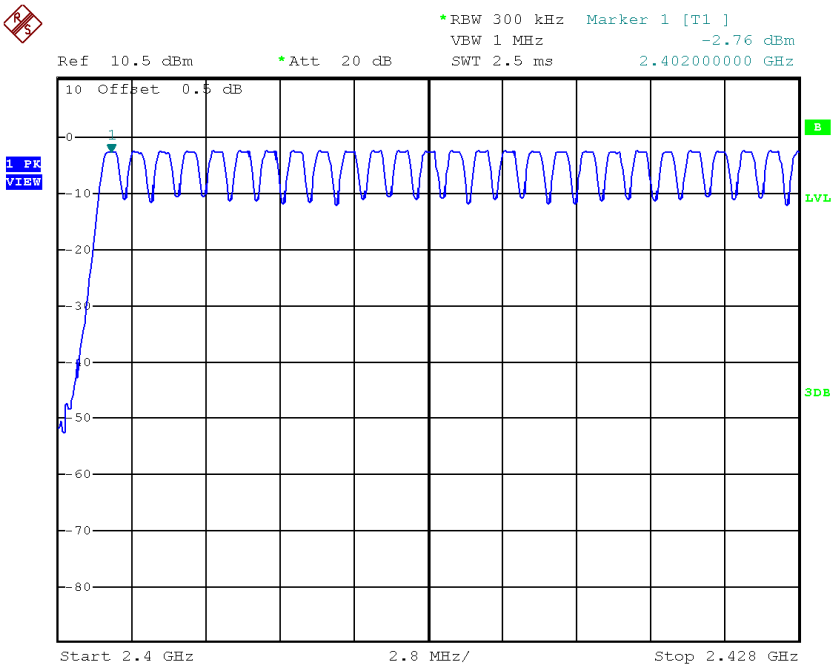
☐ at least 75 hopping channels for 5725MHz-5850MHz.

The plots of number of hopping frequencies are saved as below.

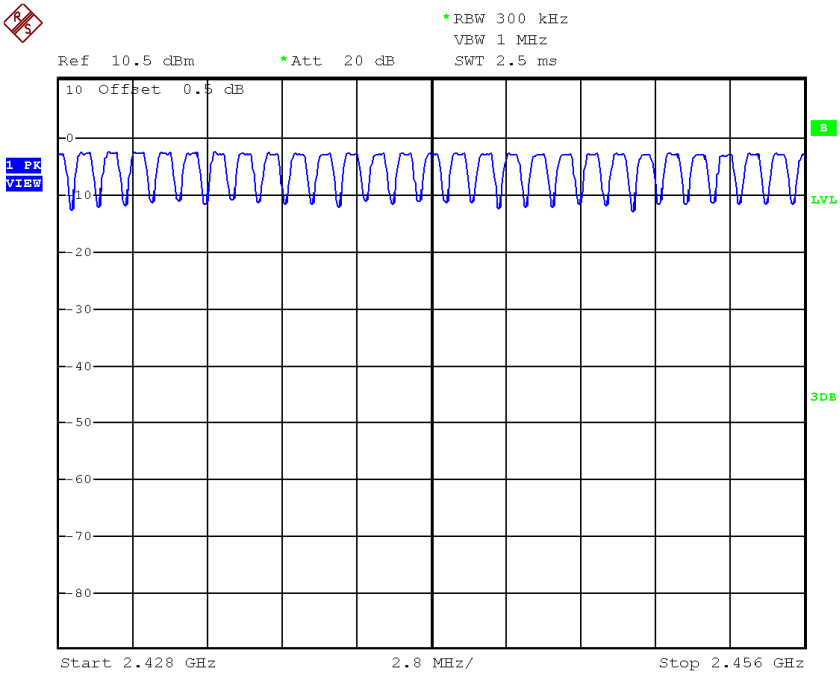
TEST REPORT

PLOTS OF NUMBER OF HOPPING FREQUENCIES

Lowest Channel



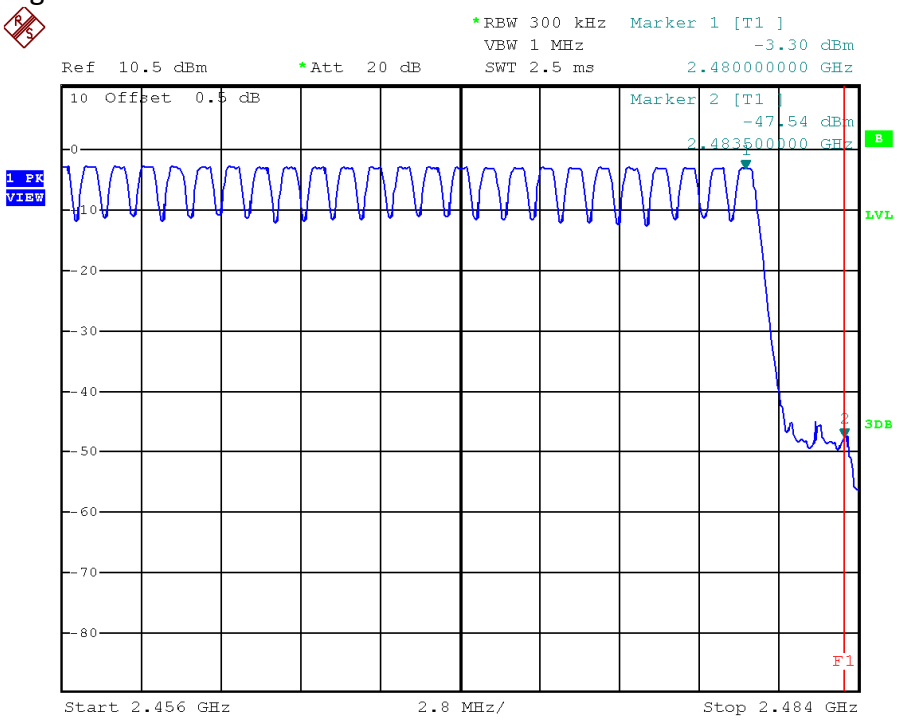
Middle Channel



TEST REPORT

PLOTS OF NUMBER OF HOPPING FREQUENCIES

Highest Channel



TEST REPORT

4.4 Minimum Hopping Channel Carrier Frequency Separation

Using the DELTA MARKER function of the analyzer, the frequency separation between two adjacent channels was measured and met the requirement.

Channel Separation (Channel 1 and Channel 2)	1000kHz

Limits:
The channel separation must be larger than:

☐ 25 kHz

☐ 20 dB bandwidth of hopping channel: ___Hz

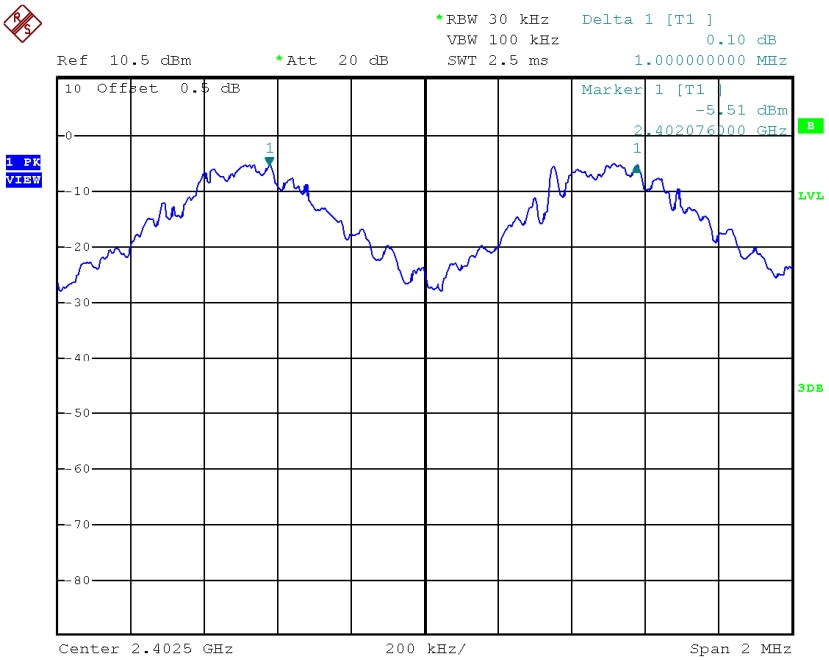
☒ 2/3 of 20dB bandwidth of hopping channel: 592 kHz

The plot(s) of hopping channel carrier frequency separation is saved as below.

TEST REPORT

PLOTS OF HOPPING CHANNEL CARRIER FREQUENCY SEPARATION

Between Channel 1 and Channel 2



TEST REPORT

4.5 Average Channel Occupancy Time

The spectrum analyzer center frequency was set to one of the known hopping channels. The SWEEP was set to 1ms, the SPAN was set to ZERO SPAN, and the TRIGGER was set to VIDEO. The time duration of the transmission so captured was measured with the MARKER DELTA function.

The SWEEP was then set to the time required by the regulation (20 seconds for 902-928 MHz devices, if the 20dB bandwidth is less than 250kHz, 10 seconds for 902-928 MHz if the 20dB bandwidth is or greater than 250kHz, "0.4 seconds x Number of hopping channels employed" seconds for 2400-2483.5 MHz, 30 seconds for 5725-5850 MHz). The analyzer was set to SINGLE SWEEP, the total ON time was added and compared against the limit (0.4 seconds).

Bluetooth 3.0 (worst-case: DH5)	
Number of hops in 7.9s = 32 Total number of hops in 31.6s = 32 X 4 = 128 Single pulse width = 2.88ms Average Occupancy Time = 2.88ms X 128	Average Occupancy Time = 0.36864 s

Limits:
Average 0.4 seconds maximum occupancy in:

☒ 31.6 seconds (0.4 sec. x 79) for 2400MHz-2483.5MHz
(Traffic – in a clear RF environment)

☐ 20 seconds for 902MHz-928MHz ≥ 50 hopping channels

☐ 10 seconds for 902MHz-928MHz ≥ 25 hopping channels

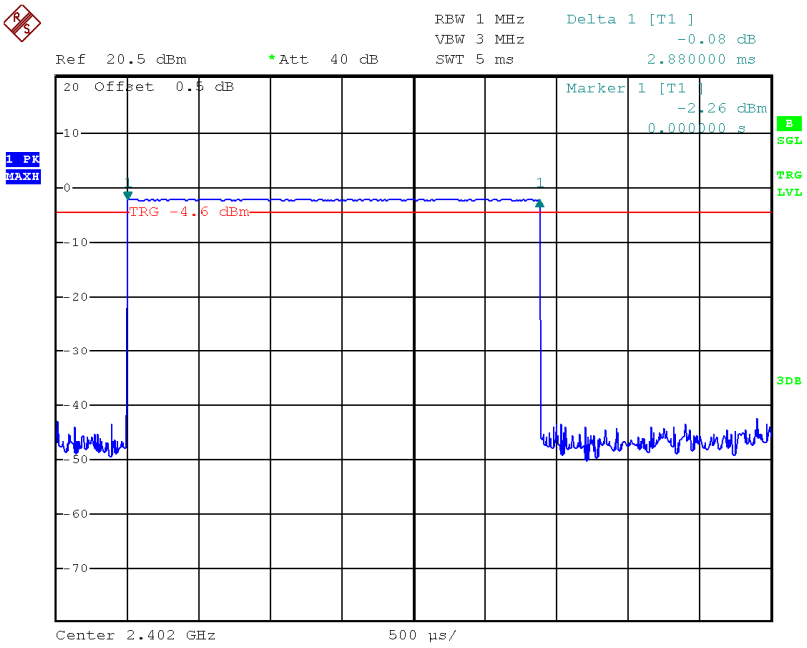
☐ 30 seconds for 5725-5850MHz

The plots of average channel occupancy time are saved as below.

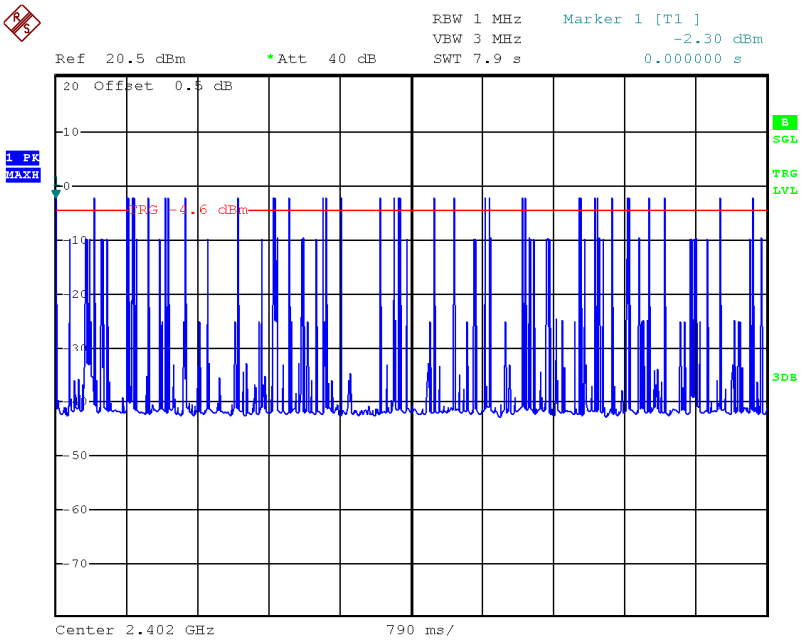
TEST REPORT

PLOTS AVERAGE CHANNEL OCCUPANCY TIME

Plot A



Plot B



TEST REPORT

4.6 Out of Band Conducted Emissions

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.

The plot(s) of bandedge compliance is shown the worst-case which has been already considered between enable and disable the hopping function of the EUT.

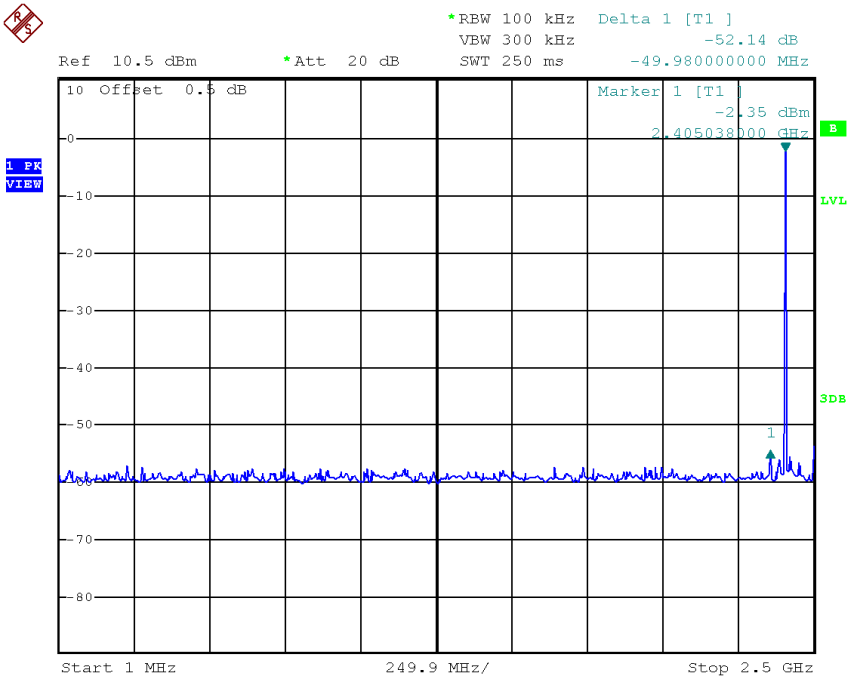
Limits:
All spurious emission and up to the tenth harmonic was measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

The plots of out of band conducted emissions are saved as below.

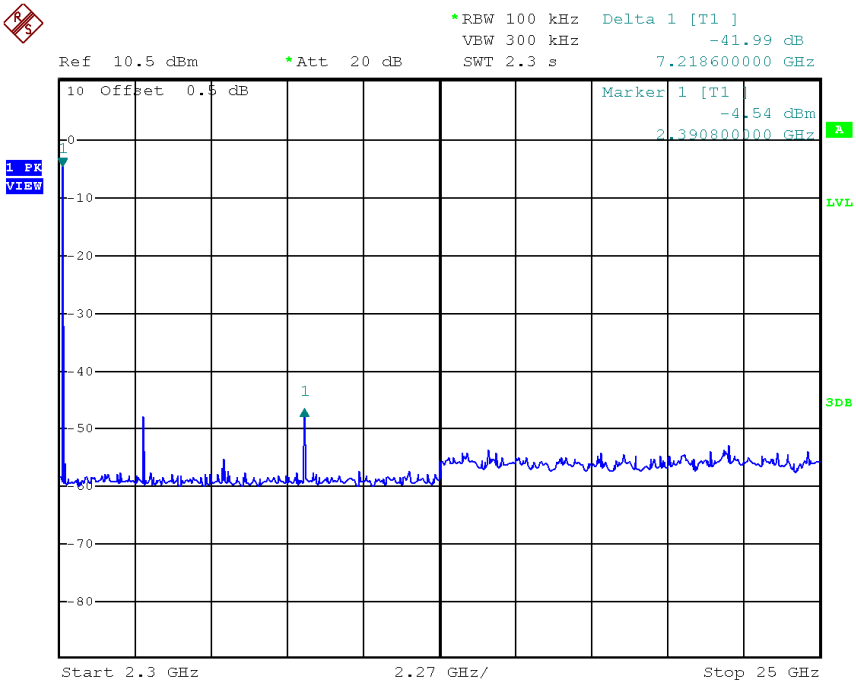
TEST REPORT

PLOTS OF OUT OF BAND CONDUCTED EMISSIONS (1DH5)

Lowest Channel, Plot 1



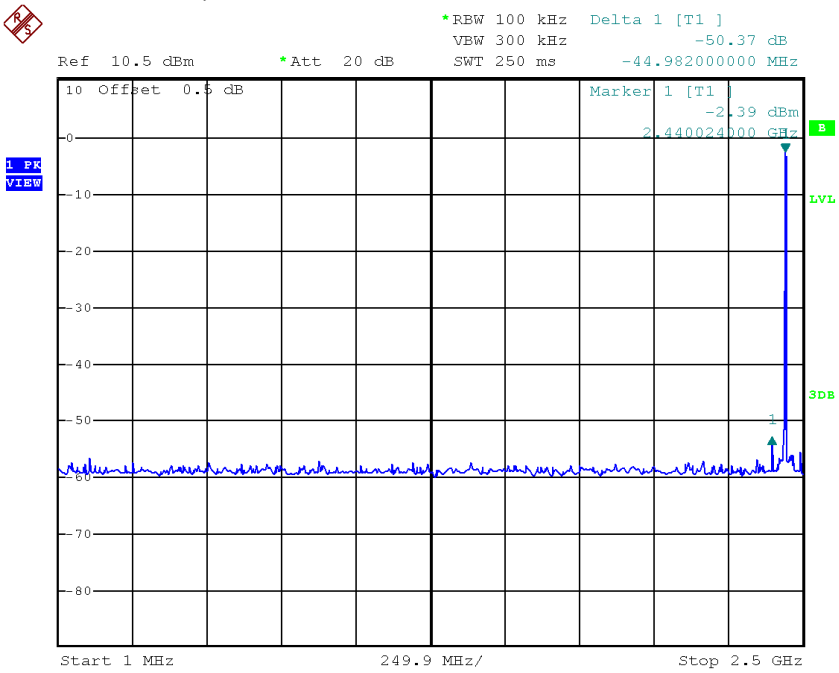
Lowest Channel, Plot 2



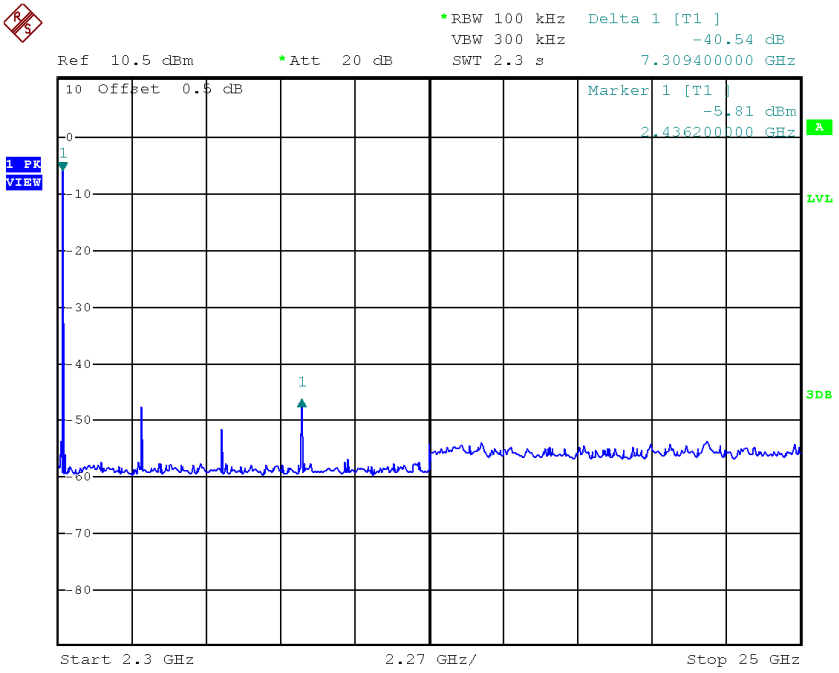
TEST REPORT

PLOTS OF OUT OF BAND CONDUCTED EMISSIONS (1DH5)

Middle Channel, Plot 1



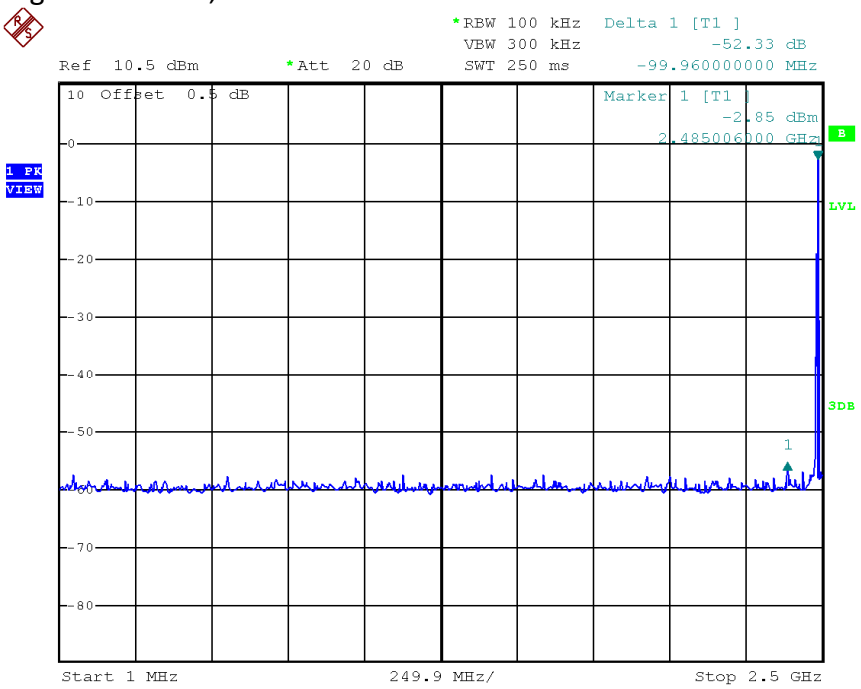
Middle Channel, Plot 2



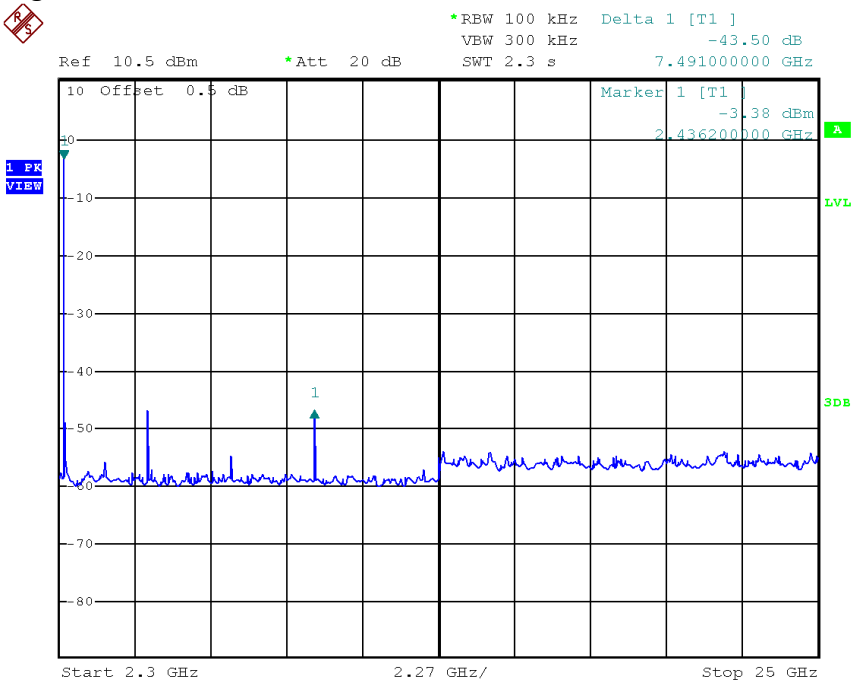
TEST REPORT

PLOTS OF OUT OF BAND CONDUCTED EMISSIONS (1DH5)

Highest Channel, Plot 1



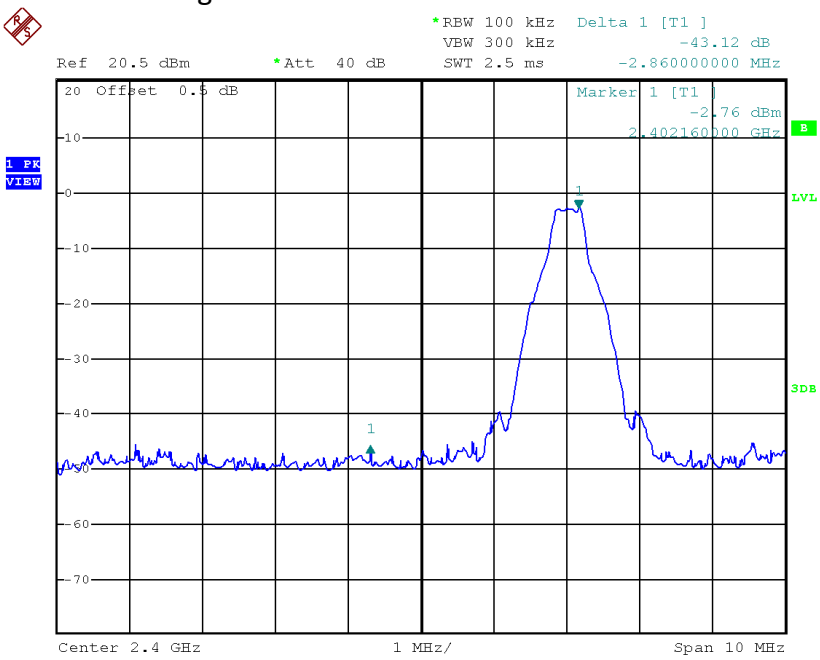
Highest Channel, Plot 2



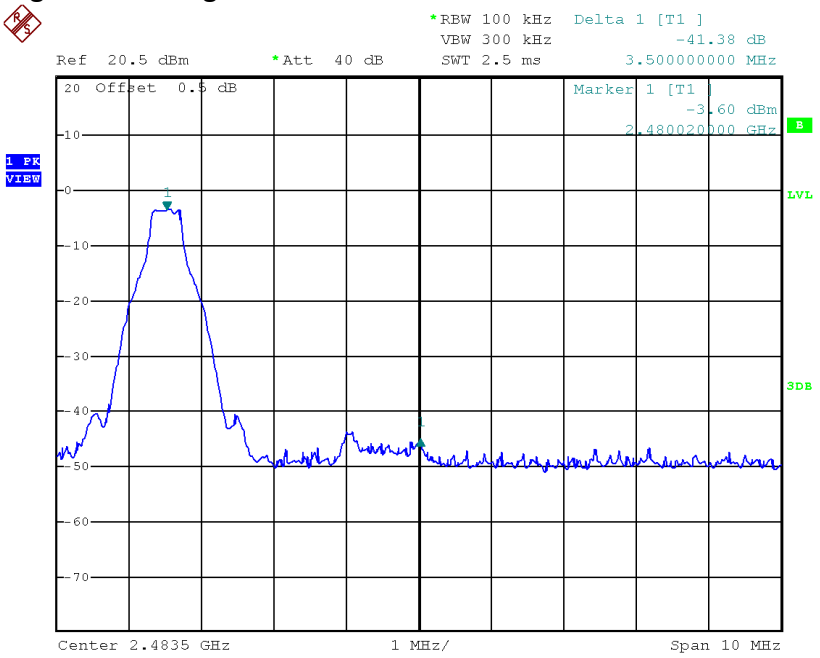
TEST REPORT

PLOTS OF BANDEDGE (1DH5)

Lowest Bandedge



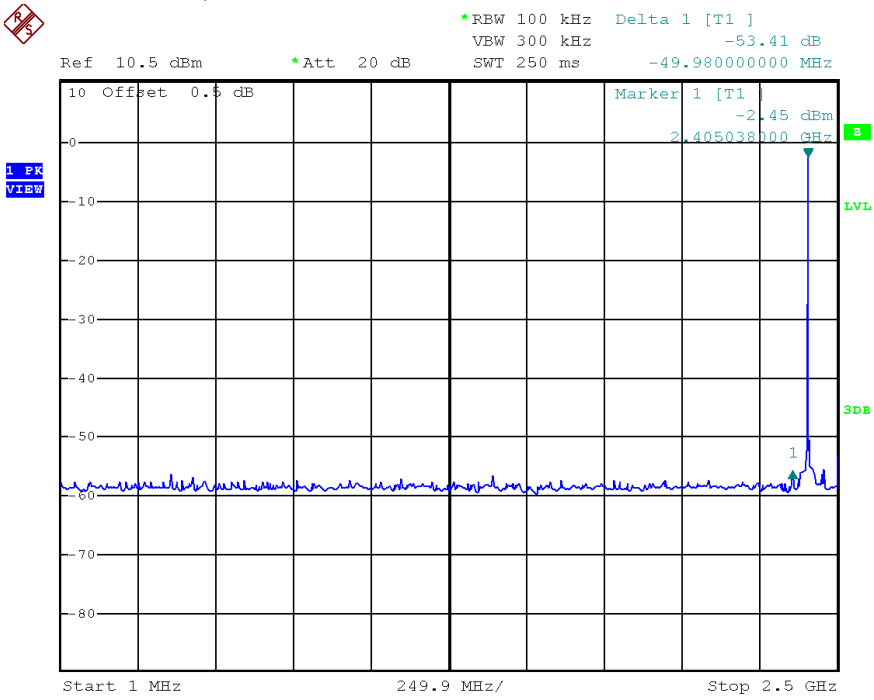
Highest Bandedge



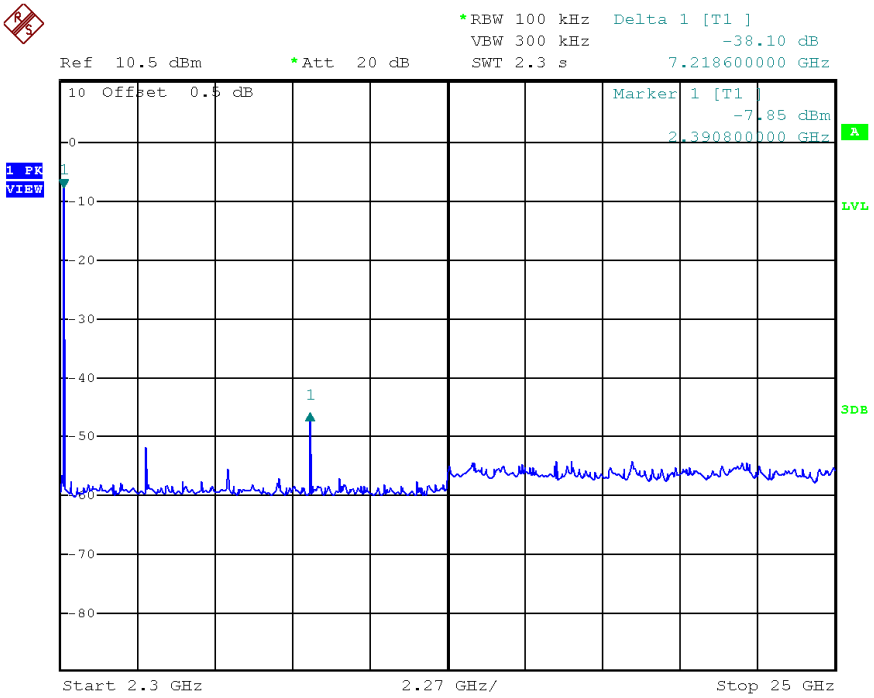
TEST REPORT

PLOTS OF OUT OF BAND CONDUCTED EMISSIONS (2DH5)

Lowest Channel, Plot 1



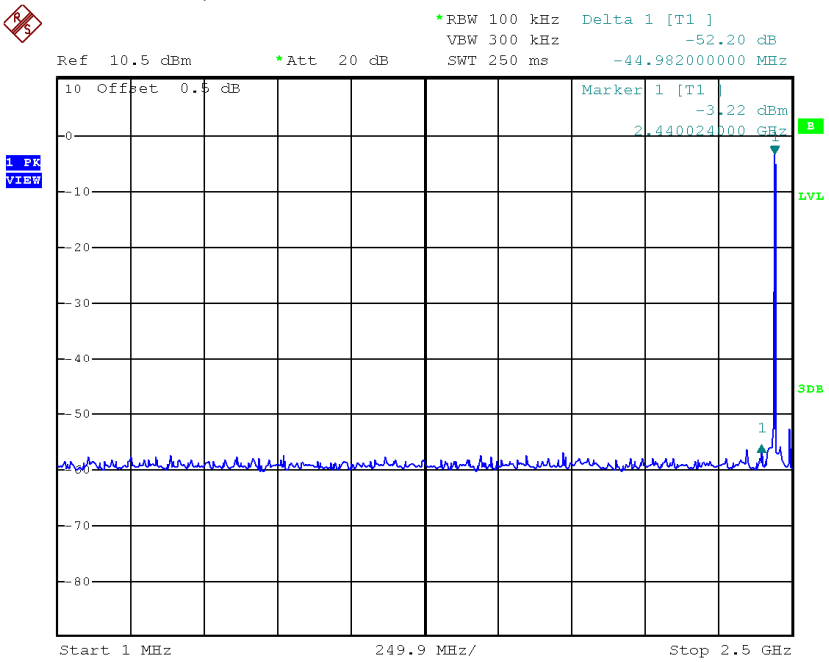
Lowest Channel, Plot 2



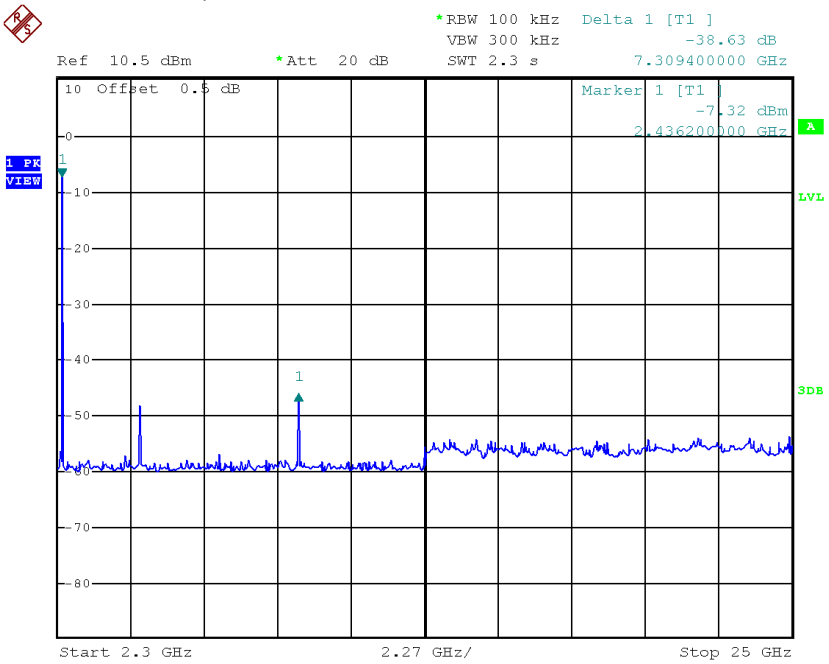
TEST REPORT

PLOTS OF OUT OF BAND CONDUCTED EMISSIONS (2DH5)

Middle Channel, Plot 1



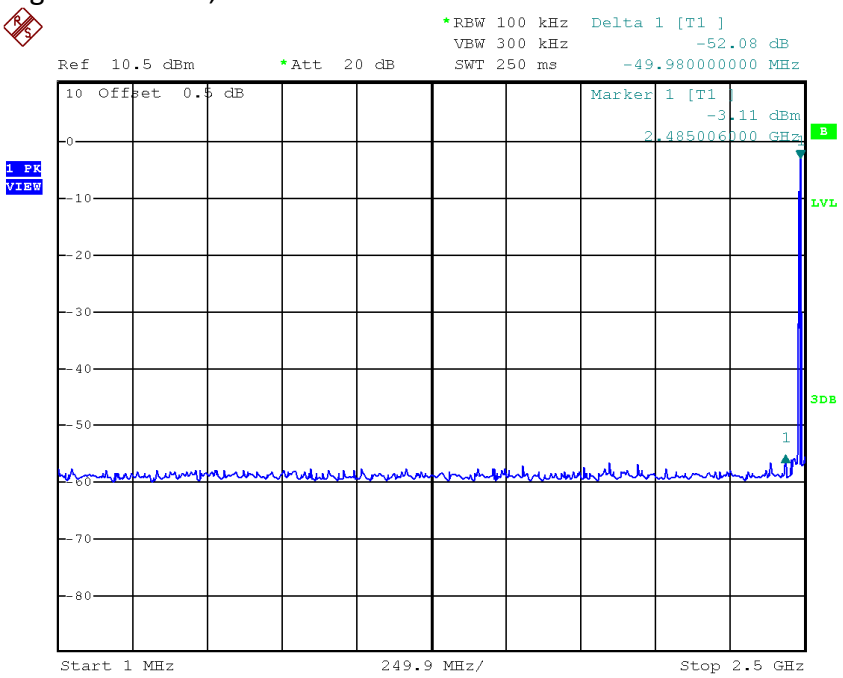
Middle Channel, Plot 2



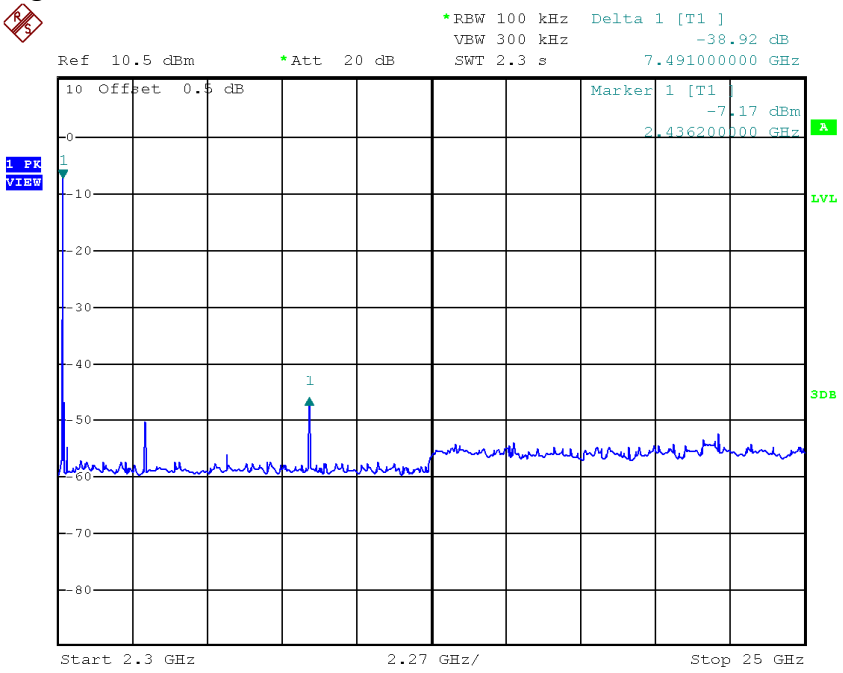
TEST REPORT

PLOTS OF OUT OF BAND CONDUCTED EMISSIONS (2DH5)

Highest Channel, Plot 1



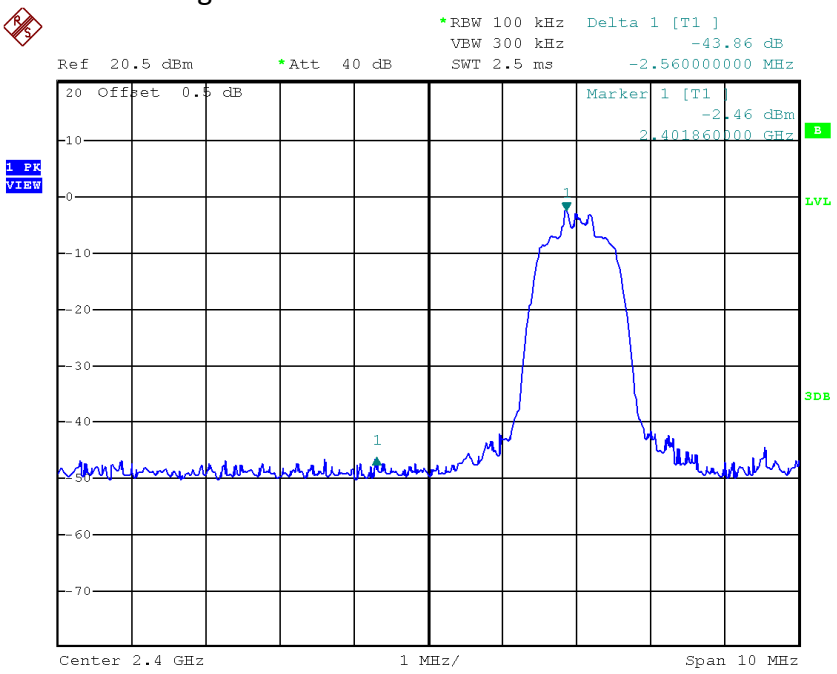
Highest Channel, Plot 2



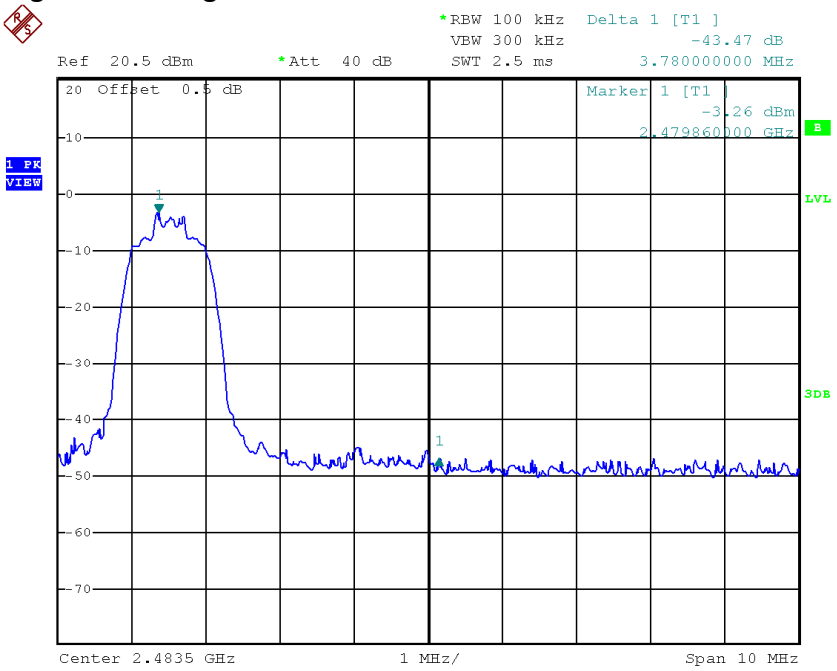
TEST REPORT

PLOTS OF BANDEDGE (2DH5)

Lowest Bandedge



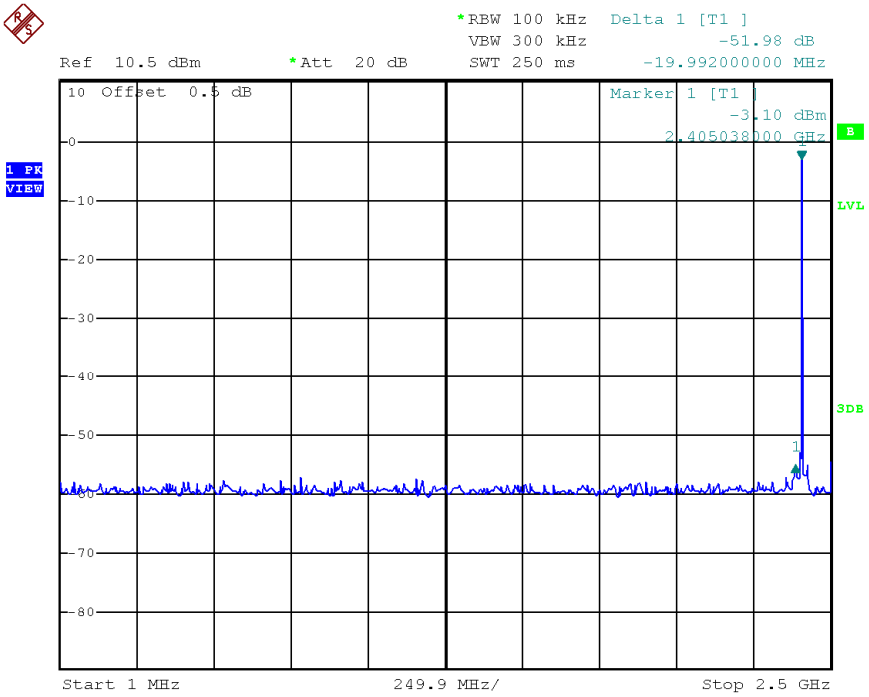
Highest Bandedge



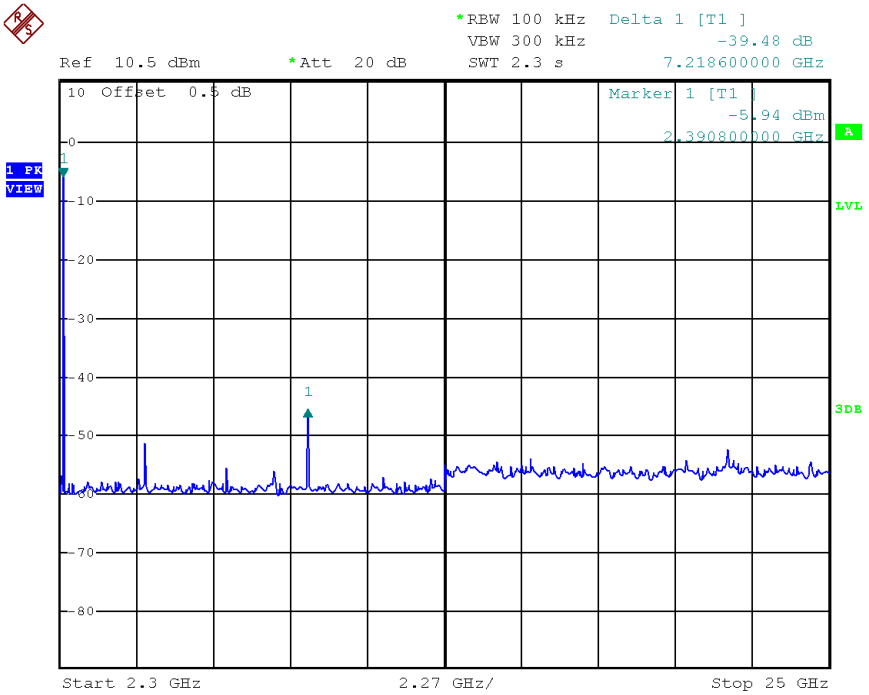
TEST REPORT

PLOTS OF OUT OF BAND CONDUCTED EMISSIONS (3DH5)

Lowest Channel, Plot 1



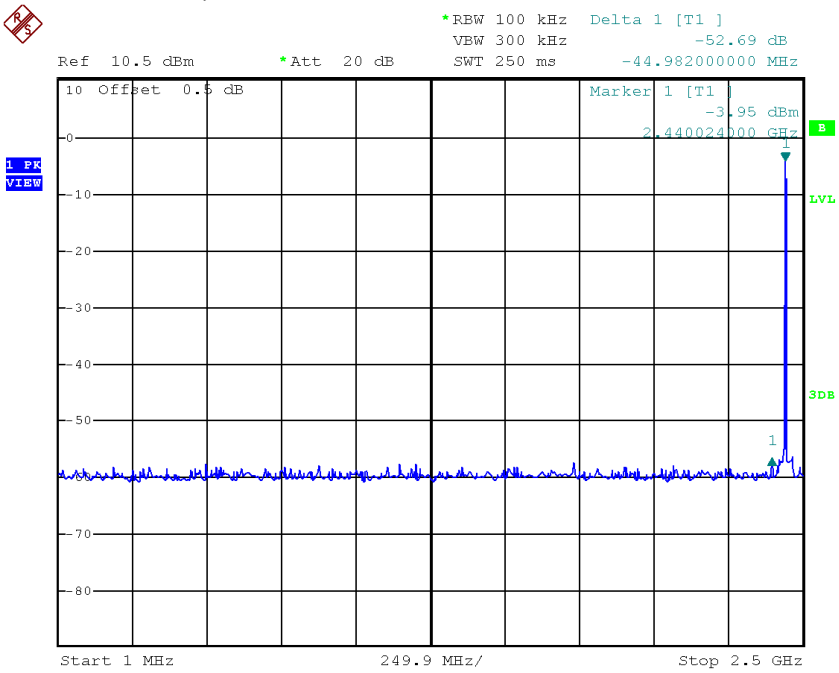
Lowest Channel, Plot 2



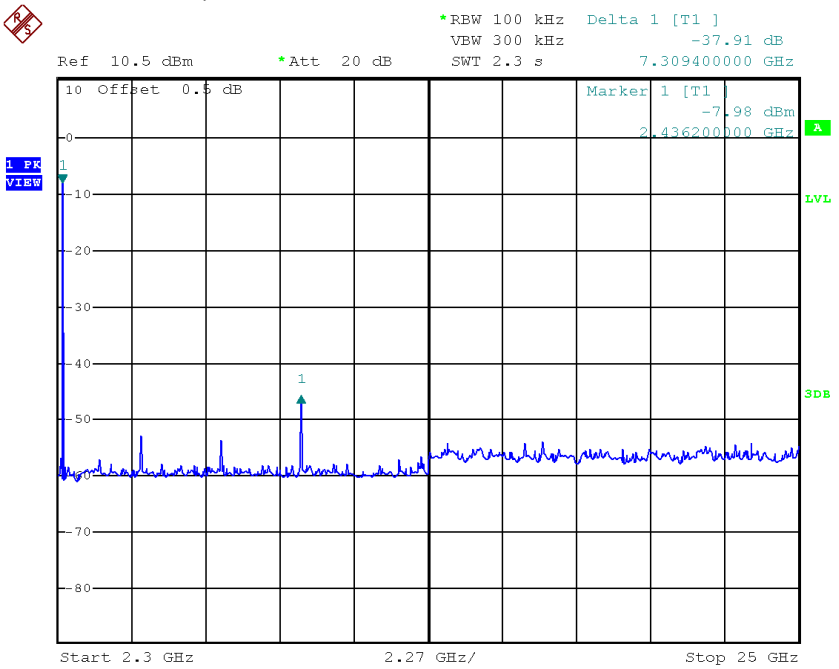
TEST REPORT

PLOTS OF OUT OF BAND CONDUCTED EMISSIONS (3DH5)

Middle Channel, Plot 1



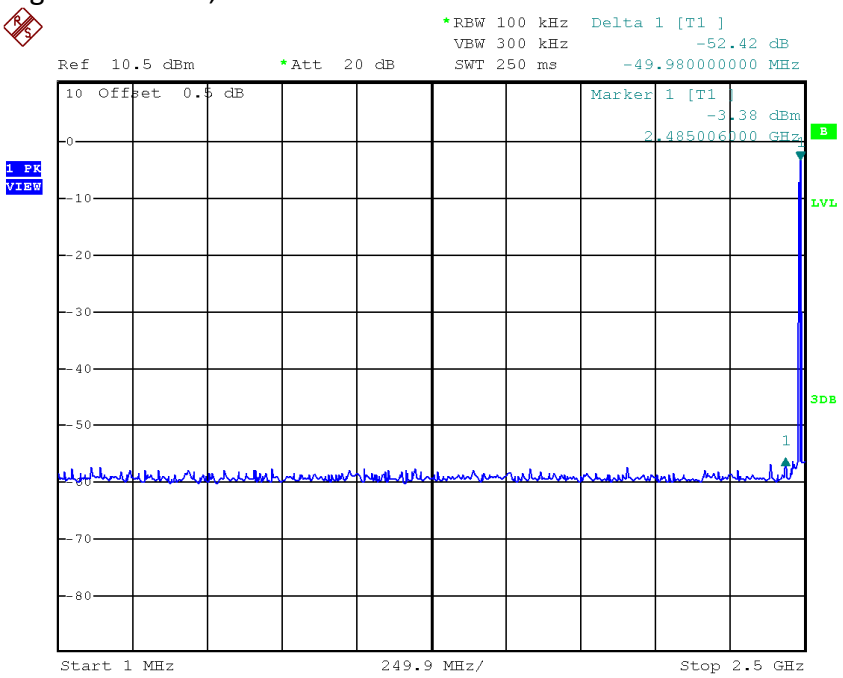
Middle Channel, Plot 2



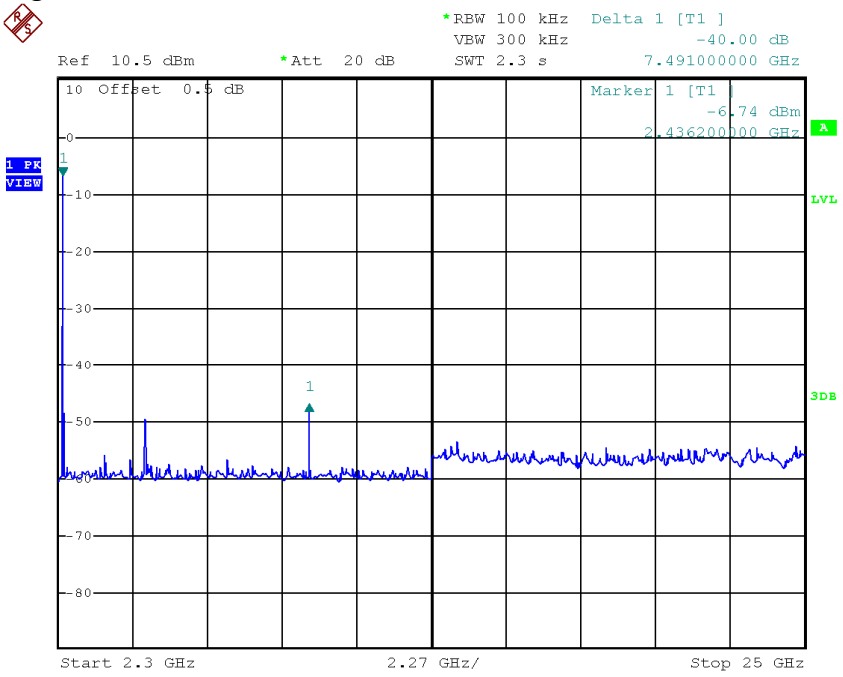
TEST REPORT

PLOTS OF OUT OF BAND CONDUCTED EMISSIONS (3DH5)

Highest Channel, Plot 1



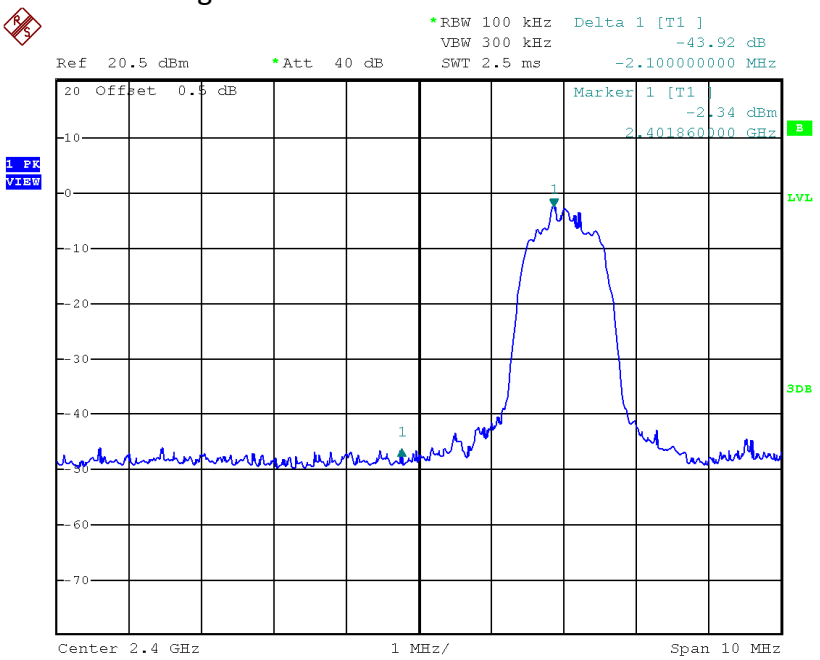
Highest Channel, Plot 2



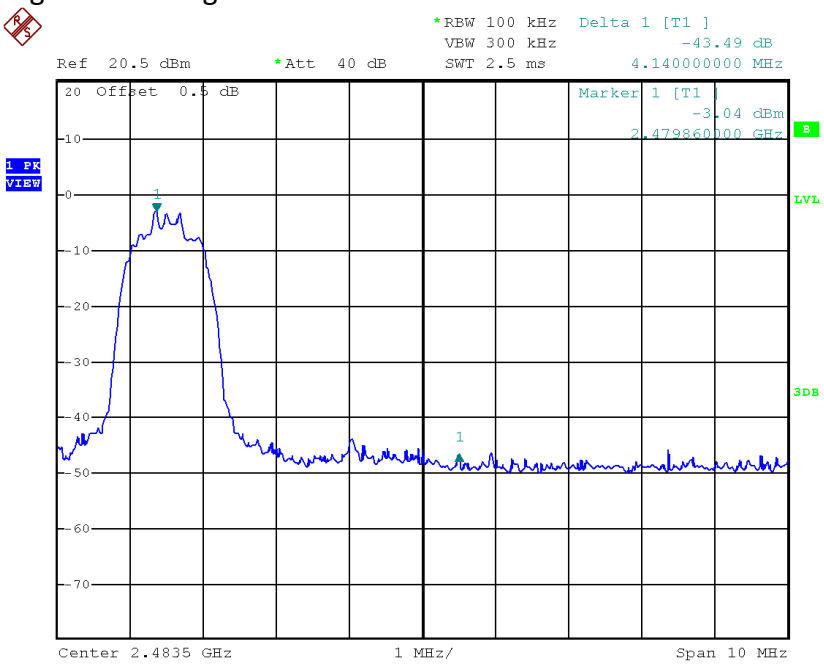
TEST REPORT

PLOTS OF BANDEDGE (3DH5)

Lowest Bandedge



Highest Bandedge



TEST REPORT

4.7 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 reflects 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

<u>Example</u>
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 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

TEST REPORT

4.8 Transmitter Radiated Emissions in Restricted Bands and Spurious Emissions

Data is included of the worst-case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst-case result compared to other modes.

TEST REPORT

4.8.1 Radiated Emission Configuration Photograph

Worst Case Restricted Band Radiated Emission
at

2390 MHz

The worst-case radiated emission configuration photographs are attached in the Appendix and saved with filename: config photos.pdf

4.8.2 Radiated Emission Data

The data in tables 1-4 list the significant emission frequencies, the limit and the margin of compliance.

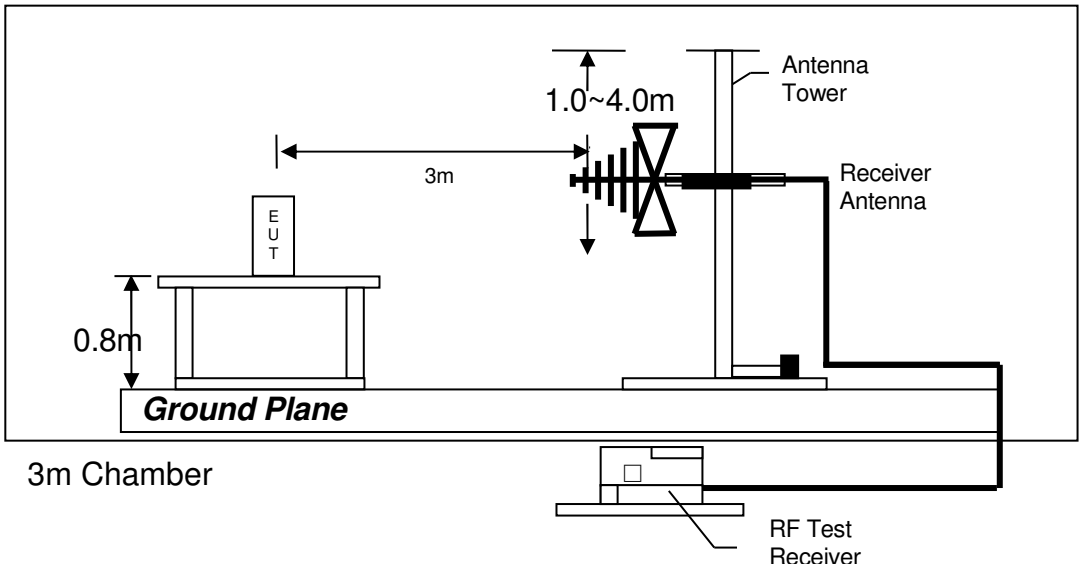
Judgement

Passed by 11.2 dB margin

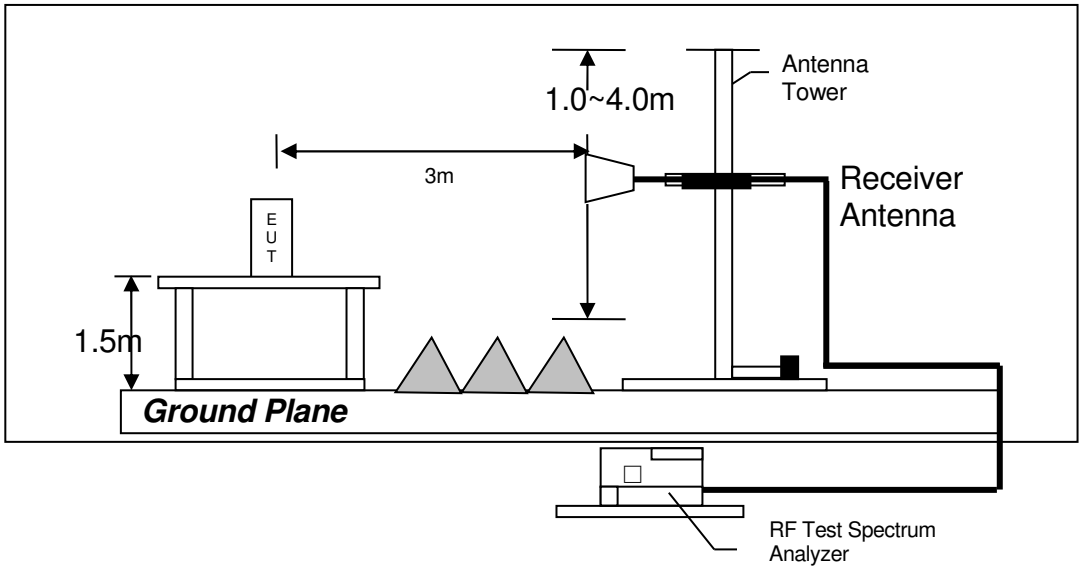
TEST REPORT

4.8.3 Radiated Emission Test Setup

The figure below shows the test setup, which is utilized to make these measurements.



Test setup of radiated emissions up to 1GHz



Test setup of radiated emissions above 1GHz

TEST REPORT

RADIATED EMISSION DATA

Mode: TX-Channel (2402MHz) (3DH5)

Table 1

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	***2390.000***	***46.4***	***33***	***29.4***	***42.8***	***54.0***	***-11.2***
V	***4804.000***	***31.1***	***33***	***34.9***	***33.0***	***54.0***	***-21.0***
V	***12010.000***	***29.7***	***33***	***40.5***	***37.2***	***54.0***	***-16.8***

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	***2390.000***	***59.1***	***33***	***29.4***	***55.5***	***74.0***	***-18.5***
V	***4804.000***	***44.6***	***33***	***34.9***	***46.5***	***74.0***	***-27.5***
V	***12010.000***	***42.7***	***33***	***40.5***	***50.2***	***74.0***	***-23.8***

NOTES:

1. Peak detector is used for the emission measurement.
   Average measurement is according to ANSI C63.10.

2. All measurements were made at 3 meters.

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

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

5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.

TEST REPORT

Mode: TX-Channel (2440MHz) (3DH5)

Table 2

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	***4880.000***	***26.5***	***33***	***34.9***	***28.4***	***54.0***	***-25.6***
H	***7320.000***	***27.5***	***33***	***37.9***	***32.4***	***54.0***	***-21.6***
V	***12200.000***	***29.1***	***33***	***40.5***	***36.6***	***54.0***	***-17.4***

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	***4880.000***	***41.3***	***33***	***34.9***	***43.2***	***74.0***	***-30.8***
H	***7320.000***	***41.3***	***33***	***37.9***	***46.2***	***74.0***	***-27.8***
V	***12200.000***	***42.7***	***33***	***40.5***	***50.2***	***74.0***	***-23.8***

NOTES:

1. Peak detector is used for the emission measurement.
   Average measurement is according to ANSI C63.10.

2. All measurements were made at 3 meters.

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

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

5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.

TEST REPORT

Mode: TX-Channel (2480MHz) (3DH5)

Table 3

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	***2483.500***	***44.8***	***33***	***29.4***	***41.2***	***54.0***	***-12.8***
V	***4960.000***	***27.3***	***33***	***34.9***	***29.2***	***54.0***	***-24.8***
H	***7440.000***	***27.5***	***33***	***37.9***	***32.4***	***54.0***	***-21.6***
V	***12400.000***	***29.1***	***33***	***40.5***	***36.6***	***54.0***	***-17.4***

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	***2483.500***	***59.8***	***33***	***29.4***	***56.2***	***74.0***	***-17.8***
V	***4960.000***	***42.3***	***33***	***34.9***	***44.2***	***74.0***	***-29.8***
H	***7440.000***	***40.5***	***33***	***37.9***	***45.4***	***74.0***	***-28.6***
V	***12400.000***	***42.9***	***33***	***40.5***	***50.4***	***74.0***	***-23.6***

NOTES:

1. Peak detector is used for the emission measurement.
   Average measurement is according to ANSI C63.10.

2. All measurements were made at 3 meters.

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

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

5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.

TEST REPORT

Mode: Bluetooth Audio Playing

Table 4

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	***74.116***	***31.4***	***16***	***6.0***	***21.4***	***40.0***	***-18.6***
V	***131.522***	***25.2***	***16***	***14.0***	***23.2***	***43.5***	***-20.3***
V	159.552	27.2	16	16.0	27.2	43.5	-16.3
H	161.504	32.2	16	16.0	32.2	43.5	-11.3
H	191.974	27.8	16	16.0	27.8	43.5	-15.7
V	360.402	20.6	16	24.0	28.6	46.0	-17.4

NOTES:

1. Quasi-Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters.
3. Negative value in the margin column shows emission below limit.
4. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.

TEST REPORT

4.8.4 Transmitter Duty Cycle Calculation

N/A

4.9 AC Power Line Conducted Emission

☒ Not applicable – EUT is only powered by battery for operation.

☐ EUT connects to AC power line. Emission Data is listed in following pages.

☐ Base Unit connects to AC power line and has transmission. Handset connects to AC power line but has no transmission. Emission Data of Base Unit is listed in following pages.

4.9.1 AC Power Line Conducted Emission Configuration Photograph

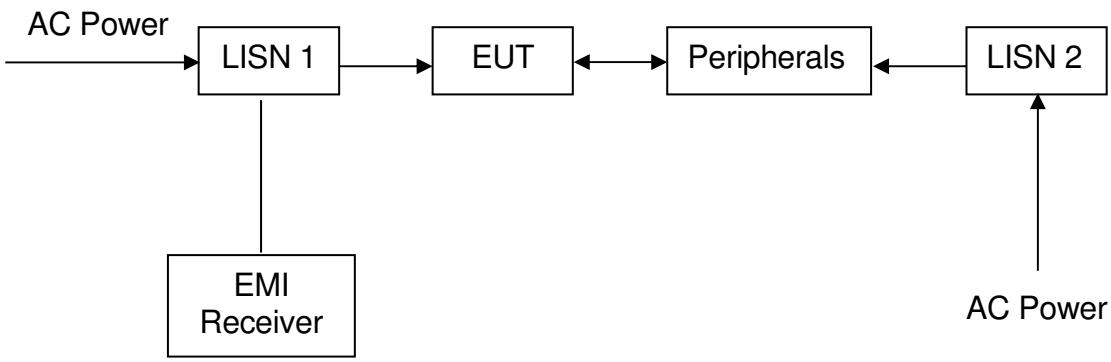
N/A

4.9.2 AC Power Line Conducted Emission Data

N/A

TEST REPORT

4.9.3 AC Line Conducted Emission Test Setup



The EUT along with its peripherals were placed on a 1.0m(W)×1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN), which provided 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. The excess power cable between the EUT and the LISN was bundled.

All connecting cables of EUT and peripherals were moved to find the maximum emission.

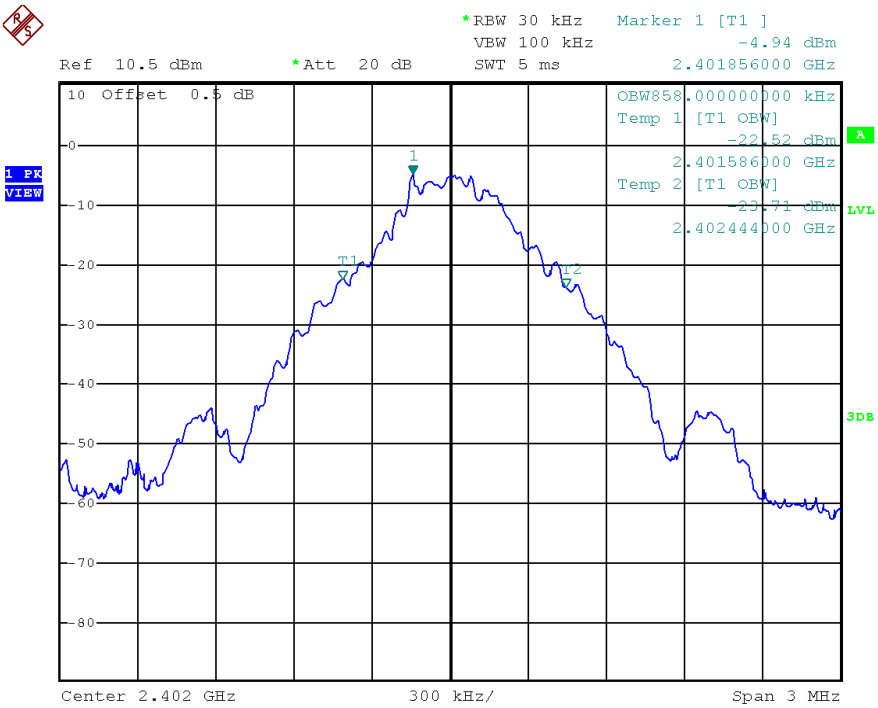
TEST REPORT

4.10 Occupied Bandwidth

Occupied Bandwidth Results: (1DH5)

	Occupied Bandwidth (kHz)
Low Channel: 2402	858
Middle Channel: 2440	858
High Channel: 2480	858

The worst case is shown as below

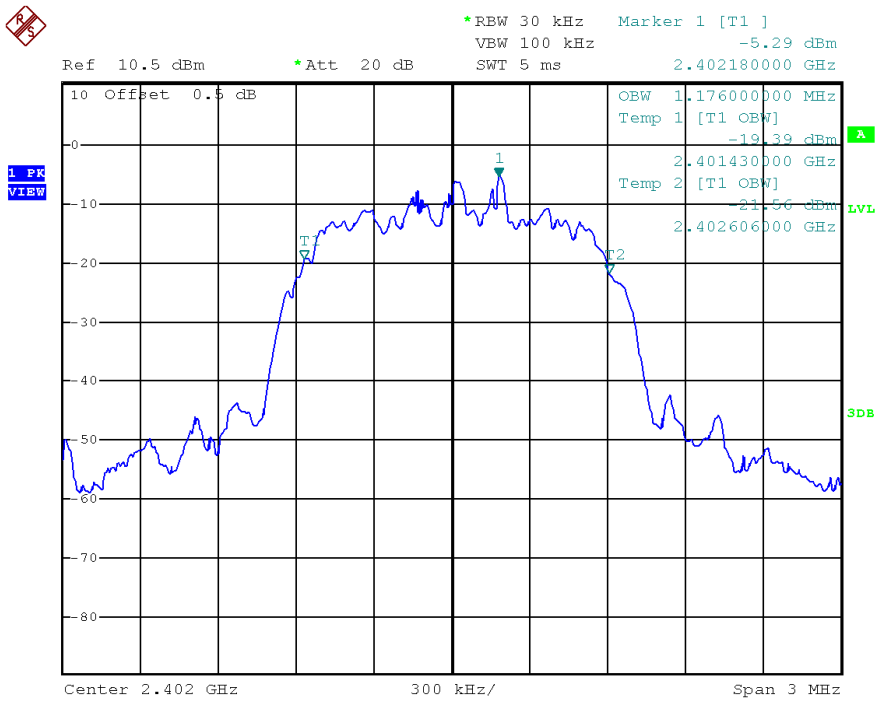


TEST REPORT

Occupied Bandwidth Results: (2DH5)

	Occupied Bandwidth (kHz)
Low Channel: 2402	1176
Middle Channel: 2440	1176
High Channel: 2480	1176

The worst case is shown as below

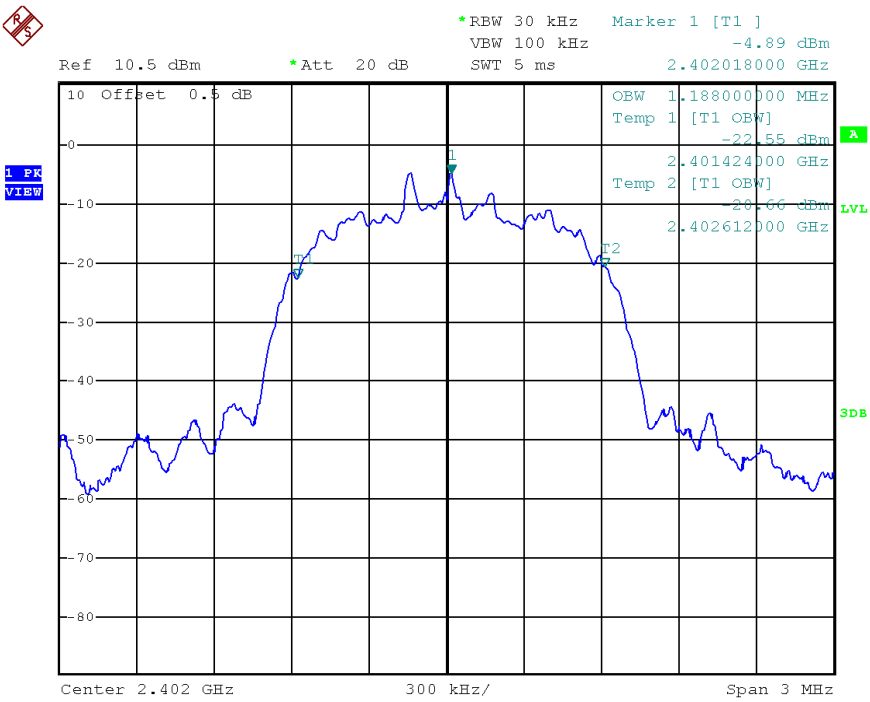


TEST REPORT

Occupied Bandwidth Results: (3DH5)

	Occupied Bandwidth (kHz)
Low Channel: 2402	1188
Middle Channel: 2440	1188
High Channel: 2480	1188

The worst case is shown as below



TEST REPORT

5.0 EQUIPMENT LIST

1) Radiated Emissions Test

Equipment	EMI Test Receiver (9kHz to 3GHz)	Spectrum Analyzer	Biconical Antenna
Registration No.	EW-2500	EW-2466	EW-0571
Manufacturer	ROHDESCHWARZ	ROHDESCHWARZ	EMCO
Model No.	ESCI	FSP30	3104C
Calibration Date	January 09, 2020	September 05, 2020	July 23, 2019
Calibration Due Date	January 09, 2021	September 05, 2021	January 23, 2021

Equipment	Log Periodic Antenna	Double Ridged Guide Antenna	RF Cable 14m (1GHz to 26.5GHz)
Registration No.	EW-0447	EW-0194	EW-3151
Manufacturer	EMCO	EMCO	GREATBILLION
Model No.	3146	3115	SMA m/SHF5MPU /SMA m ra14m,26G
Calibration Date	September 25, 2019	September 26, 2019	March 04, 2020
Calibration Due Date	March 25, 2021	March 26, 2021	March 04, 2021

Equipment	Active Loop H-field (9kHz to 30MHz)	RF Preamplifier (9kHz to 6000MHz)	Pyramidal Horn Antenna
Registration No.	EW-2313	EW-3006b	EW-0905
Manufacturer	ELECTROMETRI	SCHWARZBECK	EMCO
Model No.	EM-6876	BBV9718	3160-09
Calibration Date	December 17, 2019	November 25, 2019	July 23, 2019
Calibration Due Date	June 17, 2021	November 25, 2020	January 23, 2021

Equipment	14m Double Shield RF Cable (20MHz To 6GHz)
Registration No.	EW-2074
Manufacturer	RADIALL
Model No.	nm / RG142 / sma 14m
Calibration Date	August 29, 2020
Calibration Due Date	August 29, 2021

TEST REPORT

2) Conducted Emissions Test

Equipment	RF Cable 80cm (RG142) (9kHz to 30MHz)	Artificial Mains Network	EMI Test Receiver (9kHz to 3GHz)
Registration No.	EW-2451	EW-2501	EW-2500
Manufacturer	RADIALL	ROHDESCHWARZ	ROHDESCHWARZ
Model No.	RF Cable 80cm (RG142) (9kHz to 30MHz)	ENV-216	ESCI
Calibration Date	December 08, 2019	September 15, 2020	January 09, 2020
Calibration Due Date	December 08, 2020	September 15, 2021	January 09, 2021

3) Conductive Measurement Test

Equipment	Spectrum Analyzer	RF Cable (up to 40GHz) 1.5m length	RF Power Meter with Power Sensor
Registration No.	EW-2466	EW-2774	EW-3309
Manufacturer	ROHDESCHWARZ	N/A	ROHDESCHWARZ
Model No.	FSP30	SMA-M to SMA-M	NRP-Z81
Calibration Date	September 05, 2020	September 12, 2020	May 18, 2020
Calibration Due Date	September 05, 2021	September 12, 2021	May 18, 2021

4) Bandwidth/Bandedge Measurement Test

Equipment	RF Cable (up to 40GHz) 1.5m length	Spectrum Analyzer
Registration No.	EW-2774	EW-2466
Manufacturer	N/A	ROHDESCHWARZ
Model No.	SMA-M to SMA-M	FSP30
Calibration Date	September 12, 2020	September 05, 2020
Calibration Due Date	September 12, 2021	September 05, 2021

END OF TEST REPORT