

Simbex LLC

TEST REPORT

SCOPE OF WORK

EMC TESTING – Riddell InSite Alert Monitor

REPORT NUMBER

103638047BOX-009

ISSUE DATE

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EMISSIONS TEST REPORT (FULL COMPLIANCE)

Report Number: 103638047BOX-009

Project Number: G103638047

Report Issue Date: 11/05/2018

Report Re-issued Date: 04/02/2019

Model(s) Tested: 016-C-7000

Model(s) Partially Tested: None

Model(s) Not Tested but declared equivalent by the client: None

Standards: CFR47 FCC Part 15.247 Subpart C: 06/2018,
CFR47 FCC Part 15 Subpart B: 06/2018,
RSS-247 Issue 2 February 2017,
ICES-003 Issue 6 Published: January 2016 Updated: April 2017,
RSS-Gen Issue 5 April 2018,
RSS-102 Issue 5 March 2015

Tested by:
Intertek Testing Services NA, Inc.
70 Codman Hill Road
Boxborough, MA 01719
USA

Client:
Simbex LLC
10 Water Street Suite 410
Lebanon, NH 03766
USA

Report prepared by



Kouma Sinn / EMC Staff Engineer

Report reviewed by



Vathana Ven / EMC Staff Engineer

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

Section	Test full name	Result
3	Client Information	--
4	Description of Equipment Under Test and Variant Models	--
5	System Setup and Method	--
6	Maximum Peak Output Power CFR47 FCC Part 15 Subpart C:06/2018, Section 15.247 (b)(3) RSS-247 Issue 2 February 2017, RSS-102 Issue 5 March 2015	Pass
7	6 dB Bandwidth and Occupied Bandwidth CFR47 FCC Part 15 Subpart C: 06/2018, Section 15.247 (a)(2) RSS-247 Issue 2 February 2017	Pass
8	Maximum Power Spectral Density CFR47 FCC Part 15 Subpart C: 02/2018, Section 15.247 (e) RSS-247 Issue 2 February 2017	Pass
9	Band Edge Compliance CFR47 FCC Part 15 Subpart C: 06/2018, Section 15.247 (d) RSS-247 Issue 2: 02/2017)	Pass
10	Transmitter spurious emissions CFR47 FCC Part 15 Subpart C: 02/2018, Section 15.247 (d) RSS-247 Issue 2 February 2017	Pass
11	Digital Device and Receiver Radiated Spurious Emissions (CFR47 FCC Part 15 Subpart B 15.109: 06/2018, ICES-003 Issue 6 Published: January 2016 Updated: April 2017	Pass
12	AC Mains Conducted Emissions FCC 47CFR Part 15.107: 06/2018 ICES-003 Issue 6 Published: January 2016 Updated: April 2017	Pass
13	Revision History	--

3 Client Information

This EUT was tested at the request of:

Client: Simbex LLC
10 Water Street Suite 410
Lebanon, NH 03766
USA

Contact: Mr. Graham Clarke
Telephone: 603.448.2367 x319
Fax: None provided
Email: gdclarke@simbex.com

4 Description of Equipment Under Test and Variant Models

Manufacturer: Simbex LLC
10 Water Street Suite 410
Lebanon, NH 03766
USA

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Riddell Insite Alert Monitor*	Simbex LLC	016-C-7000	01000002
Riddell Insite Alert Monitor**	Simbex LLC	016-C-7000	01000012

*Used for radiated emissions

**Used for antenna port measurements.

Receive Date:	10/3/2018
Received Condition:	Good
Type:	Prototype

Description of Equipment Under Test (provided by client)
Alert monitor with BLE

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
Two AA Batteries	N/A	N/A	N/A

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	Pre-programmed to transmit and receive at Low, Mid, High channels

Software used by the EUT:

No.	Descriptions of EUT Exercising
1	None

Radio/Receiver Characteristics	
Frequency Band(s)	2410-2480 MHz
Modulation Type(s)	GFSK
Maximum Output Power	Low Channel (2410 MHz): 7.26 dBm Mid Channel (2450 MHz): 6.64 dBm High Channel (2480 MHz): -3.00 dBm
Test Channels	Low Channel (2410 MHz) Mid Channel (2450 MHz) High Channel (2480 MHz)
Occupied Bandwidth	Low Channel (2410 MHz): 2.477 MHz Mid Channel (2450 MHz): 2.477 MHz High Channel (2480 MHz): 2.461 MHz
6 dB Bandwidth	Low Channel (2410 MHz): 1.674 MHz Mid Channel (2450 MHz): 1.656 MHz High Channel (2480 MHz): 1.656 MHz
Frequency Hopper: Number of Hopping Channels	N/A
Frequency Hopper: Channel Dwell Time	N/A
Frequency Hopper: Max interval between two instances of use of the same channel	N/A
MIMO Information (# of Transmit and Receive antenna ports)	1
Equipment Type	Standalone
ETSI LBT/Adaptivity	Non-Adaptive
ETSI Adaptivity Type	N/A
ETSI Temperature Category (I, II, III)	N/A
ETSI Receiver Category (1, 2, 3)	3
Antenna Type and Gain	Integrated, 3.3 dBi

Variant Models:

The following variant models were not tested as part of this evaluation, but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

None

5 System Setup and Method

Cables					
ID	Description	Length (m)	Shielding	Ferrites	Termination
--	None	--	--	--	--

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
iPhone Charger	Apple	A1265	None

5.1 Method:

Configuration as required by Configuration as required by FCC Part 15 Subpart C 15.247: 02/2018, FCC Part 15 Subpart B: 02/2018, RSS 247 Issue 2: 02/2017, ICES 003 Issue 6: 01/2016 updated 06/2016, ANSI C 63.10: 2013 and ANSI C 63.4: 2014.

5.2 EUT Block Diagram:



6 Maximum Peak Output Power

6.1 Method

Tests are performed in accordance with CFR47 FCC Part 15.247, RSS-247, RSS-102, and ANSI C63.10.

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

6.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
BAR1'	Digital 4 Line Barometer	Mannix	0ABA116	BAR1	04/30/2018	04/30/2019
145128'	EMI Receiver (20 Hz - 40 Ghz)	Rohde & Schwarz	ESIB 40	839283/001	03/22/2018	03/22/2019
None	20 dB Bandwidth	HRS	AT-120V	001160	Verified Before Use	Verified

Software Utilized:

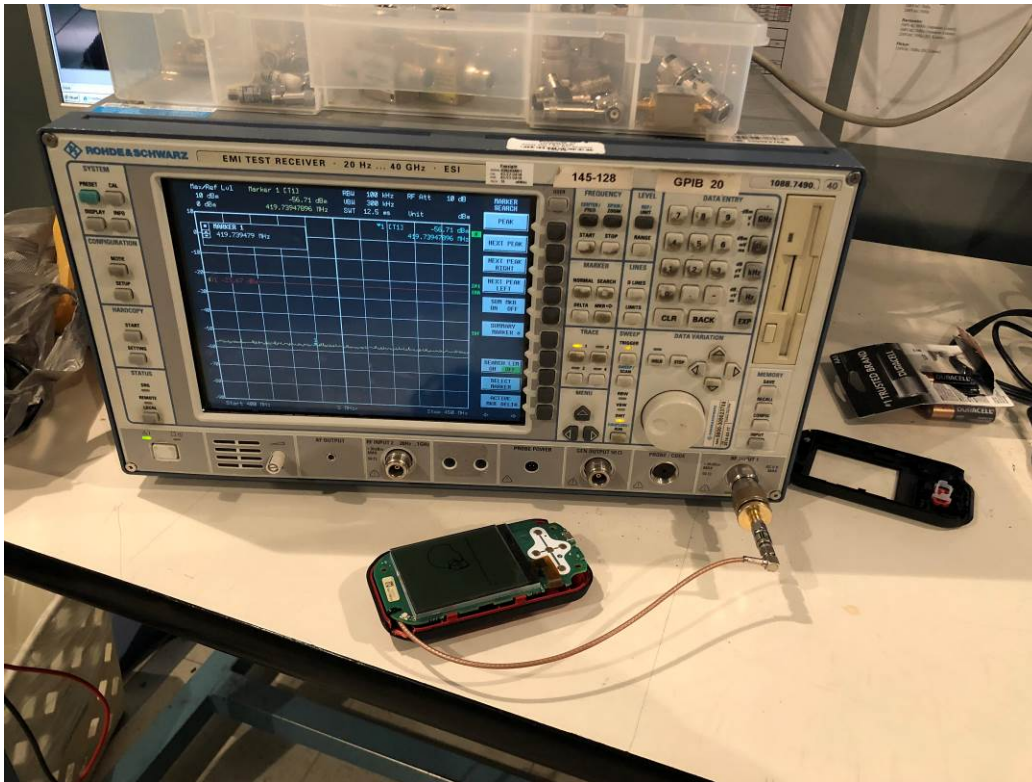
Name	Manufacturer	Version
None	--	--

6.3 Results:

The sample tested was found to Comply.

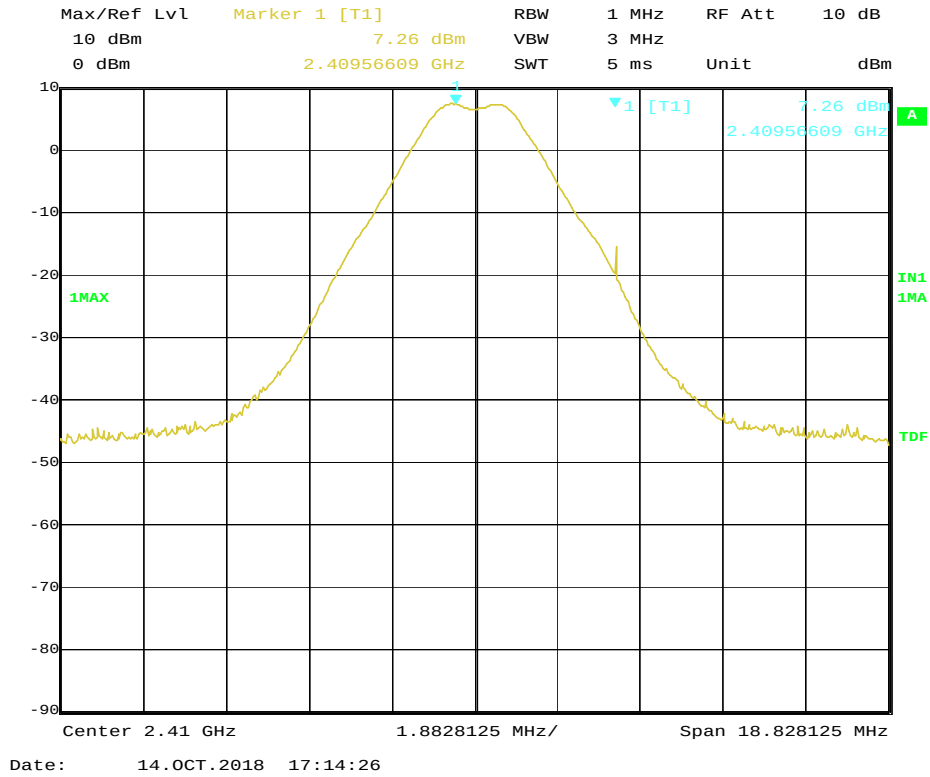
§15.247 (b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt or 30 dBm.

6.4 Setup Photograph:

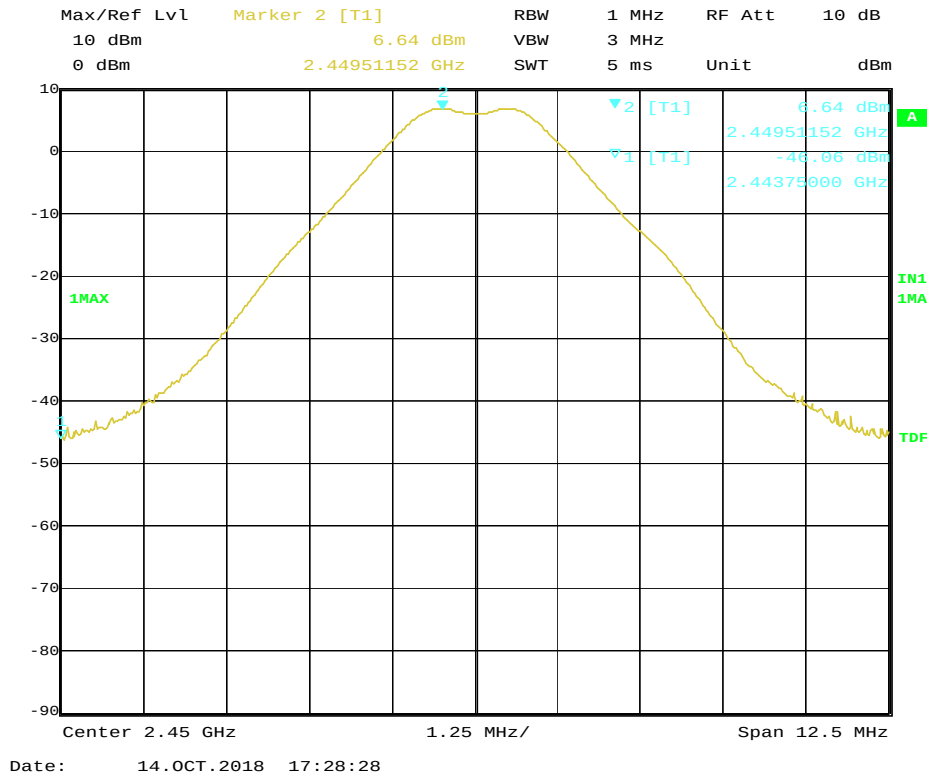


6.5 Plots/Data:

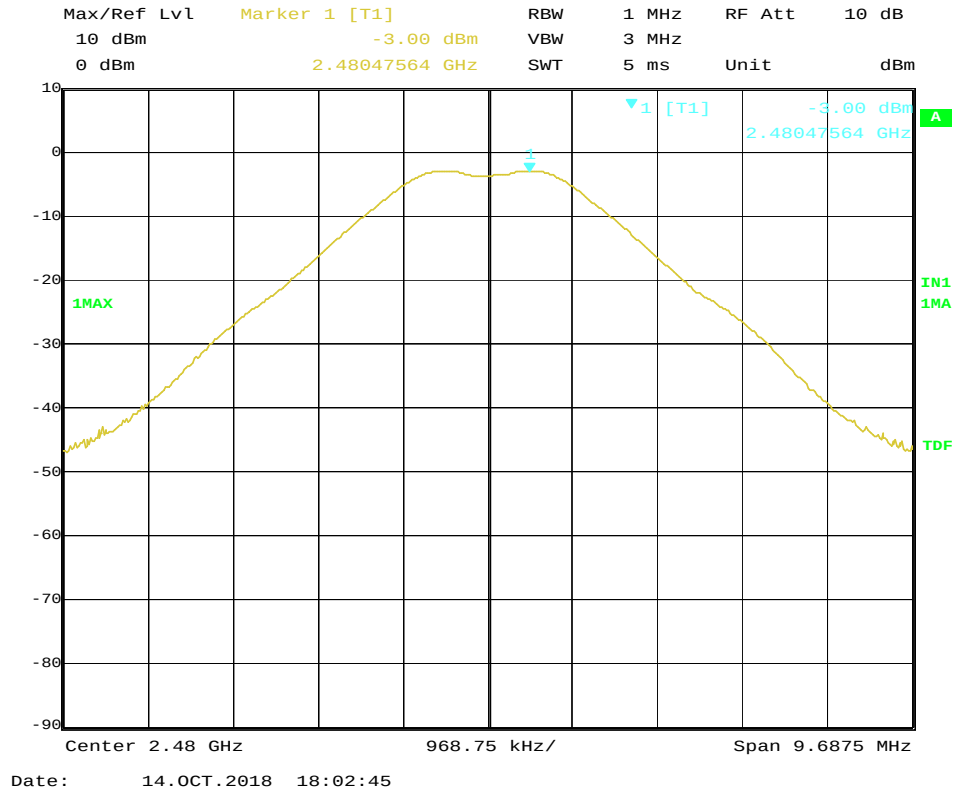
Low Channel Conducted Output Power, 7.26 dBm



Mid Channel Conducted Output Power, 6.64 dBm



High Channel Conducted Output Power, -3 dBm



Test Personnel: Kouma Sinn *KPS*
 Supervising/Reviewing Engineer:
 (Where Applicable) N/A
 Product Standard: CFR47 FCC Part 15.247
RSS-247, RSS-102
 Input Voltage: Internal Battery Powered

Pretest Verification w/
 Ambient Signals or
 BB Source: N/A

Test Date: 10/14/2018

Limit Applied: See report section 6.3

Ambient Temperature: 19 °C

Relative Humidity: 38 %

Atmospheric Pressure: 1012 mbars

Deviations, Additions, or Exclusions: None

7 6 dB Bandwidth and Occupied Bandwidth

7.1 Method

Tests are performed in accordance with CFR47 FCC Part 15.247, RSS-247, RSS-102, and ANSI C63.10.

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

7.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
BAR1'	Digital 4 Line Barometer	Mannix	0ABA116	BAR1	04/30/2018	04/30/2019
145128'	EMI Receiver (20 Hz - 40 Ghz)	Rohde & Schwarz	ESIB 40	839283/001	03/22/2018	03/22/2019
None	20 dB Bandwidth	HRS	AT-120V	001160	Verified Before Use	Verified

Software Utilized:

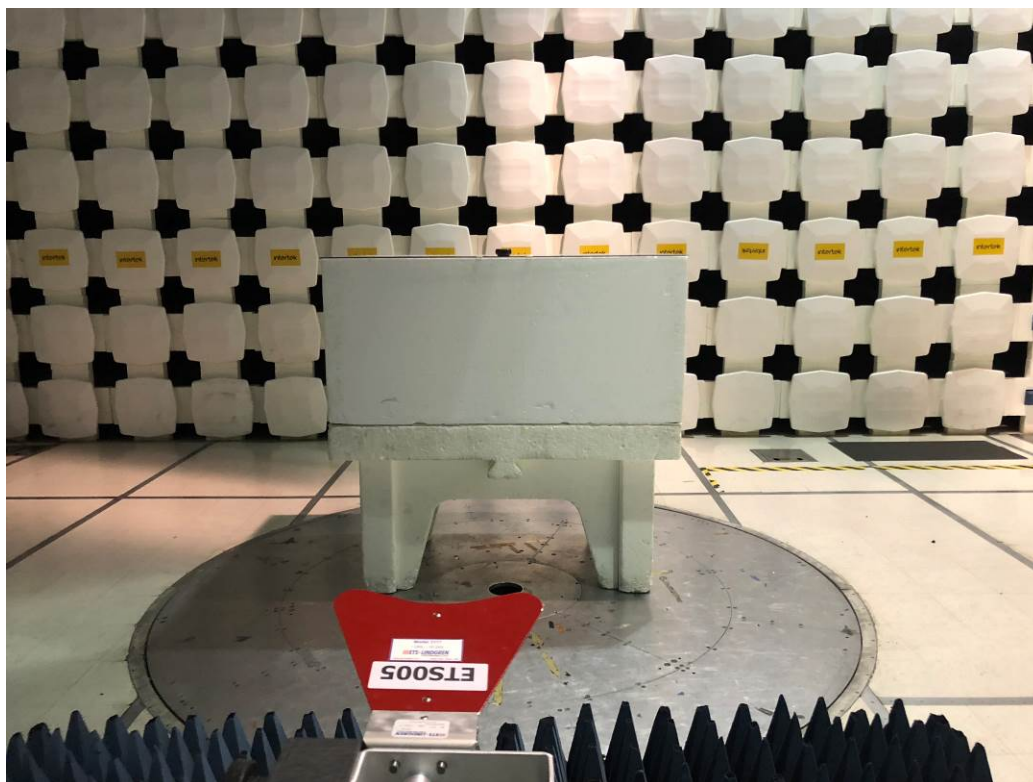
Name	Manufacturer	Version
None	--	--

7.3 Results:

The sample tested was found to Comply.

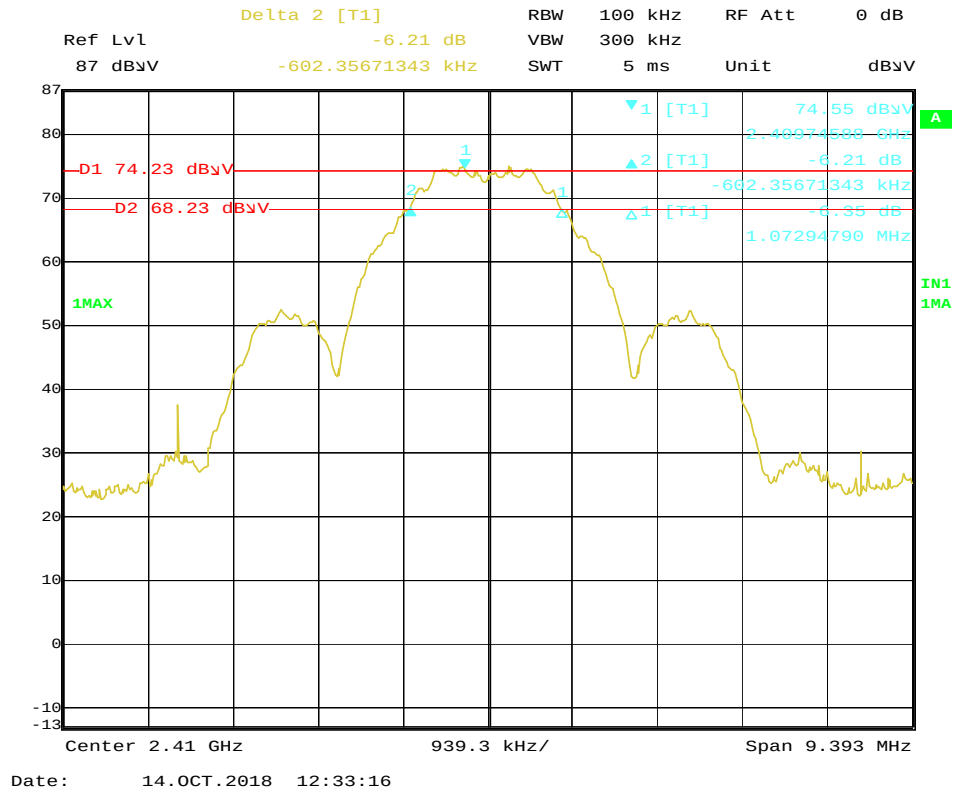
§15.247 (a) (2) Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

7.4 Setup Photograph:

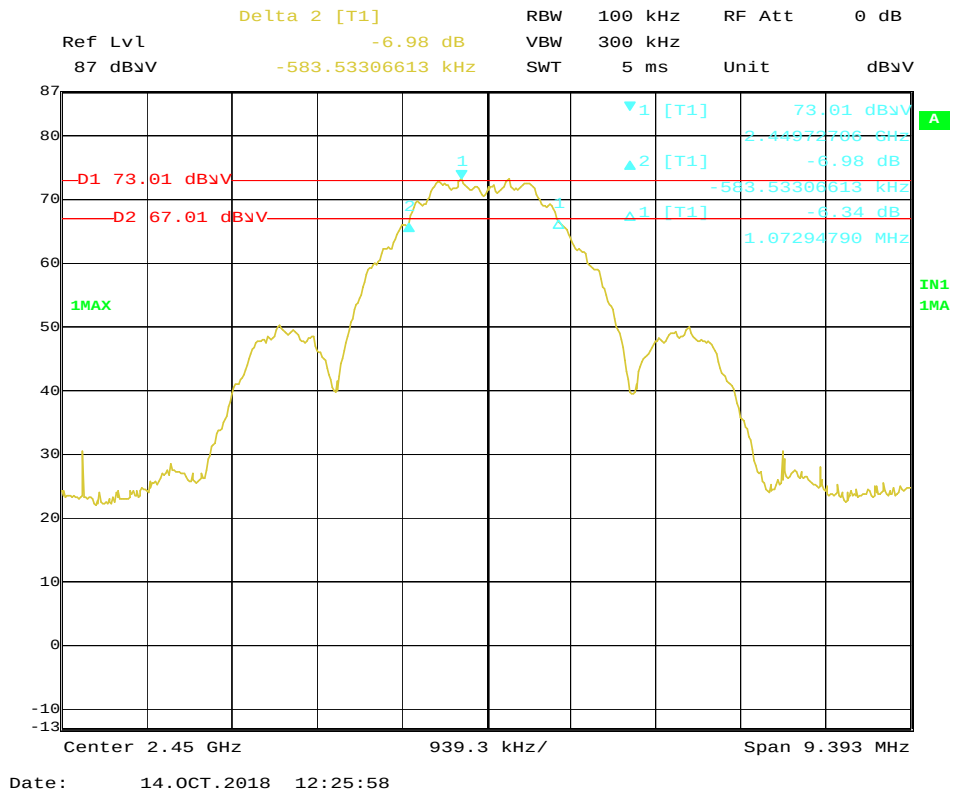


7.5 Plots/Data:

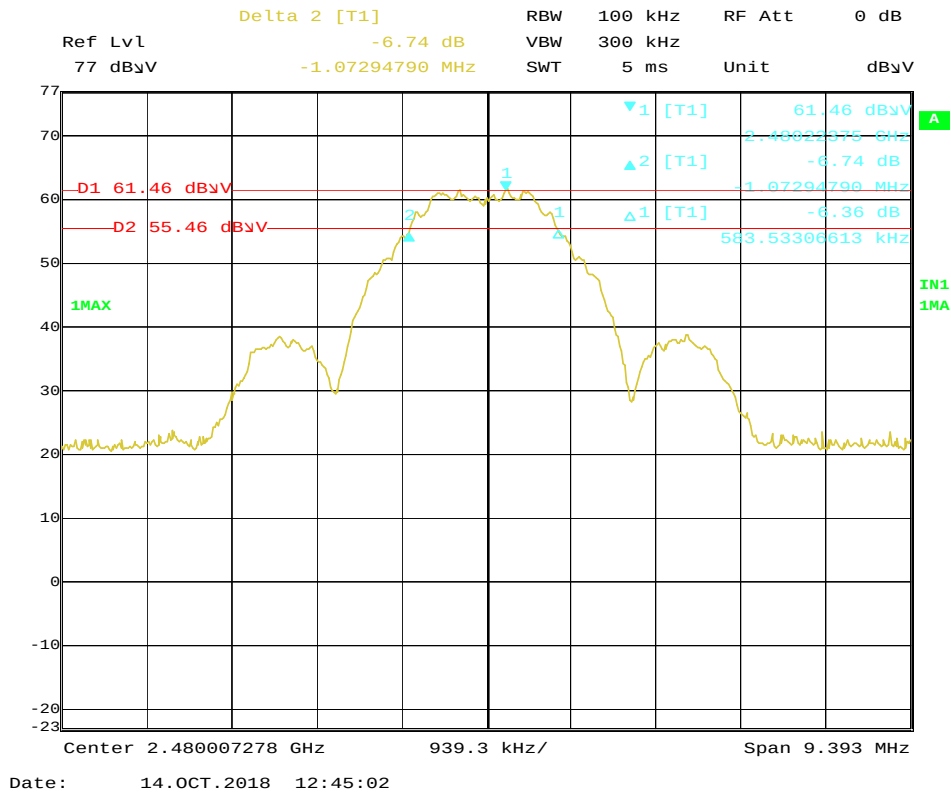
Low Channel (Battery Powered), 6 dB Bandwidth = 1.674 MHz



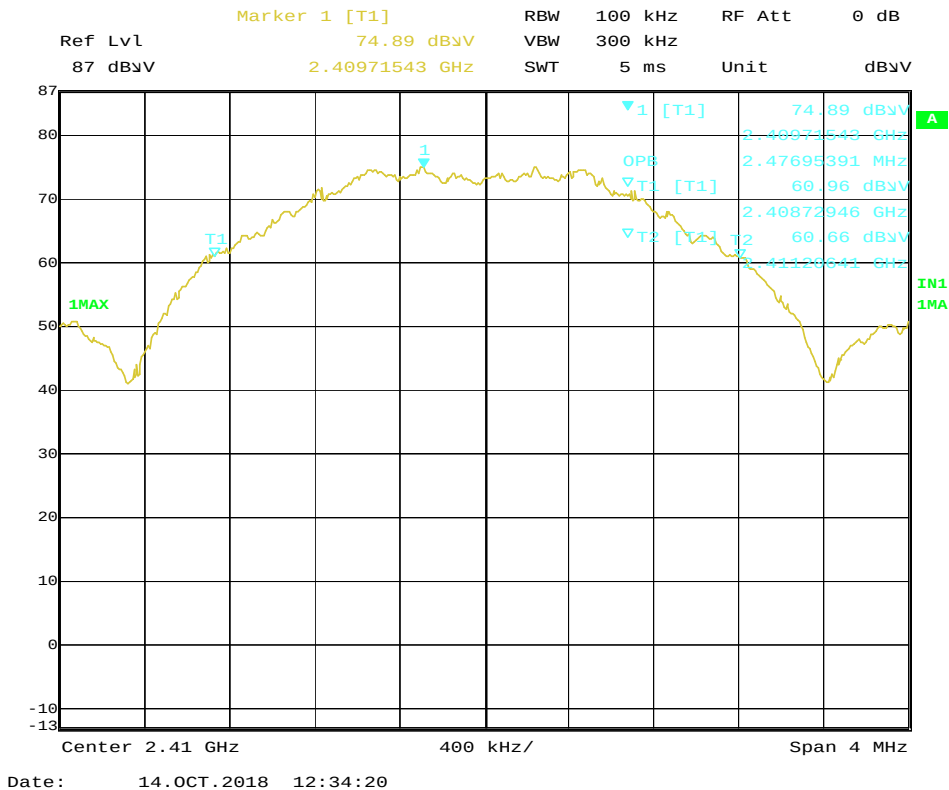
Mid Channel (Battery Powered), 6 dB Bandwidth = 1.656 MHz



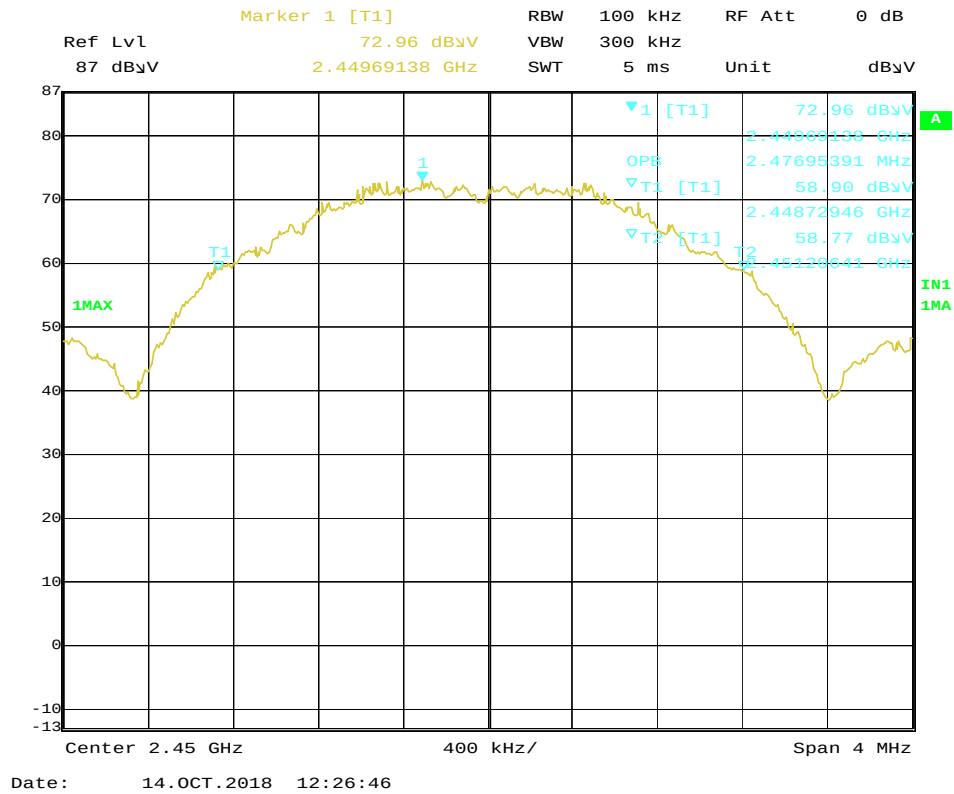
High Channel (Battery Powered), 6 dB Bandwidth = 1.656 MHz



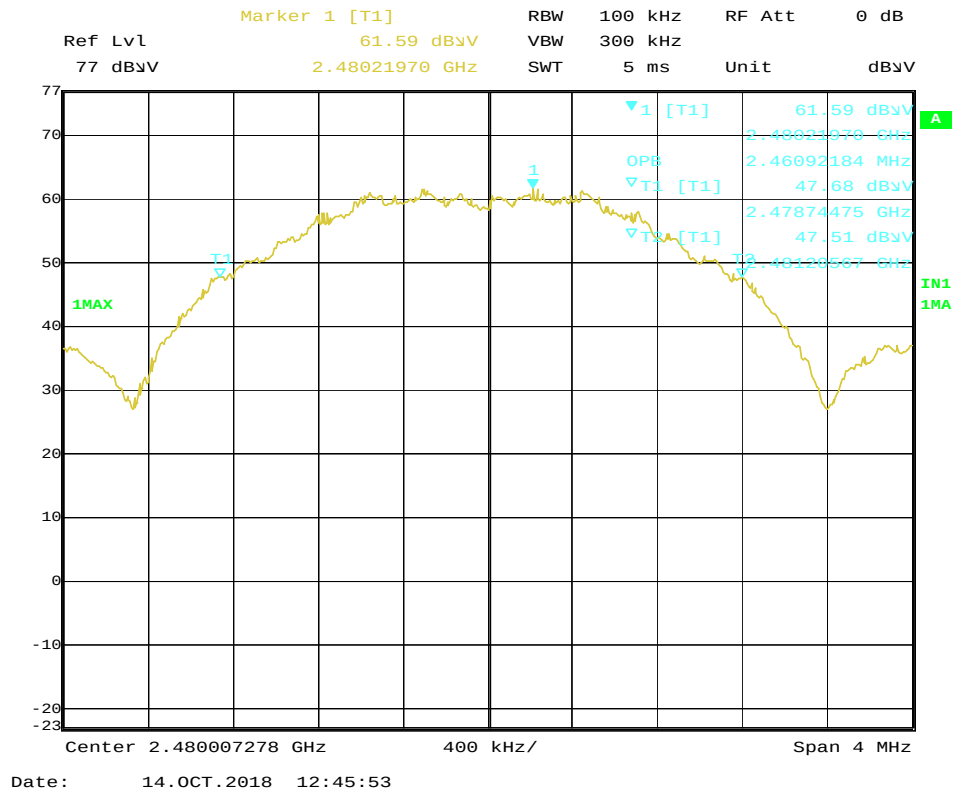
Low Channel (Battery Powered), Occupied Bandwidth = 2.477 MHz



Mid Channel (Battery Powered), Occupied Bandwidth = 2.477 MHz



High Channel (Battery Powered), Occupied Bandwidth = 2.461 MHz



Test Personnel: Kouma Sinn *KPS*
Supervising/Reviewing
Engineer:
(Where Applicable) N/A
Product Standard: CFR47 FCC Part 15.247
Input Voltage: RSS-247, RSS-102
Internal Battery Powered
Pretest Verification w/
Ambient Signals or
BB Source: N/A

Test Date: 10/14/2018
Limit Applied: See report section 7.3
Ambient Temperature: 19 °C
Relative Humidity: 38 %
Atmospheric Pressure: 1012 mbars

Deviations, Additions, or Exclusions: None

8 Maximum Power Spectral Density

8.1 Method

Tests are performed in accordance with CFR47 FCC Part 15.247, RSS-247, RSS-102, and ANSI C63.10.

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

8.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
BAR1'	Digital 4 Line Barometer	Mannix	0ABA116	BAR1	04/30/2018	04/30/2019
145128'	EMI Receiver (20 Hz - 40 Ghz)	Rohde & Schwarz	ESIB 40	839283/001	03/22/2018	03/22/2019
None	20 dB Bandwidth	HRS	AT-120V	001160	Verified Before Use	Verified

Software Utilized:

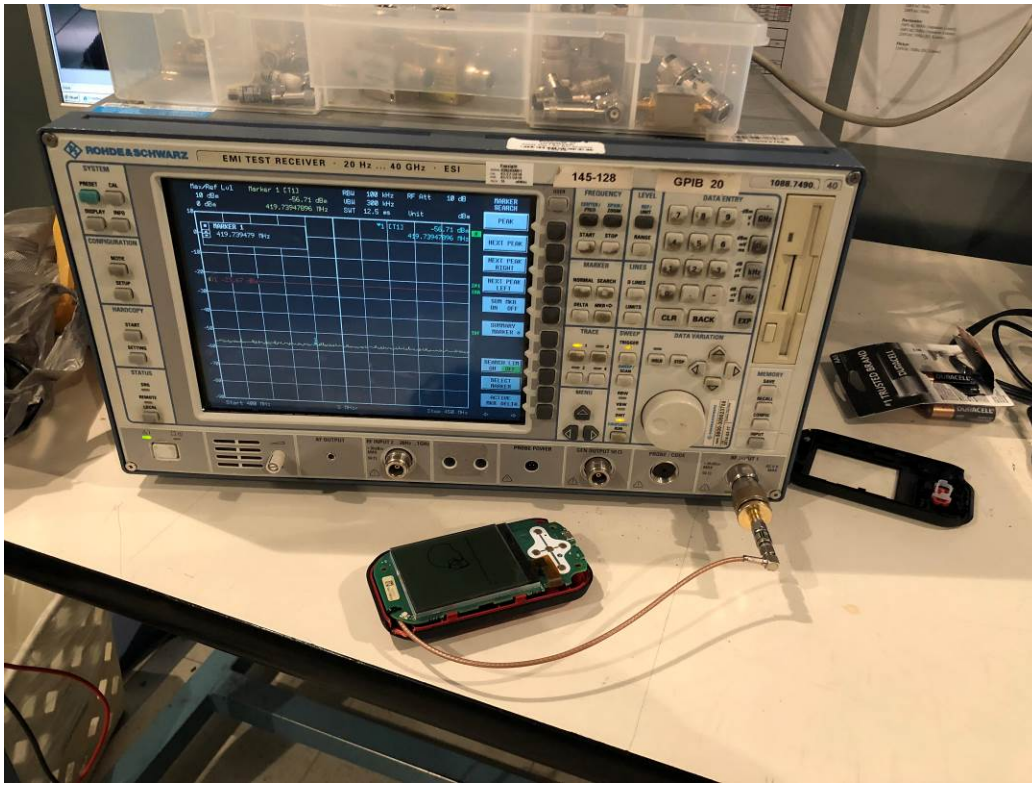
Name	Manufacturer	Version
None	--	--

8.3 Results:

The sample tested was found to Comply.

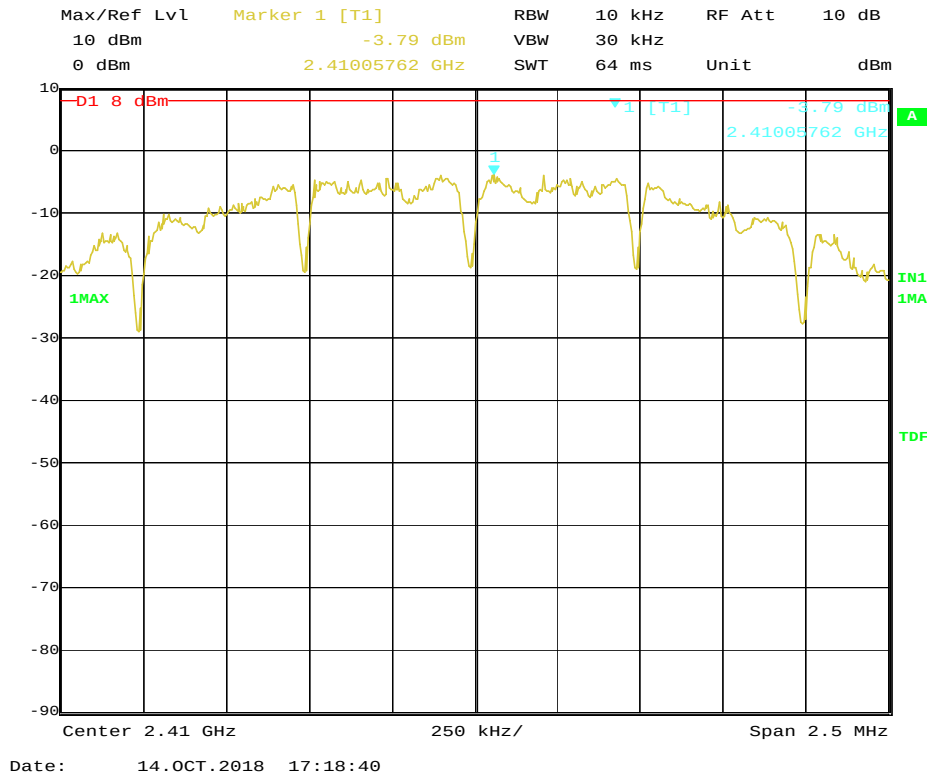
§15.247 (e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

8.4 Setup Photograph:

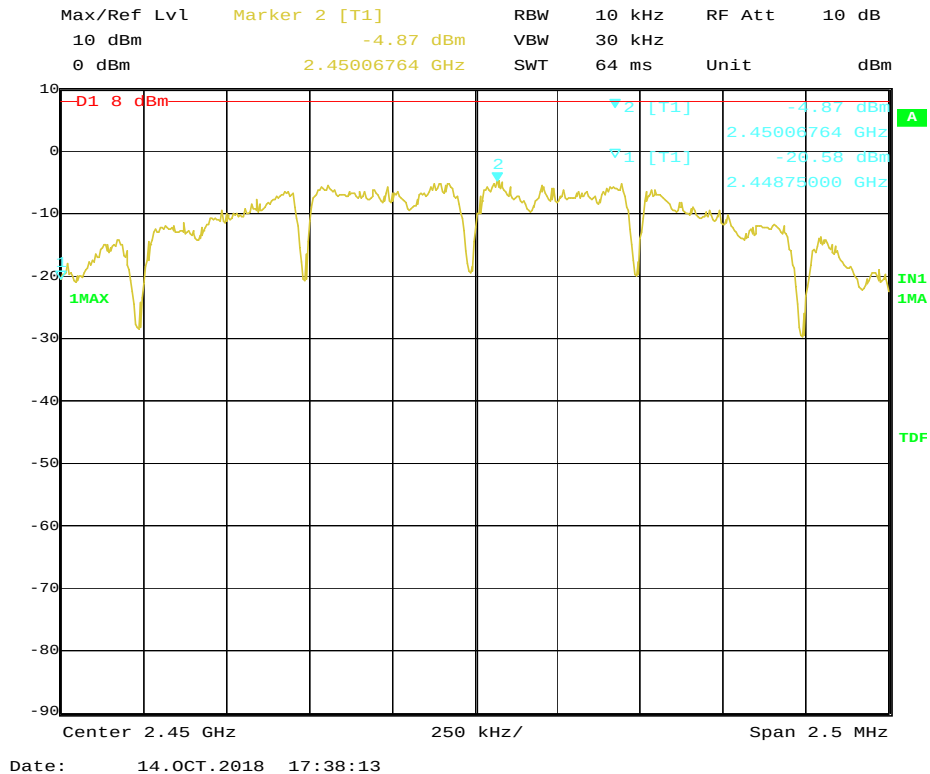


8.5 Plots/Data:

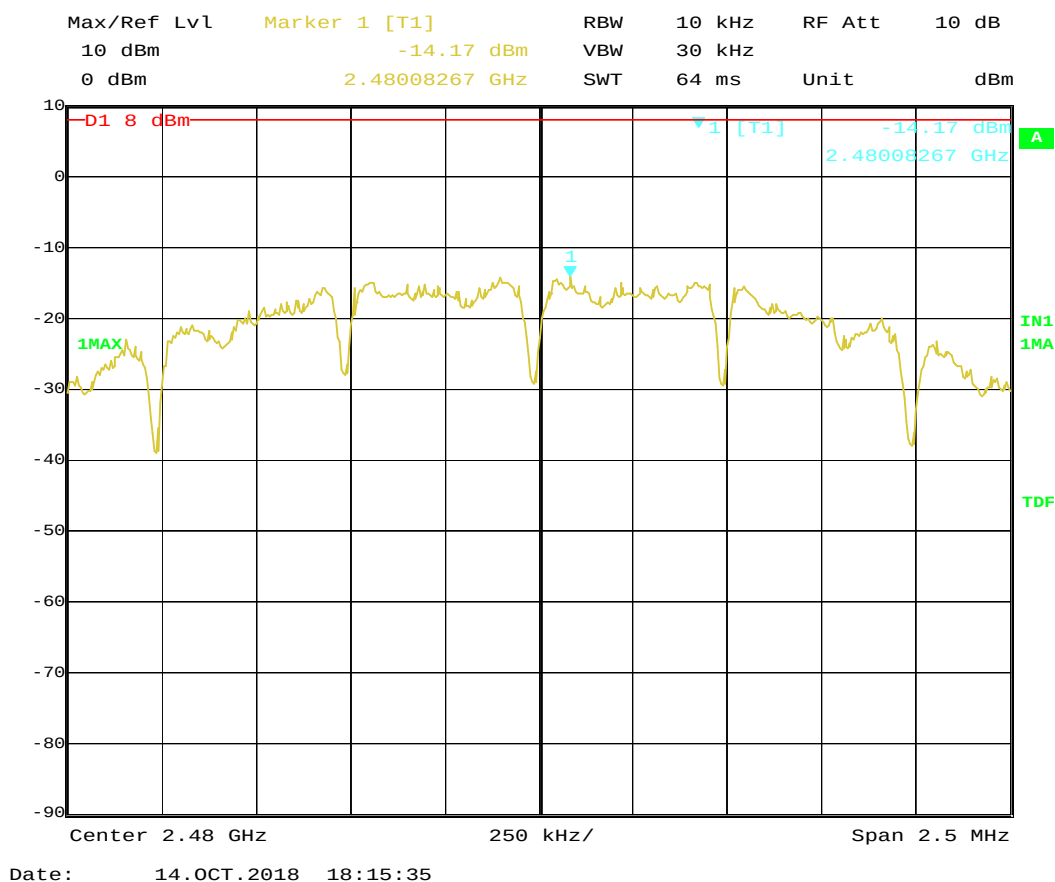
Low Channel Conducted Power Spectral Density



Mid Channel Conducted Power Spectral Density



High Channel Conducted Power Spectral Density



Test Personnel: Kouma Sinn *KPS*
Supervising/Reviewing Engineer:
(Where Applicable) N/A
Product Standard: CFR47 FCC Part 15.247
Input Voltage: RSS-247, RSS-102
Internal Battery Powered

Test Date: 10/14/2018

Limit Applied: See report section 8.3

Pretest Verification w/
Ambient Signals or
BB Source: BB Source

Ambient Temperature: 19 °C

Relative Humidity: 38 %

Atmospheric Pressure: 1012 mbars

Deviations, Additions, or Exclusions: None

9 Band Edge Compliance

9.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C 15.247 RSS 247, ANSI C 63.10, and ANSI C 63.4.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucisp
Radiated Emissions, 10m	30-1000 MHz	4.6dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	5.3 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.5 dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	5.2 dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	5.0 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	5.0 dB	5.5 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V 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, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 52.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB/m}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$FS = 32 \text{ dB}\mu\text{V/m}$$

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

$$NF = \text{Net Reading in dB}\mu\text{V}$$

Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$

$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

9.2 Test Equipment Used:

Equipment Used For Antenna Port Conducted Measurement

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
BAR1'	Digital 4 Line Barometer	Mannix	0ABA116	BAR1	04/30/2018	04/30/2019
145128'	EMI Receiver (20 Hz - 40 GHz)	Rohde & Schwarz	ESIB 40	839283/001	03/22/2018	03/22/2019
None	20 dB Bandwidth	HRS	AT-120V	001160	Verified Before Use	Verified

Software Utilized:

Name	Manufacturer	Version
None	--	--

Equipment Used For Radiated Emissions Measurement

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
BAR1'	Digital 4 Line Barometer	Mannix	0ABA116	BAR1	04/30/2018	04/30/2019
145128'	EMI Receiver (20 Hz - 40 GHz)	Rohde & Schwarz	ESIB 40	839283/001	03/22/2018	03/22/2019
145-410'	Cables 145-420 145-421 145-422 145-406	Huber + Suhner	10m Track A Cables	multiple	07/25/2018	07/25/2019
PRE11'	50dB gain pre-amp	Keith H	PRE11	PRE11	12/02/2017	12/02/2018
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	05/16/2018	05/16/2019
ETS005'	1-18GHz horn antenna	ETS-Lindgren	3117	00218279	05/14/2018	05/14/2019
145014'	Preamplifier (1 GHz to 26.5 GHz)	Hewlett Packard	8449B	3008A00232	06/14/2018	06/14/2019
REA008'	band reject filter 2.4GHz	Reactel, Inc	12RX7-2441.75-x140 S	17-01	07/13/2018	07/13/2019
145-416'	Cables 145-420 145-423 145-425 145-408	Huber + Suhner	3m Track B cables	multiple	07/25/2018	07/25/2019
CBLHF2012-2M-1'	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252675001	02/14/2018	02/14/2019
CBLHF2012-2M-2'	2m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252675002	02/14/2018	02/14/2019
REA006'	18GHz High Pass Filter	Reactel, Inc	7HS-18G/40G K11	(06)1	02/22/2018	02/22/2019
REA002'	2.5GHz High Pass Filter	Reactel, Inc	7HS-2.5G/18G-S11	06-1	02/22/2018	02/22/2019
ETS004'	18-40GHz horn antenna	ets004	3116C	00218579	12/17/2017	12/17/2018

Software Utilized:

Name	Manufacturer	Version
BAT-EMC	Nexio	3.17.0.3

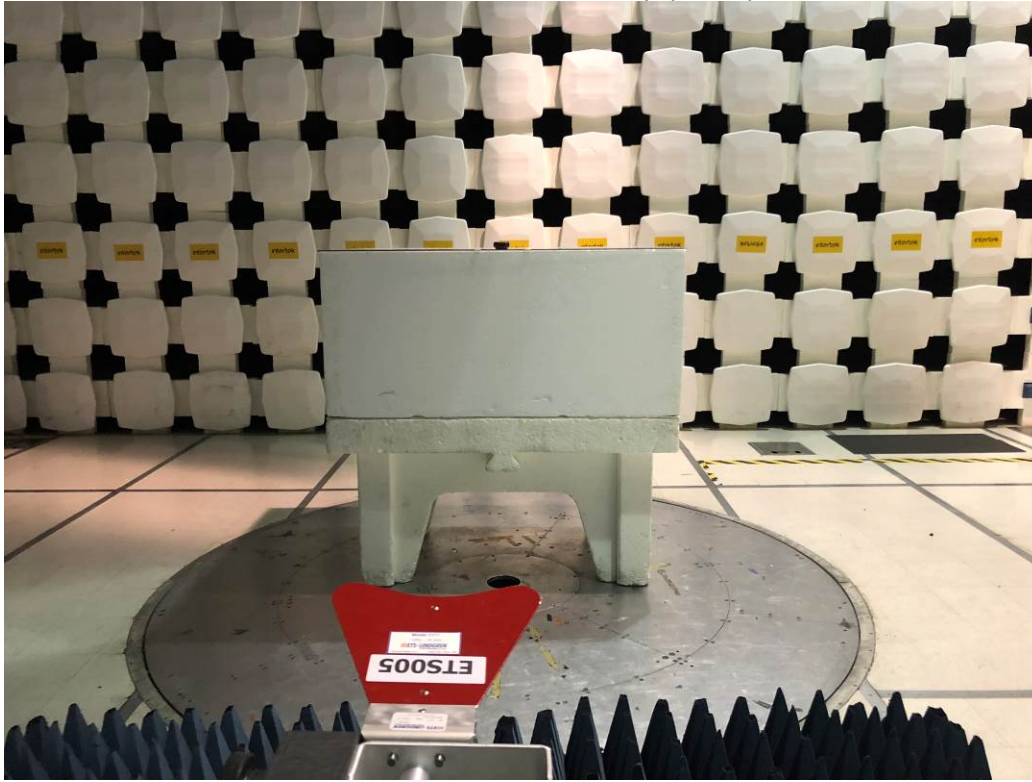
9.3 Results:

The sample tested was found to Comply.

15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

9.4 Setup Photograph:

Radiated Emissions Test Setup (X-axis)



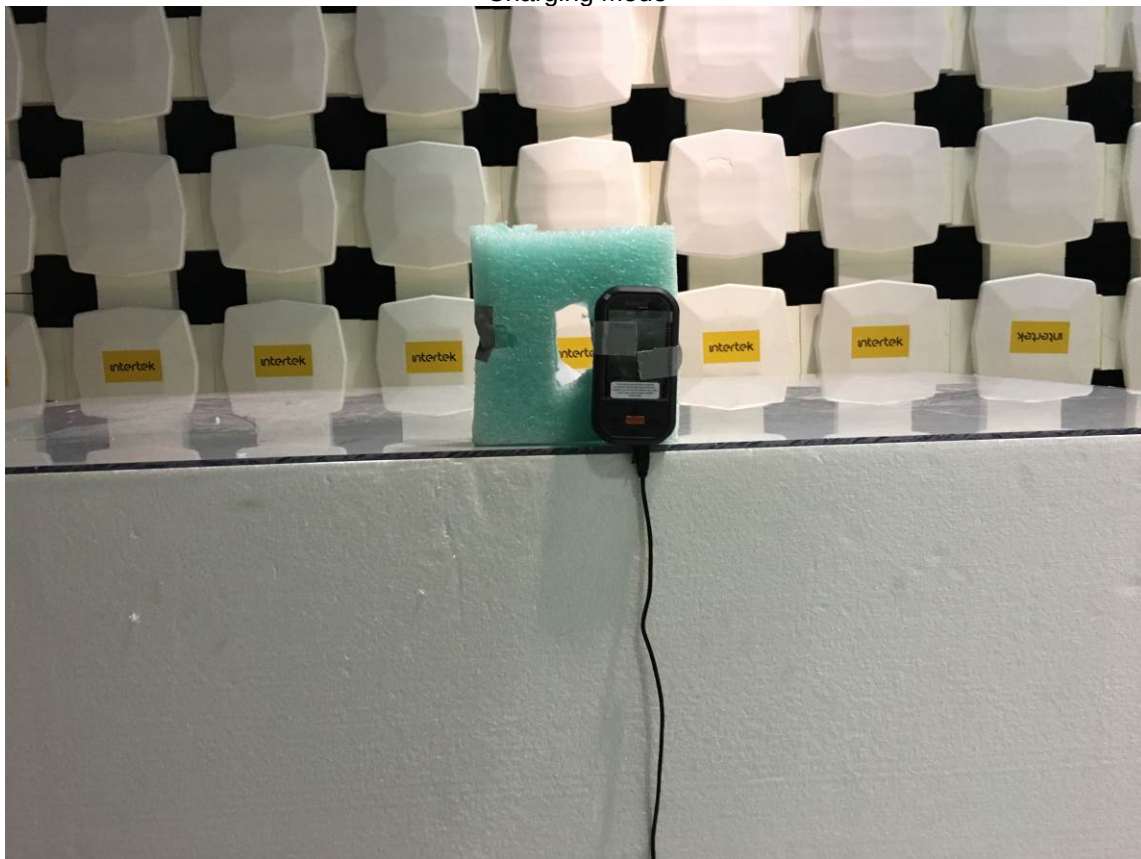
Radiated Emissions Test Setup (Y-axis)



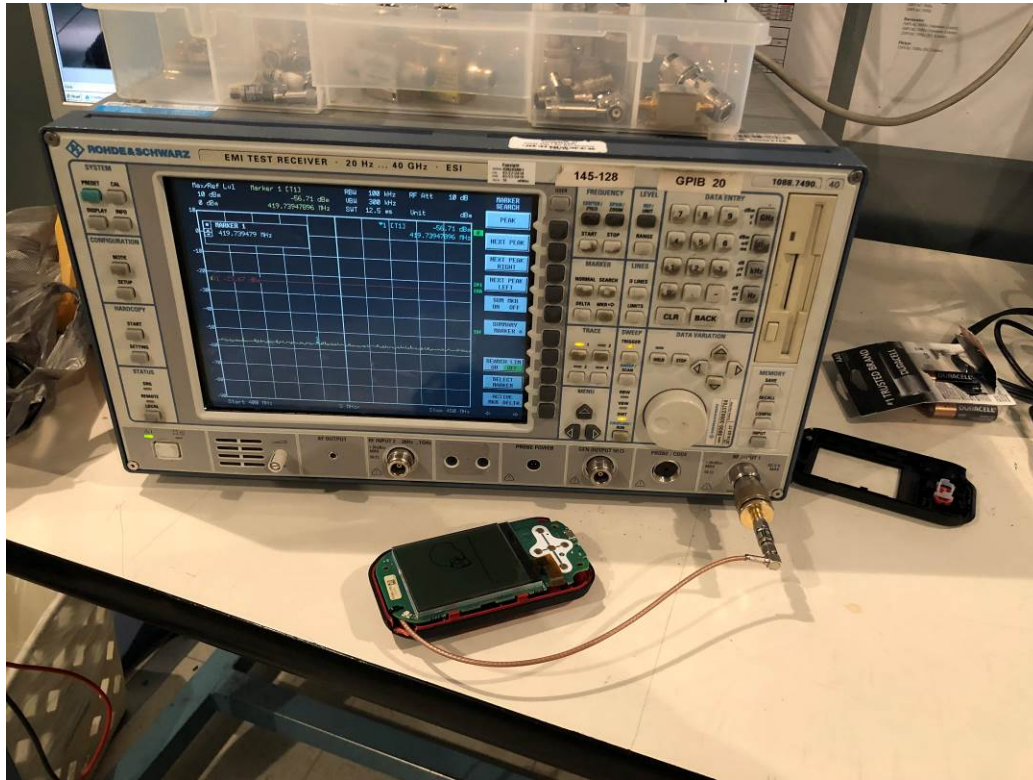
Radiated Emissions Test Setup (Z-axis)



Charging Mode

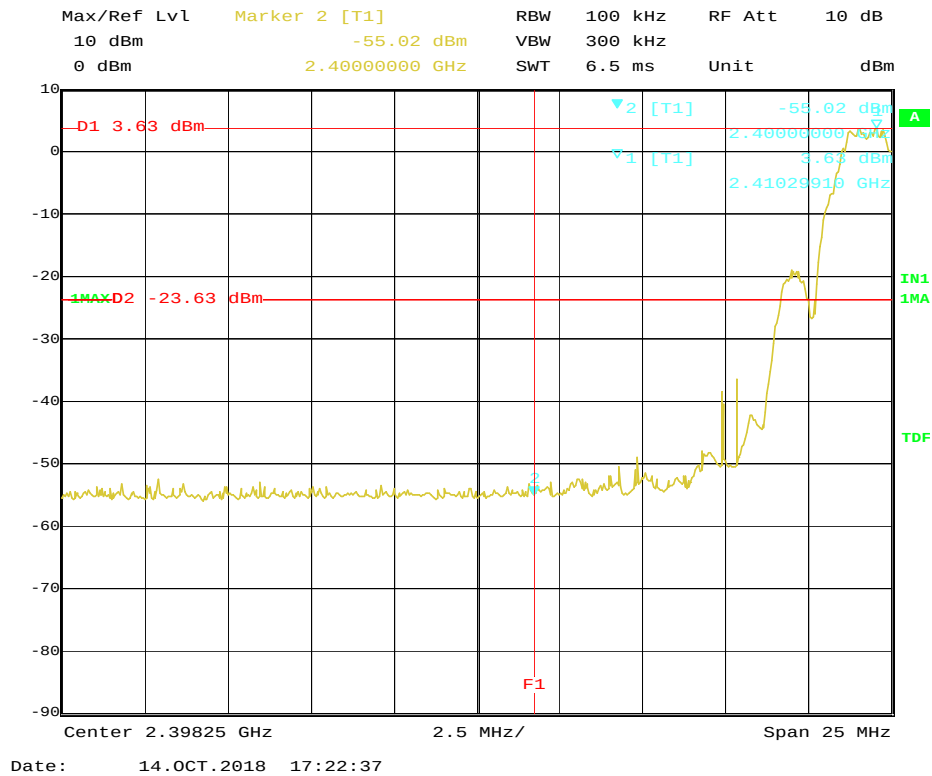


Antenna Port Conducted Test Setup

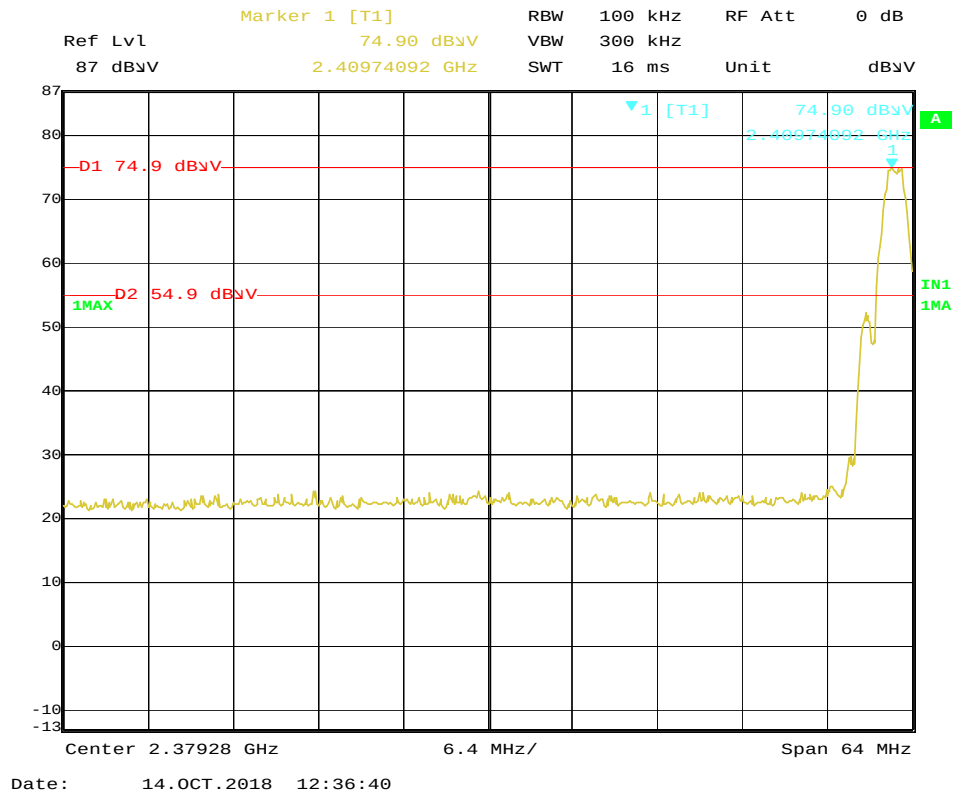


9.5 Plots/Data:

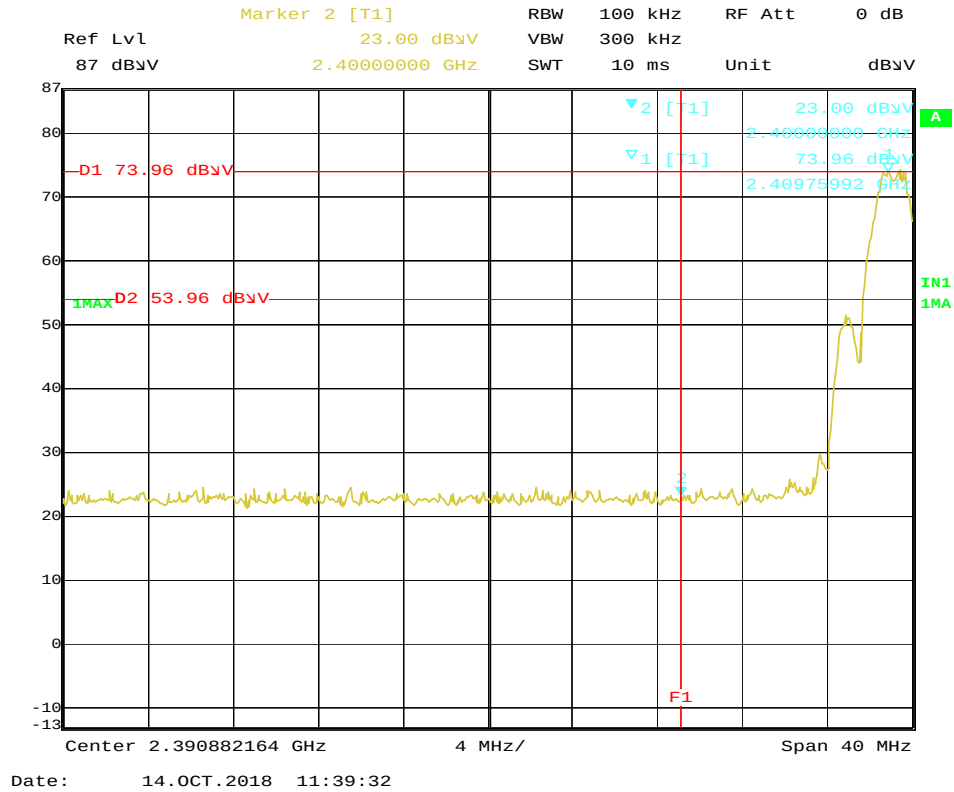
Antenna Port Conducted Lower Band Edge (Battery Powered)



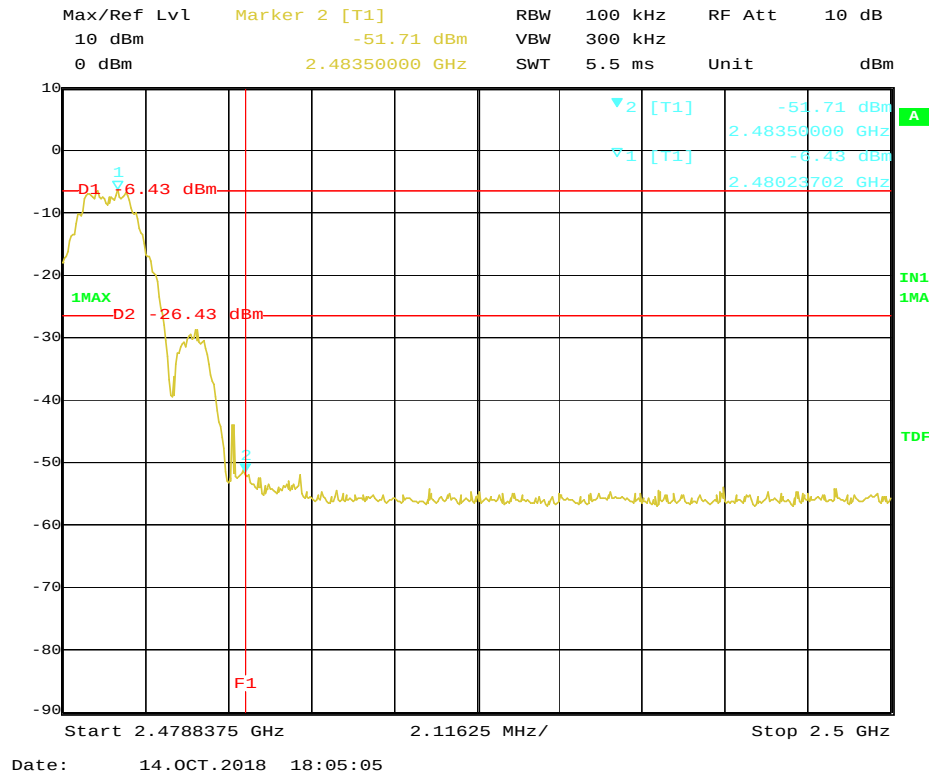
Radiated Lower Band Edge (Battery Powered) – Worst-case X-axis



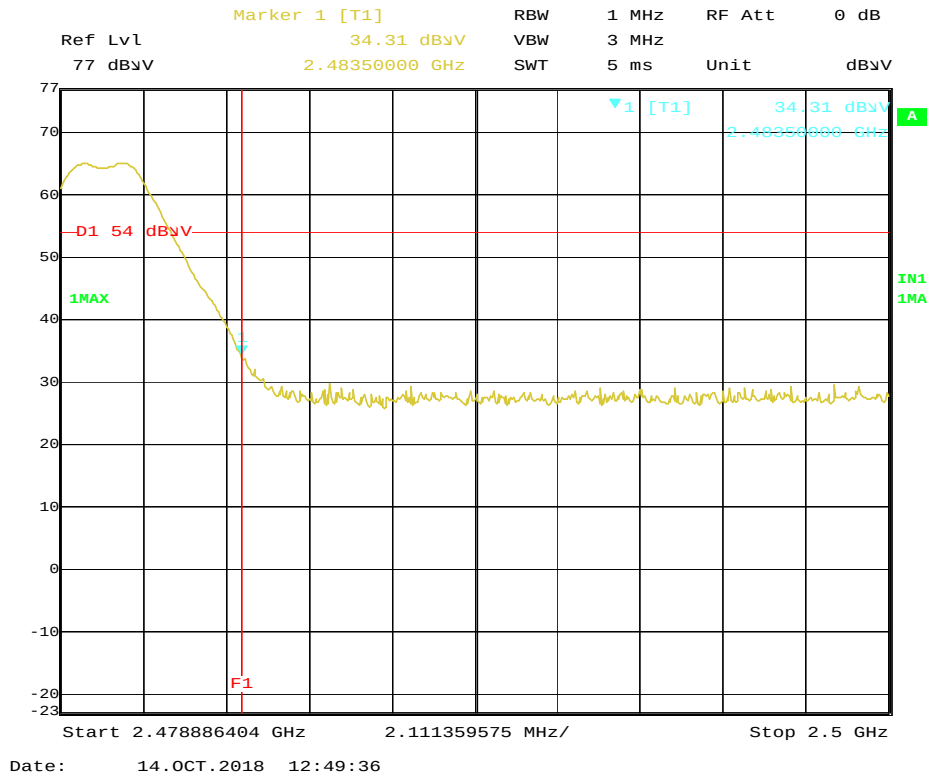
Radiated Lower Band Edge (AC Powered) – Worst-case X-axis



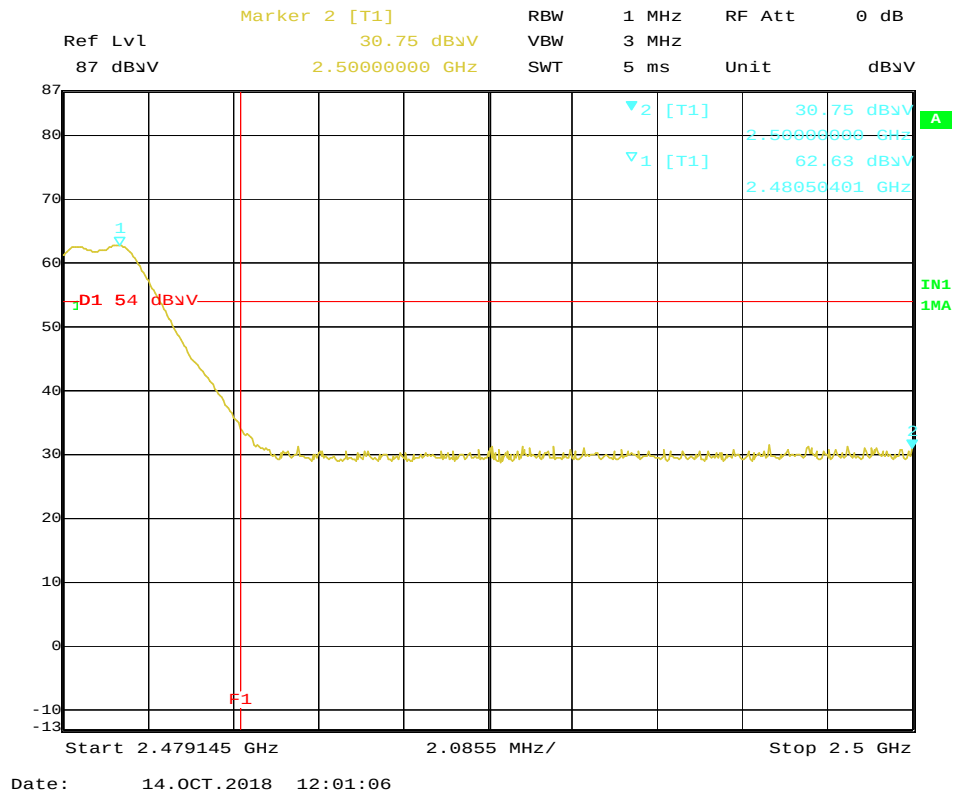
Antenna Port Conducted Upper Band Edge (Battery Powered)



Radiated Upper Band Edge (Battery Powered) – Worst-case X-axis



Radiated Upper Band Edge (AC Powered) – Worst-case X-axis



Test Personnel: Kouma Sinn *KS*
Supervising/Reviewing Engineer:
(Where Applicable) N/A
Product Standard: CFR47 FCC Part 15.247
Input Voltage: RSS-247, RSS-102
Internal Battery Powered
Pretest Verification w/
Ambient Signals or
BB Source: BB Source

Test Date: 10/14/2018
Limit Applied: See report section 9.3
Ambient Temperature: 19 °C
Relative Humidity: 38 %
Atmospheric Pressure: 1012 mbars

Deviations, Additions, or Exclusions: None

10 Transmitter spurious emissions

10.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C 15.247, FCC Part 15 Subpart B, RSS 247 ICES 003, ANSI C 63.10, and ANSI C 63.4.

TEST SITE: EMC Lab & 10m ALSE

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	U _{cispr}
Radiated Emissions, 10m	30-1000 MHz	4.6dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	5.3 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.5 dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	5.2 dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	5.0 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	5.0 dB	5.5 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V 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, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used:

$UF = 10^{(NF / 20)}$ where UF = Net Reading in μ V
NF = Net Reading in dB μ V

Example:

$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$
 $UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$

Alternately, when BAT-EMC Emission Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". The "Correction" includes Antenna Factor, Preamp, and Cable Loss. These are already accounted for in the "Level" column.

10.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
BAR1'	Digital 4 Line Barometer	Mannix	0ABA116	BAR1	04/30/2018	04/30/2019
145128'	EMI Receiver (20 Hz - 40 GHz)	Rohde & Schwarz	ESIB 40	839283/001	03/22/2018	03/22/2019
145-410'	Cables 145-420 145-421 145-422 145-406	Huber + Suhner	10m Track A Cables	multiple	07/25/2018	07/25/2019
PRE11'	50dB gain pre-amp	Keith H	PRE11	PRE11	12/02/2017	12/02/2018
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	05/16/2018	05/16/2019
ETS005'	1-18GHz horn antenna	ETS-Lindgren	3117	00218279	05/14/2018	05/14/2019
145014'	Preamplifier (1 GHz to 26.5 GHz)	Hewlett Packard	8449B	3008A00232	06/14/2018	06/14/2019
REA008'	band reject filter 2.4GHz	Reactel, Inc	12RX7-2441.75-x140 S	17-01	07/13/2018	07/13/2019
145-416'	Cables 145-420 145-423 145-425 145-408	Huber + Suhner	3m Track B cables	multiple	07/25/2018	07/25/2019
CBLHF2012-2M-1'	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252675001	02/14/2018	02/14/2019
CBLHF2012-2M-2'	2m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252675002	02/14/2018	02/14/2019
REA006'	18GHz High Pass Filter	Reactel, Inc	7HS-18G/40G K11	(06)1	02/22/2018	02/22/2019
REA002'	2.5GHz High Pass Filter	Reactel, Inc	7HS-2.5G/18G-S11	06-1	02/22/2018	02/22/2019
ETS004'	18-40GHz horn antenna	ets004	3116C	00218579	12/17/2017	12/17/2018

Software Utilized:

Name	Manufacturer	Version
BAT-EMC	Nexio	3.17.0.3

10.3 Results:

The sample tested was found to Comply.

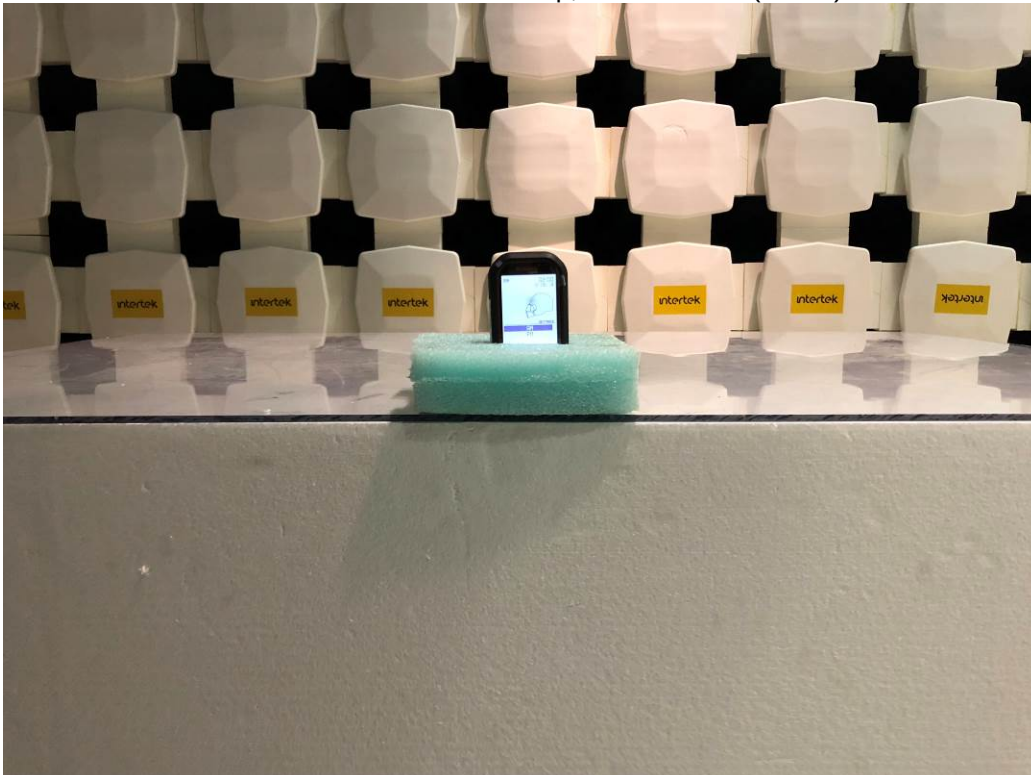
15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

10.4 Setup Photographs:

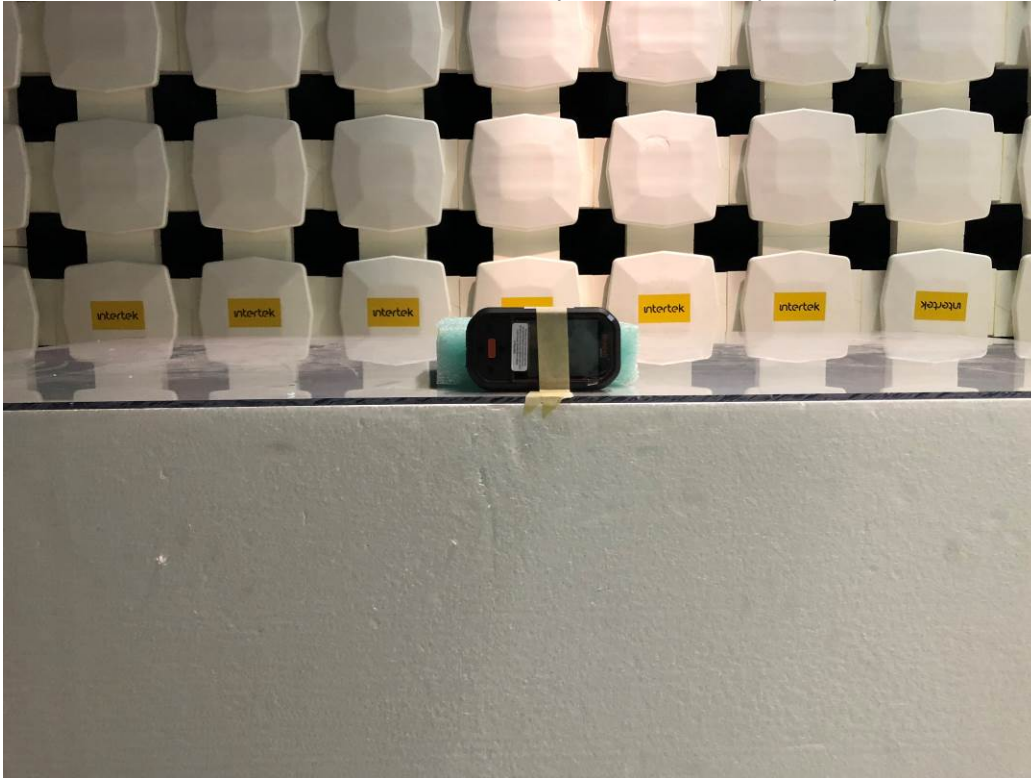
Radiated Emissions Test Setup, 30-1000 MHz (X-axis)



Radiated Emissions Test Setup, 30-1000 MHz (Y-axis)



Radiated Emissions Test Setup, 30-1000 MHz (Z-axis)



Radiated Emissions Test Setup, 1-13 GHz (X-axis)



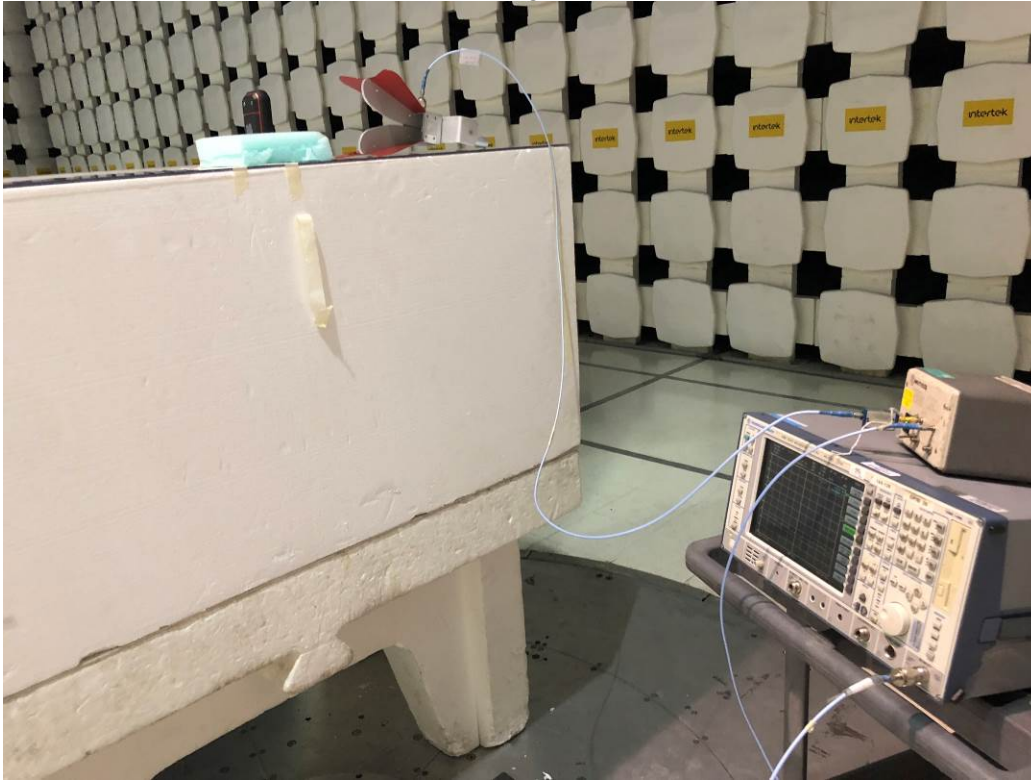
Radiated Emissions Test Setup, 1-13 GHz (Y-axis)



Radiated Emissions Test Setup, 1-13 GHz (Z-axis)



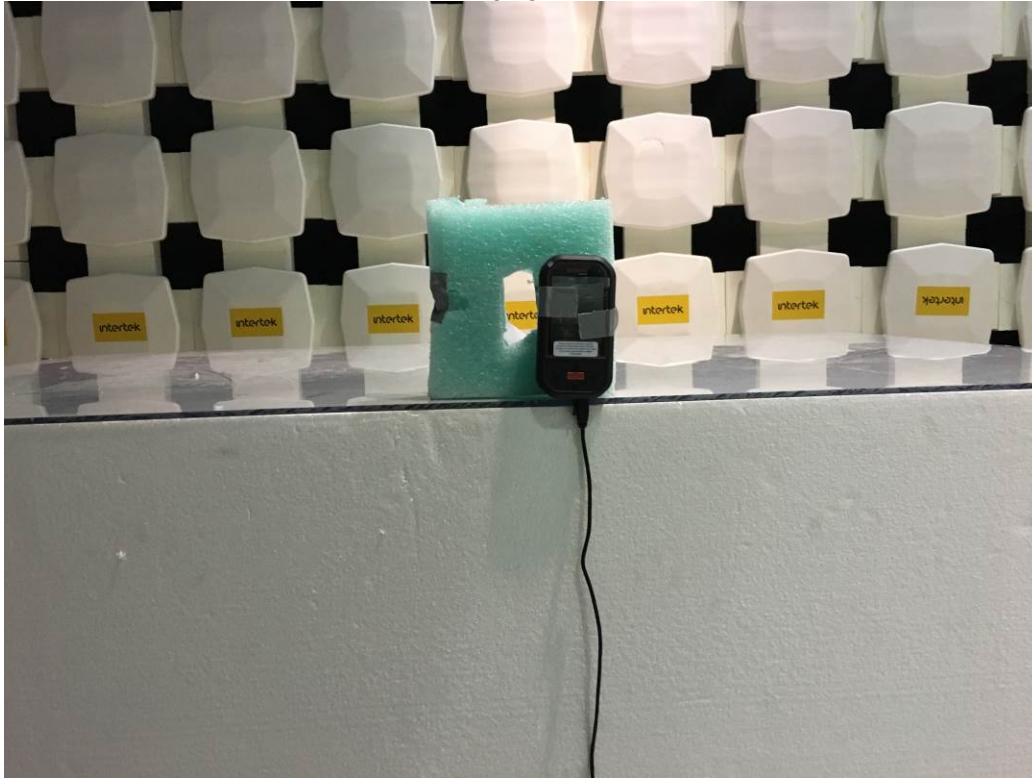
Manual Testing, 13-18 GHz



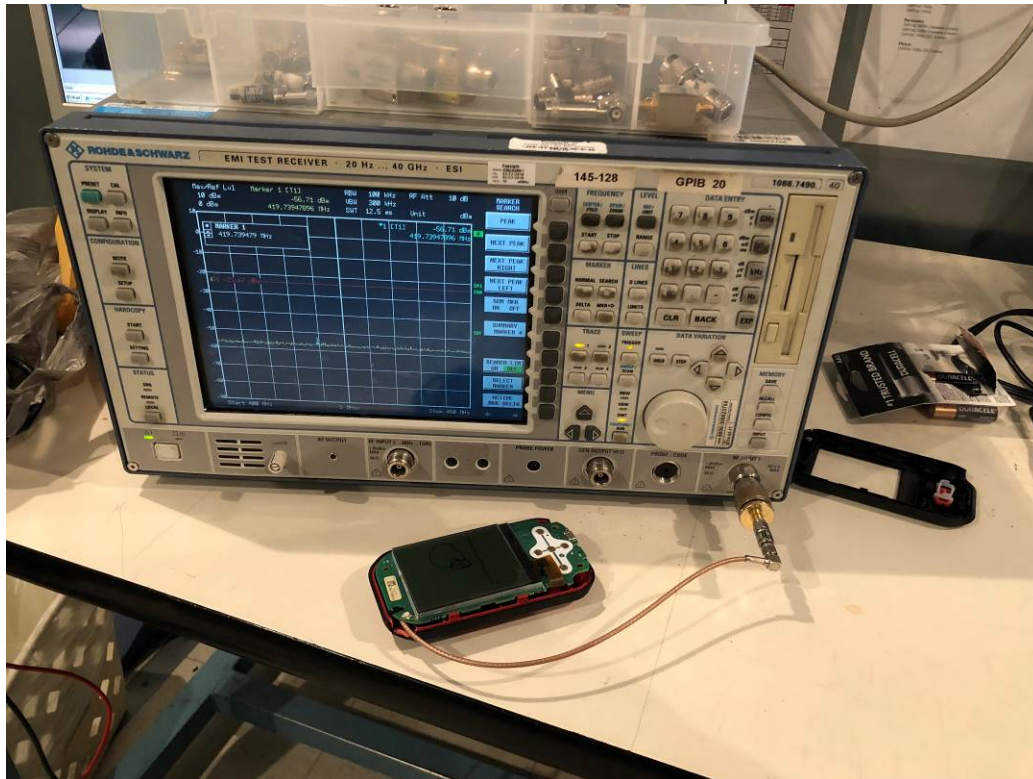
Manual Testing, 18-25 GHz



Charging Mode



Antenna Port Conducted Test Setup



10.5 Plots/Data:

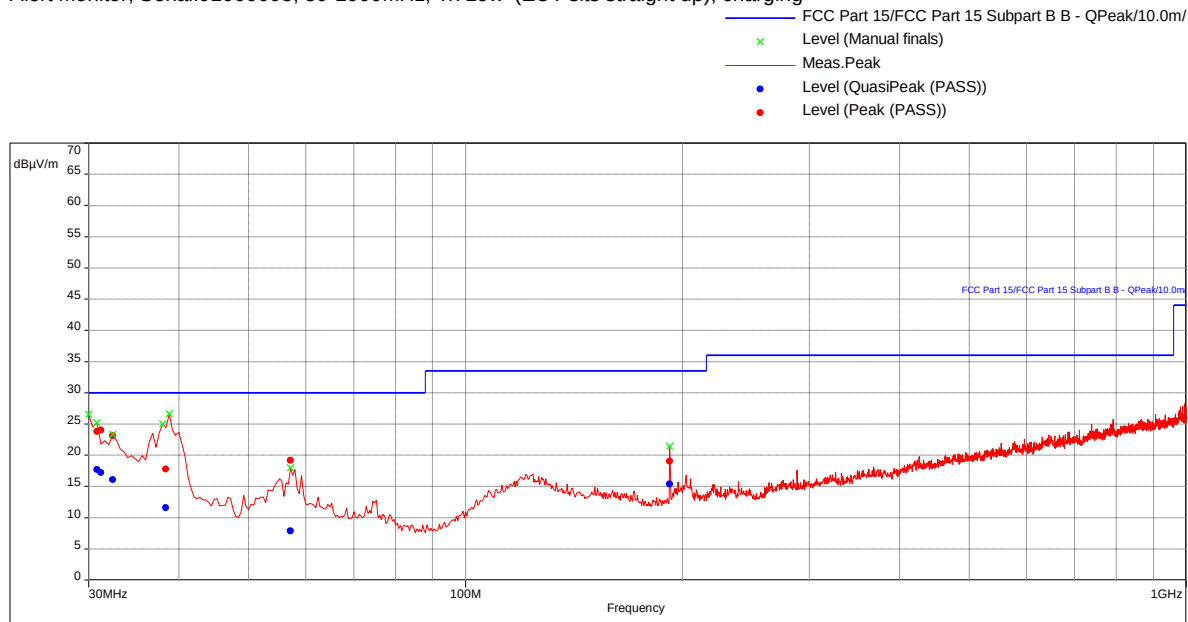
Transmit Mode, Charging Mode, 30-1000 MHz

Test Information:

Date and Time	10/3/2018 11:03:37 AM
Client and Project Number	Simbex
Engineer	Kouma Sinn
Temperature	19C
Humidity	53%
Atmospheric Pressure	1006mbar
Comments	Alert Monitor, Serial:01000005, 30-1000MHz, Tx Low (EUT sits straight up), charging

Graph:

Alert Monitor, Serial:01000005, 30-1000MHz, Tx Low (EUT sits straight up), charging



Results:

QuasiPeak (PASS) (6)

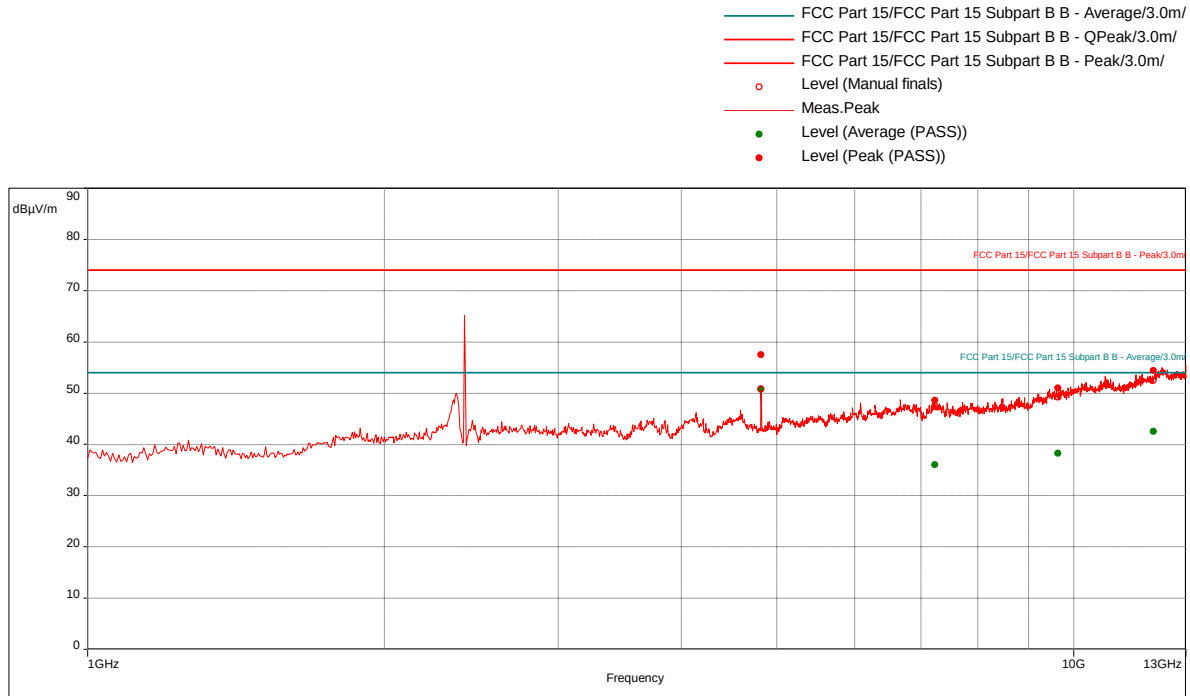
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
30.61578947	17.69	30.00	-12.31	328.00	3.21	Vertical	120000.00	-22.24
31.17894737	17.20	30.00	-12.80	227.00	3.50	Vertical	120000.00	-22.65
32.21052632	16.09	30.00	-13.91	10.00	2.79	Vertical	120000.00	-23.45
38.54736842	11.61	30.00	-18.39	39.00	1.86	Vertical	120000.00	-28.26
57.26315789	7.90	30.00	-22.10	5.00	1.97	Vertical	120000.00	-36.02
192	15.36	33.50	-18.14	334.00	1.74	Vertical	120000.00	-30.57

Transmit @ Low Channel (X-axis), Charging Mode, 1-25 GHz

Test Information:

Date and Time	10/13/2018 1:12:51 AM
Client and Project Number	Simbex
Engineer	Vathana Ven
Temperature	19C
Humidity	45%
Atmospheric Pressure	997mbar
Comments	Alert Monitor, Tx Low, X-axis, Charging mode, 1-13 GHz

Graph:



Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:

Peak (PASS) (4)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4818.947368	57.54	74.00	-16.46	263.00	2.51	Vertical	1000000.00	7.75
7231.578947	48.59	74.00	-25.41	321.00	3.20	Horizontal	1000000.00	11.08
9640.263158	51.03	74.00	-22.97	300.00	4.00	Vertical	1000000.00	13.79
12047.89474	54.38	74.00	-19.62	86.00	2.84	Vertical	1000000.00	19.02

Average (PASS) (4)

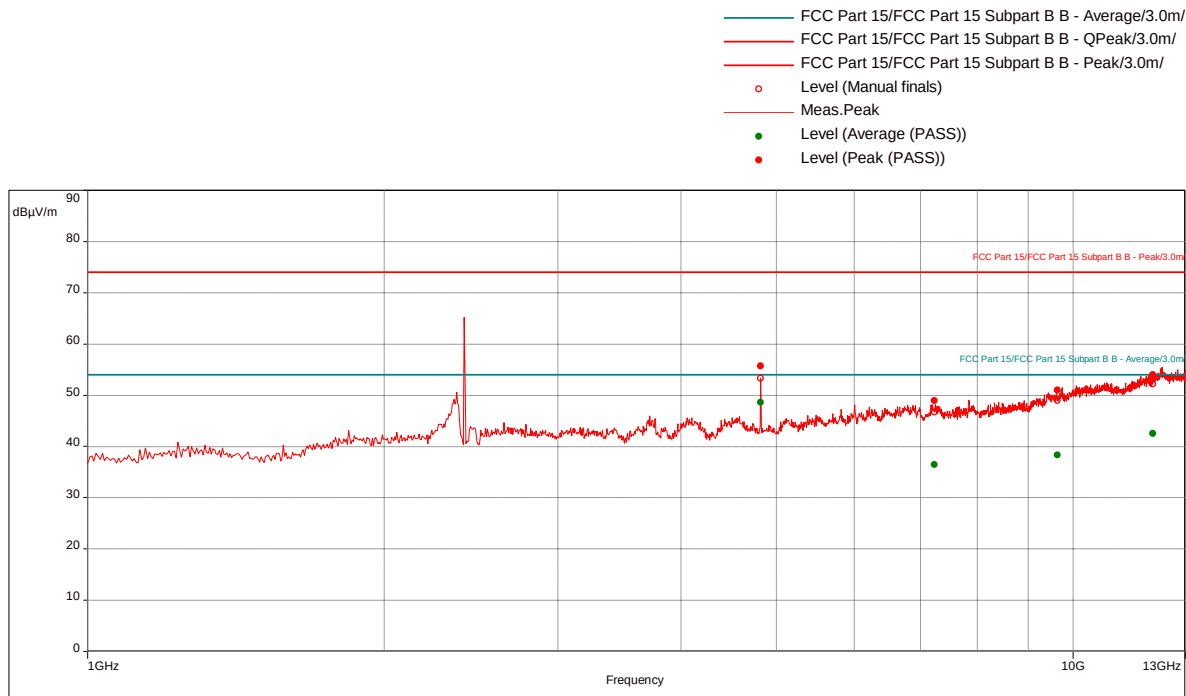
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4818.947368	50.71	54.00	-3.29	263.00	2.51	Vertical	1000000.00	7.75
7231.578947	36.02	54.00	-17.98	321.00	3.20	Horizontal	1000000.00	11.08
9640.263158	38.22	54.00	-15.78	300.00	4.00	Vertical	1000000.00	13.79
12047.89474	42.53	54.00	-11.47	86.00	2.84	Vertical	1000000.00	19.02

Transmit @ Low Channel (Y-axis), Charging Mode, 1-25 GHz

Test Information:

Date and Time	10/13/2018 1:36:29 AM
Client and Project Number	Simbex
Engineer	Vathana Ven
Temperature	19C
Humidity	45%
Atmospheric Pressure	997mbar
Comments	Alert Monitor, Tx Low, Y-axis, Charging mode, 1-13 GHz

Graph:



Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:

Peak (PASS) (4)

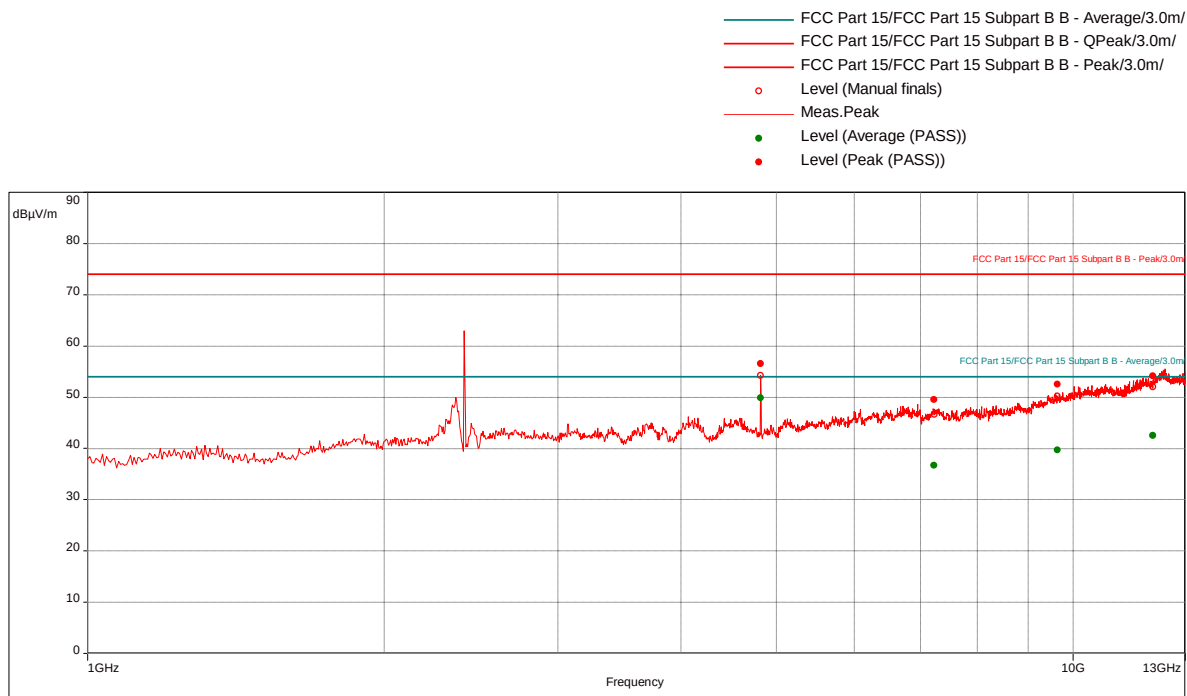
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4818.947368	55.67	74.00	-18.33	269.00	1.00	Vertical	1000000.00	7.75
7228.947368	48.98	74.00	-25.02	204.00	2.24	Vertical	1000000.00	11.07
9640.789474	51.03	74.00	-22.97	56.00	1.77	Vertical	1000000.00	13.79
12051.84211	53.97	74.00	-20.03	225.00	3.47	Vertical	1000000.00	19.03

Average (PASS) (4)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4818.947368	48.56	54.00	-5.44	269.00	1.00	Vertical	1000000.00	7.75
7228.947368	36.41	54.00	-17.59	204.00	2.24	Vertical	1000000.00	11.07
9640.789474	38.31	54.00	-15.69	56.00	1.77	Vertical	1000000.00	13.79
12051.84211	42.55	54.00	-11.45	225.00	3.47	Vertical	1000000.00	19.03

Transmit @ Low Channel (Z-axis), Charging Mode, 1-25 GHz**Test Information:**

Date and Time	10/13/2018 2:00:05 AM
Client and Project Number	Simbex
Engineer	Vathana Ven
Temperature	19C
Humidity	45%
Atmospheric Pressure	997mbar
Comments	Alert Monitor, Tx Low, Z-axis, Charging mode, 1-13 GHz

Graph:

Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:**Peak (PASS) (4)**

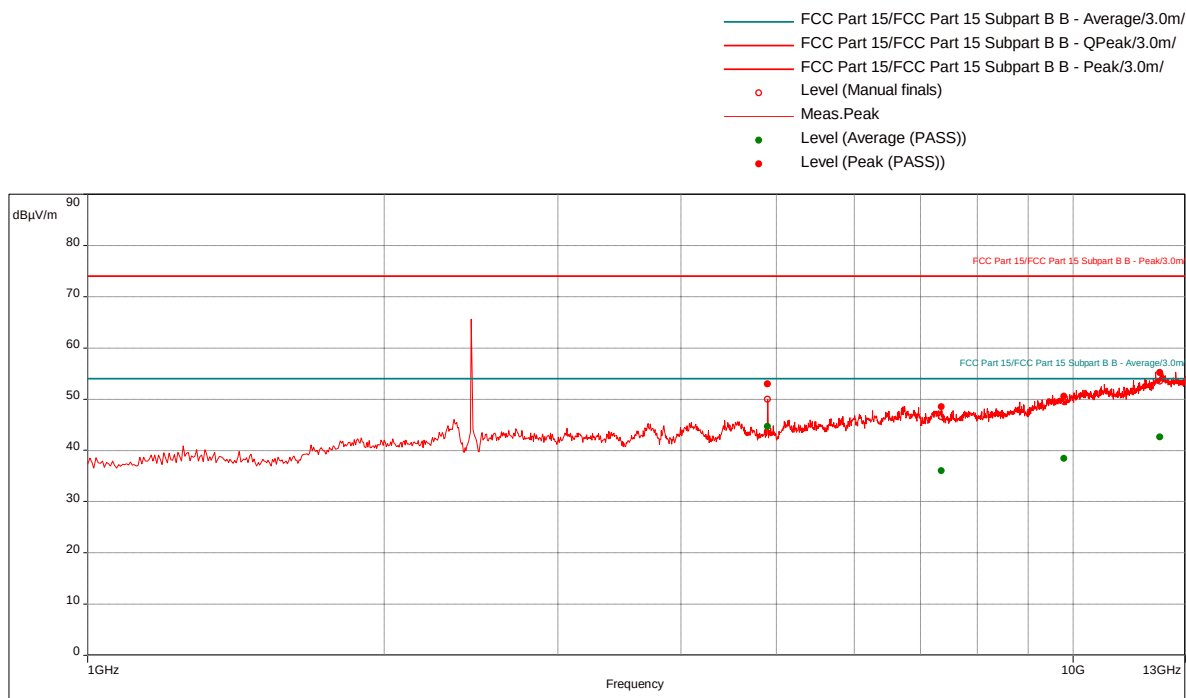
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4818.947368	56.58	74.00	-17.42	78.00	1.30	Vertical	1000000.00	7.75
7226.578947	49.52	74.00	-24.48	285.00	2.58	Horizontal	1000000.00	11.07
9641.842105	52.49	74.00	-21.51	70.00	2.77	Horizontal	1000000.00	13.79
12052.36842	54.12	74.00	-19.88	183.00	1.74	Horizontal	1000000.00	19.03

Average (PASS) (4)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4818.947368	49.86	54.00	-4.14	78.00	1.30	Vertical	1000000.00	7.75
7226.578947	36.72	54.00	-17.28	285.00	2.58	Horizontal	1000000.00	11.07
9641.842105	39.73	54.00	-14.27	70.00	2.77	Horizontal	1000000.00	13.79
12052.36842	42.55	54.00	-11.45	183.00	1.74	Horizontal	1000000.00	19.03

Transmit @ Mid Channel (X-axis), Charging Mode, 1-25 GHz**Test Information:**

Date and Time	10/13/2018 2:23:44 AM
Client and Project Number	Simbex
Engineer	Vathana Ven
Temperature	19C
Humidity	45%
Atmospheric Pressure	997mbar
Comments	Alert Monitor, Tx Mid, X-axis, Charging mode, 1-25 GHz

Graph:

Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:**Peak (PASS) (4)**

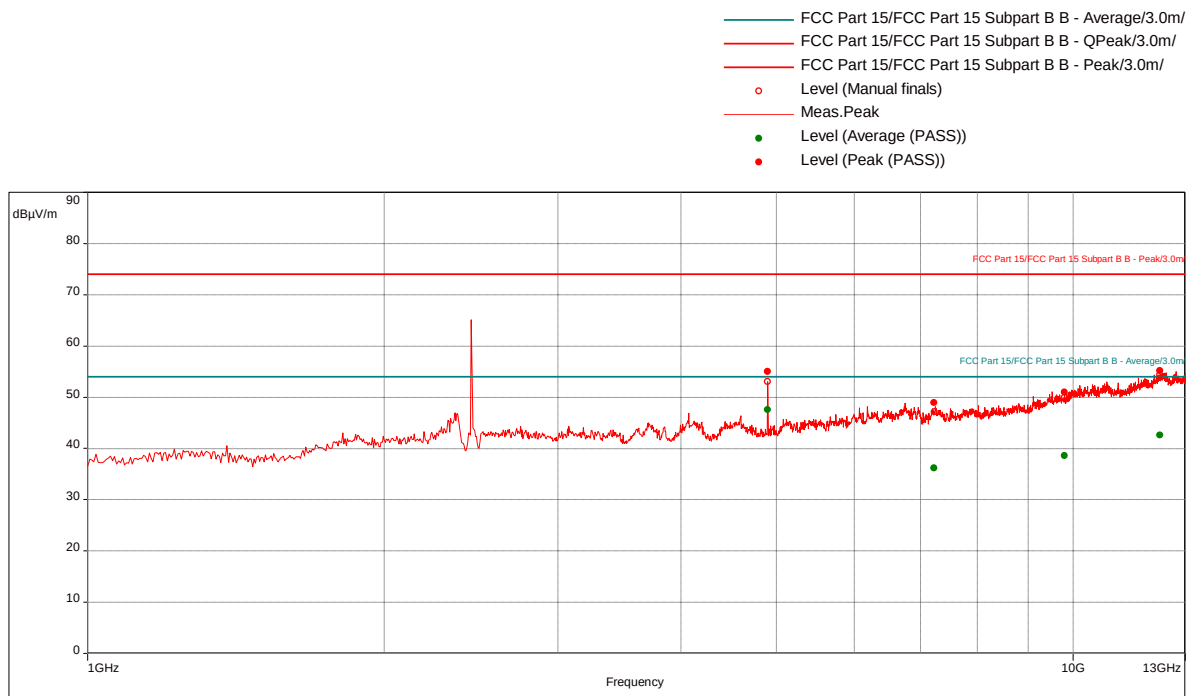
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4898.947368	52.96	74.00	-21.04	196.00	2.66	Vertical	1000000.00	7.61
7348.421053	48.52	74.00	-25.48	56.00	1.77	Horizontal	1000000.00	11.00
9795.526316	50.61	74.00	-23.39	34.00	3.13	Vertical	1000000.00	14.28
12253.68421	55.19	74.00	-18.81	71.00	1.26	Vertical	1000000.00	19.27

Average (PASS) (4)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4898.947368	44.65	54.00	-9.35	196.00	2.66	Vertical	1000000.00	7.61
7348.421053	36.03	54.00	-17.97	56.00	1.77	Horizontal	1000000.00	11.00
9795.526316	38.45	54.00	-15.55	34.00	3.13	Vertical	1000000.00	14.28
12253.68421	42.60	54.00	-11.40	71.00	1.26	Vertical	1000000.00	19.27

Transmit @ Mid Channel (Y-axis), Charging Mode, 1-25 GHz**Test Information:**

Date and Time	10/13/2018 2:47:34 AM
Client and Project Number	Simbex
Engineer	Vathana Ven
Temperature	19C
Humidity	45%
Atmospheric Pressure	997mbar
Comments	Alert Monitor, Tx Mid, Y-axis, Charging mode, 1-25 GHz

Graph:

Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:**Peak (PASS) (4)**

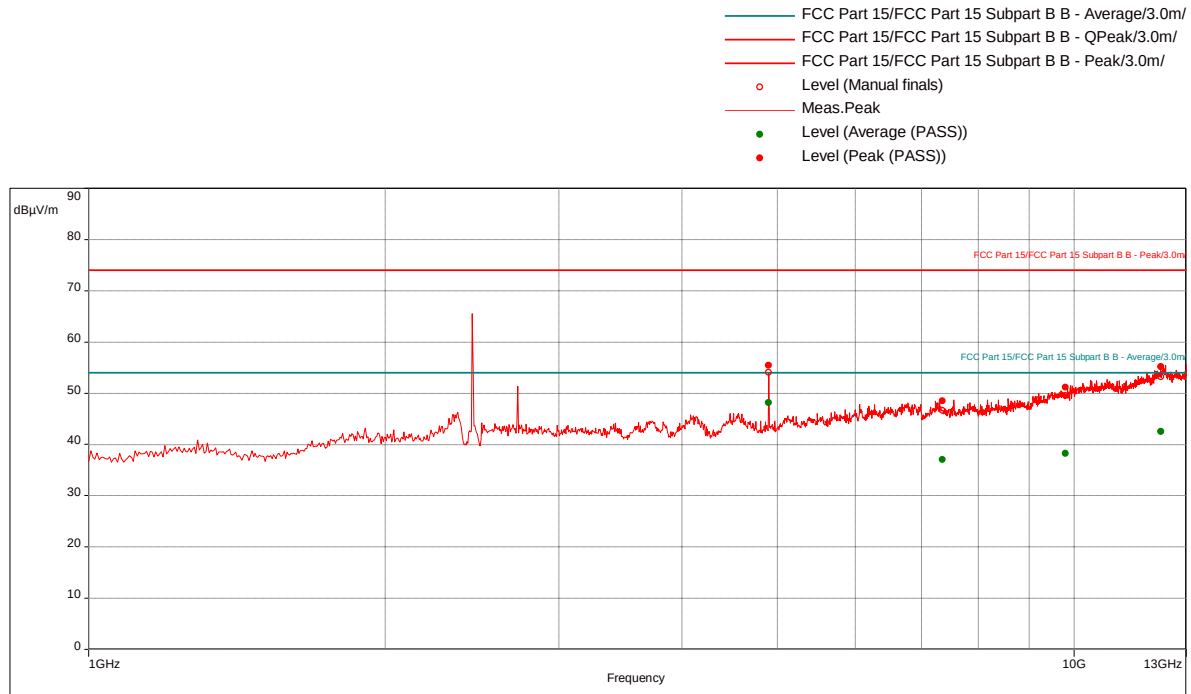
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4898.947368	55.01	74.00	-18.99	270.00	1.00	Vertical	1000000.00	7.61
7226.052632	48.98	74.00	-25.02	86.00	1.23	Vertical	1000000.00	11.07
9800.263158	51.01	74.00	-22.99	344.00	2.62	Horizontal	1000000.00	14.30
12248.15789	55.19	74.00	-18.81	285.00	3.22	Vertical	1000000.00	19.27

Average (PASS) (4)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4898.947368	47.55	54.00	-6.45	270.00	1.00	Vertical	1000000.00	7.61
7226.052632	36.17	54.00	-17.83	86.00	1.23	Vertical	1000000.00	11.07
9800.263158	38.56	54.00	-15.44	344.00	2.62	Horizontal	1000000.00	14.30
12248.15789	42.59	54.00	-11.41	285.00	3.22	Vertical	1000000.00	19.27

Transmit @ Mid Channel (Z-axis), Charging Mode, 1-25 GHz**Test Information:**

Date and Time	10/13/2018 3:09:39 AM
Client and Project Number	Simbex
Engineer	Vathana Ven
Temperature	19C
Humidity	45%
Atmospheric Pressure	997mbar
Comments	Alert Monitor, Tx Mid, Z-axis, Charging mode, 1-25 GHz

Graph:

Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:**Peak (PASS) (4)**

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4898.947368	55.40	74.00	-18.60	78.00	1.27	Vertical	1000000.00	7.61
7350.263158	48.52	74.00	-25.48	219.00	1.47	Horizontal	1000000.00	11.00
9800	51.14	74.00	-22.86	108.00	1.65	Vertical	1000000.00	14.30
12249.47368	55.19	74.00	-18.81	19.00	2.50	Vertical	1000000.00	19.27

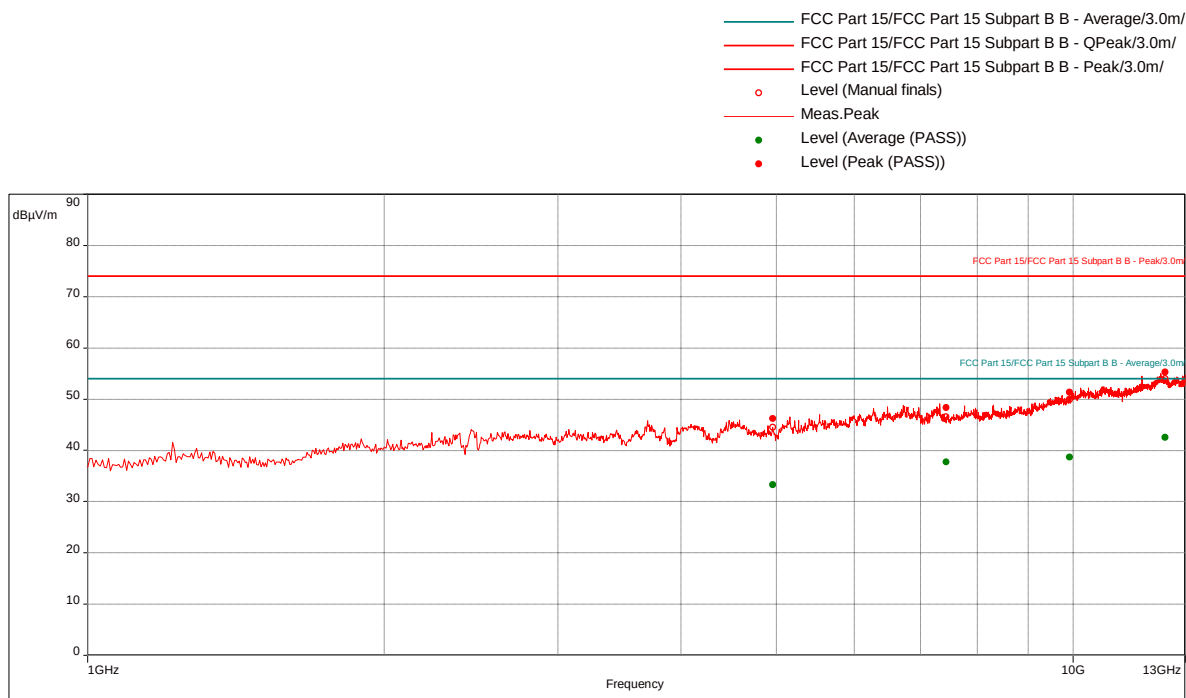
Average (PASS) (4)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4898.947368	48.21	54.00	-5.79	78.00	1.27	Vertical	1000000.00	7.61
7350.263158	37.09	54.00	-16.91	219.00	1.47	Horizontal	1000000.00	11.00
9800	38.29	54.00	-15.71	108.00	1.65	Vertical	1000000.00	14.30
12249.47368	42.50	54.00	-11.50	19.00	2.50	Vertical	1000000.00	19.27

Transmit @ High Channel (X-axis), Charging Mode, 1-25 GHz

Test Information:

Date and Time	10/13/2018 3:45:20 AM
Client and Project Number	Simbex
Engineer	Vathana Ven
Temperature	19C
Humidity	45%
Atmospheric Pressure	997mbar
Comments	Alert Monitor, Tx High, X-axis, Charging mode, 1-25 GHz

Graph:

Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:

Peak (PASS) (4)

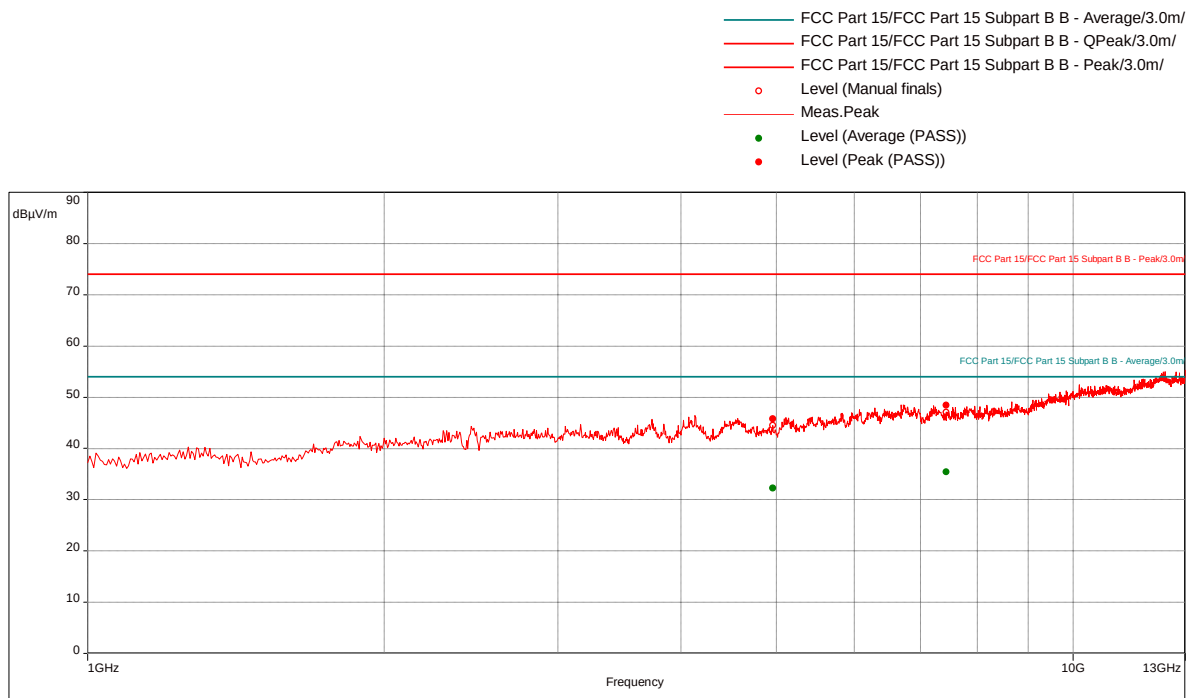
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4960.263158	46.17	74.00	-27.83	143.00	2.65	Vertical	1000000.00	7.60
7441.315789	48.39	74.00	-25.61	218.00	3.37	Vertical	1000000.00	10.87
9918.157895	51.31	74.00	-22.69	33.00	1.45	Vertical	1000000.00	14.47
12400.26316	55.29	74.00	-18.71	166.00	3.94	Vertical	1000000.00	19.23

Average (PASS) (4)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4960.263158	33.33	54.00	-20.67	143.00	2.65	Vertical	1000000.00	7.60
7441.315789	37.71	54.00	-16.29	218.00	3.37	Vertical	1000000.00	10.87
9918.157895	38.65	54.00	-15.35	33.00	1.45	Vertical	1000000.00	14.47
12400.26316	42.56	54.00	-11.44	166.00	3.94	Vertical	1000000.00	19.23

Transmit @ High Channel (Y-axis), Charging Mode, 1-25 GHz**Test Information:**

Date and Time	10/13/2018 4:21:55 AM
Client and Project Number	Simbex
Engineer	Vathana Ven
Temperature	19C
Humidity	45%
Atmospheric Pressure	997mbar
Comments	Alert Monitor, Tx High, Y-axis, Charging mode, 1-25 GHz

Graph:

Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:**Peak (PASS) (2)**

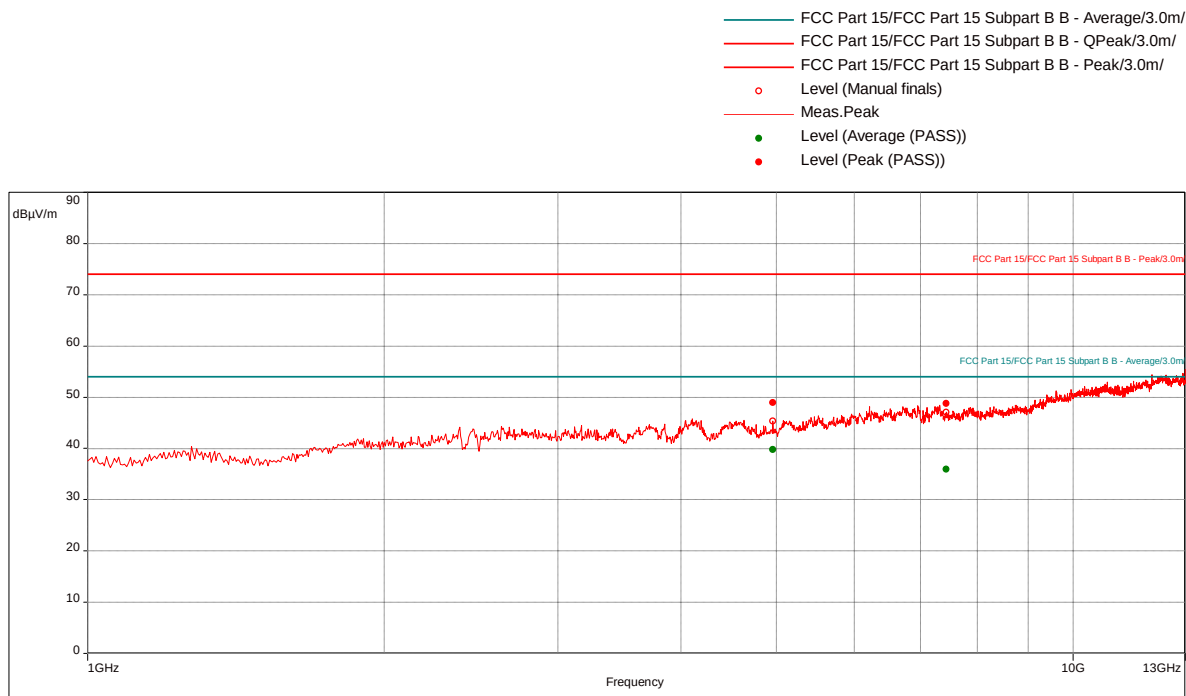
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4957.894737	45.79	74.00	-28.21	271.00	2.66	Vertical	1000000.00	7.60
7438.947368	48.39	74.00	-25.61	197.00	3.13	Vertical	1000000.00	10.87

Average (PASS) (2)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4957.894737	32.29	54.00	-21.71	271.00	2.66	Vertical	1000000.00	7.60
7438.947368	35.39	54.00	-18.61	197.00	3.13	Vertical	1000000.00	10.87

Transmit @ High Channel (Z-axis), Charging Mode, 1-25 GHz**Test Information:**

Date and Time	10/13/2018 4:37:22 AM
Client and Project Number	Simbex
Engineer	Vathana Ven
Temperature	19C
Humidity	45%
Atmospheric Pressure	997mbar
Comments	Alert Monitor, Tx High, Z-axis, Charging mode, 1-25 GHz

Graph:

Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:**Peak (PASS) (2)**

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4960	48.92	74.00	-25.08	358.00	3.12	Vertical	1000000.00	7.60
7441.578947	48.78	74.00	-25.22	357.00	1.97	Vertical	1000000.00	10.87

Average (PASS) (2)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4960	39.82	54.00	-14.18	358.00	3.12	Vertical	1000000.00	7.60
7441.578947	35.97	54.00	-18.03	357.00	1.97	Vertical	1000000.00	10.87

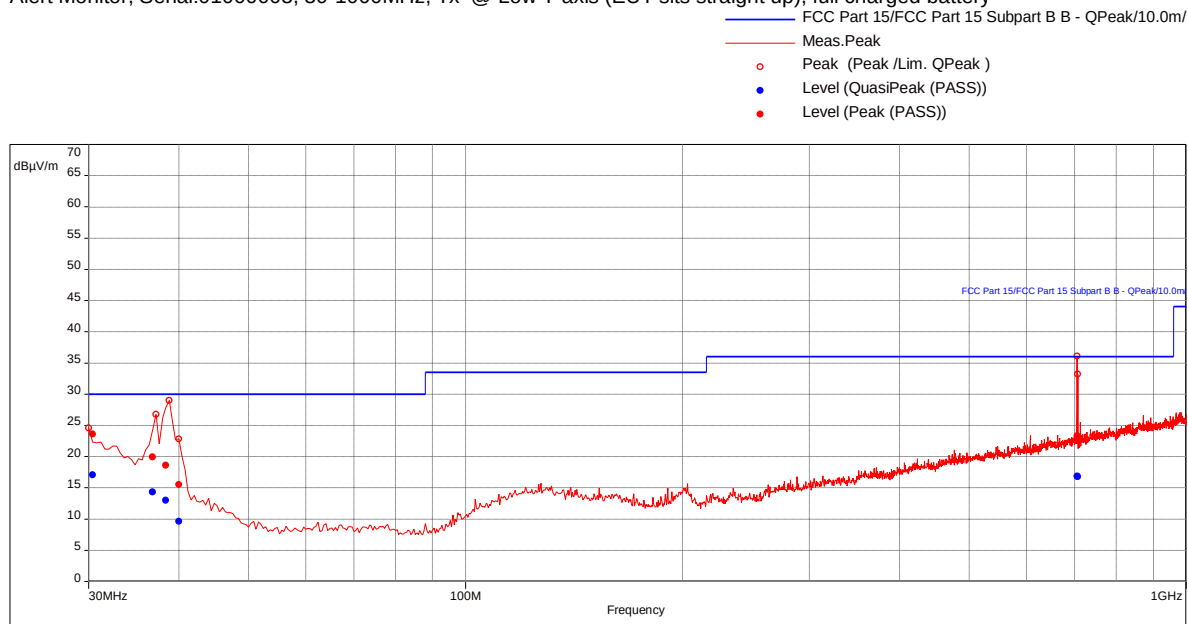
Transmit Mode, Battery Mode, 30-1000 MHz

Test Information:

Date and Time	10/3/2018 9:17:59 AM
Client and Project Number	Simbex
Engineer	Kouma Sinn
Temperature	19C
Humidity	53%
Atmospheric Pressure	1006mbar
Comments	Alert Monitor, Serial:01000005, 30-1000MHz, Tx @ Low Y-axis (EUT sits straight up), full charged battery

Graph:

Alert Monitor, Serial:01000005, 30-1000MHz, Tx @ Low Y-axis (EUT sits straight up), full charged battery



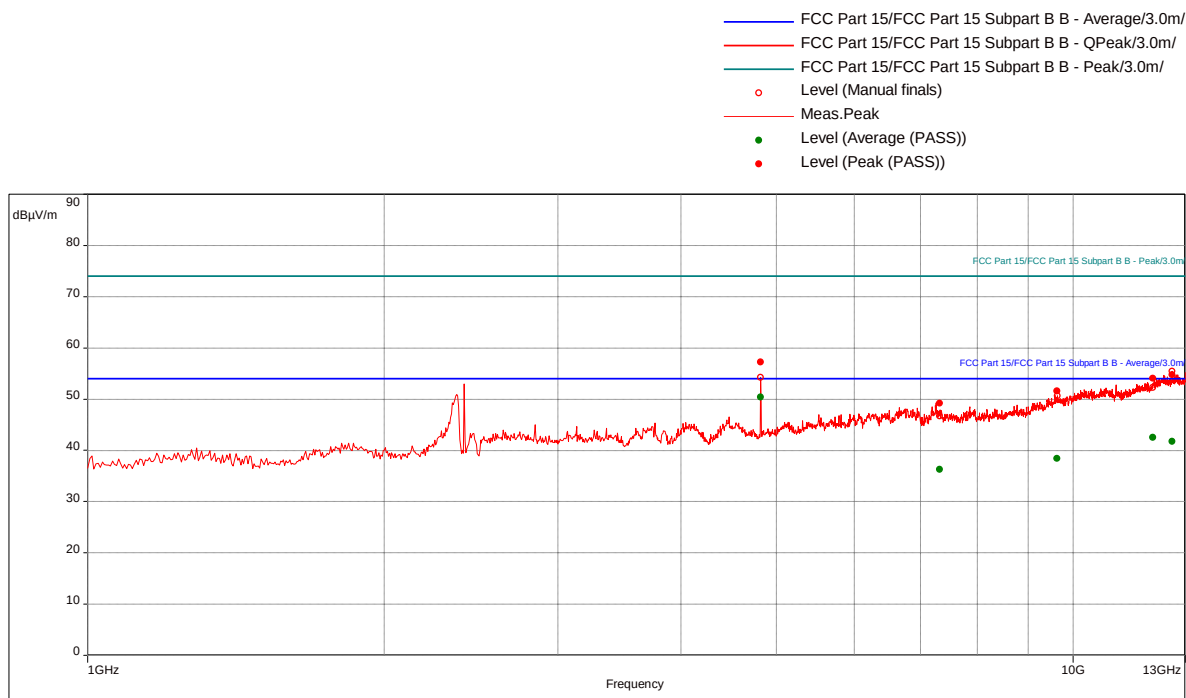
Results:

QuasiPeak (PASS) (6)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
30.44210526	17.09	30.00	-12.91	232.00	2.32	Vertical	120000.00	-22.13
36.78947368	14.33	30.00	-15.67	25.00	3.59	Vertical	120000.00	-26.97
38.51578947	12.97	30.00	-17.03	32.00	1.58	Vertical	120000.00	-28.23
40.12631579	9.64	30.00	-20.36	32.00	3.21	Vertical	120000.00	-29.41
705.7263158	16.86	36.00	-19.14	268.00	2.78	Vertical	120000.00	-19.26
706.6315789	16.78	36.00	-19.22	180.00	2.12	Vertical	120000.00	-19.30

Transmit @ Low Channel (X-axis), Battery Mode, 1-25 GHz**Test Information:**

Date and Time	10/10/2018 3:16:29 PM
Client and Project Number	Simbex
Engineer	Kouma Sinn
Temperature	21C
Humidity	47%
Atmospheric Pressure	1007mbar
Comments	Alert Monitor, Tx Low, X-axis, Fresh Batteries, 1-13 GHz

Graph:

Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:**Peak (PASS) (5)**

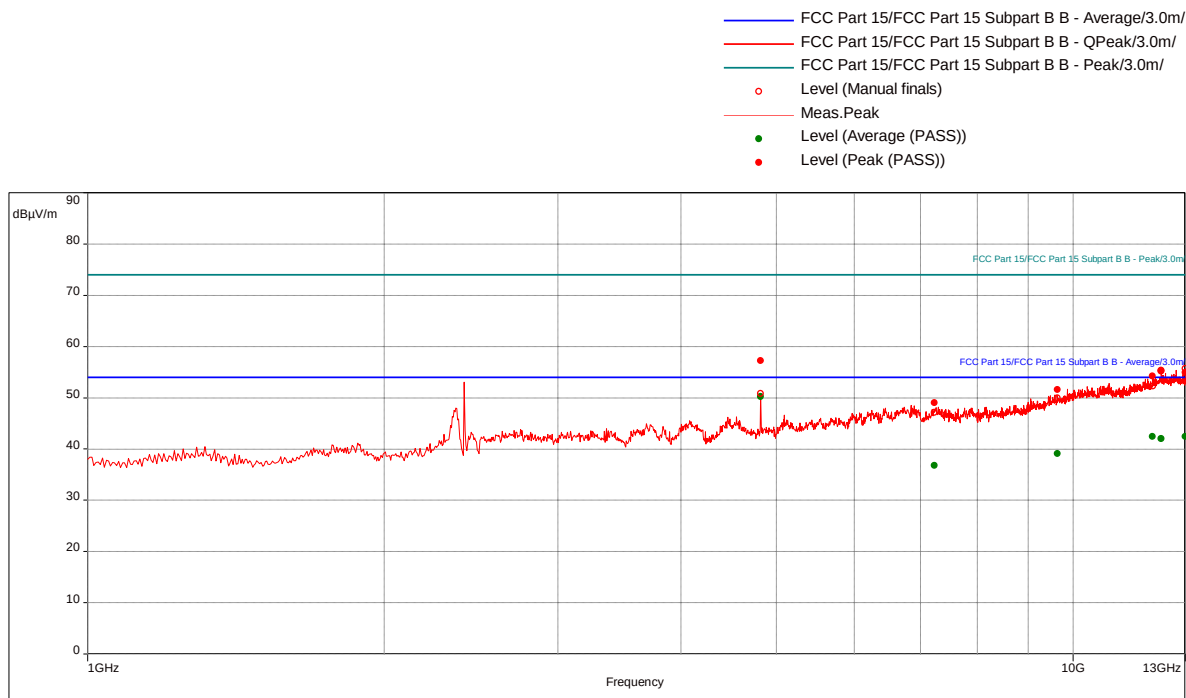
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4821.052632	57.26	74.00	-16.74	195.00	1.22	Vertical	1000000.00	7.74
7319.473684	49.23	74.00	-24.77	343.00	1.88	Horizontal	1000000.00	11.05
9636.578947	51.56	74.00	-22.44	135.00	3.06	Horizontal	1000000.00	13.78
12049.73684	54.11	74.00	-19.89	314.00	2.19	Horizontal	1000000.00	19.02
12607.10526	54.74	74.00	-19.26	25.00	1.57	Horizontal	1000000.00	19.11

Average (PASS) (5)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4821.052632	50.41	54.00	-3.59	195.00	1.22	Vertical	1000000.00	7.74
7319.473684	36.31	54.00	-17.69	343.00	1.88	Horizontal	1000000.00	11.05
9636.578947	38.39	54.00	-15.61	135.00	3.06	Horizontal	1000000.00	13.78
12049.73684	42.54	54.00	-11.46	314.00	2.19	Horizontal	1000000.00	19.02
12607.10526	41.71	54.00	-12.29	25.00	1.57	Horizontal	1000000.00	19.11

Transmit @ Low Channel (Y-axis), Battery Mode, 1-25 GHz**Test Information:**

Date and Time	10/10/2018 2:47:48 PM
Client and Project Number	Simbex
Engineer	Kouma Sinn
Temperature	21C
Humidity	47%
Atmospheric Pressure	1007mbar
Comments	Alert Monitor, Tx Low, Y-axis, Fresh Batteries, 1-13 GHz

Graph:

Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:**Peak (PASS) (6)**

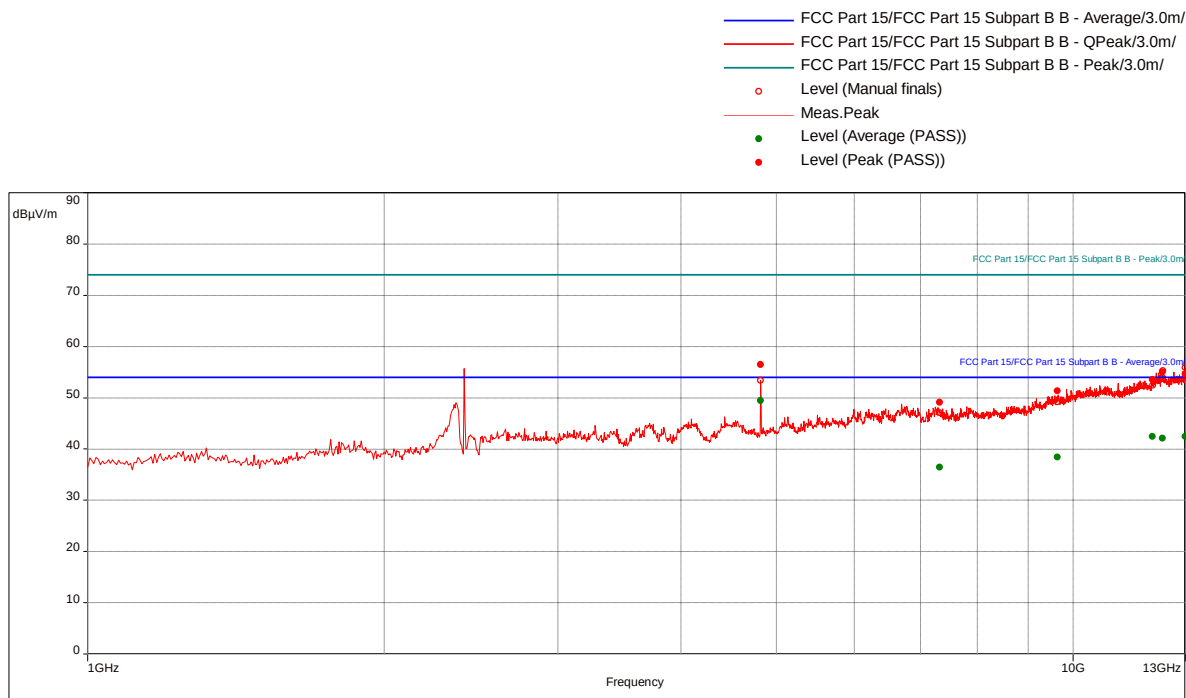
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4820.789474	57.26	74.00	-16.74	166.00	2.24	Vertical	1000000.00	7.74
7231.842105	48.99	74.00	-25.01	92.00	2.92	Vertical	1000000.00	11.08
9642.105263	51.57	74.00	-22.43	121.00	2.57	Horizontal	1000000.00	13.79
12045.52632	54.22	74.00	-19.78	56.00	2.73	Vertical	1000000.00	19.01
12294.47368	55.18	74.00	-18.82	196.00	1.46	Horizontal	1000000.00	19.27
12998.68421	54.90	74.00	-19.10	159.00	2.41	Horizontal	1000000.00	19.96

Average (PASS) (6)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4820.789474	50.22	54.00	-3.78	166.00	2.24	Vertical	1000000.00	7.74
7231.842105	36.80	54.00	-17.20	92.00	2.92	Vertical	1000000.00	11.08
9642.105263	39.13	54.00	-14.87	121.00	2.57	Horizontal	1000000.00	13.79
12045.52632	42.43	54.00	-11.57	56.00	2.73	Vertical	1000000.00	19.01
12294.47368	41.98	54.00	-12.02	196.00	1.46	Horizontal	1000000.00	19.27
12998.68421	42.46	54.00	-11.54	159.00	2.41	Horizontal	1000000.00	19.96

Transmit @ Low Channel (Z-axis), Battery Mode, 1-25 GHz**Test Information:**

Date and Time	10/10/2018 2:18:28 PM
Client and Project Number	Simbex
Engineer	Kouma Sinn
Temperature	21C
Humidity	47%
Atmospheric Pressure	1007mbar
Comments	Alert Monitor, Tx Low, Z-axis, Fresh Batteries, 1-13 GHz

Graph:

Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:**Peak (PASS) (6)**

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4821.052632	56.45	74.00	-17.55	276.00	1.30	Vertical	1000000.00	7.74
7321.578947	49.09	74.00	-24.91	218.00	1.61	Horizontal	1000000.00	11.05
9638.421053	51.30	74.00	-22.70	78.00	2.07	Vertical	1000000.00	13.78
12045.26316	53.54	74.00	-20.46	107.00	1.25	Horizontal	1000000.00	19.00
12331.05263	55.03	74.00	-18.97	121.00	1.62	Horizontal	1000000.00	19.26
12993.55263	54.63	74.00	-19.37	70.00	2.81	Vertical	1000000.00	19.95

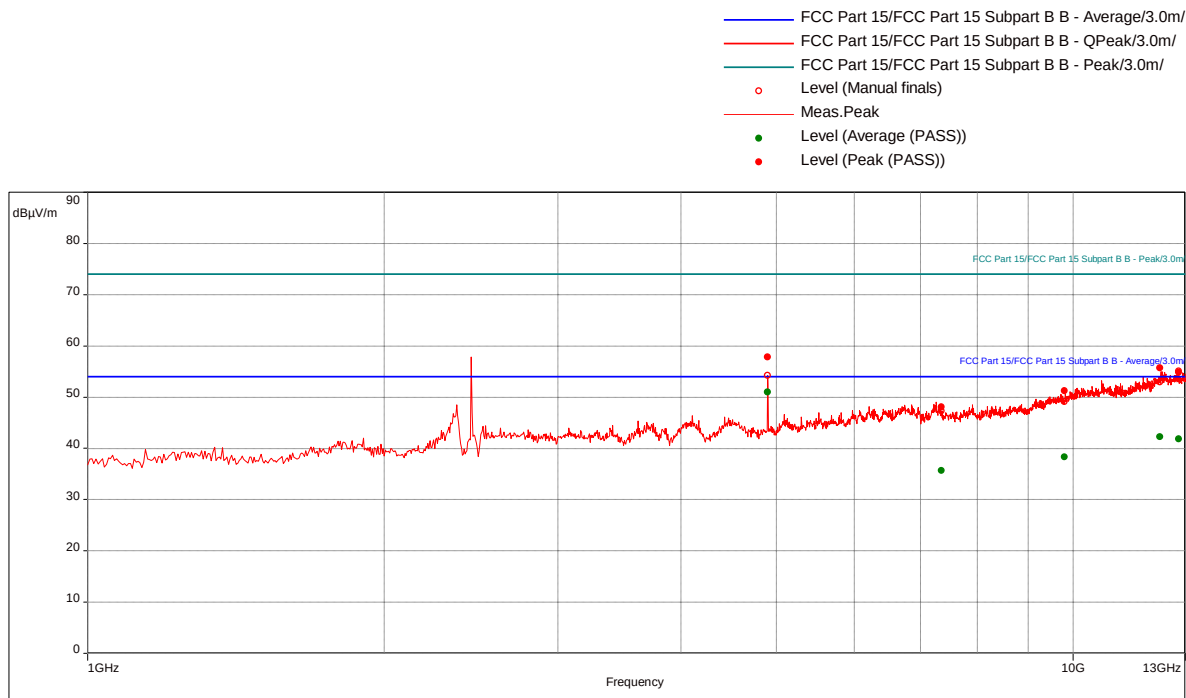
Average (PASS) (6)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4821.052632	49.46	54.00	-4.54	276.00	1.30	Vertical	1000000.00	7.74
7321.578947	36.46	54.00	-17.54	218.00	1.61	Horizontal	1000000.00	11.05
9638.421053	38.39	54.00	-15.61	78.00	2.07	Vertical	1000000.00	13.78
12045.26316	42.43	54.00	-11.57	107.00	1.25	Horizontal	1000000.00	19.00
12331.05263	42.07	54.00	-11.93	121.00	1.62	Horizontal	1000000.00	19.26
12993.55263	42.45	54.00	-11.55	70.00	2.81	Vertical	1000000.00	19.95

Transmit @ Mid Channel (X-axis), Battery Mode, 1-25 GHz

Test Information:

Date and Time	10/10/2018 12:48:18 PM
Client and Project Number	Simbex
Engineer	Kouma Sinn
Temperature	21C
Humidity	47%
Atmospheric Pressure	1007mbar
Comments	Alert Monitor, Tx Mid, X-axis, Fresh Batteries, 1-13 GHz

Graph:**Results:**

Peak (PASS) (5)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4898.947368	57.81	74.00	-16.19	210.00	1.22	Vertical	1000000.00	7.61
7351.315789	48.10	74.00	-25.90	152.00	3.86	Vertical	1000000.00	11.00
9804.473684	51.29	74.00	-22.71	1.00	2.11	Horizontal	1000000.00	14.31
12251.05263	55.73	74.00	-18.27	336.00	2.07	Vertical	1000000.00	19.27
12802.10526	54.81	74.00	-19.19	181.00	1.37	Vertical	1000000.00	19.59

Average (PASS) (5)

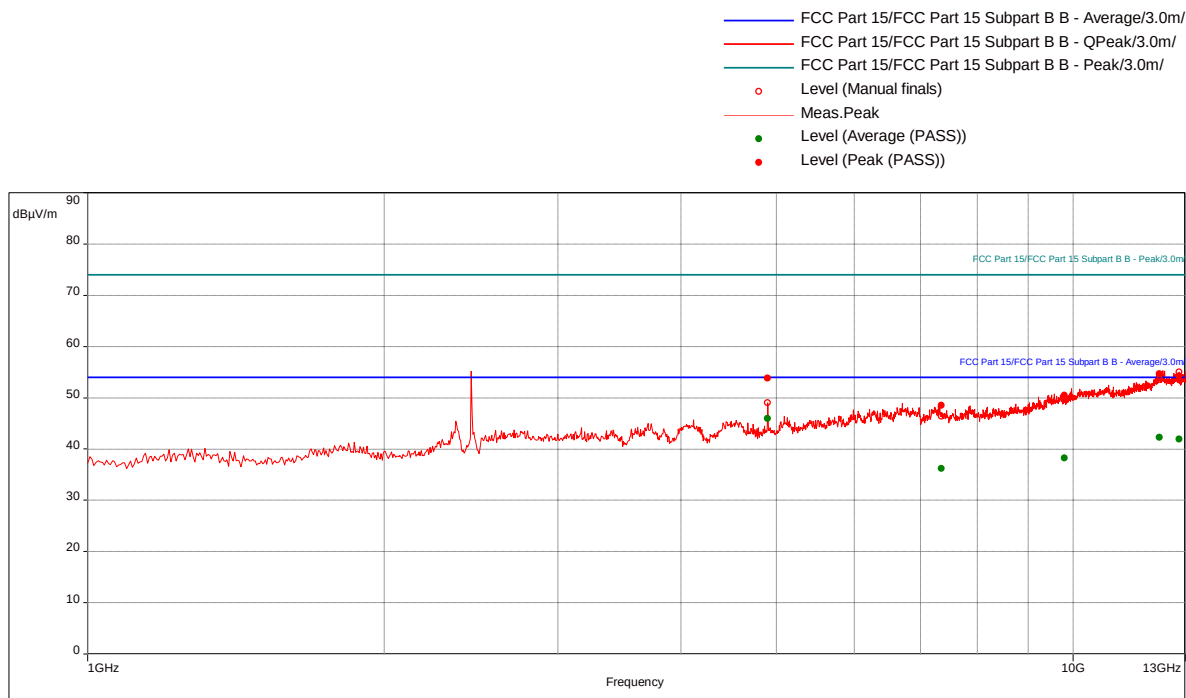
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4898.947368	50.99	54.00	-3.01	210.00	1.22	Vertical	1000000.00	7.61
7351.315789	35.69	54.00	-18.31	152.00	3.86	Vertical	1000000.00	11.00
9804.473684	38.30	54.00	-15.70	1.00	2.11	Horizontal	1000000.00	14.31
12251.05263	42.30	54.00	-11.70	336.00	2.07	Vertical	1000000.00	19.27
12802.10526	41.87	54.00	-12.13	181.00	1.37	Vertical	1000000.00	19.59

Transmit @ Mid Channel (Y-axis), Battery Mode, 1-25 GHz

Test Information:

Date and Time	10/10/2018 1:16:18 PM
Client and Project Number	Simbex
Engineer	Kouma Sinn
Temperature	21C
Humidity	47%
Atmospheric Pressure	1007mbar
Comments	Alert Monitor, Tx Mid, Y-axis, Fresh Batteries, 1-13 GHz

Graph:



Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:

Peak (PASS) (5)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4898.947368	53.85	74.00	-20.15	106.00	2.26	Vertical	1000000.00	7.61
7348.421053	48.52	74.00	-25.48	129.00	1.45	Horizontal	1000000.00	11.00
9800.263158	50.49	74.00	-23.51	174.00	3.99	Horizontal	1000000.00	14.30
12246.84211	54.63	74.00	-19.37	107.00	3.61	Horizontal	1000000.00	19.27
12811.05263	54.28	74.00	-19.72	70.00	2.23	Vertical	1000000.00	19.61

Average (PASS) (5)

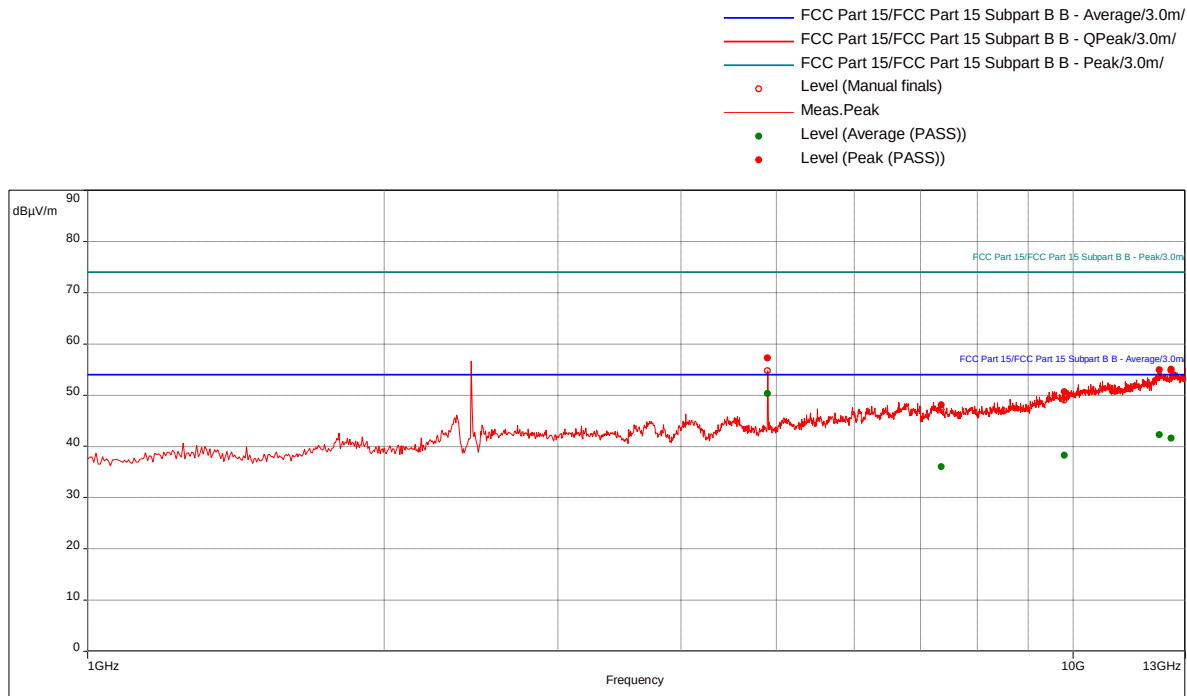
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4898.947368	45.92	54.00	-8.08	106.00	2.26	Vertical	1000000.00	7.61
7348.421053	36.19	54.00	-17.81	129.00	1.45	Horizontal	1000000.00	11.00
9800.263158	38.29	54.00	-15.71	174.00	3.99	Horizontal	1000000.00	14.30
12246.84211	42.29	54.00	-11.71	107.00	3.61	Horizontal	1000000.00	19.27
12811.05263	41.89	54.00	-12.11	70.00	2.23	Vertical	1000000.00	19.61

Transmit @ Mid Channel (Z-axis), Battery Mode, 1-25 GHz

Test Information:

Date and Time	10/10/2018 1:52:27 PM
Client and Project Number	Simbex
Engineer	Kouma Sinn
Temperature	21C
Humidity	47%
Atmospheric Pressure	1007mbar
Comments	Alert Monitor, Tx Mid, Z-axis, Fresh Batteries, 1-13 GHz

Graph:



Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:

Peak (PASS) (5)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4898.947368	57.26	74.00	-16.74	91.00	1.29	Vertical	1000000.00	7.61
7352.368421	48.10	74.00	-25.90	0.00	3.84	Vertical	1000000.00	11.00
9802.105263	50.63	74.00	-23.37	337.00	1.23	Vertical	1000000.00	14.30
12245.52632	54.90	74.00	-19.10	269.00	2.01	Vertical	1000000.00	19.27
12585	55.03	74.00	-18.97	233.00	1.96	Vertical	1000000.00	19.11

Average (PASS) (5)

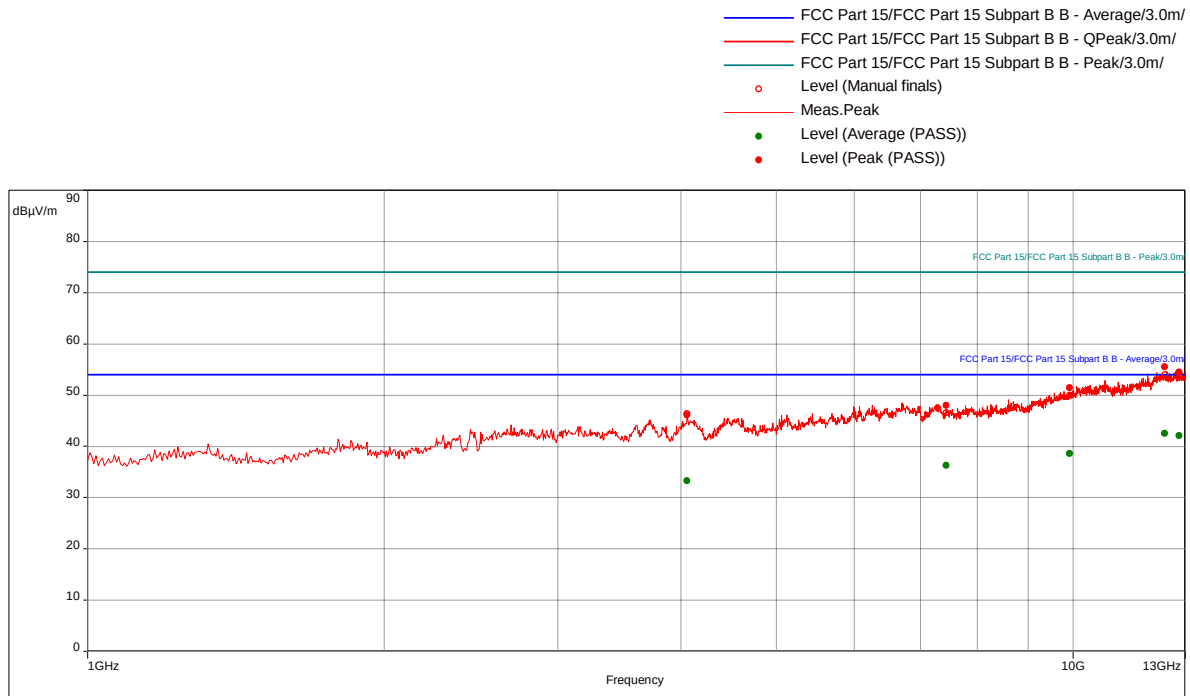
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4898.947368	50.32	54.00	-3.68	91.00	1.29	Vertical	1000000.00	7.61
7352.368421	36.02	54.00	-17.98	0.00	3.84	Vertical	1000000.00	11.00
9802.105263	38.29	54.00	-15.71	337.00	1.23	Vertical	1000000.00	14.30
12245.52632	42.29	54.00	-11.71	269.00	2.01	Vertical	1000000.00	19.27
12585	41.61	54.00	-12.39	233.00	1.96	Vertical	1000000.00	19.11

Transmit @ High Channel (X-axis), Battery Mode, 1-25 GHz

Test Information:

Date and Time	10/10/2018 3:41:53 PM
Client and Project Number	Simbex
Engineer	Kouma Sinn
Temperature	21C
Humidity	47%
Atmospheric Pressure	1007mbar
Comments	Alert Monitor, Tx High, X-axis, Fresh Batteries, 1-13 GHz

Graph:



Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:

Peak (PASS) (5)

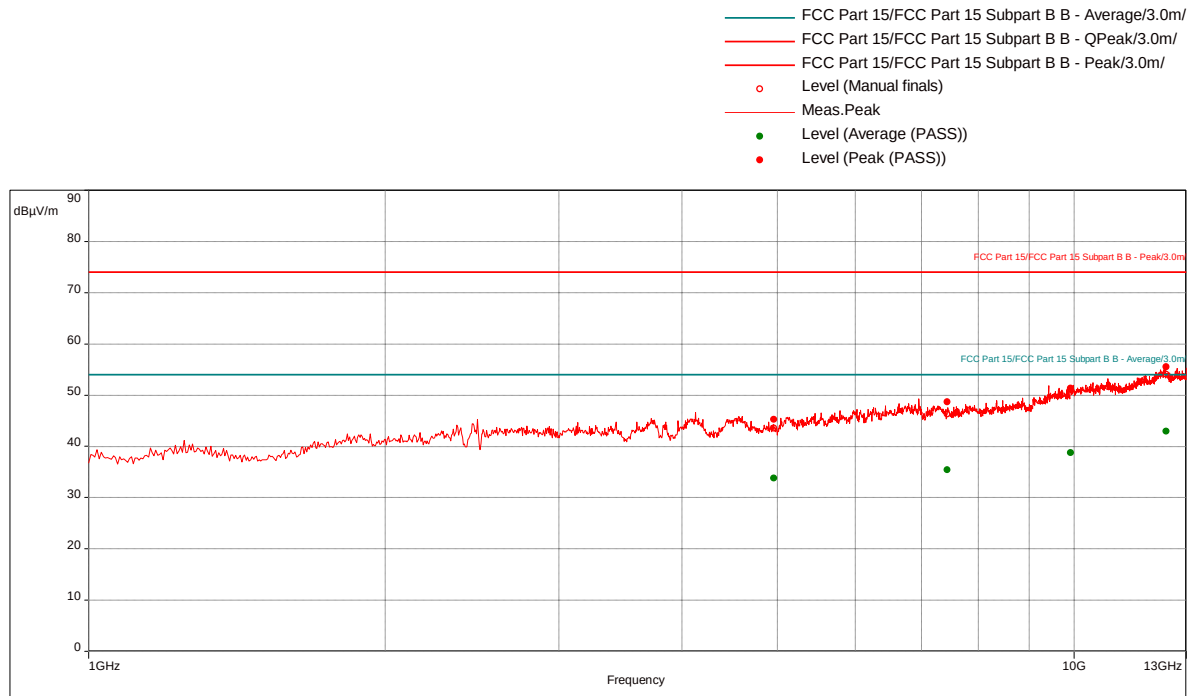
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4058.684211	46.14	74.00	-27.86	336.00	3.59	Horizontal	1000000.00	7.30
7439.210526	47.97	74.00	-26.03	225.00	1.91	Vertical	1000000.00	10.87
9921.842105	51.46	74.00	-22.54	151.00	3.27	Vertical	1000000.00	14.48
12396.05263	55.56	74.00	-18.44	336.00	1.96	Horizontal	1000000.00	19.23
12808.15789	54.54	74.00	-19.46	203.00	1.60	Vertical	1000000.00	19.60

Average (PASS) (5)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4058.684211	33.24	54.00	-20.76	336.00	3.59	Horizontal	1000000.00	7.30
7439.210526	36.29	54.00	-17.71	225.00	1.91	Vertical	1000000.00	10.87
9921.842105	38.56	54.00	-15.44	151.00	3.27	Vertical	1000000.00	14.48
12396.05263	42.56	54.00	-11.44	336.00	1.96	Horizontal	1000000.00	19.23
12808.15789	42.10	54.00	-11.90	203.00	1.60	Vertical	1000000.00	19.60

Transmit @ High Channel (Y-axis), Battery Mode, 1-25 GHz**Test Information:**

Date and Time	10/13/2018 12:12:36 AM
Client and Project Number	Simbex
Engineer	Vathana Ven
Temperature	19C
Humidity	45%
Atmospheric Pressure	997mbar
Comments	Alert Monitor, Tx High, Y-axis, Fresh Batteries, 1-13 GHz

Graph:

Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:**Peak (PASS) (4)**

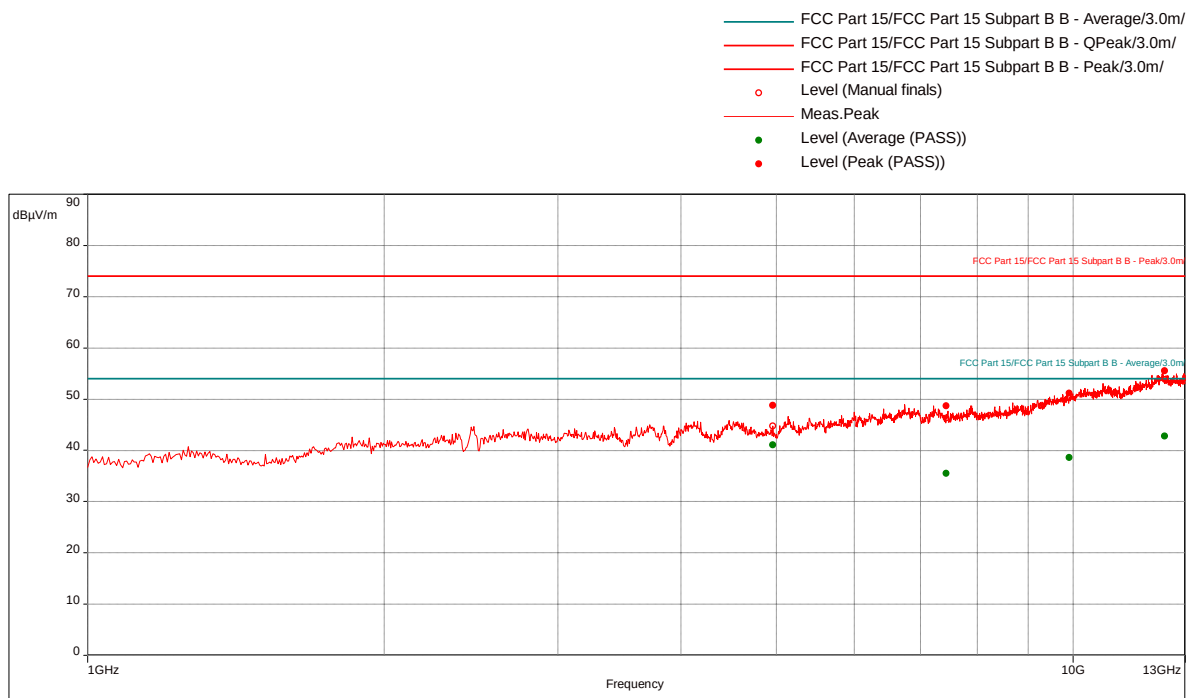
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4961.842105	45.26	74.00	-28.74	182.00	2.55	Vertical	1000000.00	7.60
7442.368421	48.65	74.00	-25.35	1.00	2.96	Vertical	1000000.00	10.87
9921.315789	51.32	74.00	-22.68	49.00	1.85	Vertical	1000000.00	14.48
12400.52632	55.55	74.00	-18.45	277.00	3.71	Vertical	1000000.00	19.23

Average (PASS) (4)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4961.842105	33.77	54.00	-20.23	182.00	2.55	Vertical	1000000.00	7.60
7442.368421	35.39	54.00	-18.61	1.00	2.96	Vertical	1000000.00	10.87
9921.315789	38.74	54.00	-15.26	49.00	1.85	Vertical	1000000.00	14.48
12400.52632	42.94	54.00	-11.06	277.00	3.71	Vertical	1000000.00	19.23

Transmit @ High Channel (Z-axis), Battery Mode, 1-25 GHz**Test Information:**

Date and Time	10/13/2018 12:37:43 AM
Client and Project Number	Simbex
Engineer	Vathana Ven
Temperature	19C
Humidity	45%
Atmospheric Pressure	997mbar
Comments	Alert Monitor, Tx High, Z-axis, Fresh Batteries, 1-13 GHz

Graph:

Note: From 13-25 GHz the scan was performed manually, no emissions were detected above the measuring noise floor.

Results:**Peak (PASS) (4)**

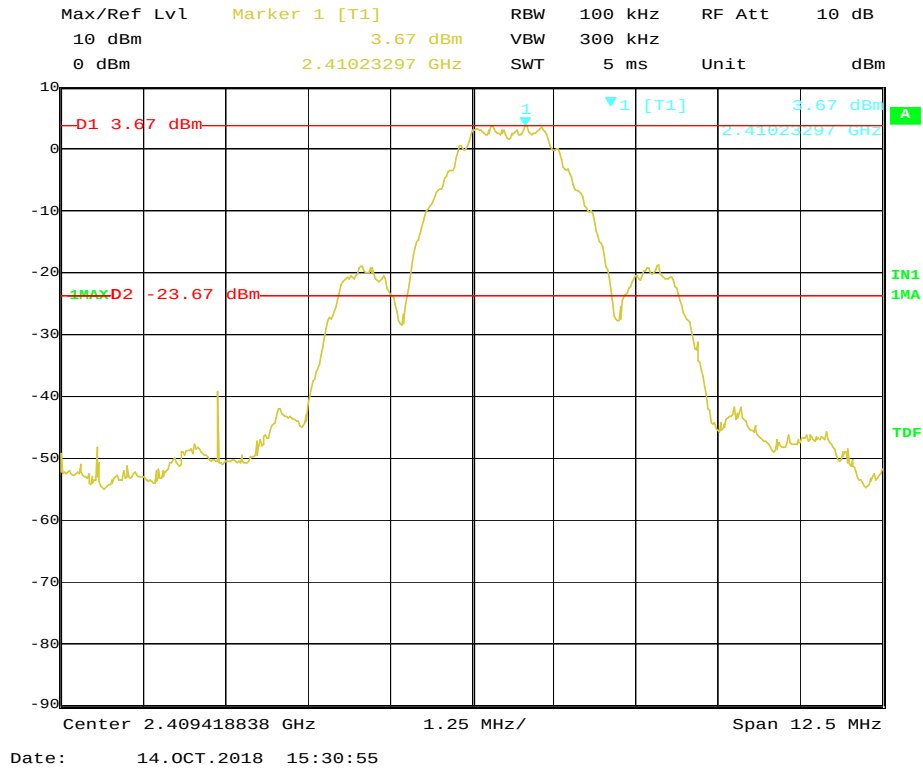
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4960	48.78	74.00	-25.22	12.00	2.24	Vertical	1000000.00	7.60
7439.473684	48.65	74.00	-25.35	336.00	2.98	Horizontal	1000000.00	10.87
9915.263158	51.18	74.00	-22.82	145.00	3.32	Horizontal	1000000.00	14.47
12396.84211	55.56	74.00	-18.44	203.00	1.00	Horizontal	1000000.00	19.23

Average (PASS) (4)

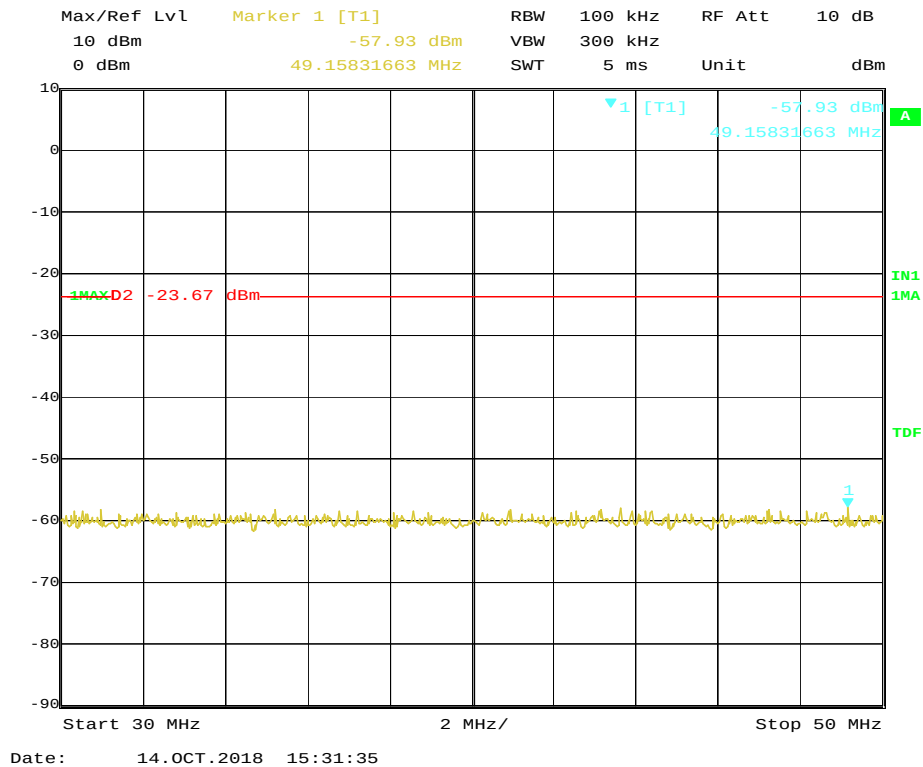
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4960	41.07	54.00	-12.93	12.00	2.24	Vertical	1000000.00	7.60
7439.473684	35.48	54.00	-18.52	336.00	2.98	Horizontal	1000000.00	10.87
9915.263158	38.55	54.00	-15.45	145.00	3.32	Horizontal	1000000.00	14.47
12396.84211	42.75	54.00	-11.25	203.00	1.00	Horizontal	1000000.00	19.23

Antenna Port Conducted Emissions

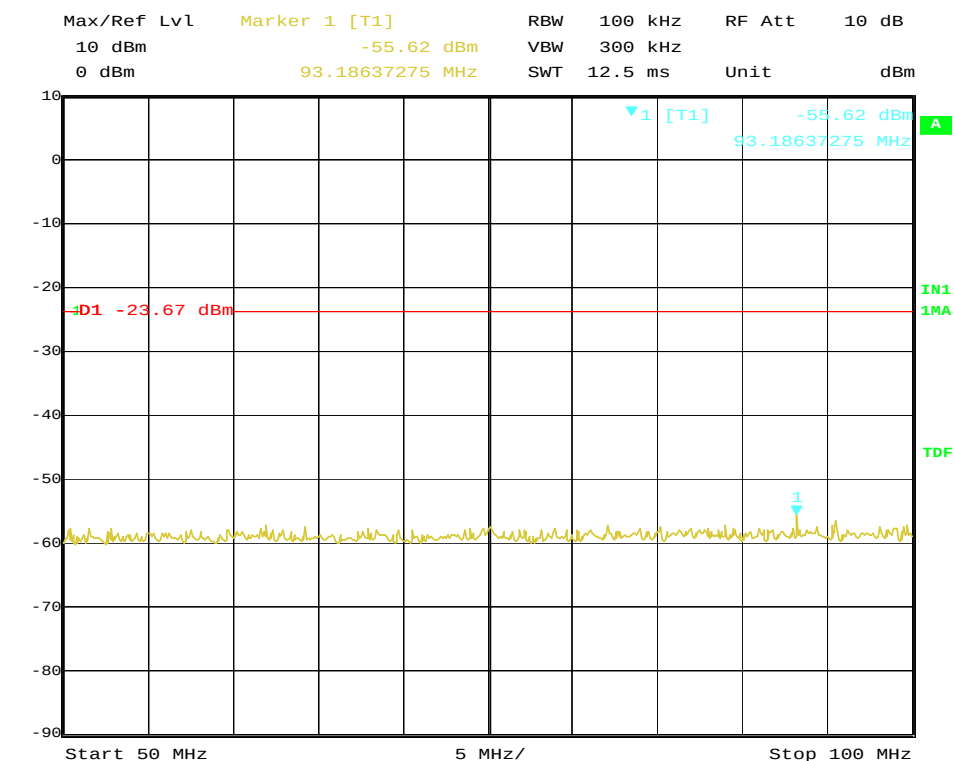
Limit: 20 dB down from the carrier (Low Channel)



Low Channel Antenna Port Conducted Spurious Emissions, 30-50 MHz

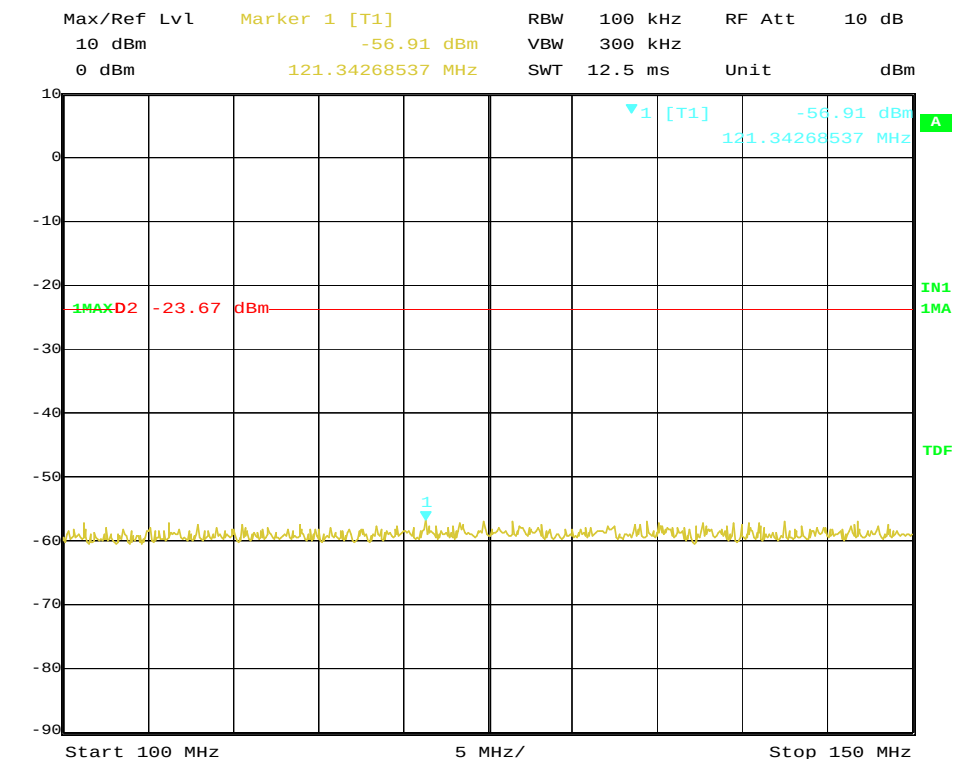


Low Channel Antenna Port Conducted Spurious Emissions, 50-100 MHz



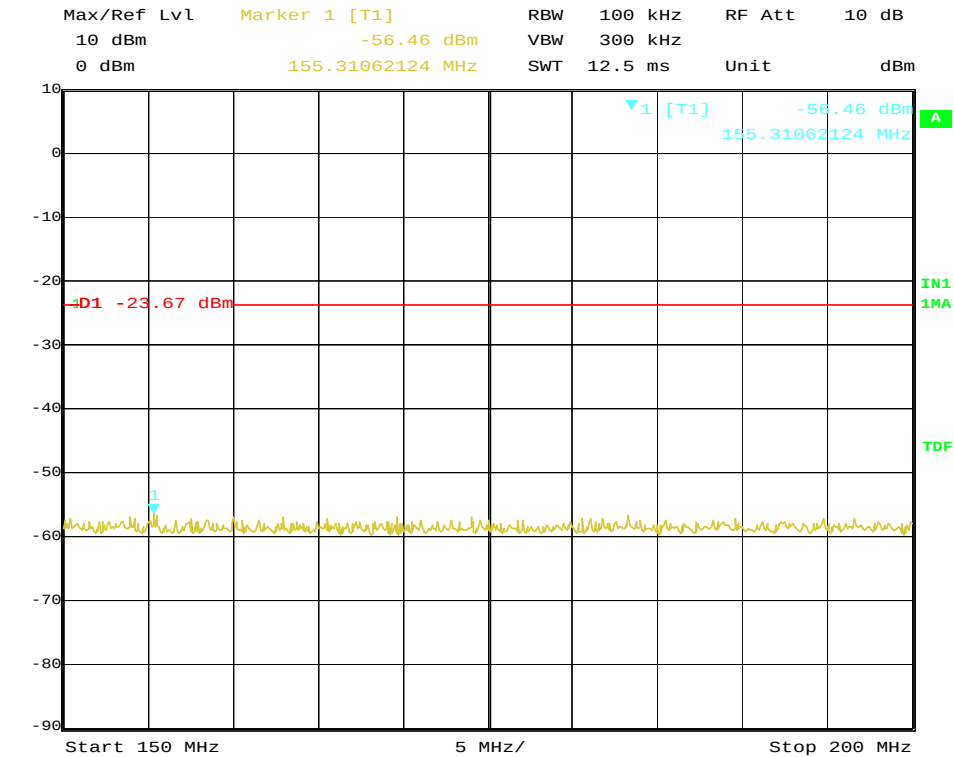
Date: 14.OCT.2018 18:37:36

Low Channel Antenna Port Conducted Spurious Emissions, 100-150 MHz



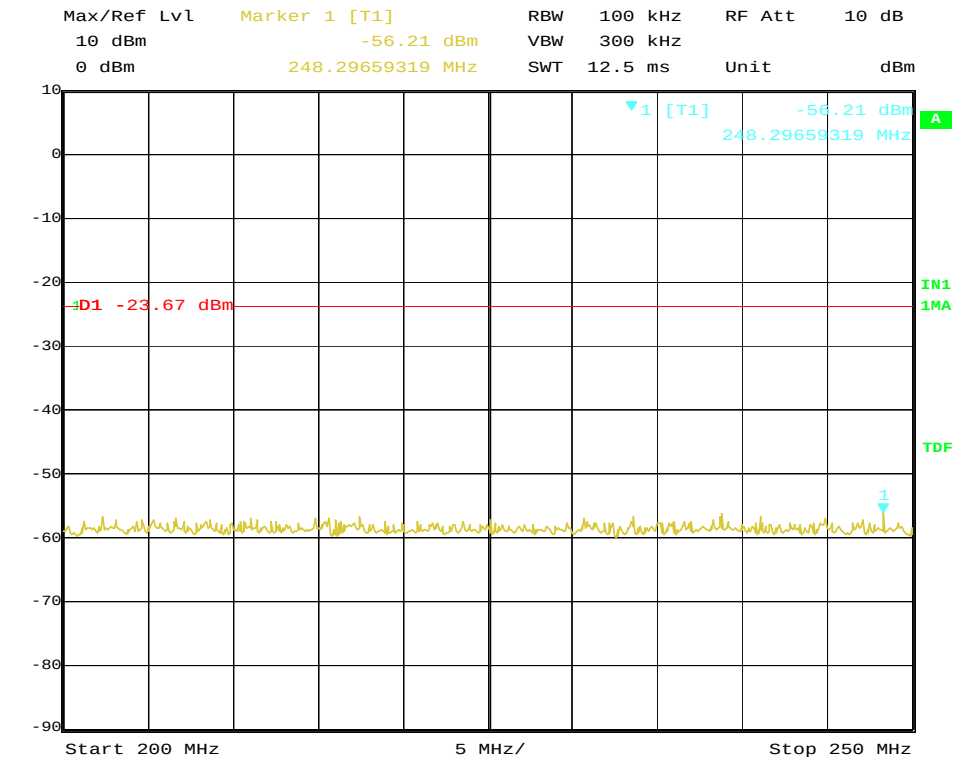
Date: 14.OCT.2018 15:32:27

Low Channel Antenna Port Conducted Spurious Emissions, 150-200 MHz



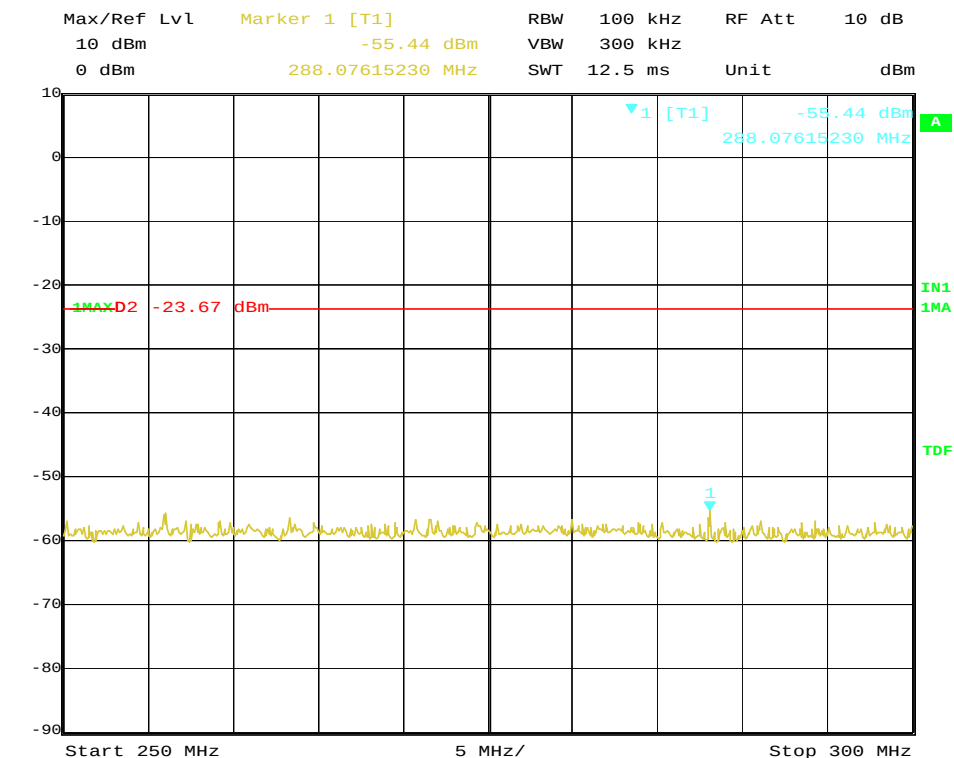
Date: 14.OCT.2018 18:39:34

Low Channel Antenna Port Conducted Spurious Emissions, 200-250 MHz



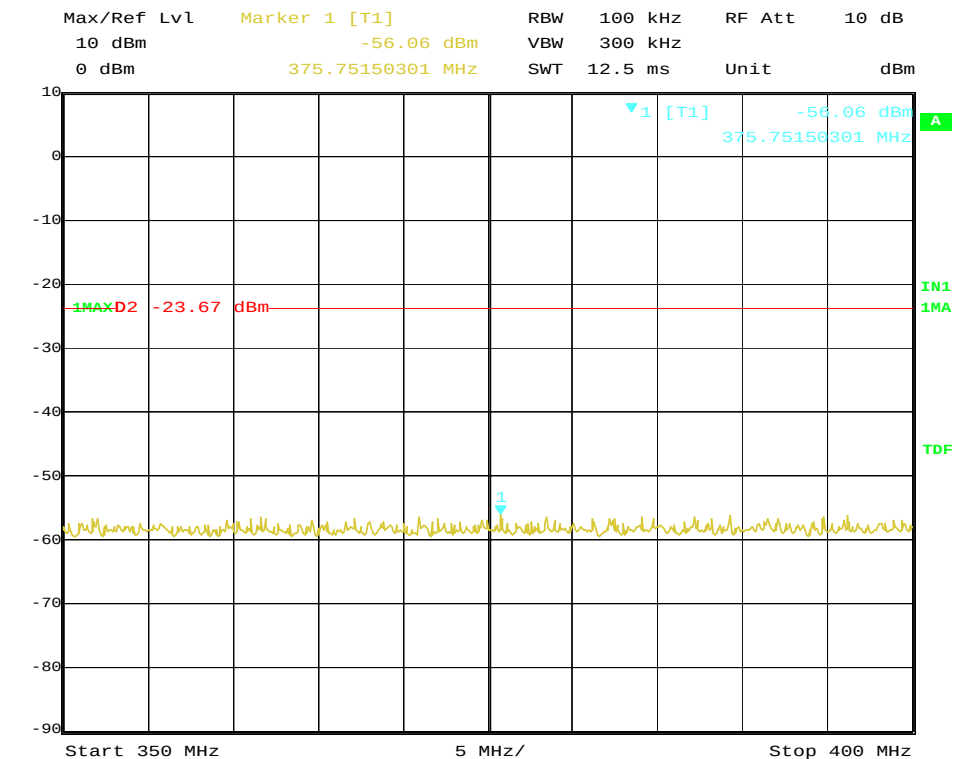
Date: 14.OCT.2018 18:40:05

Low Channel Antenna Port Conducted Spurious Emissions, 250-300 MHz



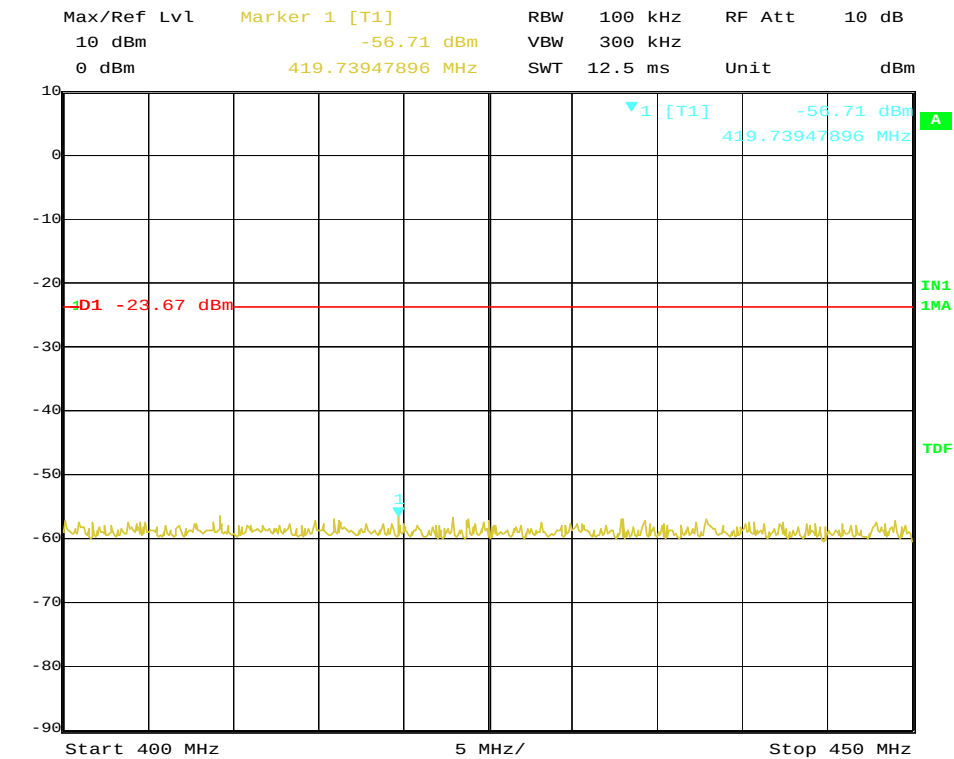
Date: 14.OCT.2018 15:33:44

Low Channel Antenna Port Conducted Spurious Emissions, 350-400 MHz



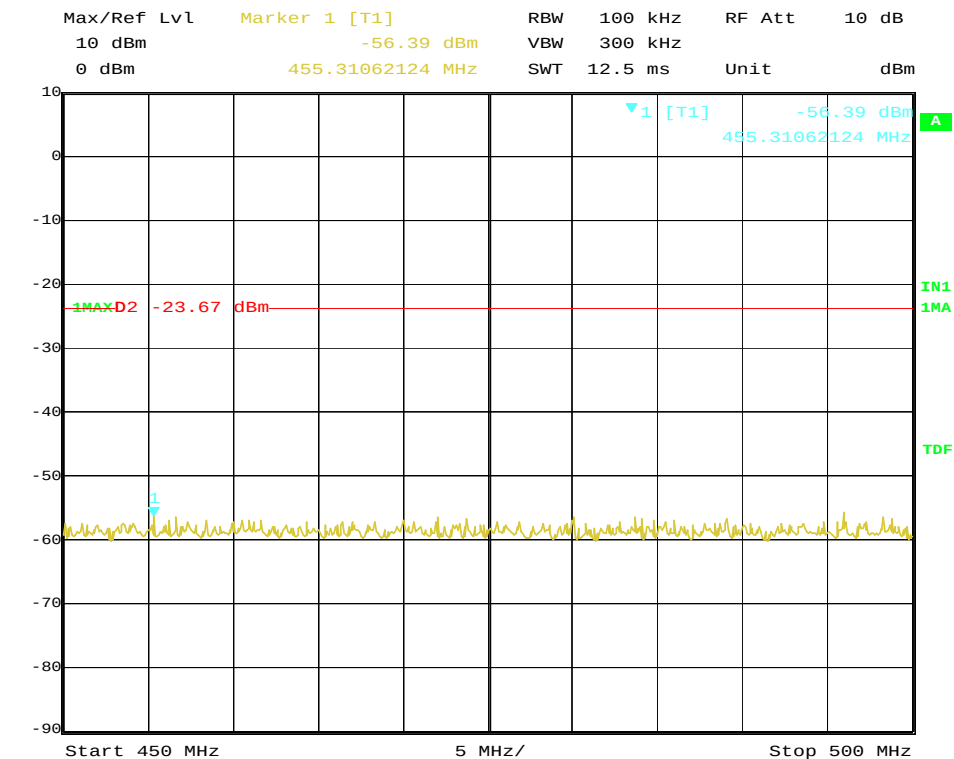
Date: 14.OCT.2018 15:34:28

Low Channel Antenna Port Conducted Spurious Emissions, 400-450 MHz



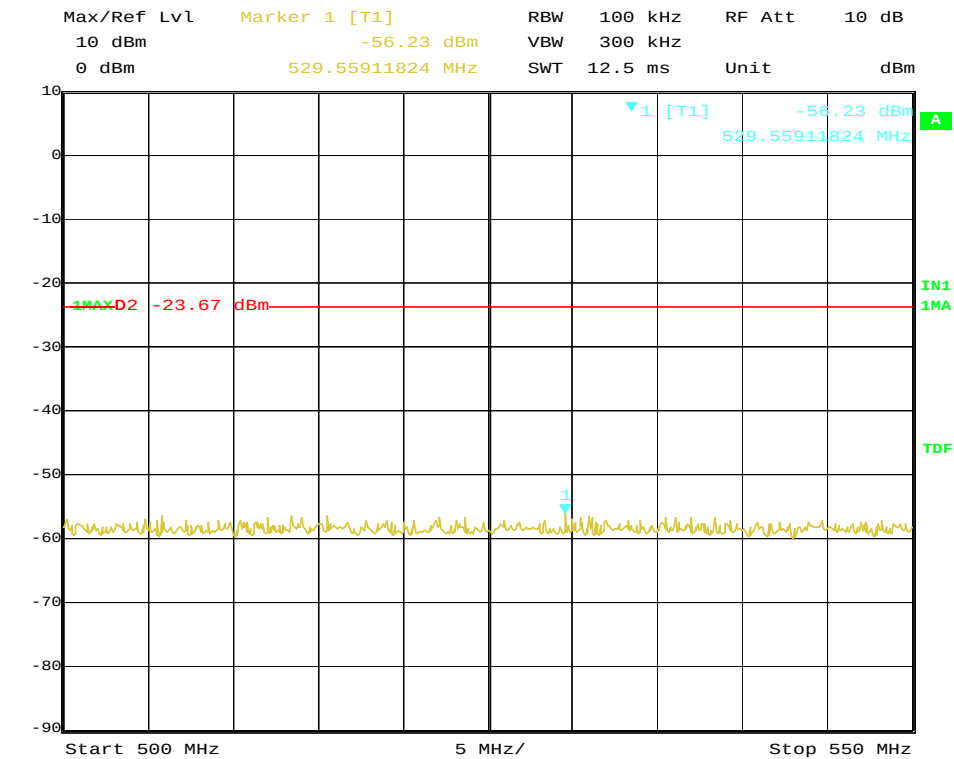
Date: 14.OCT.2018 18:43:10

Low Channel Antenna Port Conducted Spurious Emissions, 450-500 MHz

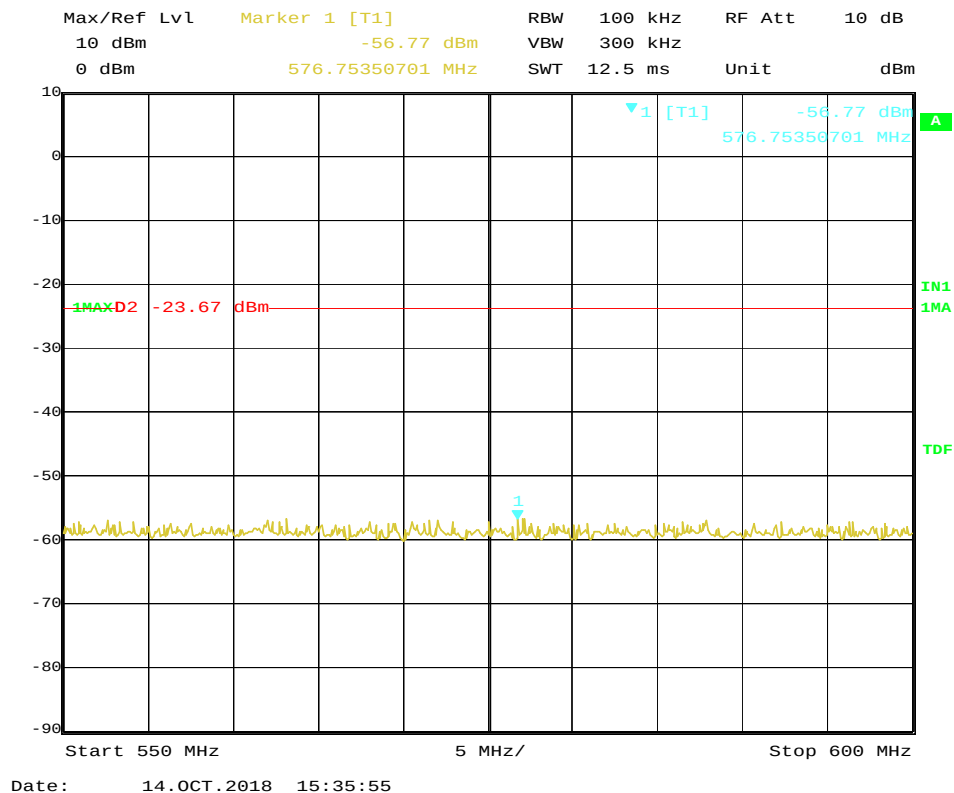


Date: 14.OCT.2018 15:34:51

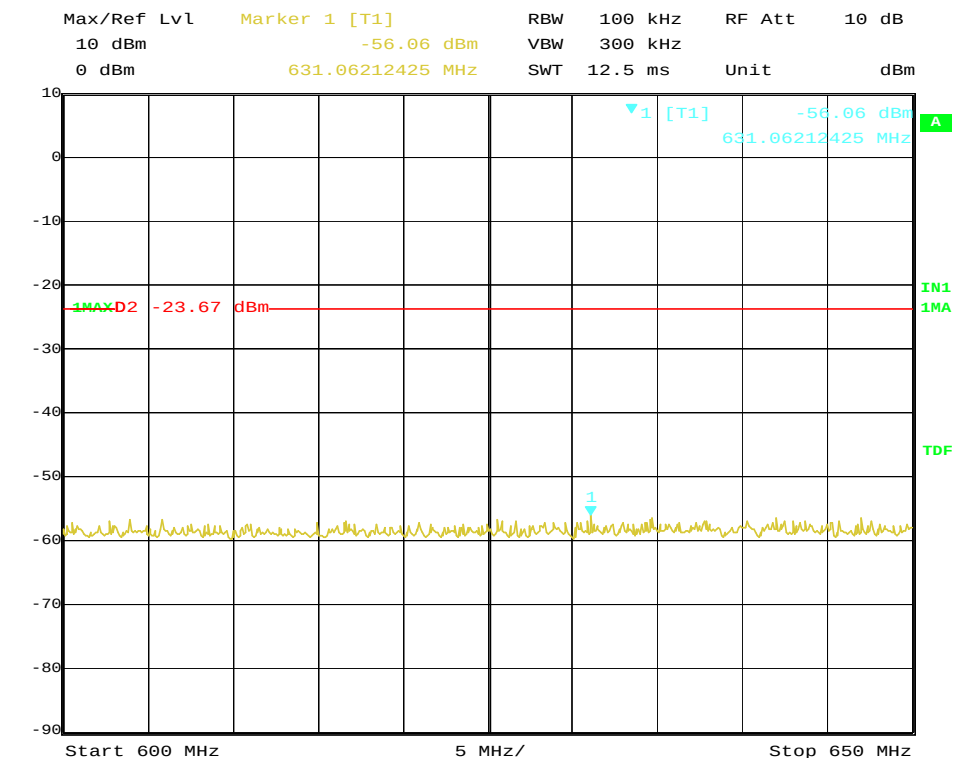
Low Channel Antenna Port Conducted Spurious Emissions, 500-550 MHz



Low Channel Antenna Port Conducted Spurious Emissions, 550-600 MHz

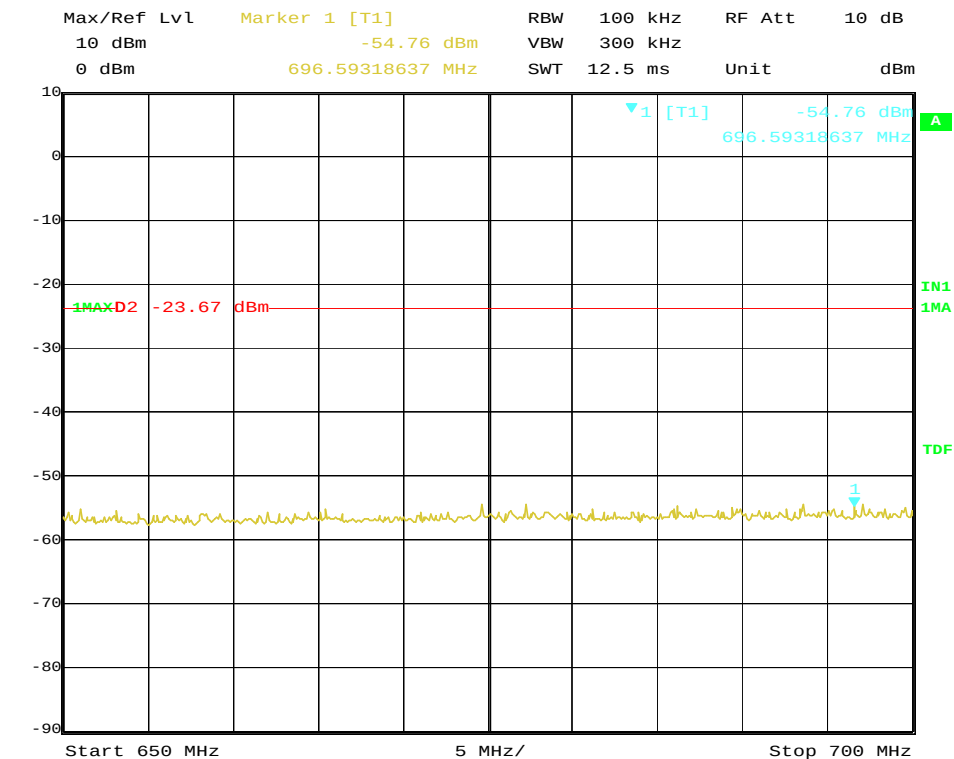


Low Channel Antenna Port Conducted Spurious Emissions, 600-650 MHz



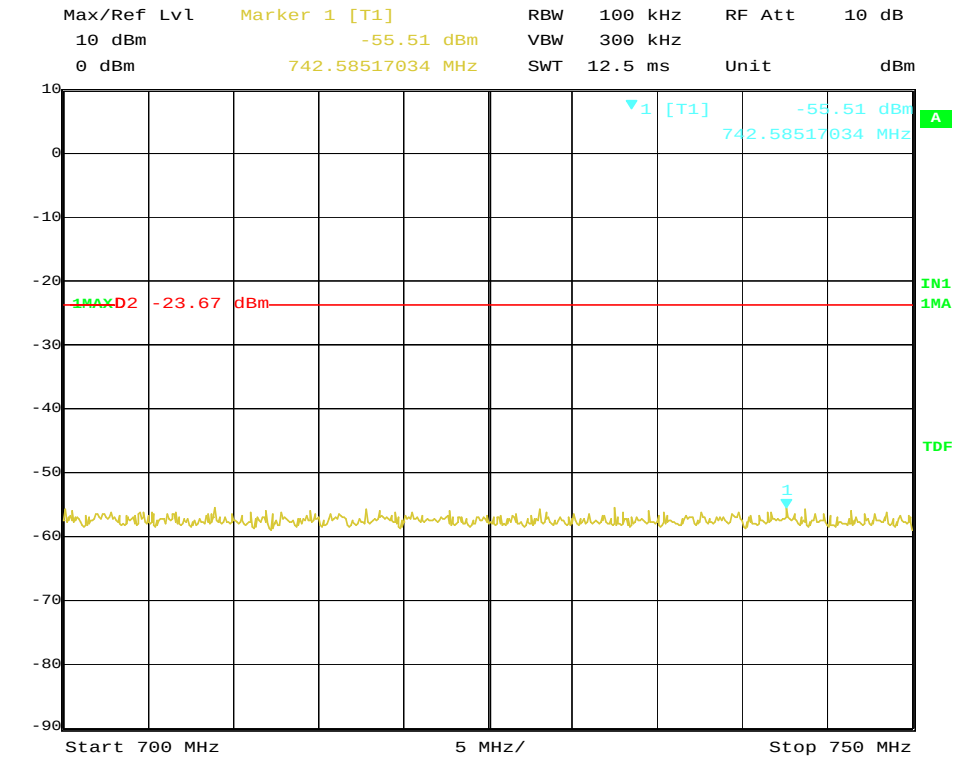
Date: 14.OCT.2018 15:36:29

Low Channel Antenna Port Conducted Spurious Emissions, 650-700 MHz



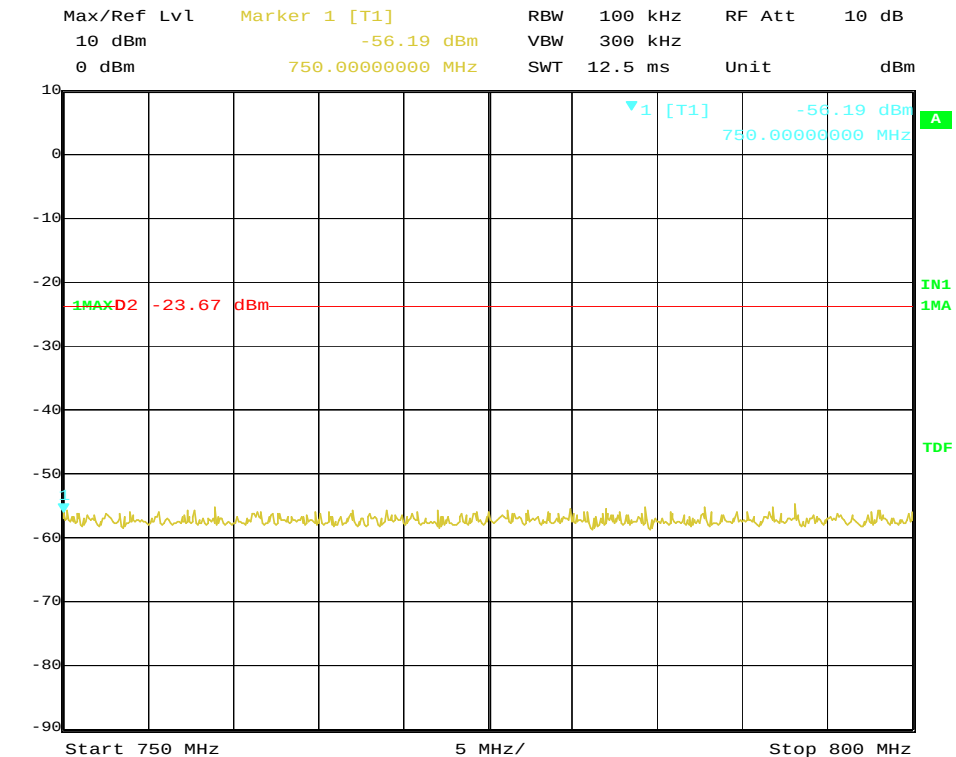
Date: 14.OCT.2018 15:38:28

Low Channel Antenna Port Conducted Spurious Emissions, 700-750 MHz



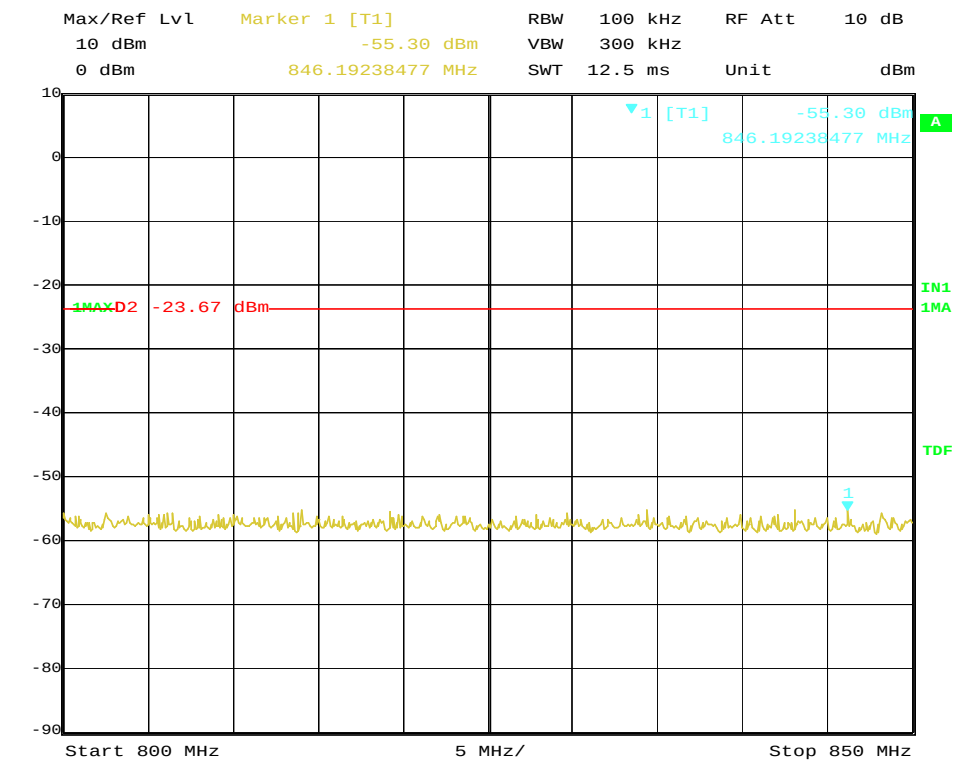
Date: 14.OCT.2018 15:38:55

Low Channel Antenna Port Conducted Spurious Emissions, 750-800 MHz



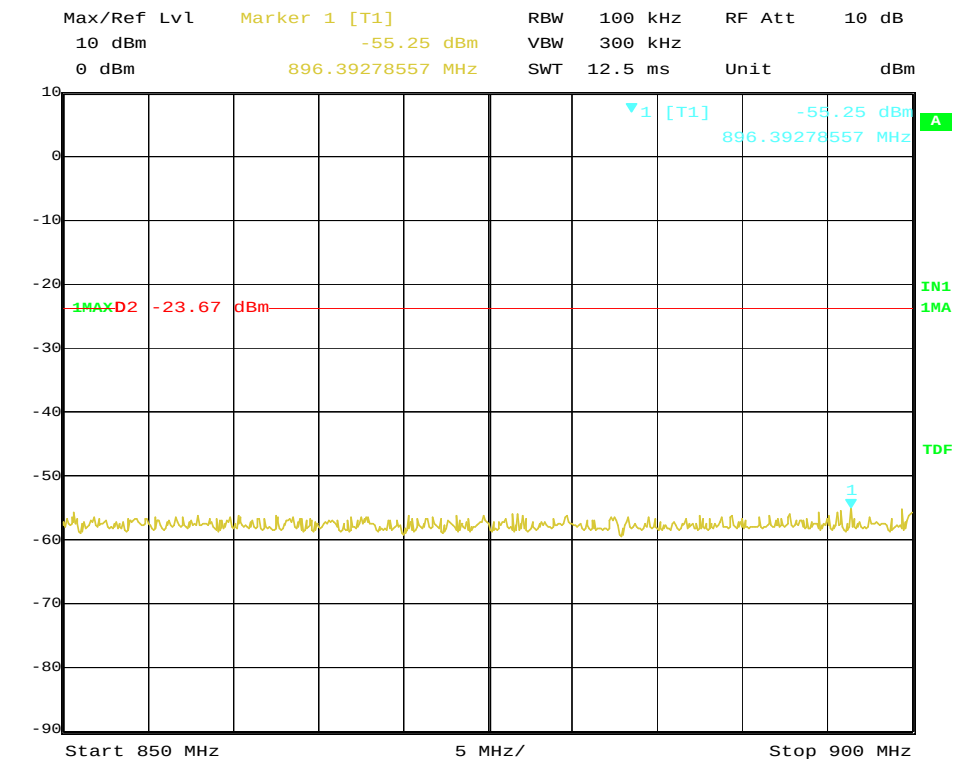
Date: 14.OCT.2018 15:39:29

Low Channel Antenna Port Conducted Spurious Emissions, 800-850 MHz



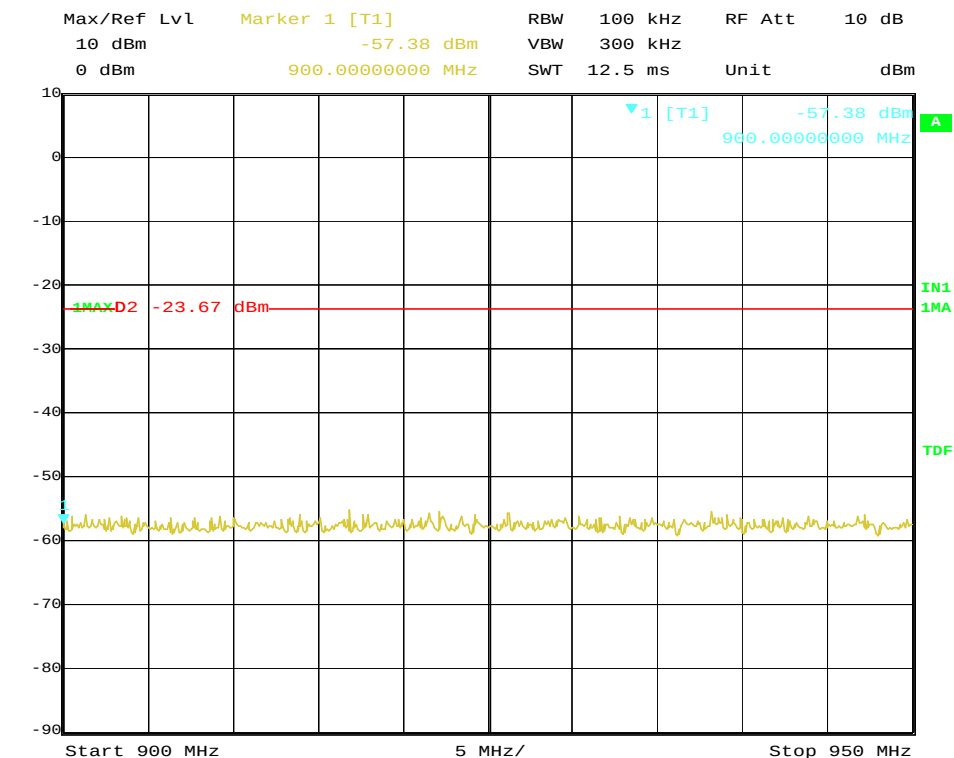
Date: 14.OCT.2018 15:39:54

Low Channel Antenna Port Conducted Spurious Emissions, 850-900 MHz



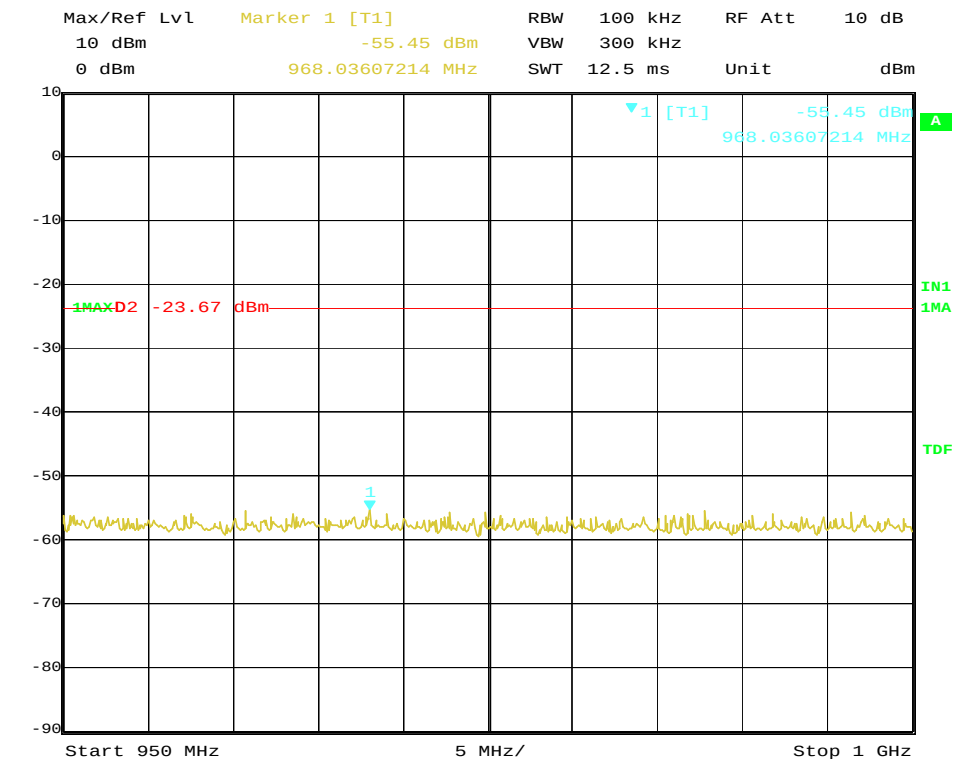
Date: 14.OCT.2018 15:40:24

Low Channel Antenna Port Conducted Spurious Emissions, 900-950 MHz



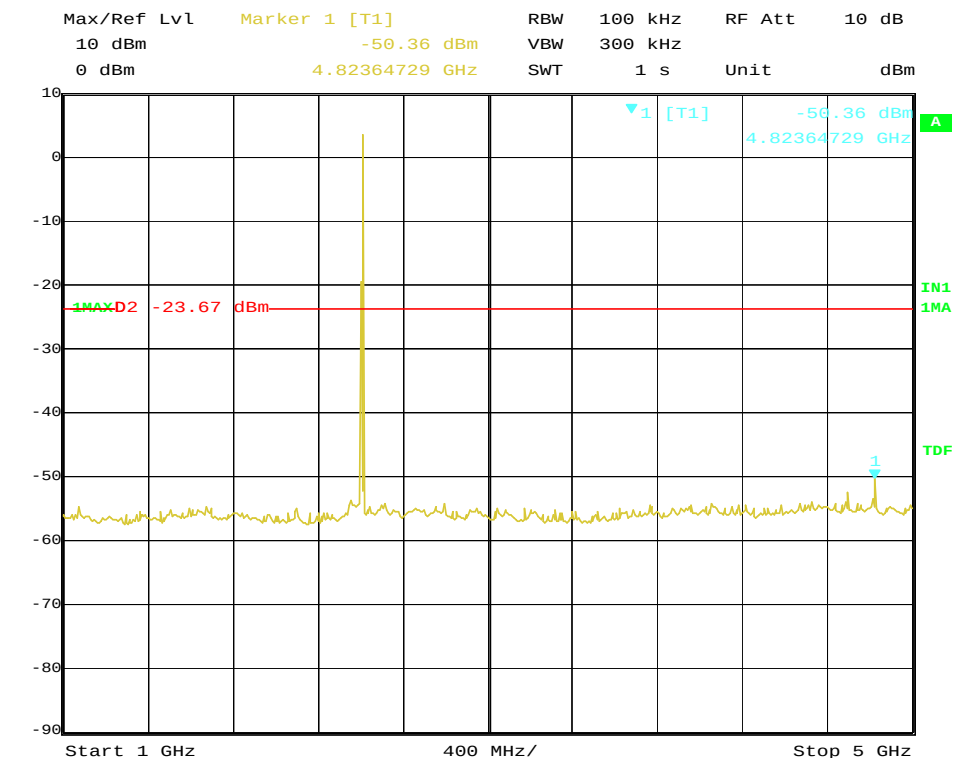
Date: 14.OCT.2018 15:40:53

Low Channel Antenna Port Conducted Spurious Emissions, 950-1000 MHz



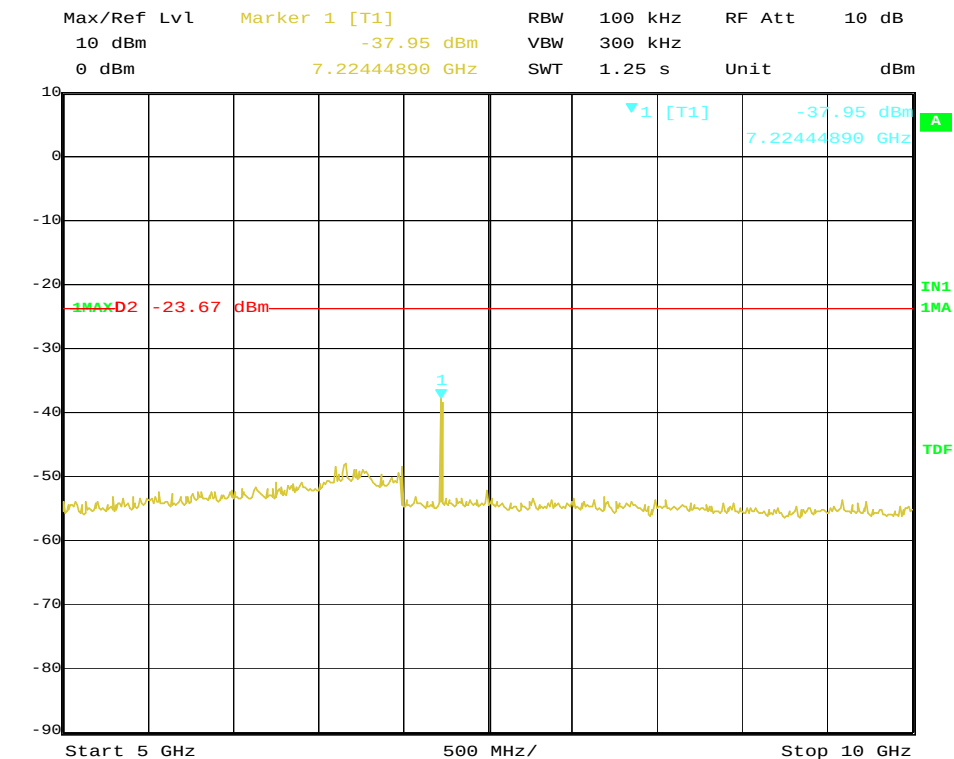
Date: 14.OCT.2018 15:41:21

Low Channel Antenna Port Conducted Spurious Emissions, 1-5 GHz



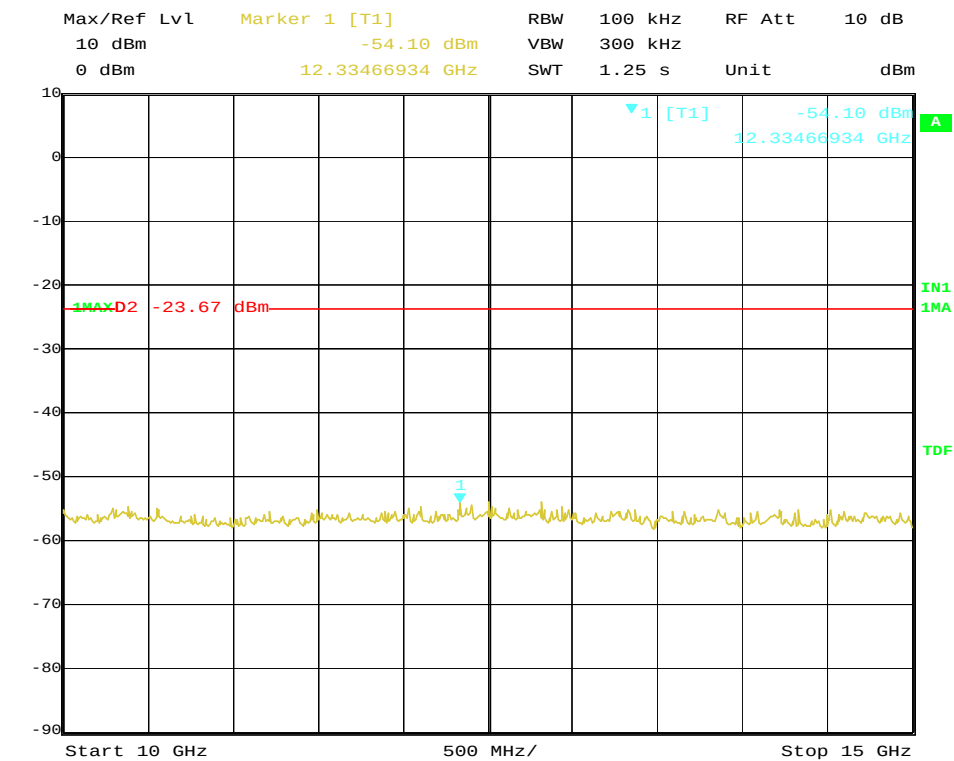
Date: 14.OCT.2018 15:42:16

Low Channel Antenna Port Conducted Spurious Emissions, 5-10 GHz



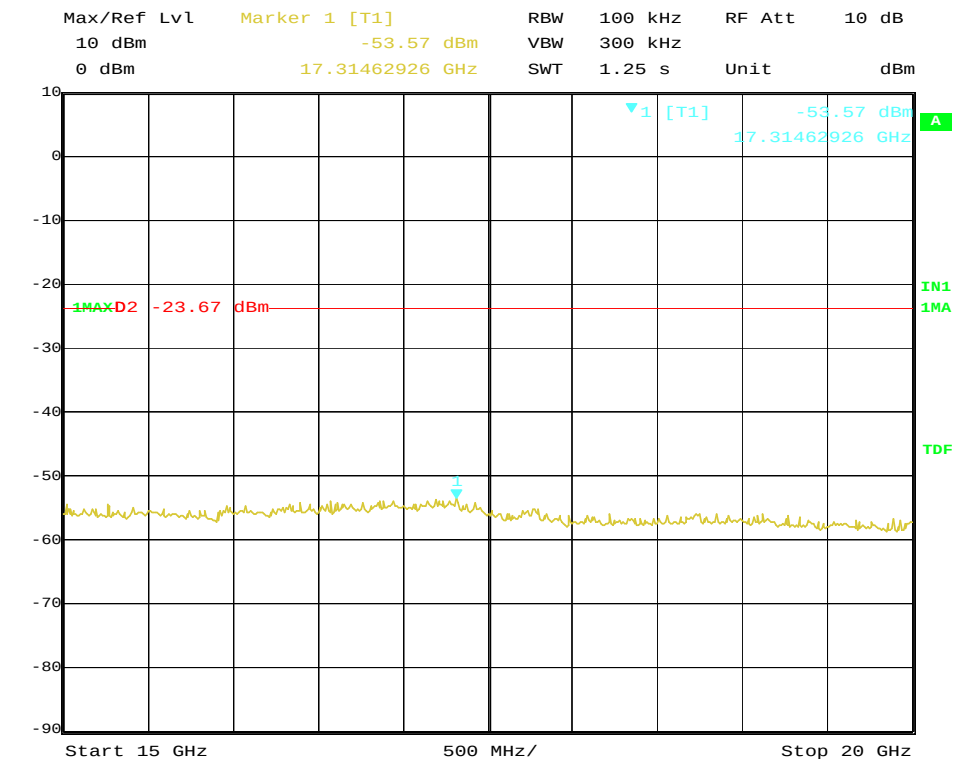
Date: 14.OCT.2018 15:42:55

Low Channel Antenna Port Conducted Spurious Emissions, 10-15 GHz



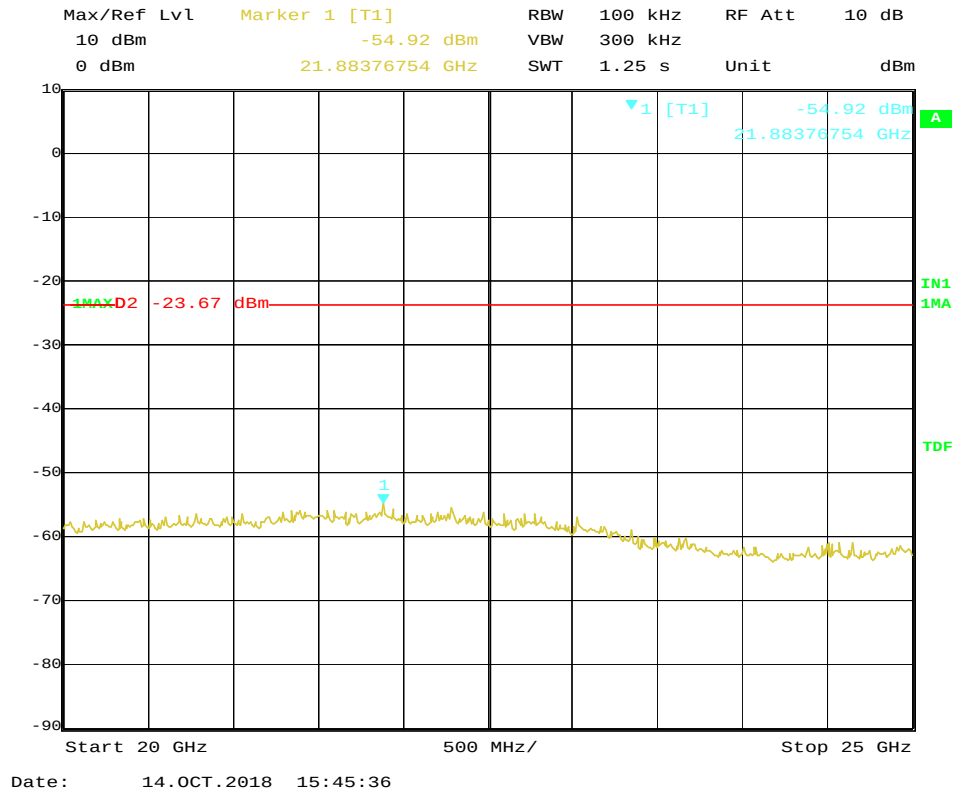
Date: 14.OCT.2018 15:43:29

Low Channel Antenna Port Conducted Spurious Emissions, 15-20 GHz

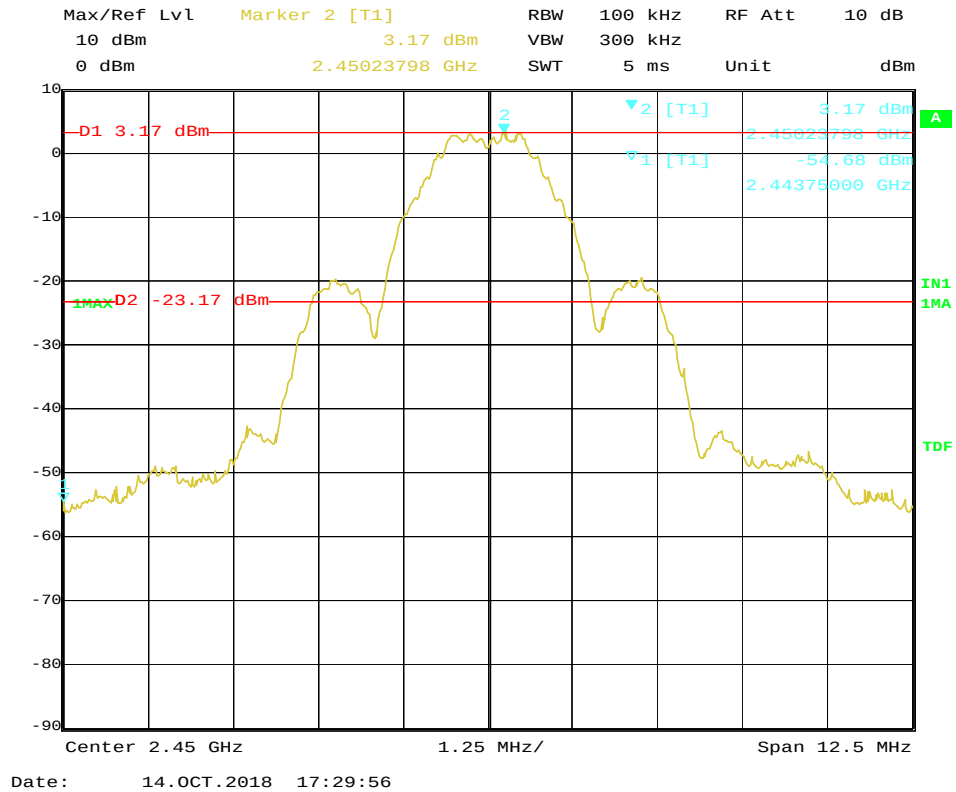


Date: 14.OCT.2018 15:44:58

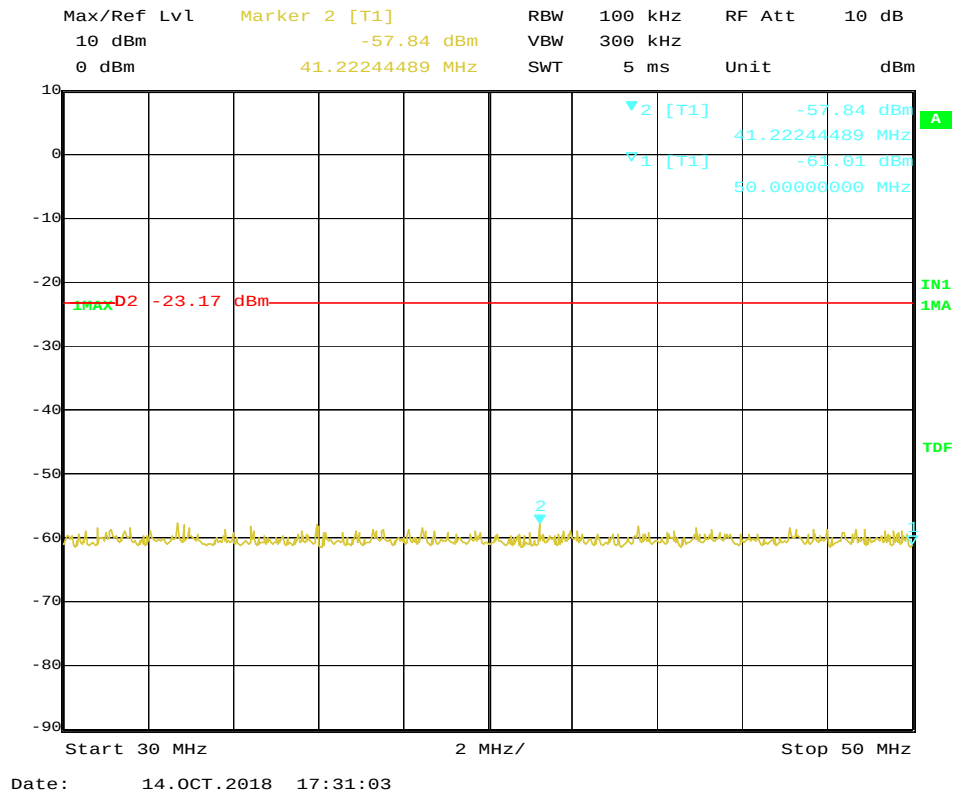
Low Channel Antenna Port Conducted Spurious Emissions, 20-25 GHz



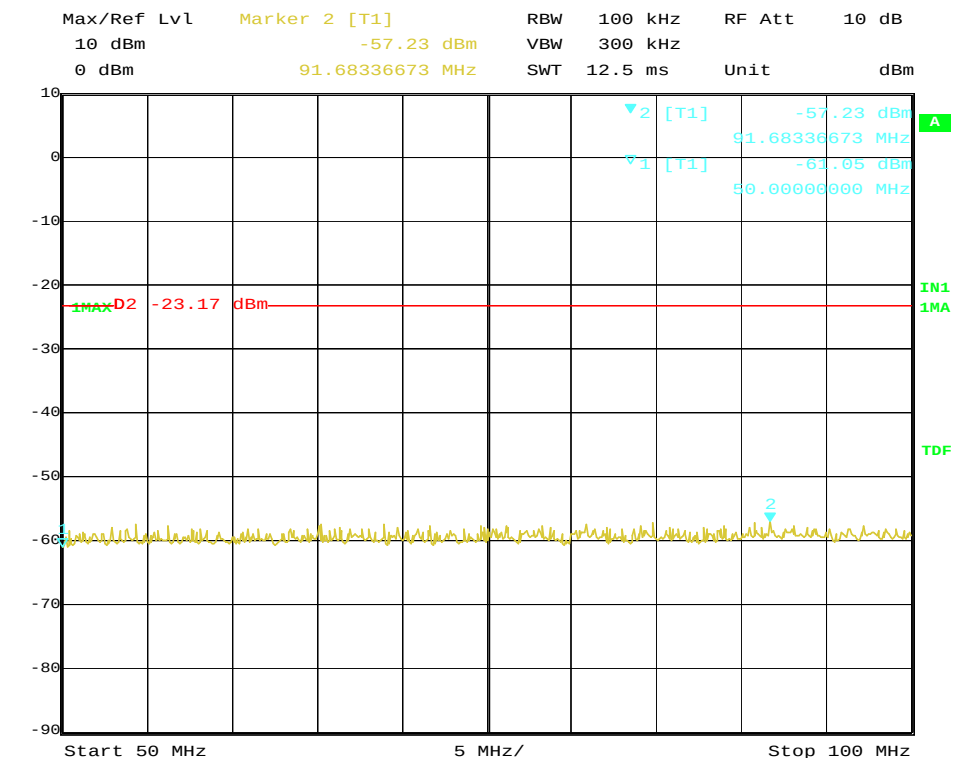
Limit: 20 dB down from the carrier (Mid Channel)



Mid Channel Antenna Port Conducted Spurious Emissions, 30-50 MHz

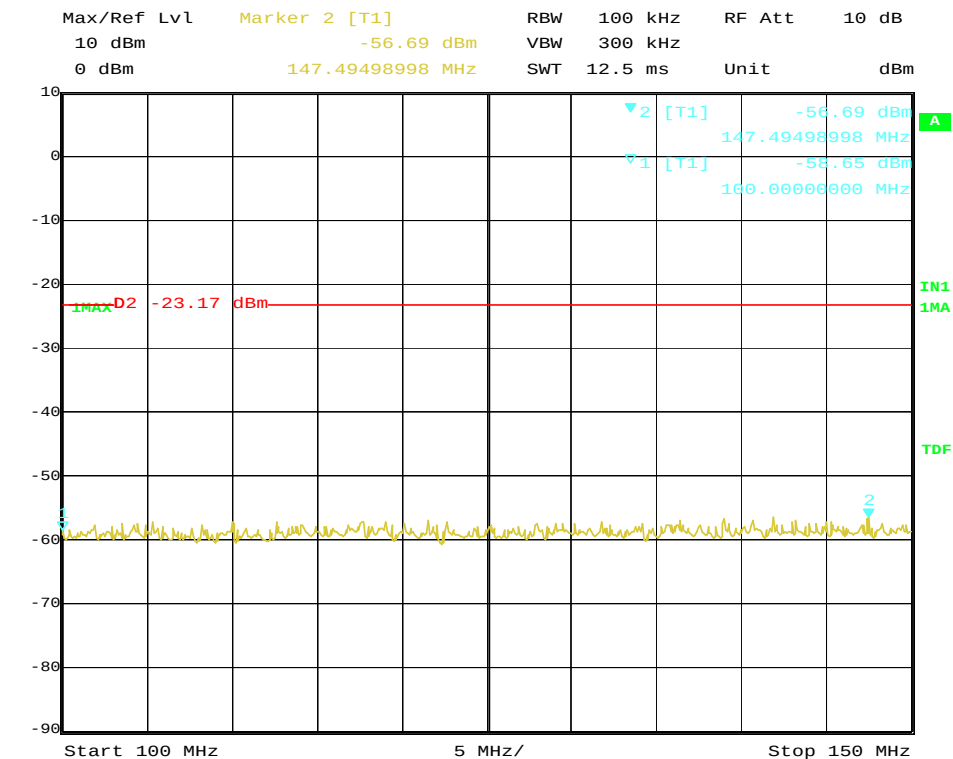


Mid Channel Antenna Port Conducted Spurious Emissions, 50-100 MHz



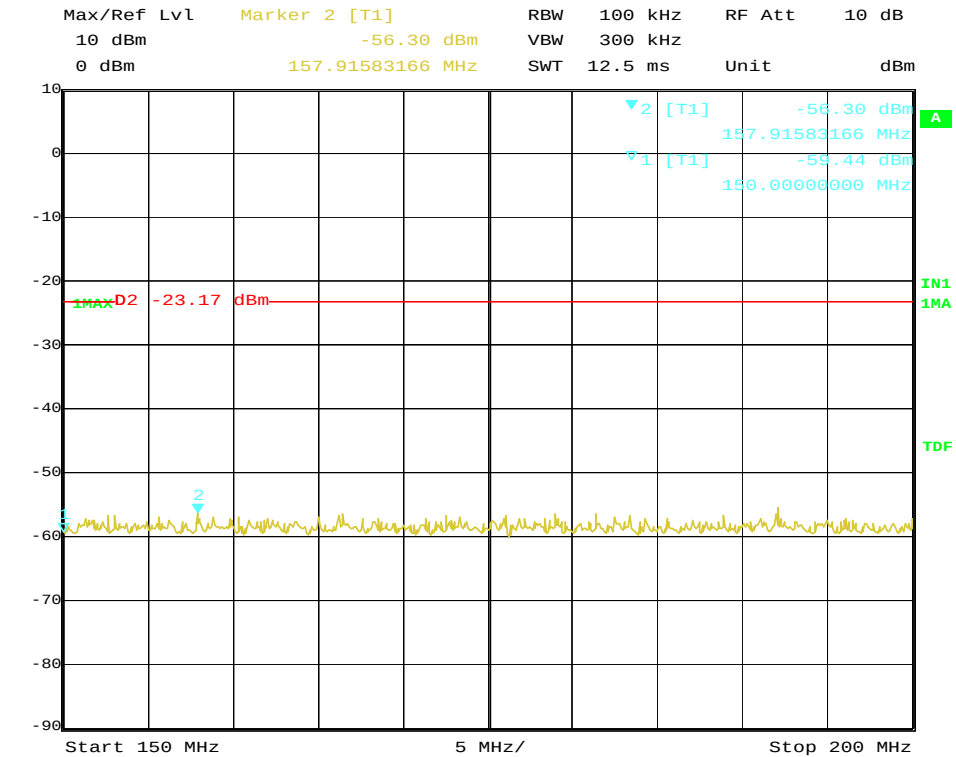
Date: 14.OCT.2018 17:31:50

Mid Channel Antenna Port Conducted Spurious Emissions, 100-150 MHz



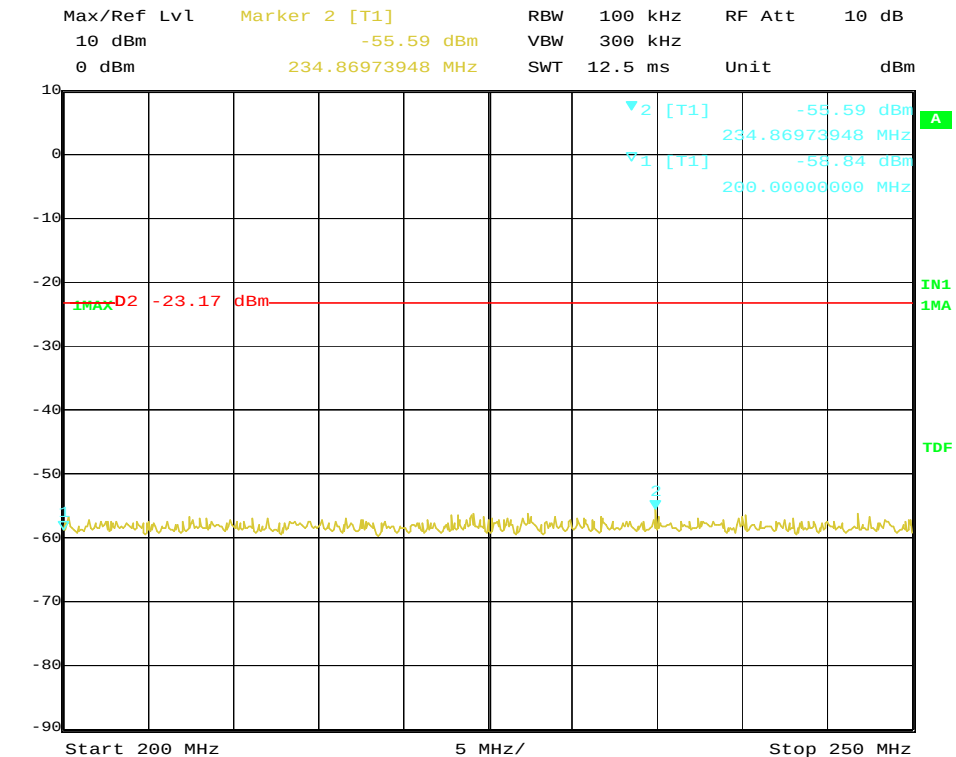
Date: 14.OCT.2018 17:32:17

Mid Channel Antenna Port Conducted Spurious Emissions, 150-200 MHz



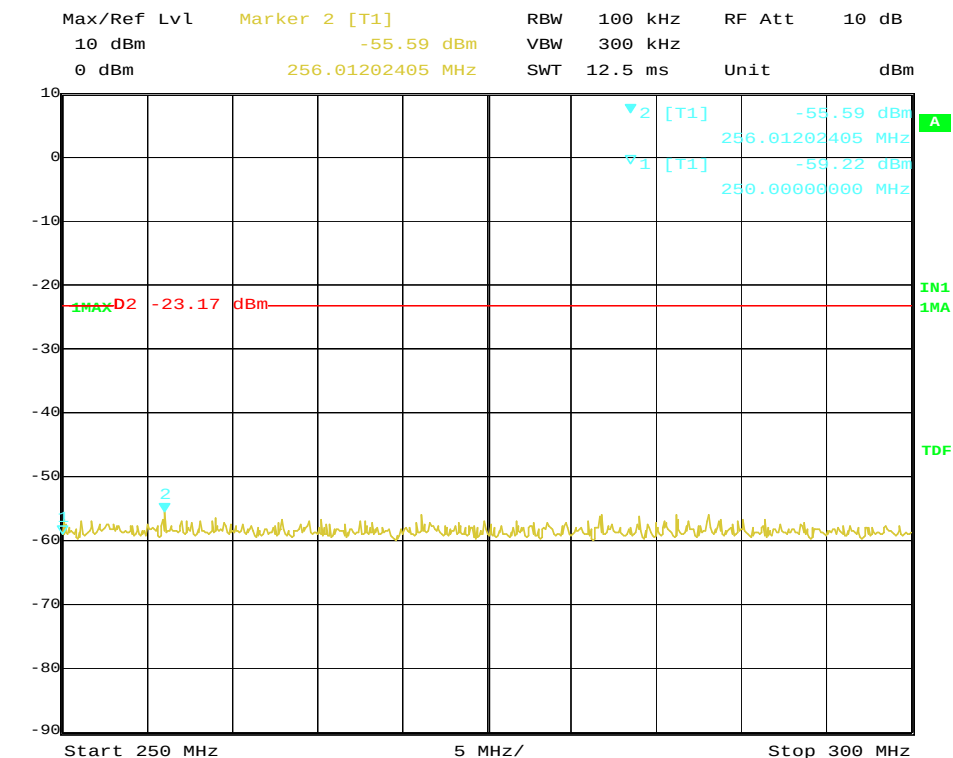
Date: 14.OCT.2018 17:32:43

Mid Channel Antenna Port Conducted Spurious Emissions, 200-250 MHz



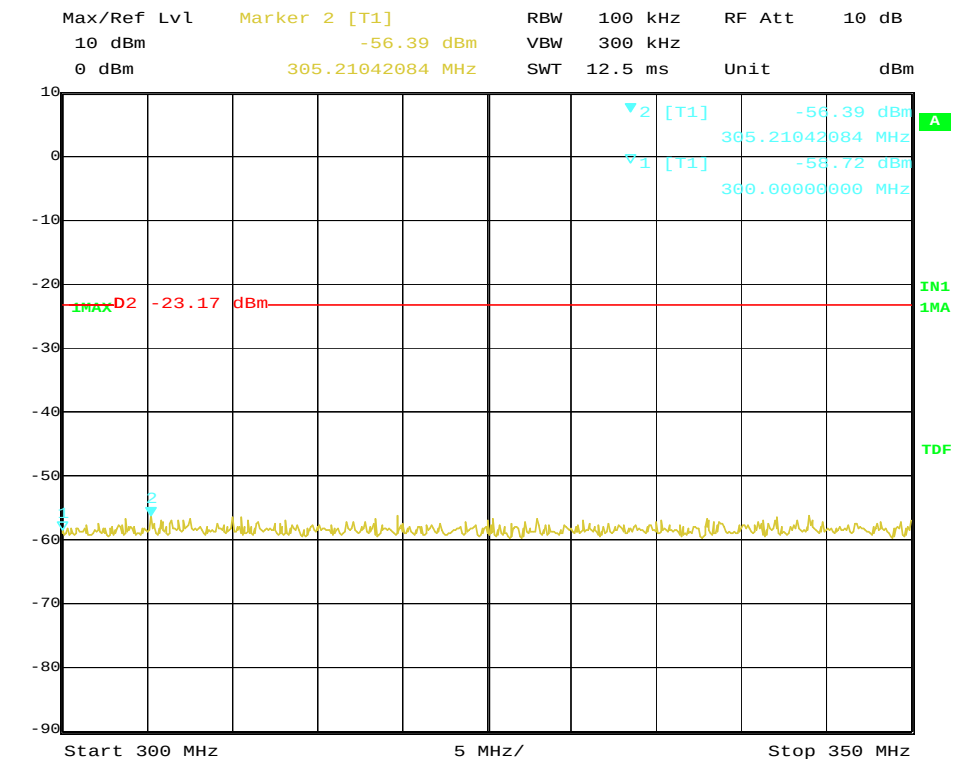
Date: 14.OCT.2018 17:33:15

Mid Channel Antenna Port Conducted Spurious Emissions, 250-300 MHz



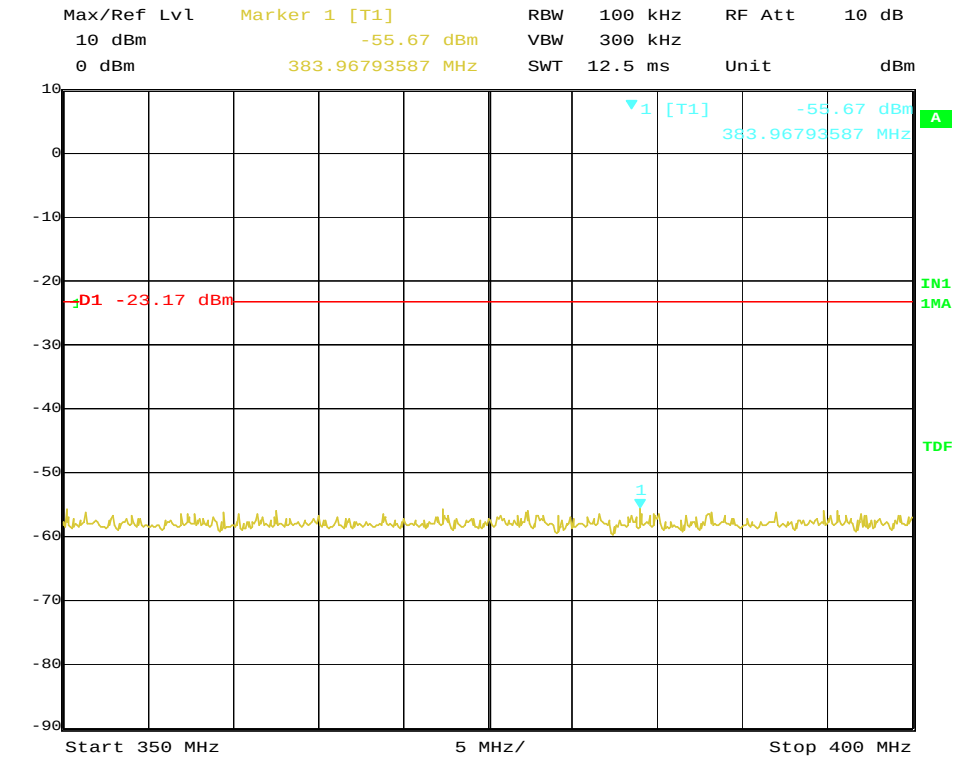
Date: 14.OCT.2018 17:33:40

Mid Channel Antenna Port Conducted Spurious Emissions, 300-350 MHz



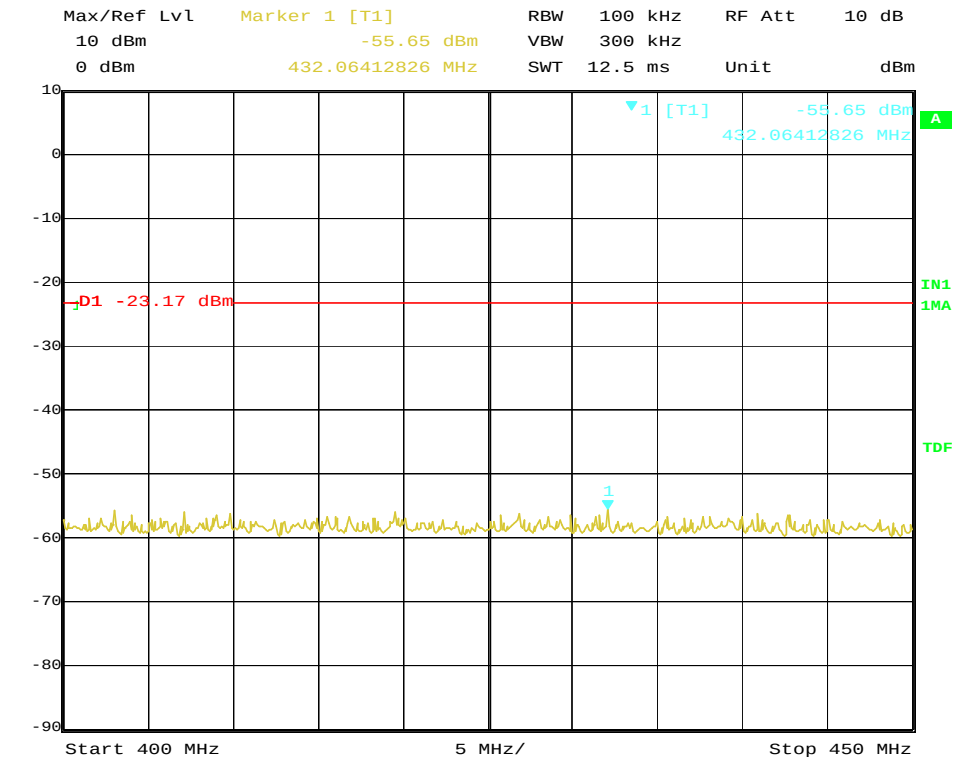
Date: 14.OCT.2018 17:34:05

Mid Channel Antenna Port Conducted Spurious Emissions, 350-400 MHz



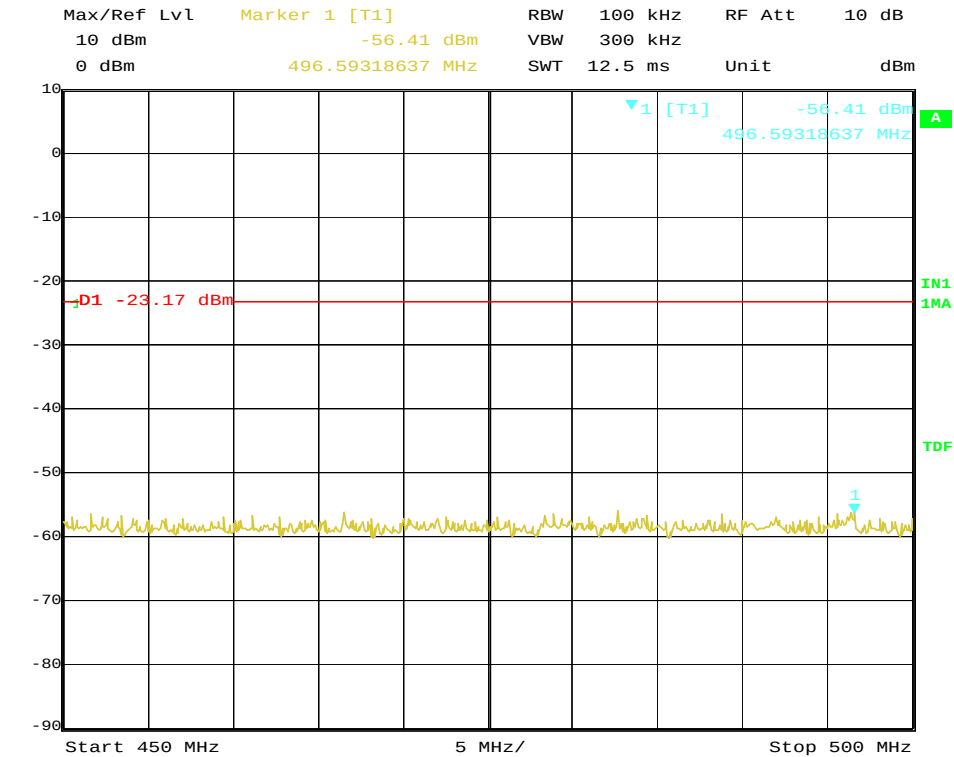
Date: 14.OCT.2018 17:39:51

Mid Channel Antenna Port Conducted Spurious Emissions, 400-450 MHz



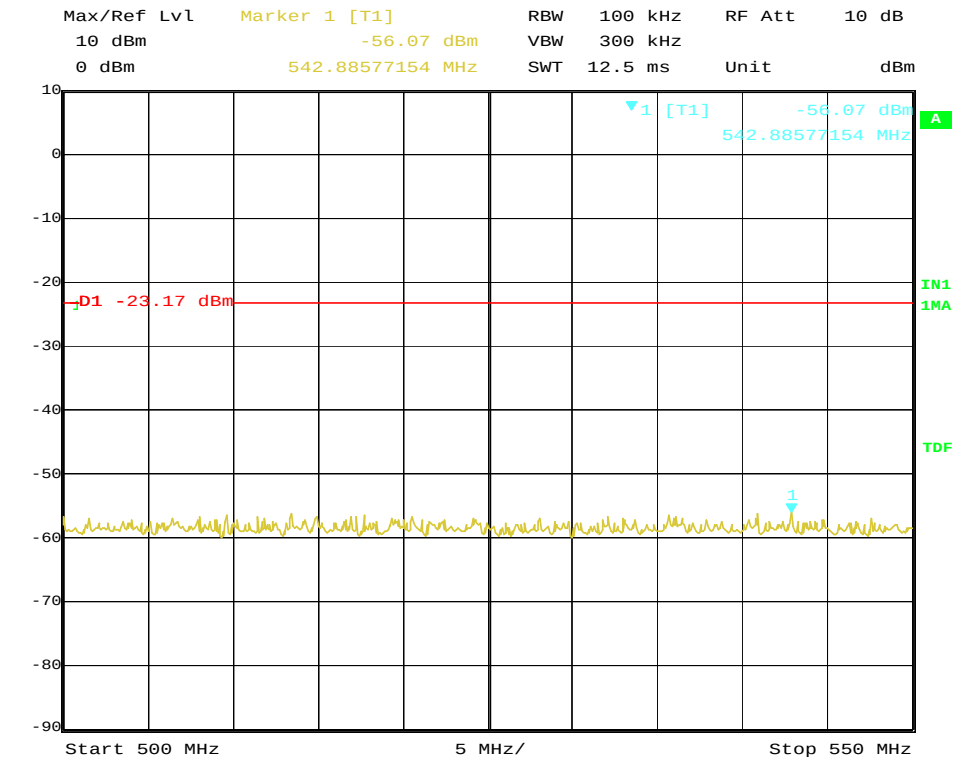
Date: 14.OCT.2018 17:40:21

Mid Channel Antenna Port Conducted Spurious Emissions, 450-500 MHz



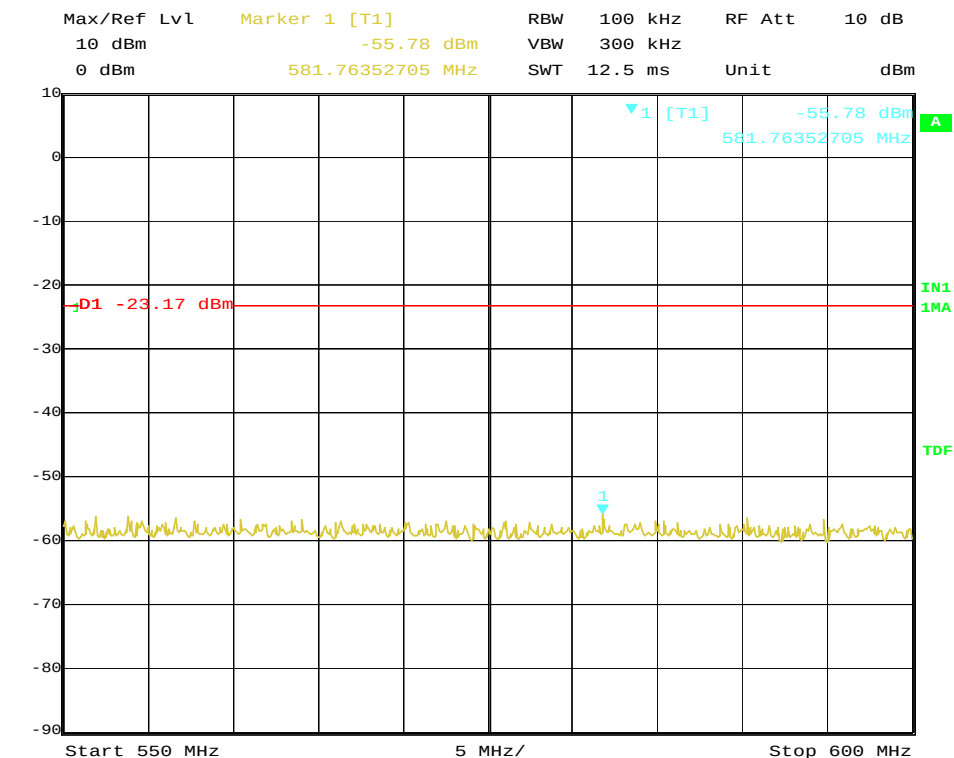
Date: 14.OCT.2018 17:40:47

Mid Channel Antenna Port Conducted Spurious Emissions, 500-550 MHz



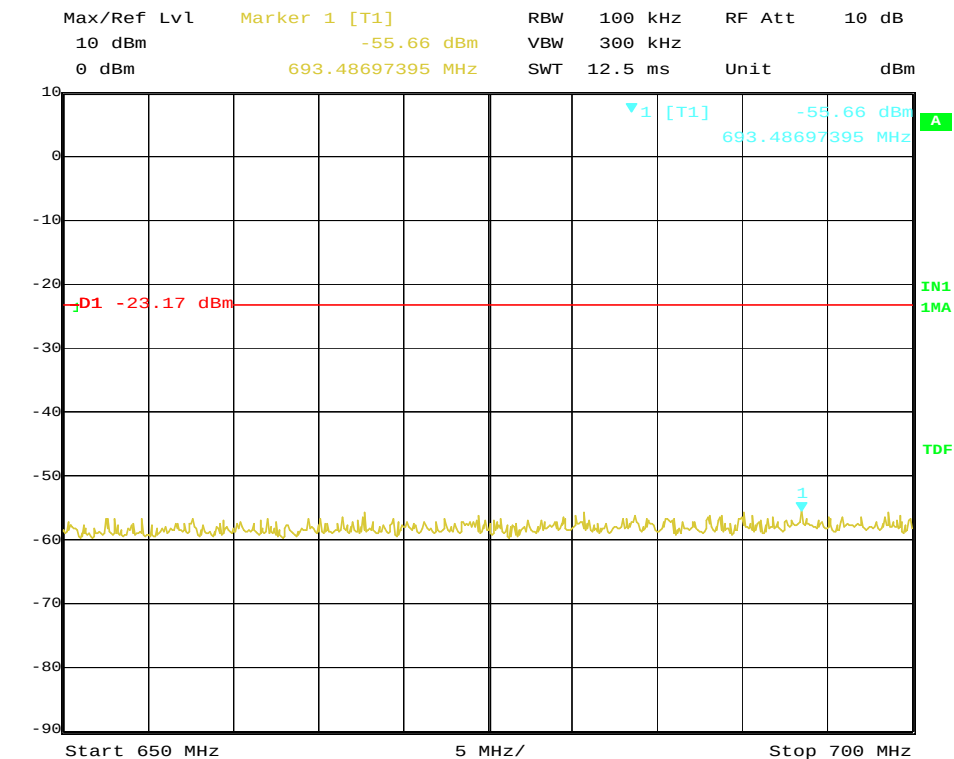
Date: 14.OCT.2018 17:41:14

Mid Channel Antenna Port Conducted Spurious Emissions, 550-600 MHz



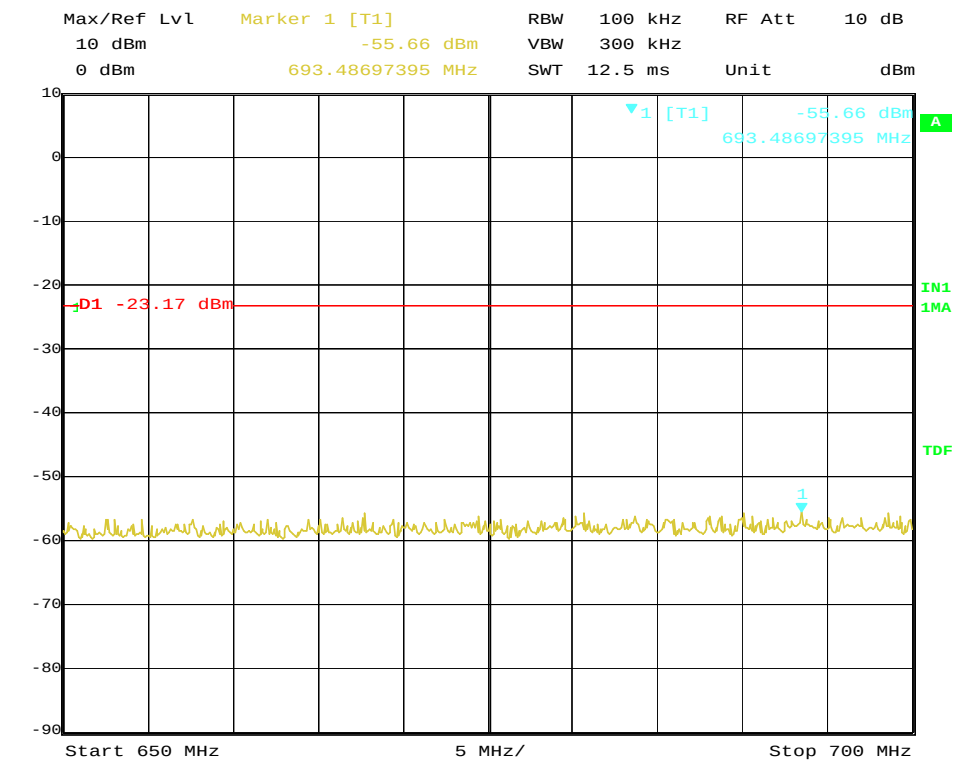
Date: 14.OCT.2018 17:41:42

Mid Channel Antenna Port Conducted Spurious Emissions, 600-650 MHz



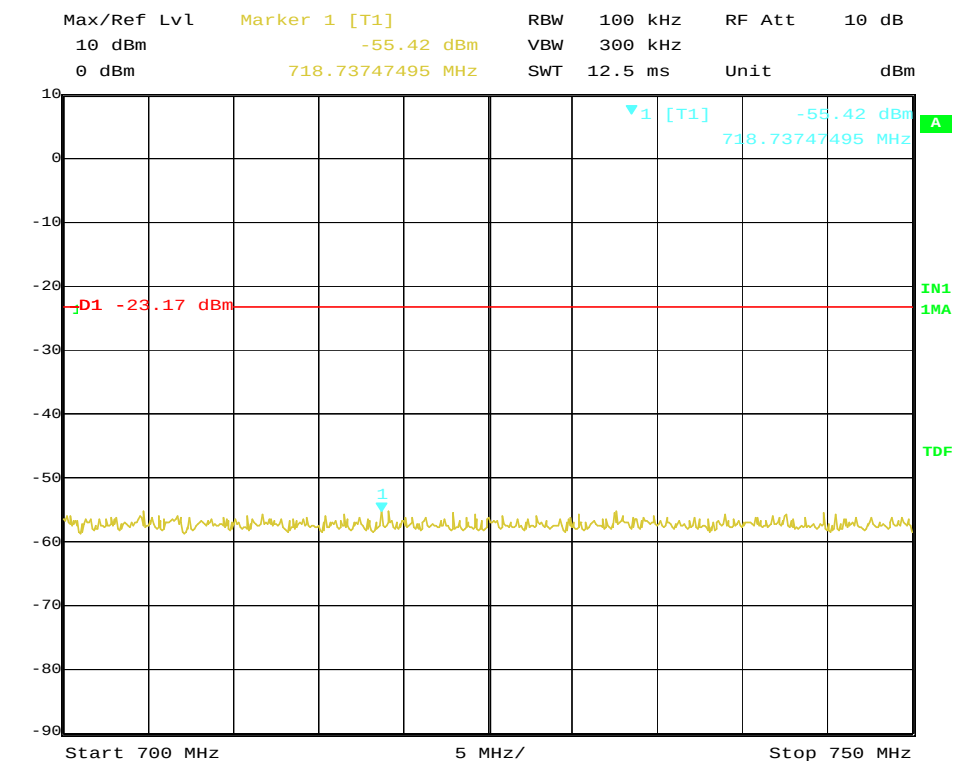
Date: 14.OCT.2018 17:42:27

Mid Channel Antenna Port Conducted Spurious Emissions, 650-700 MHz



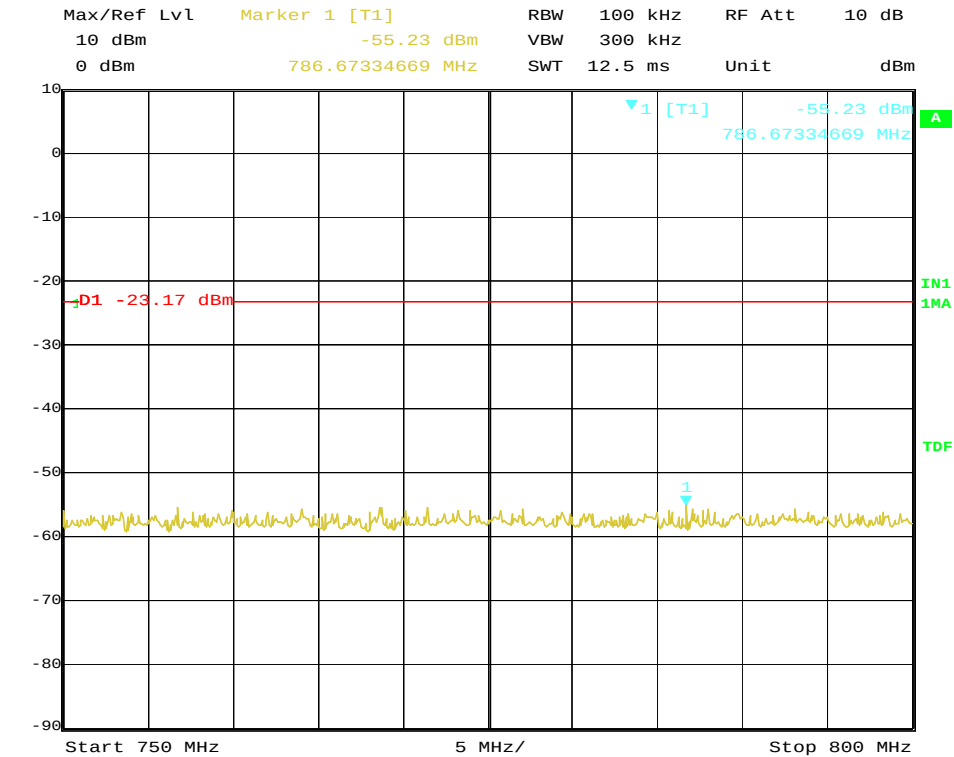
Date: 14.OCT.2018 17:42:27

Mid Channel Antenna Port Conducted Spurious Emissions, 700-750 MHz



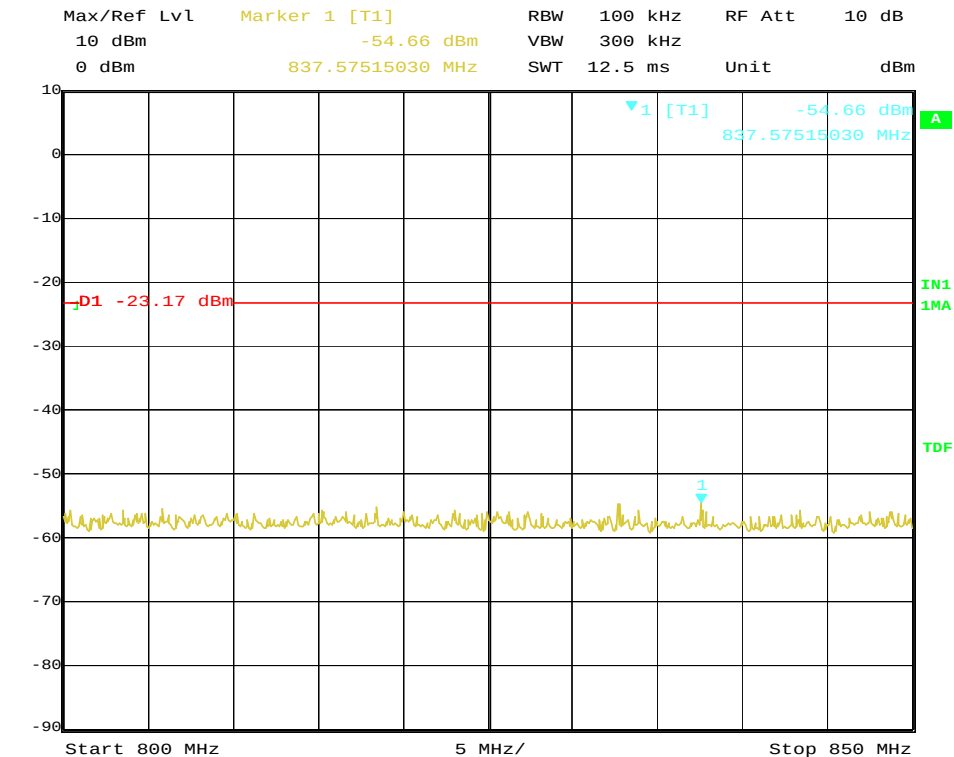
Date: 14.OCT.2018 17:43:27

Mid Channel Antenna Port Conducted Spurious Emissions, 750-800 MHz



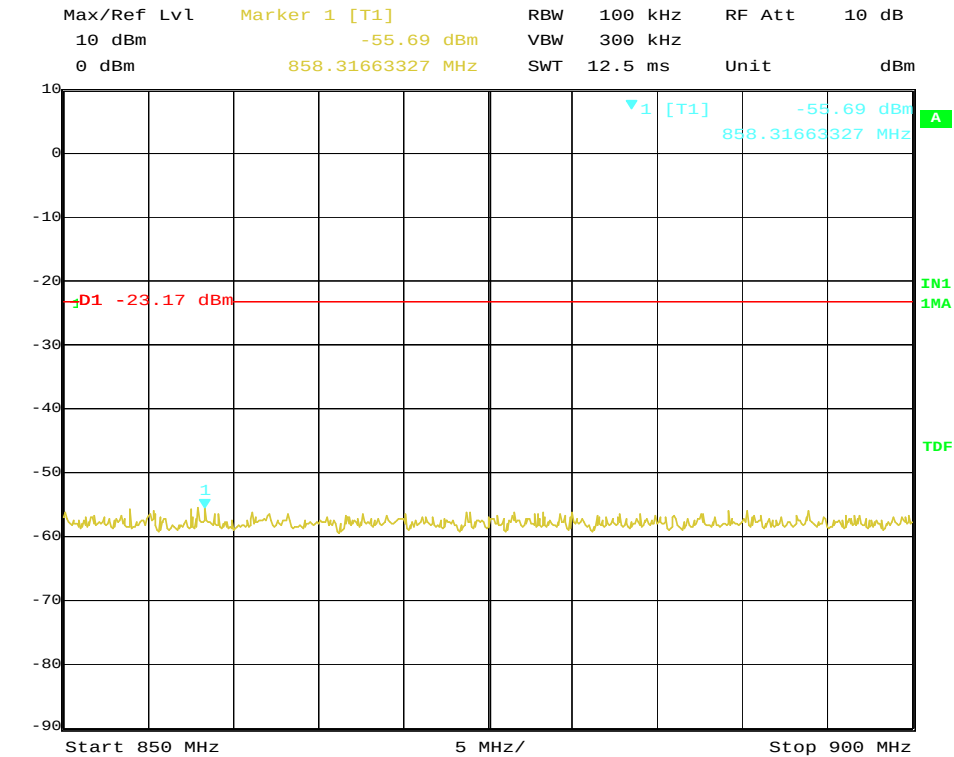
Date: 14.OCT.2018 17:44:03

Mid Channel Antenna Port Conducted Spurious Emissions, 800-850 MHz



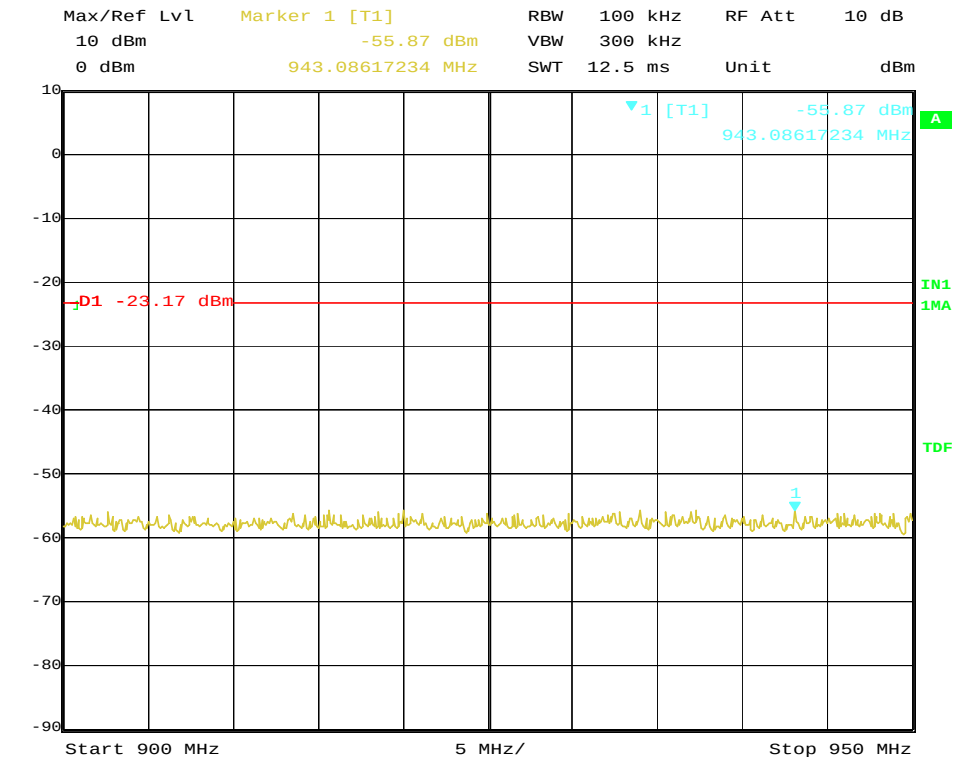
Date: 14.OCT.2018 17:47:09

Mid Channel Antenna Port Conducted Spurious Emissions, 850-900 MHz



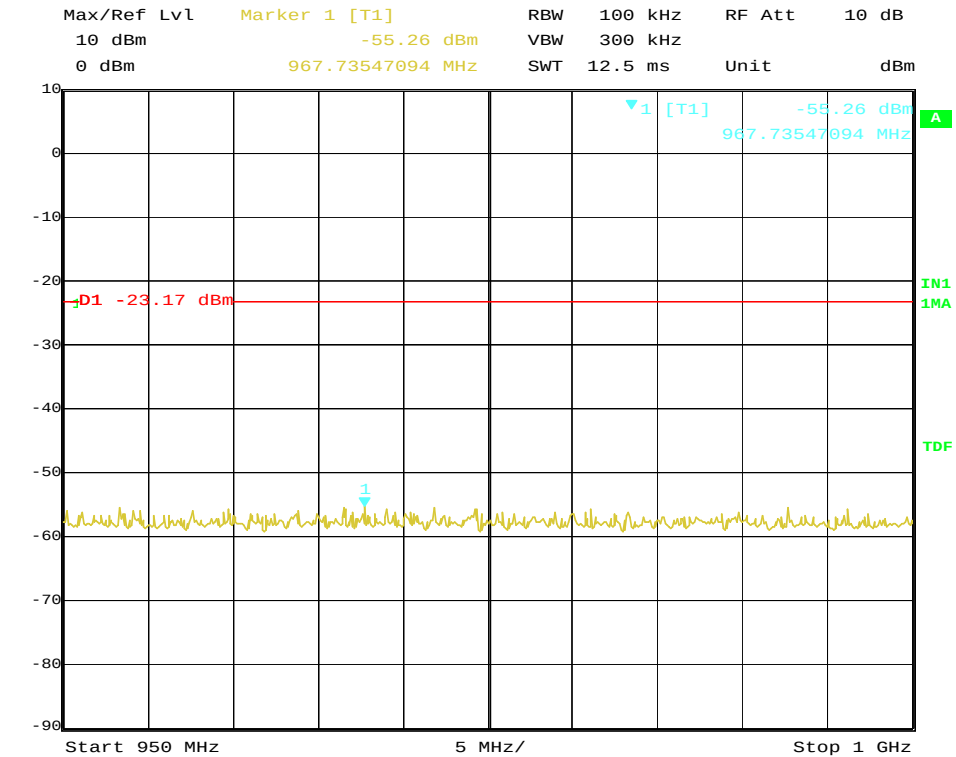
Date: 14.OCT.2018 17:47:41

Mid Channel Antenna Port Conducted Spurious Emissions, 900-950 MHz



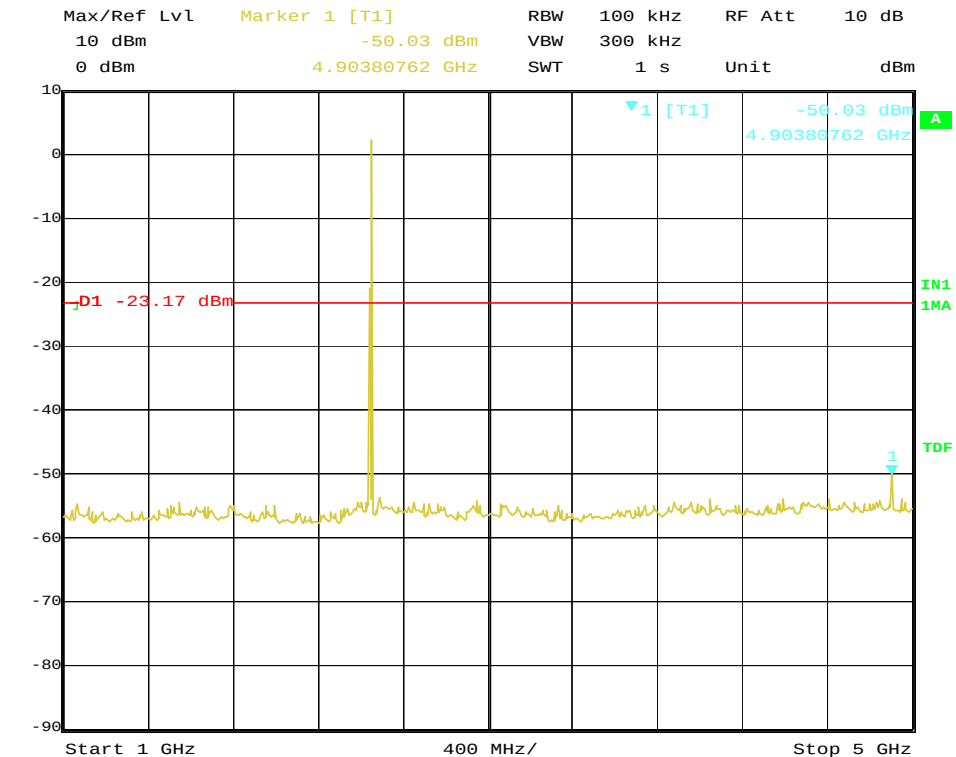
Date: 14.OCT.2018 17:48:09

Mid Channel Antenna Port Conducted Spurious Emissions, 950-1000 MHz



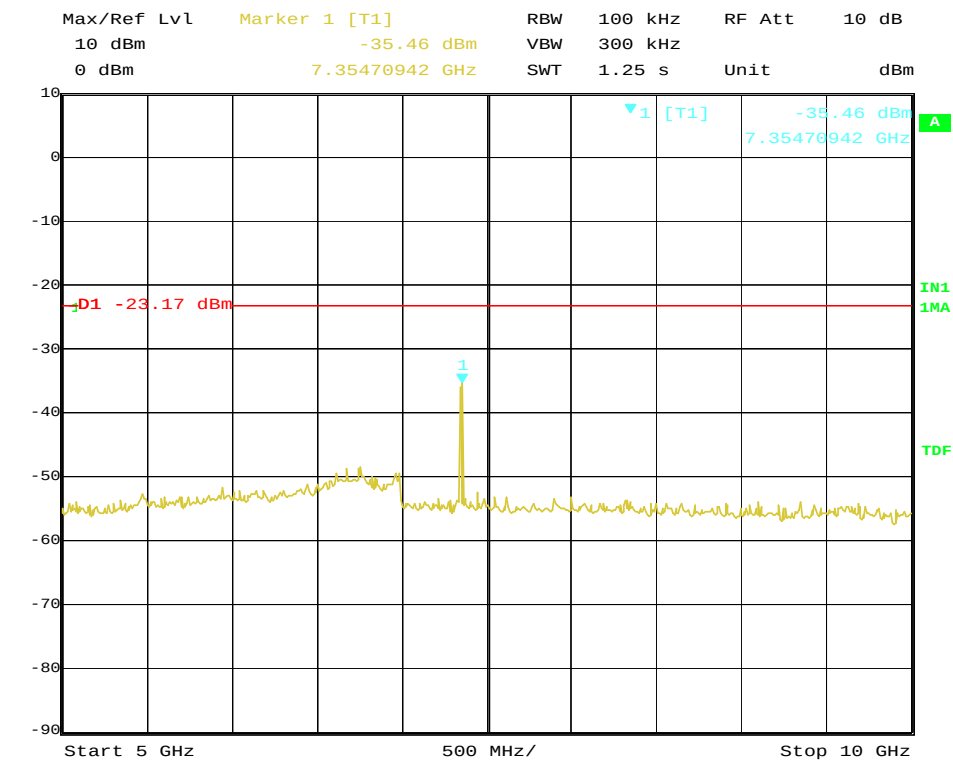
Date: 14.OCT.2018 17:48:36

Mid Channel Antenna Port Conducted Spurious Emissions, 1-5 GHz



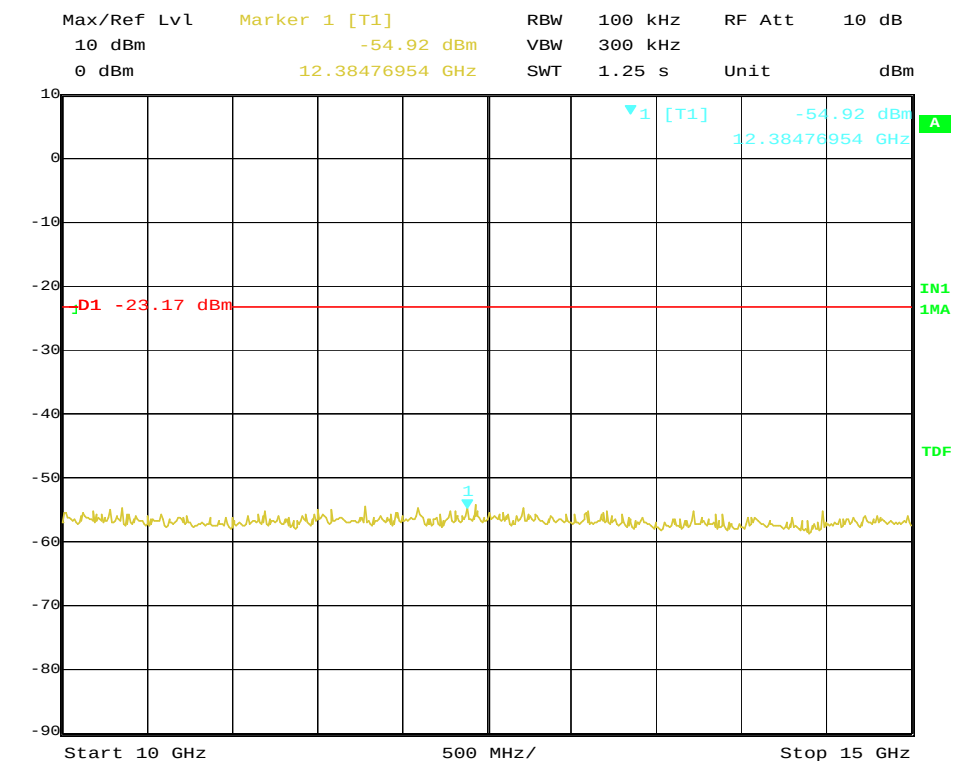
Date: 14.OCT.2018 17:49:12

Mid Channel Antenna Port Conducted Spurious Emissions, 5-10 GHz



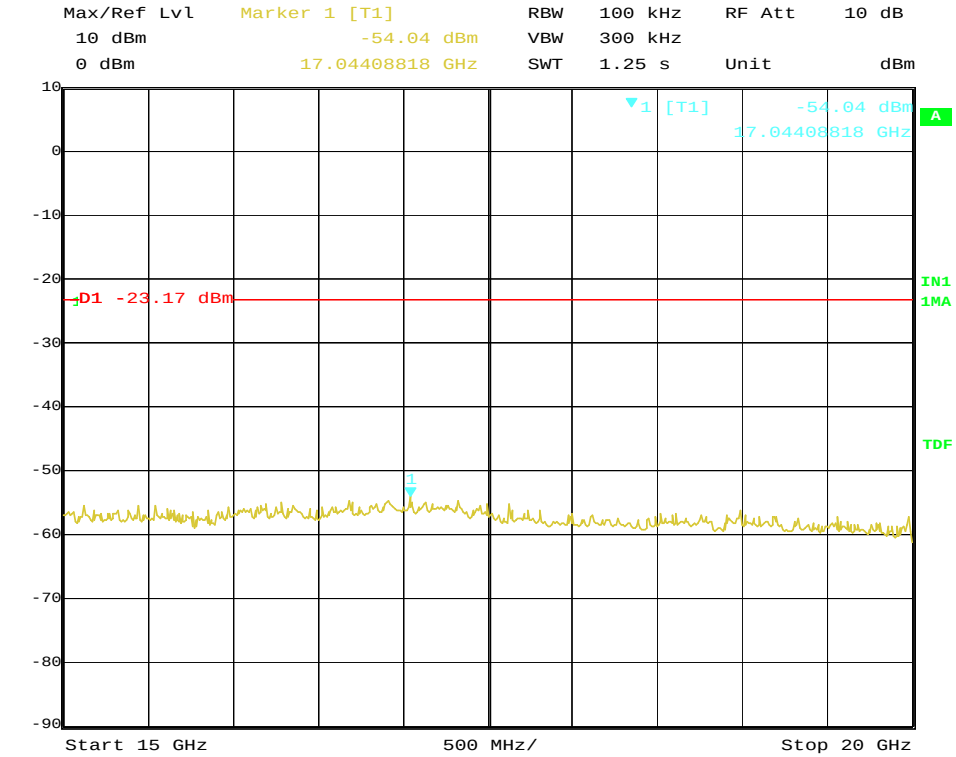
Date: 14.OCT.2018 17:49:44

Mid Channel Antenna Port Conducted Spurious Emissions, 10-15 GHz

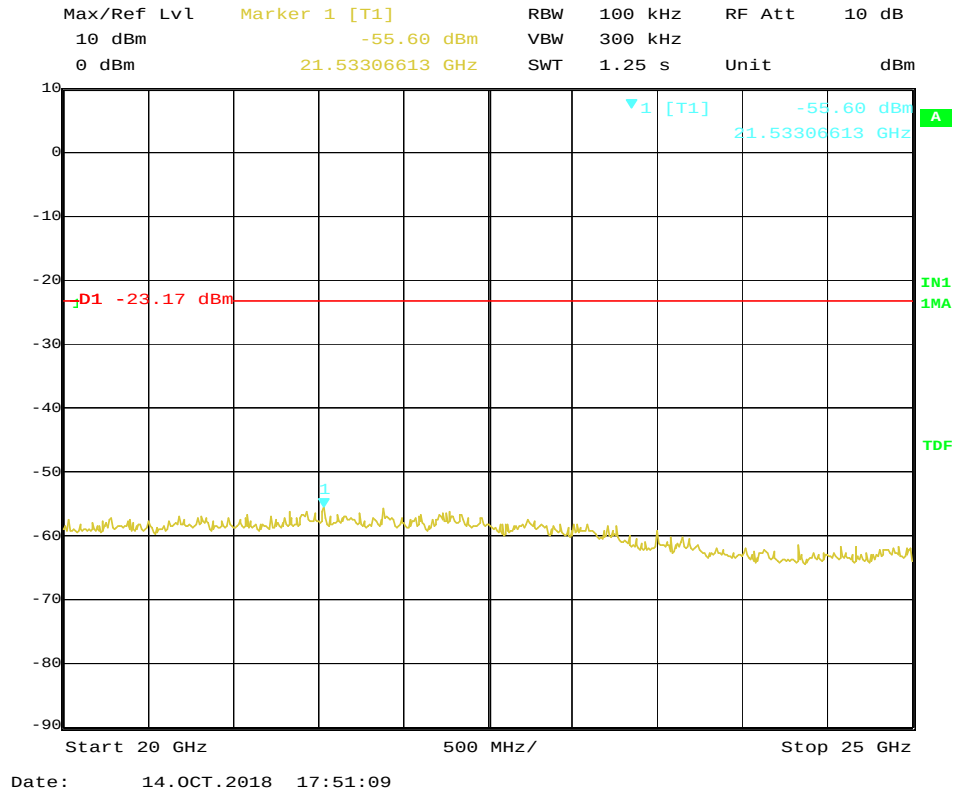


Date: 14.OCT.2018 17:50:09

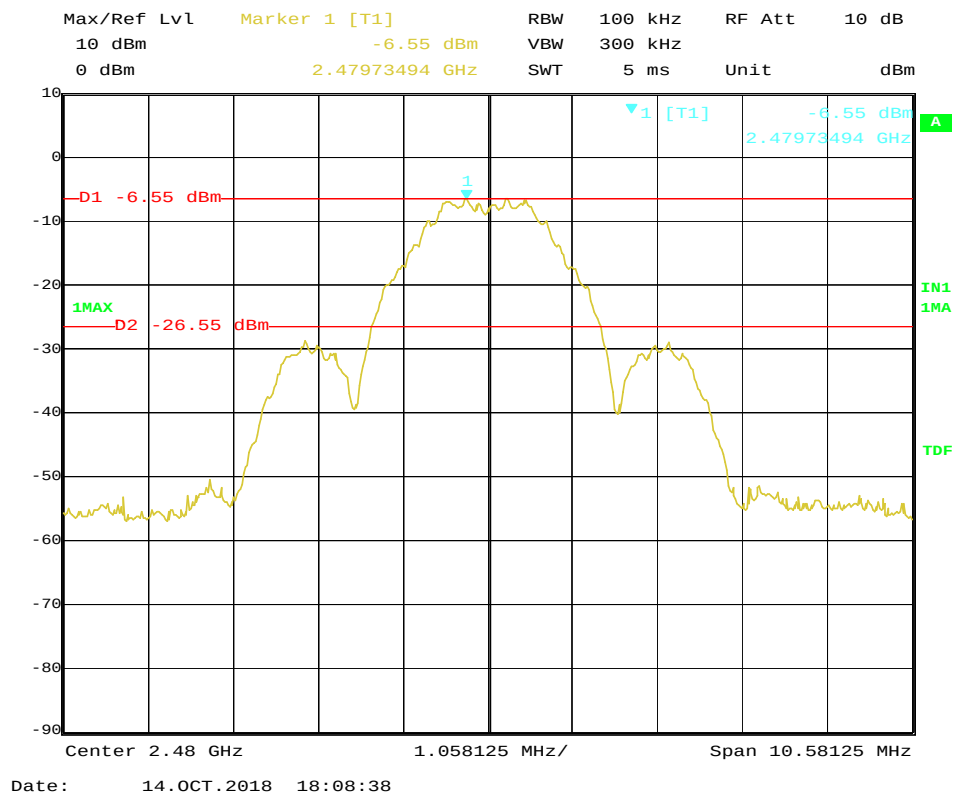
Mid Channel Antenna Port Conducted Spurious Emissions, 15-20 GHz



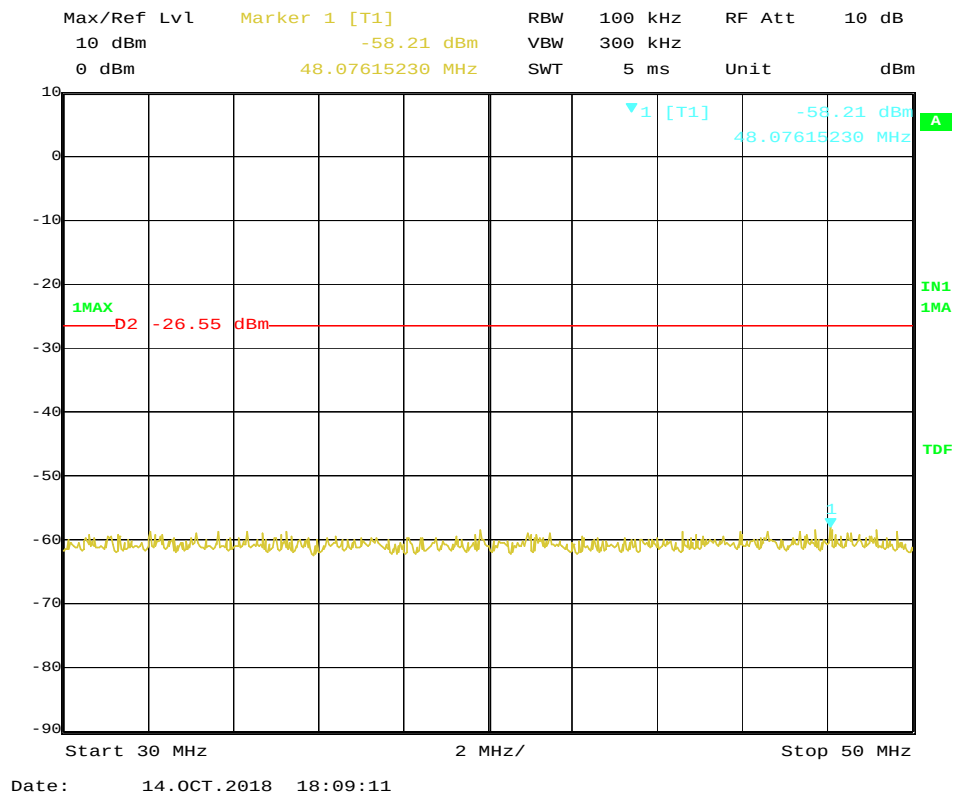
Mid Channel Antenna Port Conducted Spurious Emissions, 20-25 GHz



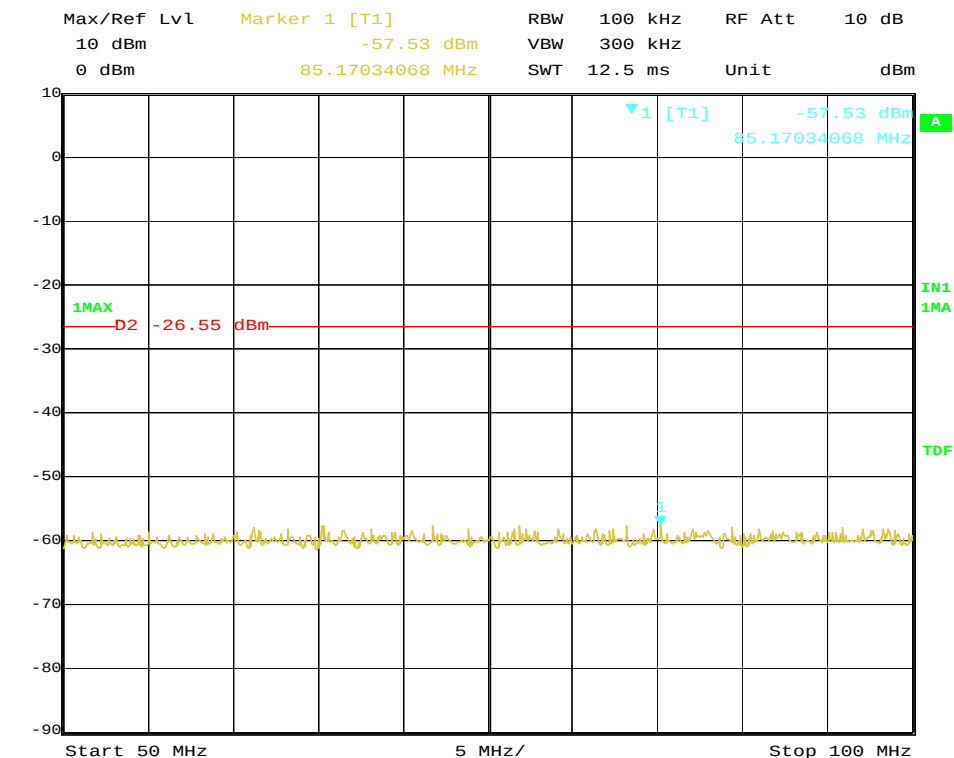
Limit: 20 dB down from the carrier (High Channel)



High Channel Antenna Port Conducted Spurious Emissions, 30-50 MHz

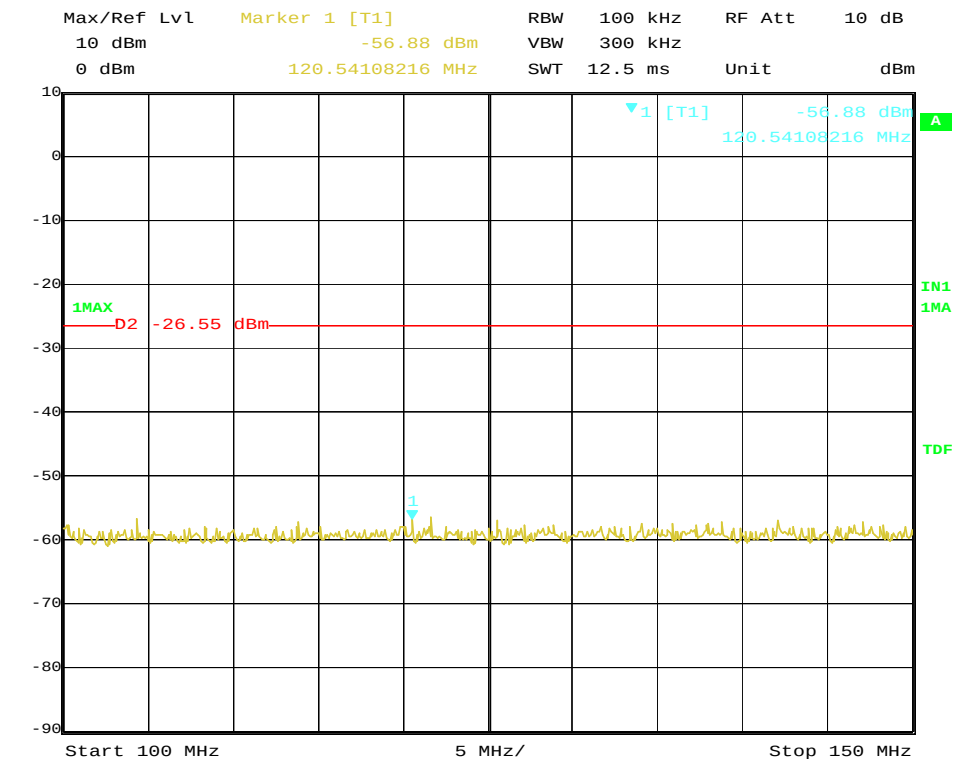


High Channel Antenna Port Conducted Spurious Emissions, 50-100 MHz



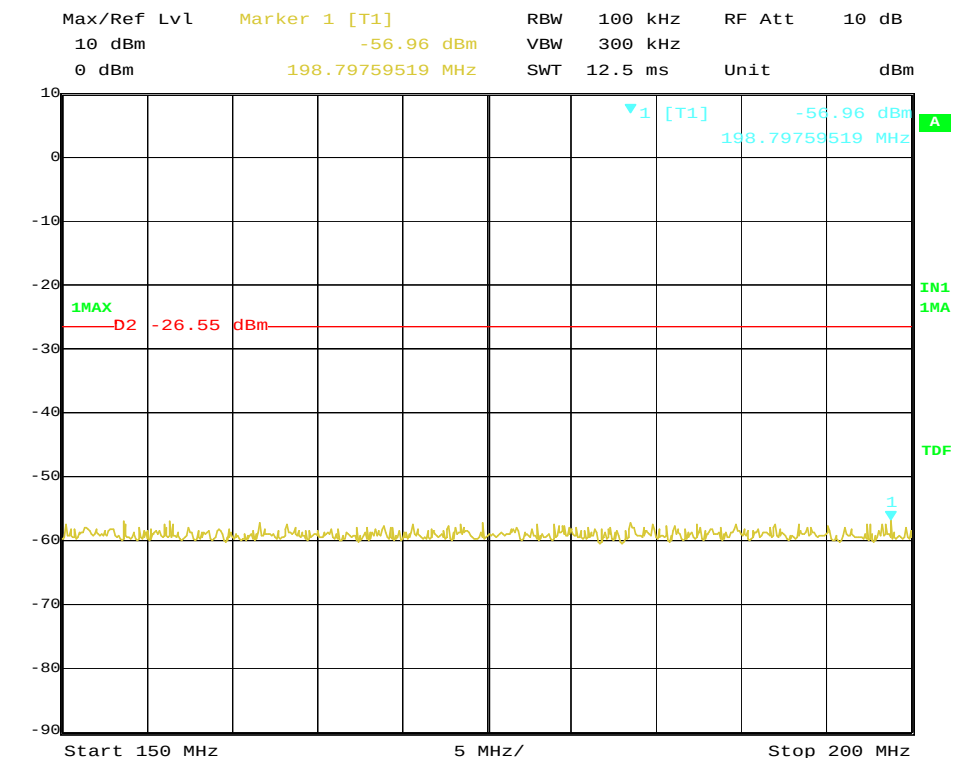
Date: 14.OCT.2018 18:09:41

High Channel Antenna Port Conducted Spurious Emissions, 100-150 MHz



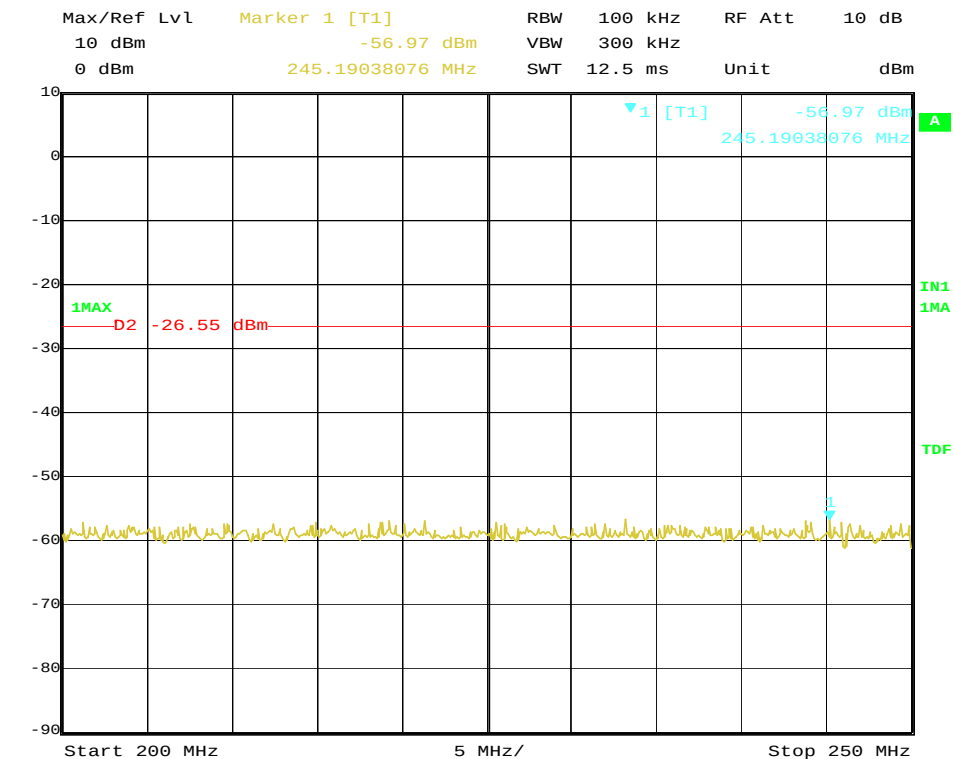
Date: 14.OCT.2018 18:10:03

High Channel Antenna Port Conducted Spurious Emissions, 150-200 MHz



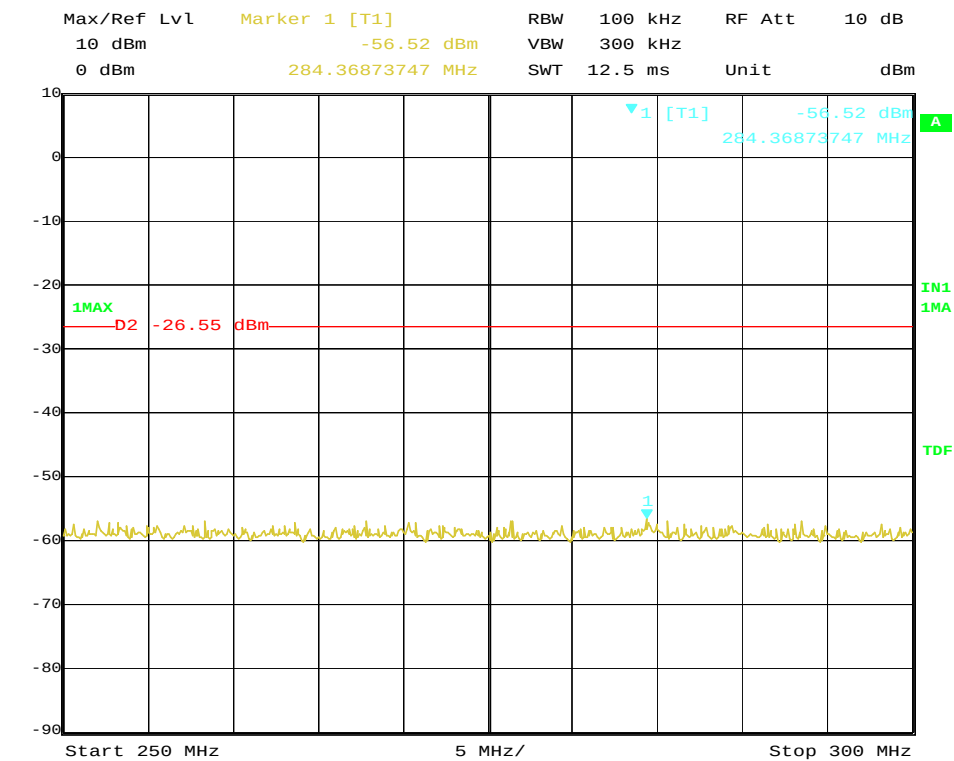
Date: 14.OCT.2018 18:10:27

High Channel Antenna Port Conducted Spurious Emissions, 200-250 MHz

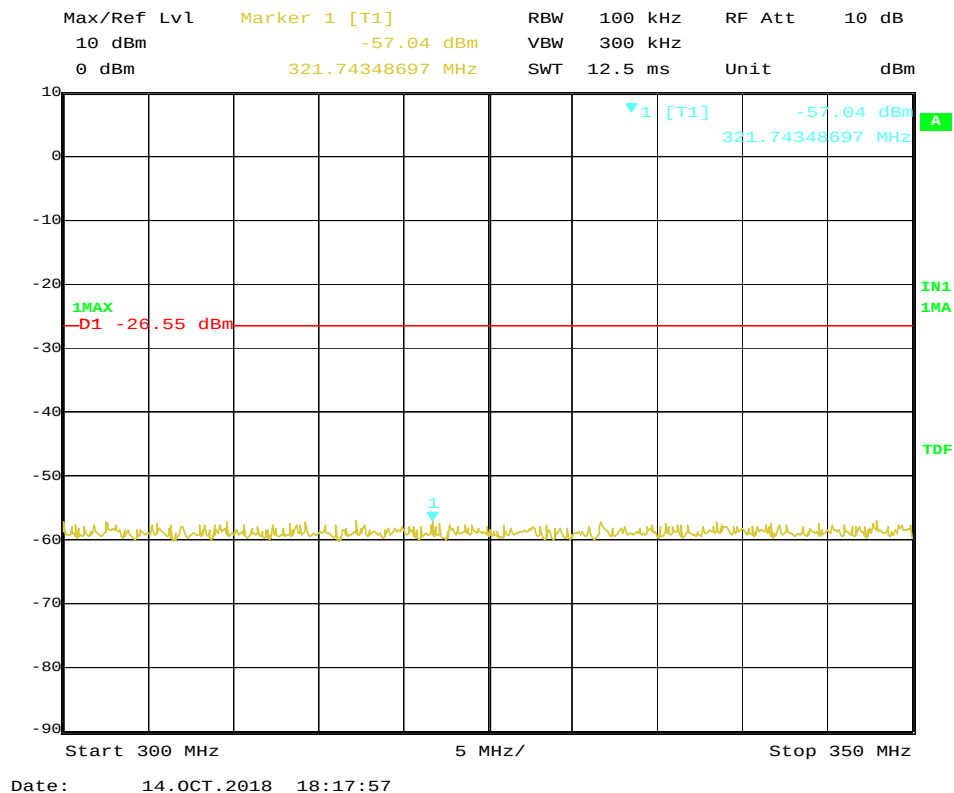


Date: 14.OCT.2018 18:10:52

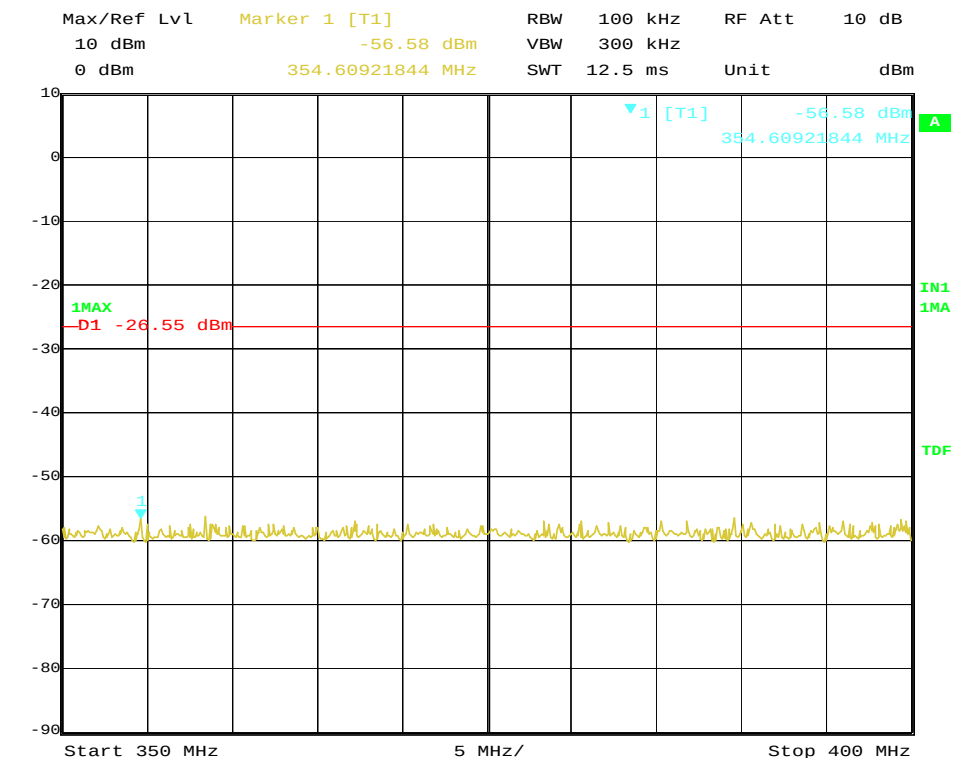
High Channel Antenna Port Conducted Spurious Emissions, 250-300 MHz



High Channel Antenna Port Conducted Spurious Emissions, 300-350 MHz

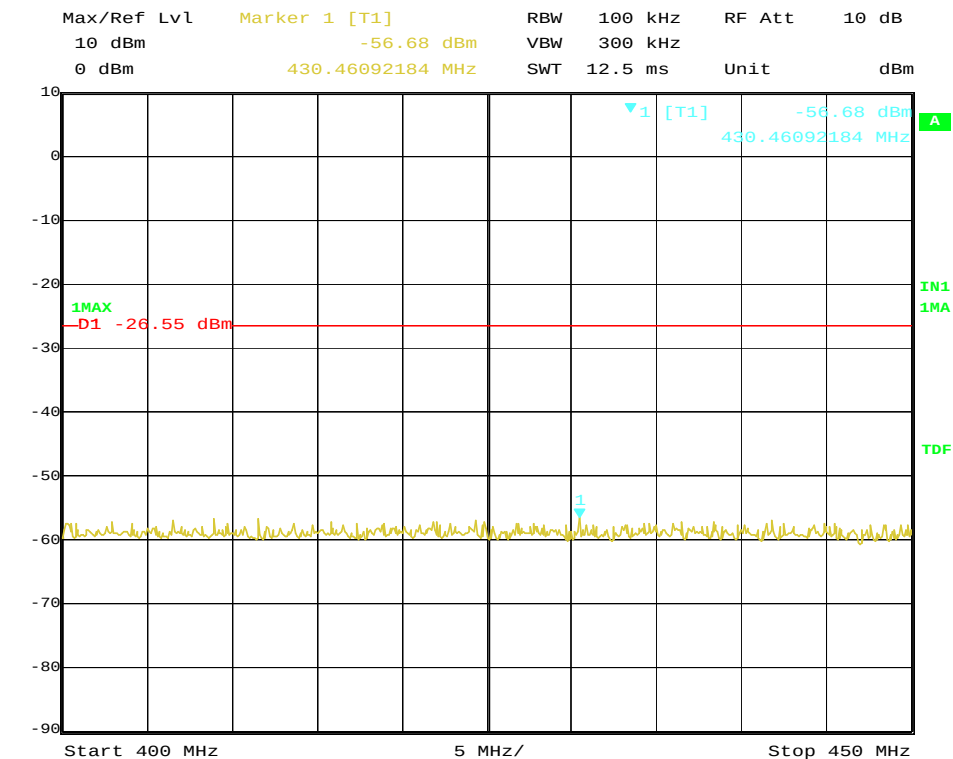


High Channel Antenna Port Conducted Spurious Emissions, 350-400 MHz



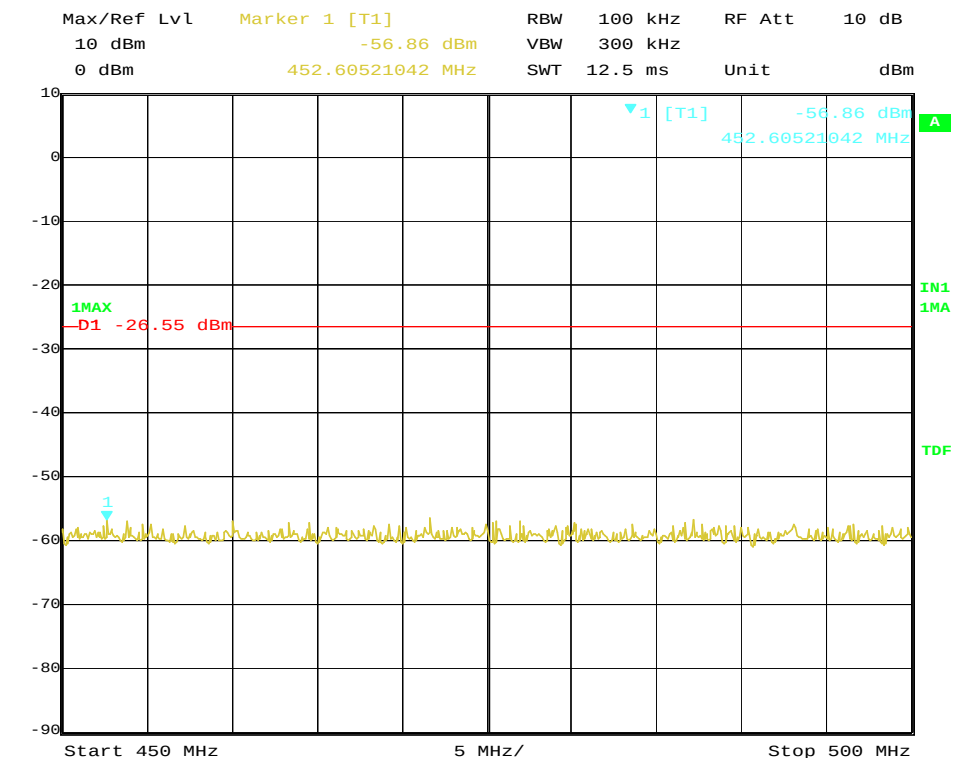
Date: 14.OCT.2018 18:18:20

High Channel Antenna Port Conducted Spurious Emissions, 400-450 MHz



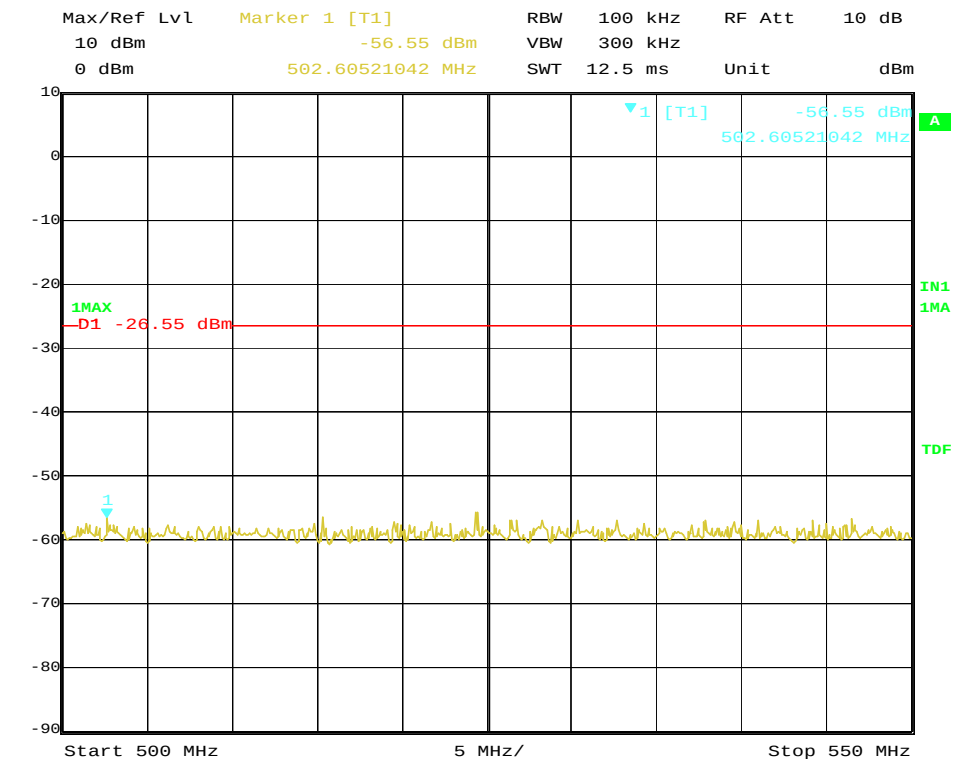
Date: 14.OCT.2018 18:18:43

High Channel Antenna Port Conducted Spurious Emissions, 400-450 MHz



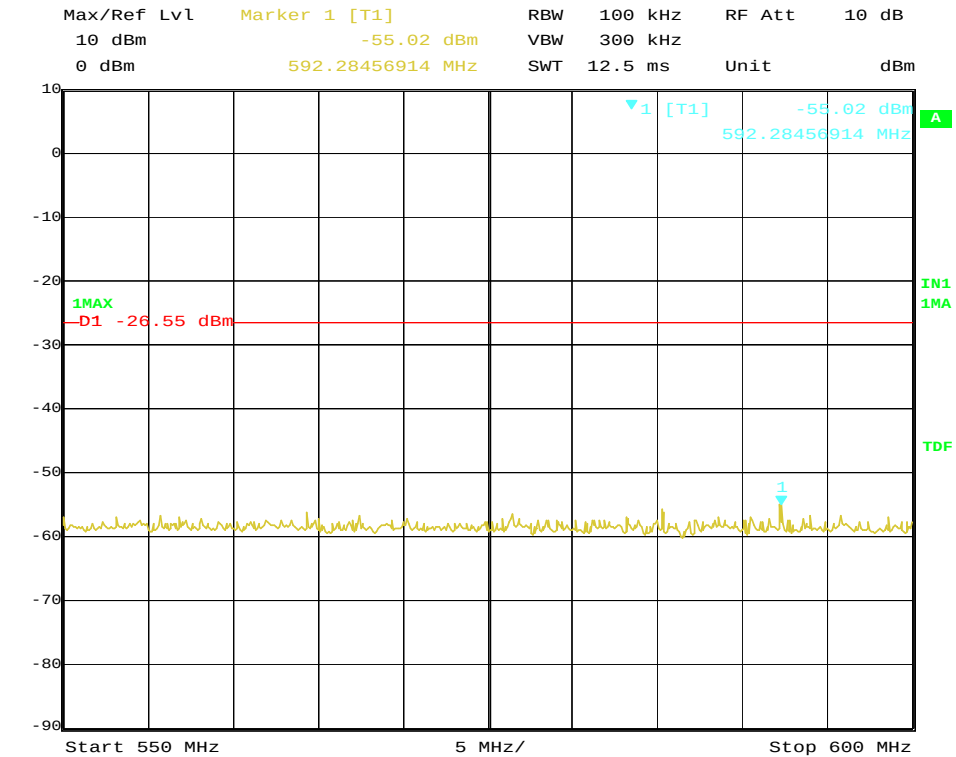
Date: 14.OCT.2018 18:19:08

High Channel Antenna Port Conducted Spurious Emissions, 500-550 MHz

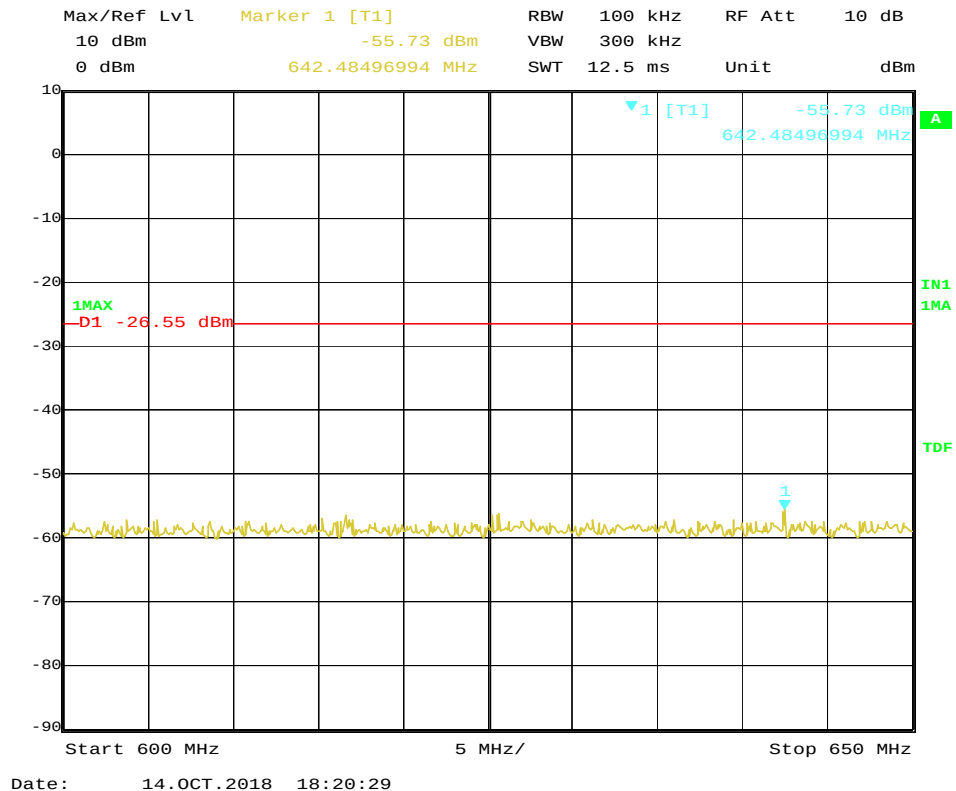


Date: 14.OCT.2018 18:19:32

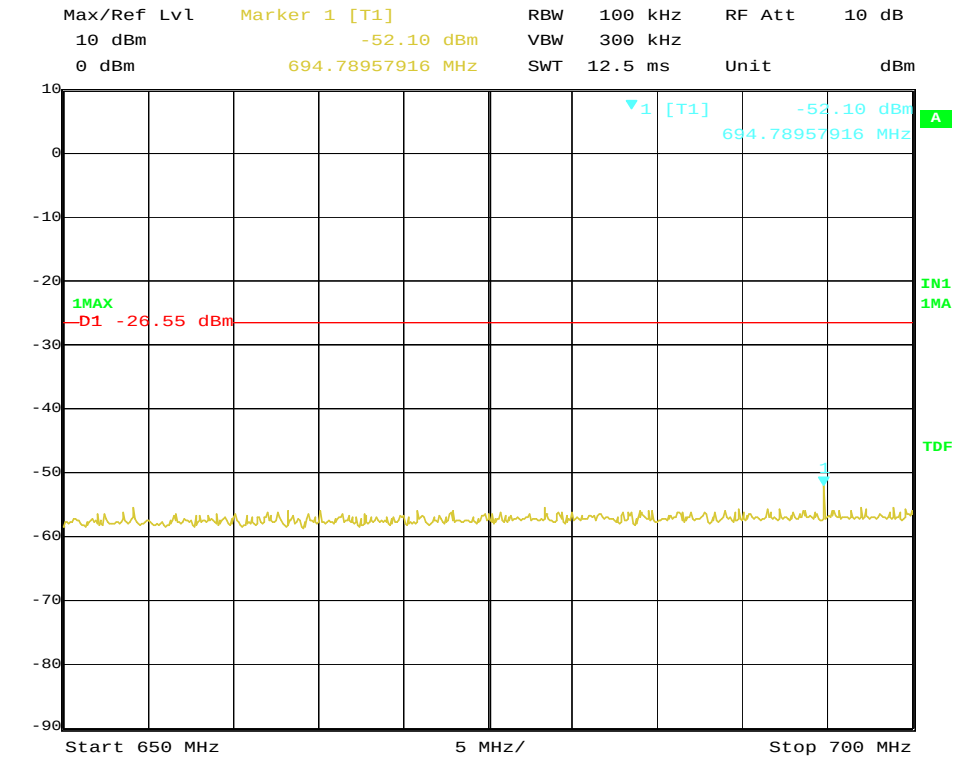
High Channel Antenna Port Conducted Spurious Emissions, 550-600 MHz



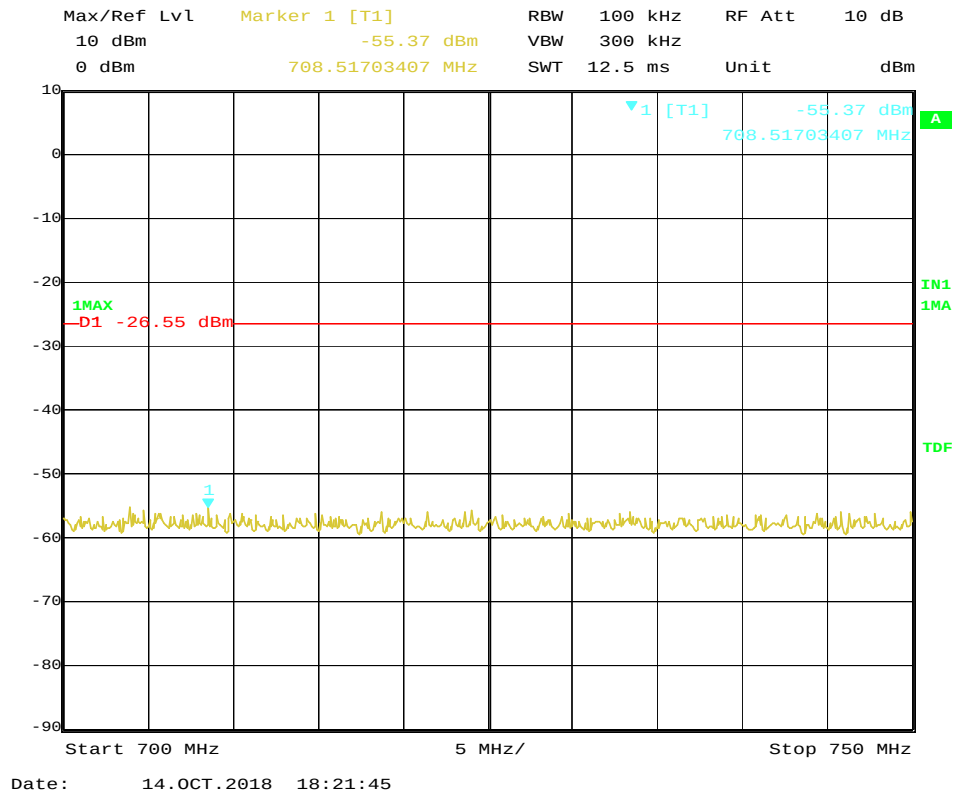
High Channel Antenna Port Conducted Spurious Emissions, 600-650 MHz



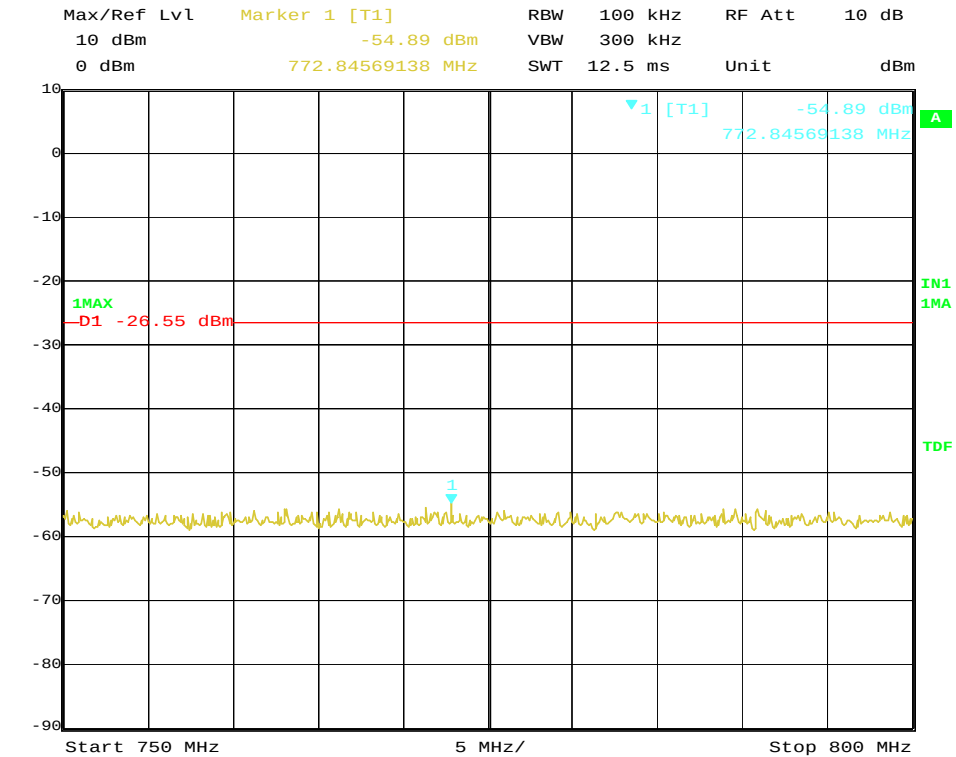
High Channel Antenna Port Conducted Spurious Emissions, 650-700 MHz



High Channel Antenna Port Conducted Spurious Emissions, 700-750 MHz

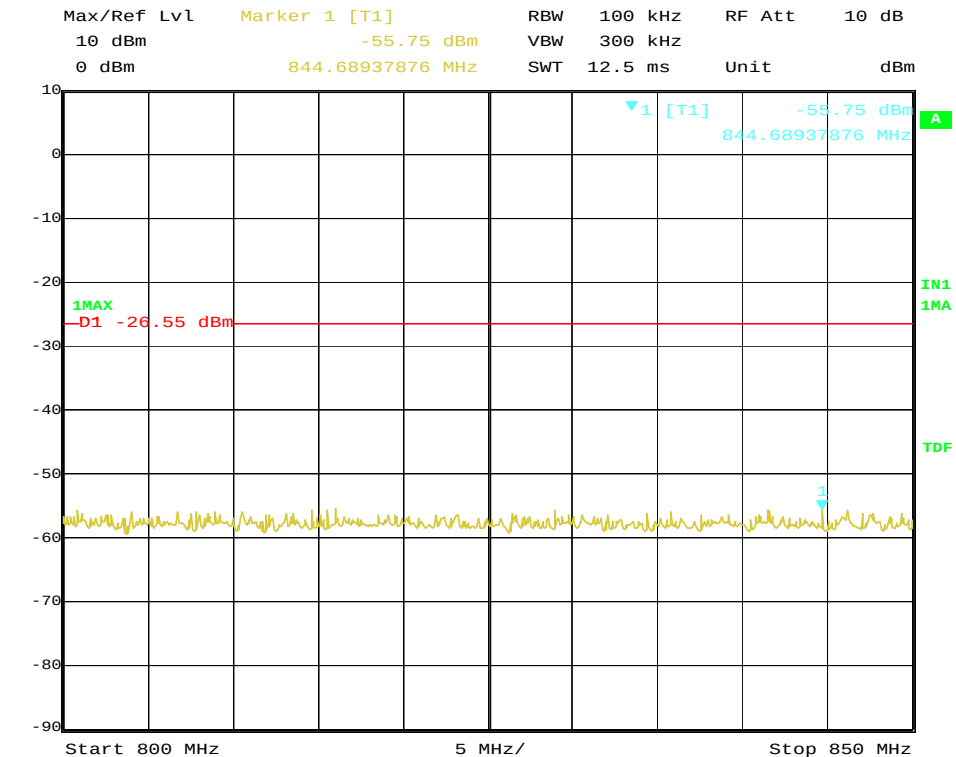


High Channel Antenna Port Conducted Spurious Emissions, 750-800 MHz



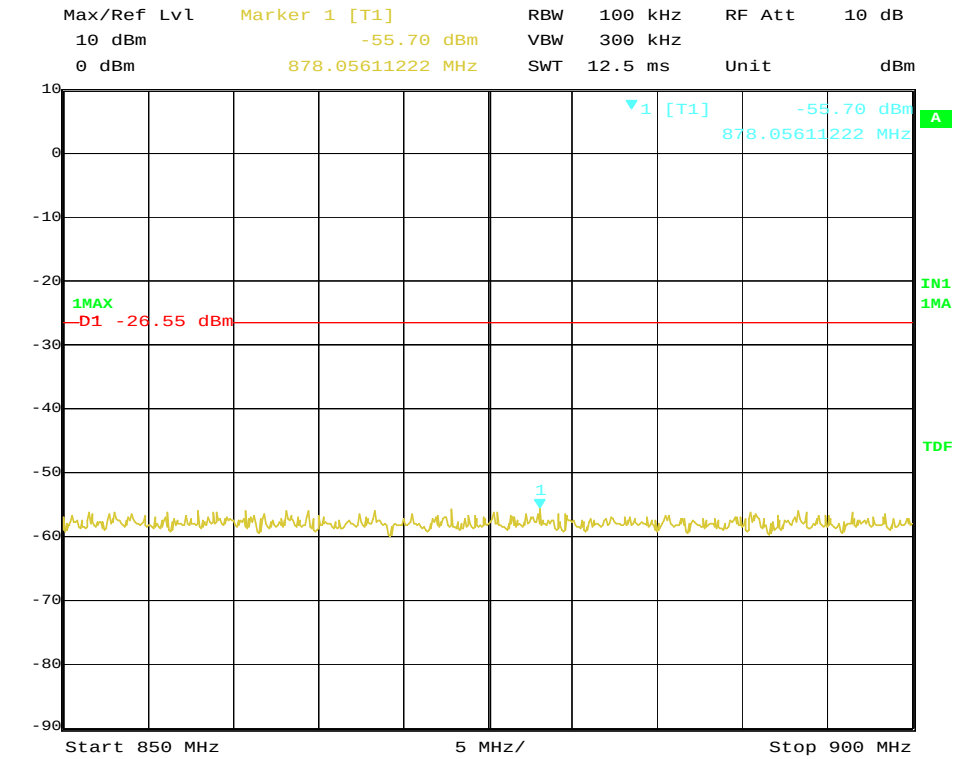
Date: 14.OCT.2018 18:22:20

High Channel Antenna Port Conducted Spurious Emissions, 800-850 MHz



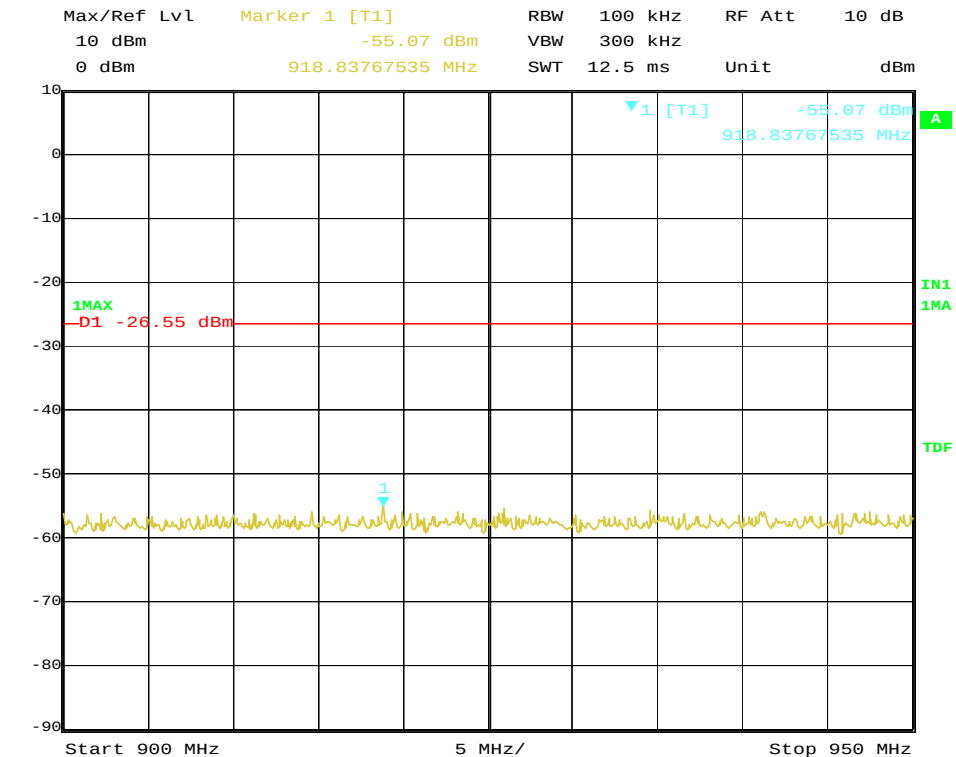
Date: 14.OCT.2018 18:24:26

High Channel Antenna Port Conducted Spurious Emissions, 850-900 MHz



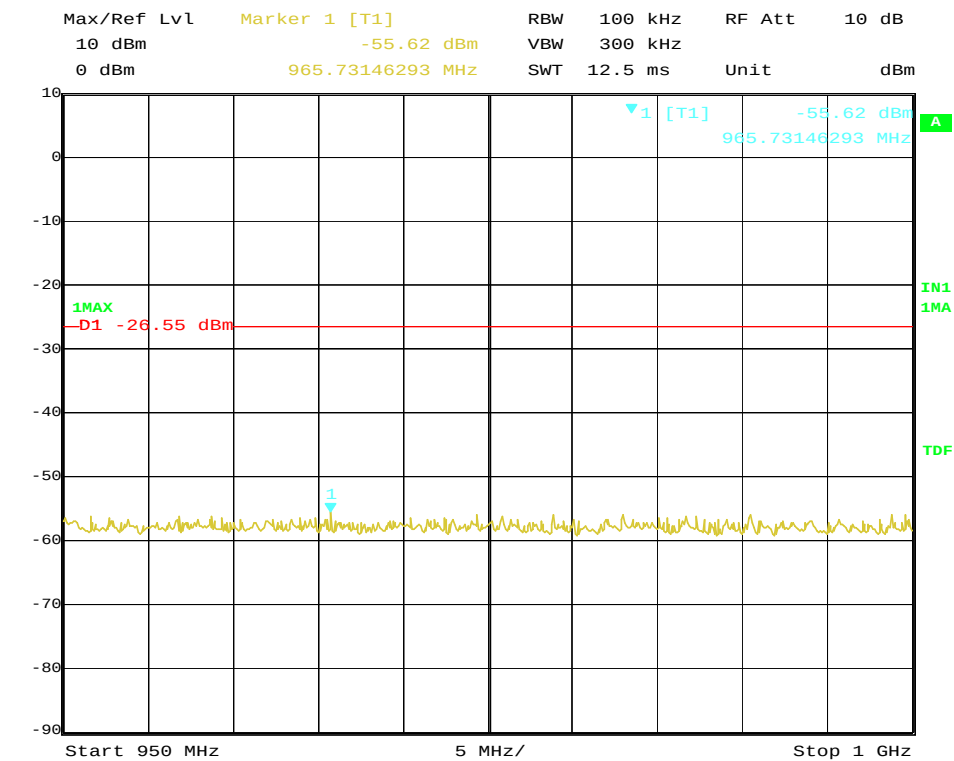
Date: 14.OCT.2018 18:24:51

High Channel Antenna Port Conducted Spurious Emissions, 900-950 MHz



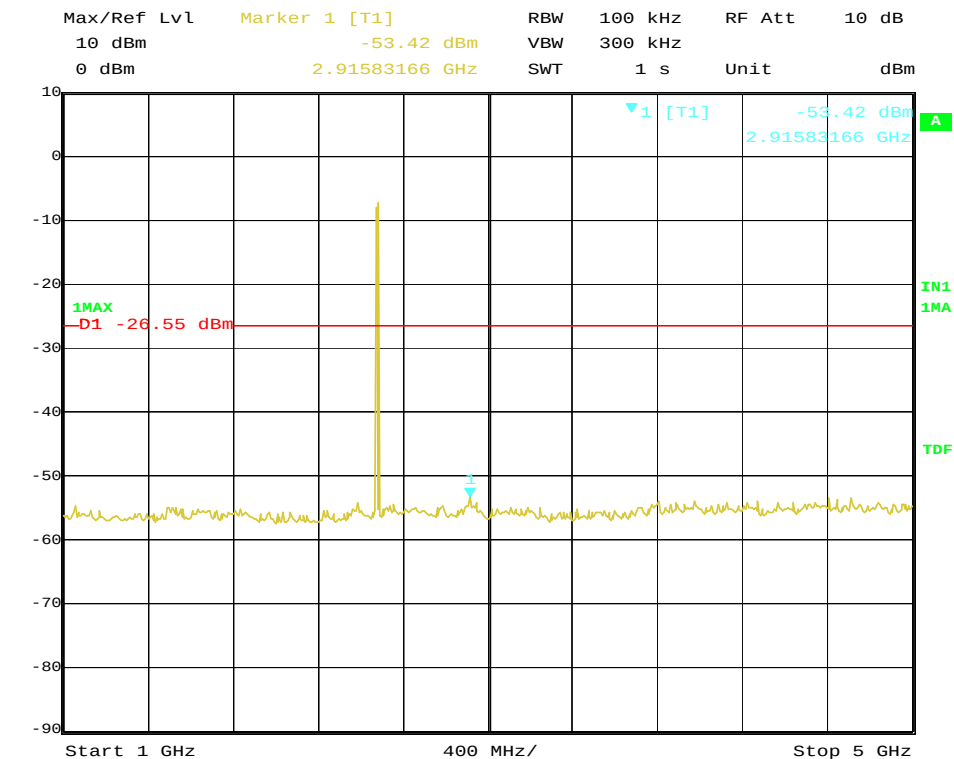
Date: 14.OCT.2018 18:25:13

High Channel Antenna Port Conducted Spurious Emissions, 950-1000 MHz



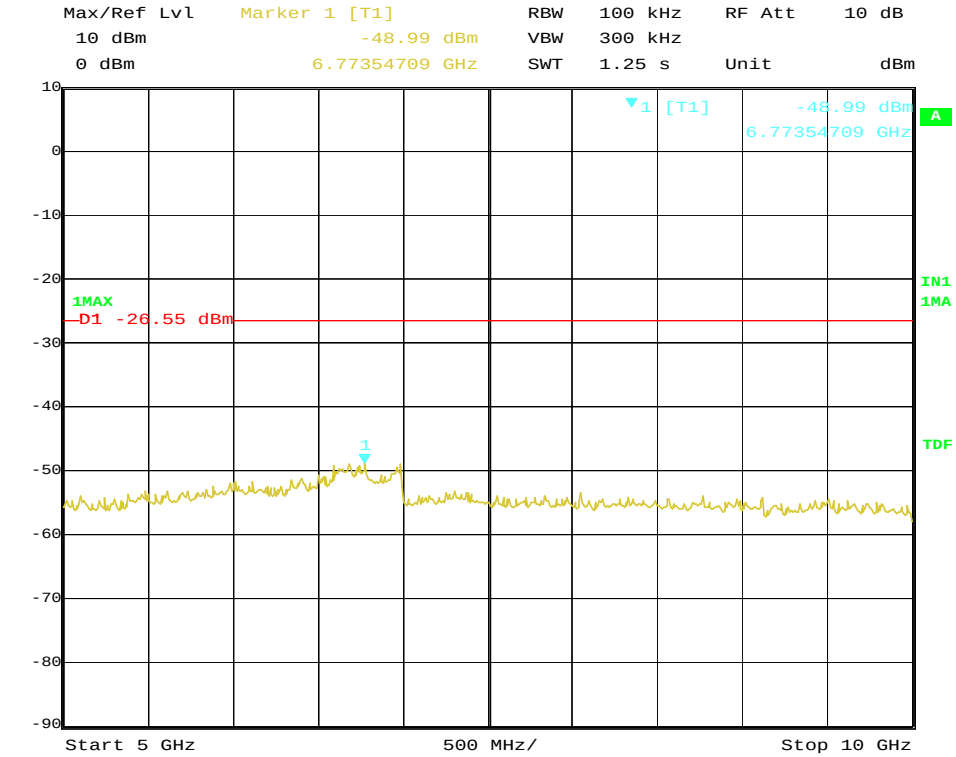
Date: 14.OCT.2018 18:25:34

High Channel Antenna Port Conducted Spurious Emissions, 1-5 GHz



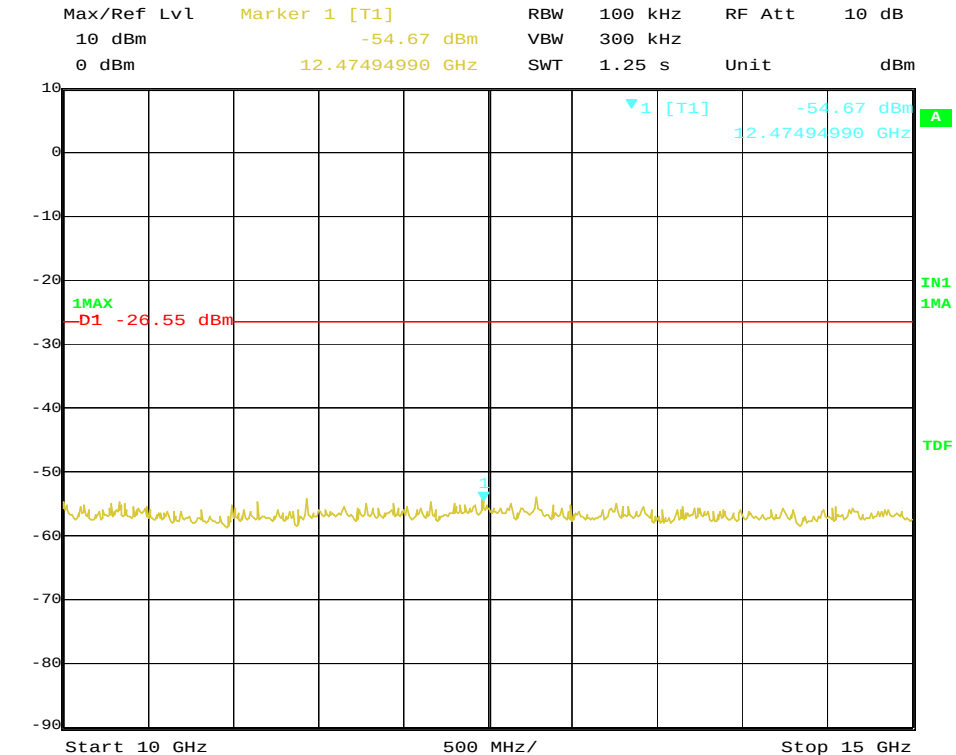
Date: 14.OCT.2018 18:26:33

High Channel Antenna Port Conducted Spurious Emissions, 5-10 GHz



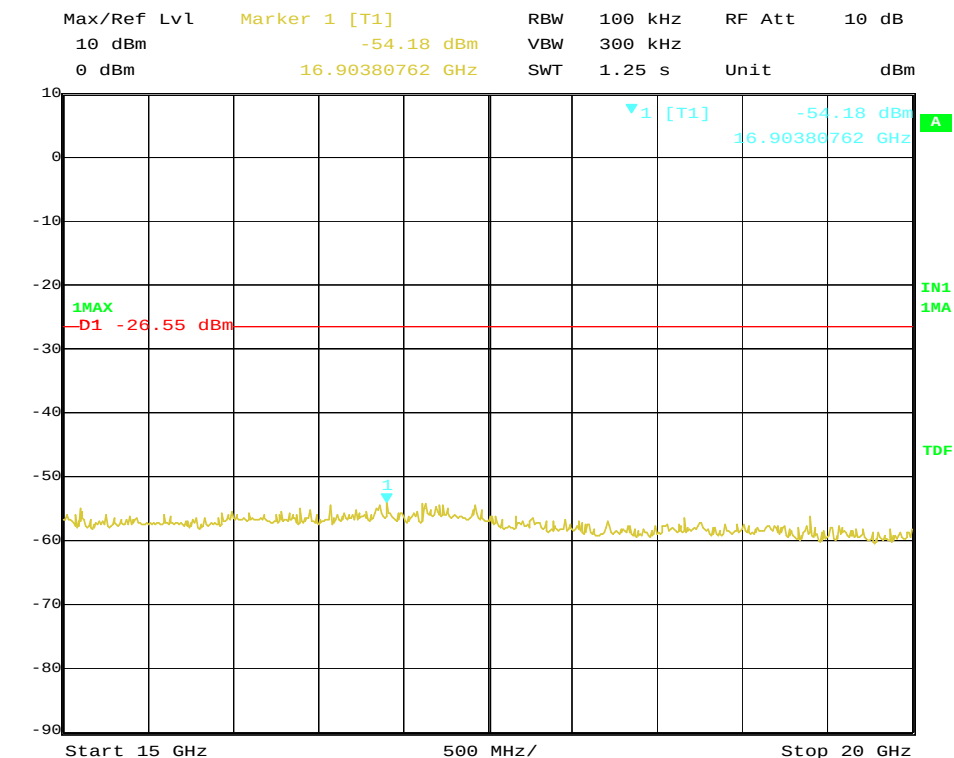
Date: 14.OCT.2018 18:26:59

High Channel Antenna Port Conducted Spurious Emissions, 10-15 GHz



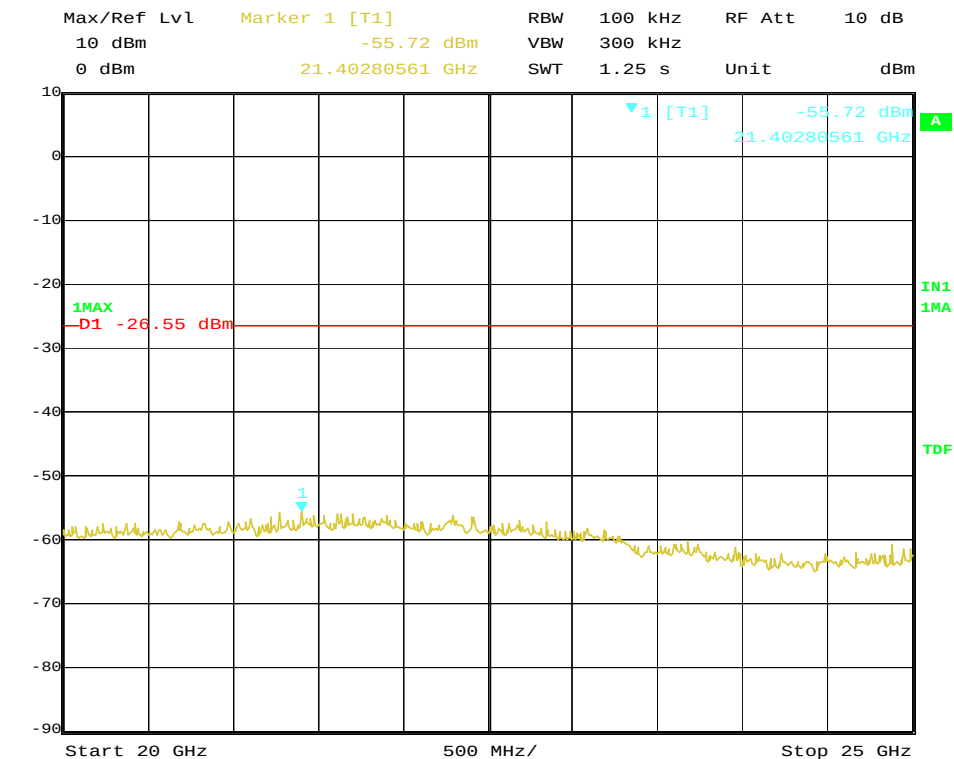
Date: 14.OCT.2018 18:27:23

High Channel Antenna Port Conducted Spurious Emissions, 15-20 GHz



Date: 14.OCT.2018 18:27:49

High Channel Antenna Port Conducted Spurious Emissions, 20-25 GHz



Date: 14.OCT.2018 18:28:15

Test Personnel: Kouma Sinn *KPS*
Supervising/Reviewing
Engineer:
(Where Applicable) N/A
Product Standard: CFR47 FCC Part 15.247
Input Voltage: RSS-247, RSS-102
Internal Battery Powered
Pretest Verification w/
Ambient Signals or
BB Source: BB Source

Test Date: 10/03/2018, 10/10/2018,
10/14/2018

Limit Applied: See report section 9.3

Ambient Temperature: 19, 21, 19 °C

Relative Humidity: 53, 47, 38 %

Atmospheric Pressure: 1006, 1007, 1012 mbars

Deviations, Additions, or Exclusions: None

11 Digital Device and Receiver Radiated Spurious Emissions

11.1 Method

Tests are performed in accordance with FCC Part 15 Subpart B, ICES 003, and ANSI C 63.4.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucisp
Radiated Emissions, 10m	30-1000 MHz	4.6dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	5.3 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.5 dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	5.2 dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	5.0 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	5.0 dB	5.5 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V 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, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 52.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB/m}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$FS = 32 \text{ dB}\mu\text{V/m}$$

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where UF = Net Reading in } \mu\text{V}$$

$$NF = \text{Net Reading in dB}\mu\text{V}$$

Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$

$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

Alternately, when BAT-EMC Emission Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". The "Correction" includes Antenna Factor, Preamp, and Cable Loss. These are already accounted for in the "Level" column.

11.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
BAR1'	Digital 4 Line Barometer	Mannix	0ABA116	BAR1	04/30/2018	04/30/2019
145128'	EMI Receiver (20 Hz - 40 GHz)	Rohde & Schwarz	ESIB 40	839283/001	03/22/2018	03/22/2019
145-410'	Cables 145-420 145-421 145-422 145-406	Huber + Suhner	10m Track A Cables	multiple	07/25/2018	07/25/2019
PRE11'	50dB gain pre-amp	Keith H	PRE11	PRE11	12/02/2017	12/02/2018
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	05/16/2018	05/16/2019
ETS005'	1-18GHz horn antenna	ETS-Lindgren	3117	00218279	05/14/2018	05/14/2019
145014'	Preamplifier (1 GHz to 26.5 GHz)	Hewlett Packard	8449B	3008A00232	06/14/2018	06/14/2019
145-416'	Cables 145-420 145-423 145-425 145-408	Huber + Suhner	3m Track B cables	multiple	07/25/2018	07/25/2019

Software Utilized:

Name	Manufacturer	Version
BAT-EMC	Nexio	3.17.0.3

11.3 Results:

The sample tested was found to Comply.

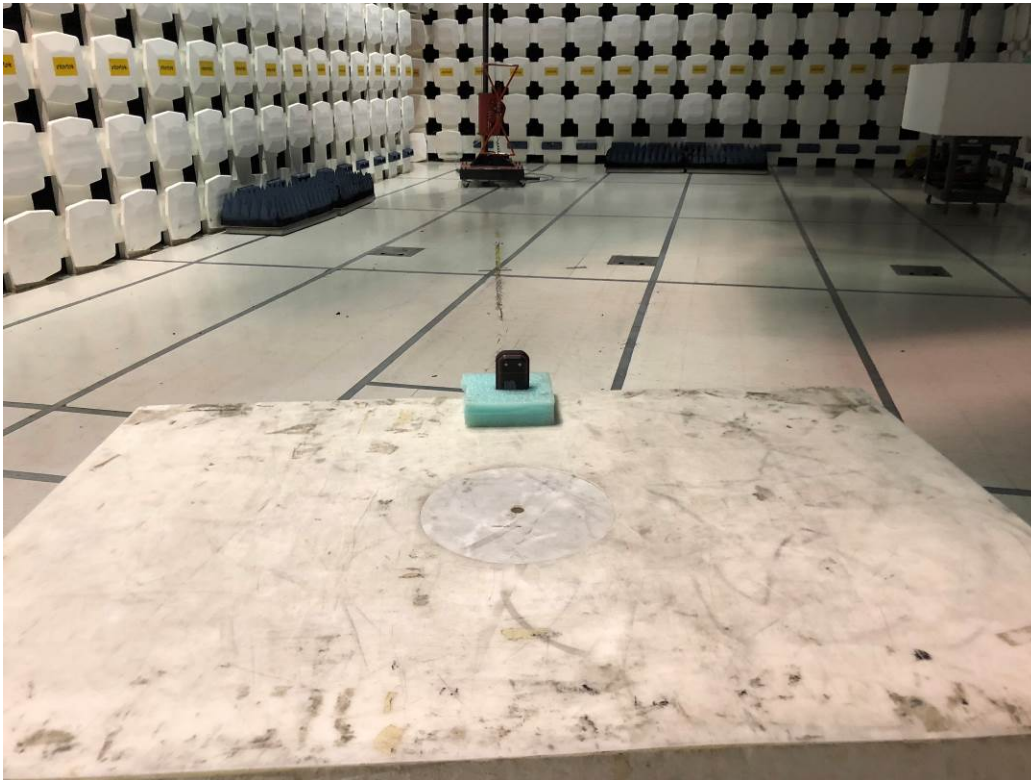
§15.109 Radiated emission limits.

The field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values.

Frequency of emission (MHz)	Field strength (microvolts/meter)	Field strength (dBµV/m)
30-88	100	40.00
88-216	150	43.52
216-960	200	46.02
Above 960	500	54.00

11.4 Setup Photographs:

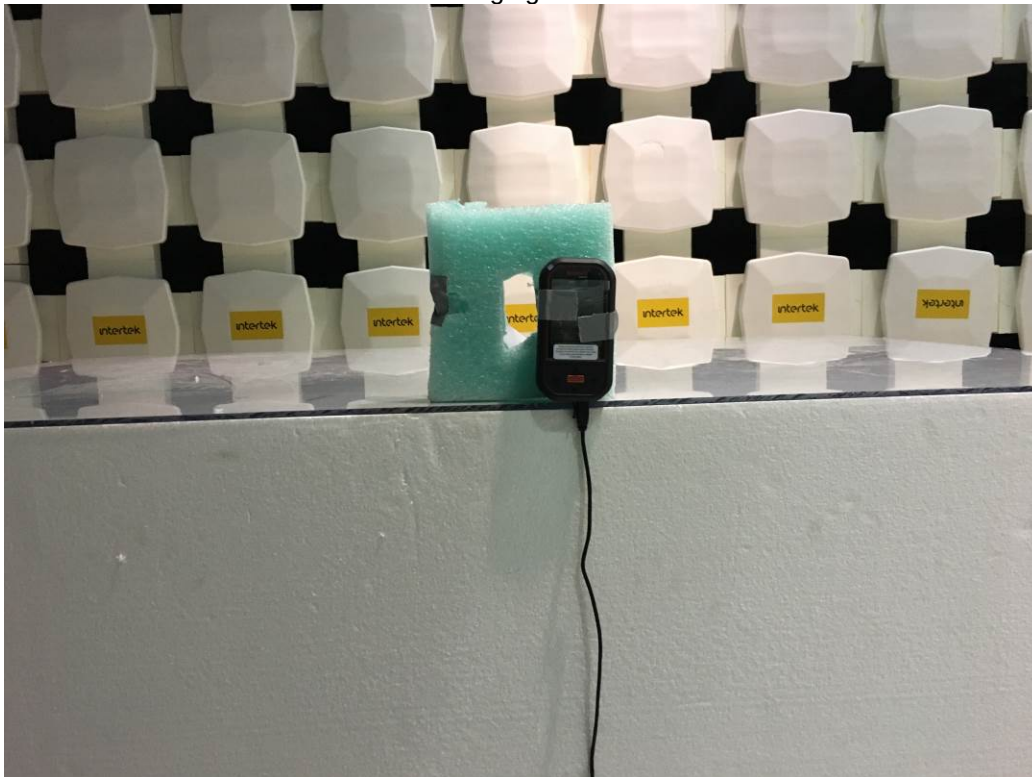
Radiated Emissions Test Setup, 30-1000 MHz



Radiated Emissions Test Setup, 1-13 GHz



Charging Mode



11.5 Plots/Data:

Receive Mode, Battery Powered, 30-1000 MHz

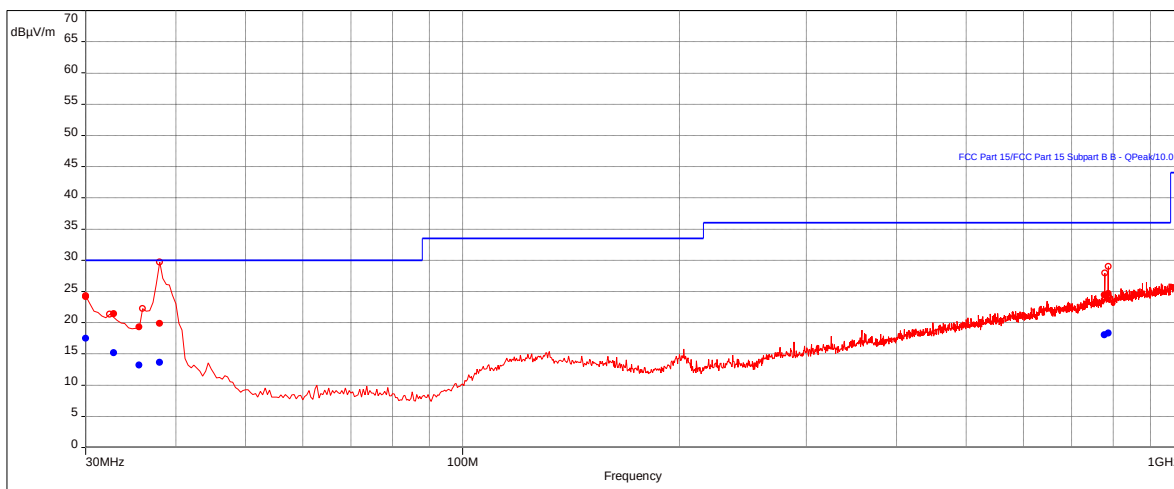
Test Information:

Date and Time	10/3/2018 10:09:00 AM
Client and Project Number	Simbex
Engineer	Kouma Sinn
Temperature	19C
Humidity	53%
Atmospheric Pressure	1006mbar
Comments	Alert Monitor, Serial:01000005, 30-1000MHz, Receive Mode (EUT sits straight up), full charged battery

Graph:

Alert Monitor, Serial:01000005, 30-1000MHz, Receive Mode (EUT sits straight up), full charged battery

- FCC Part 15/FCC Part 15 Subpart B B - QPeak/10.0m/
- Meas.Peak
- Peak (Peak /Lim. QPeak)
- Level (QuasiPeak (PASS))
- Level (Peak (PASS))



Results:

QuasiPeak (PASS) (6)

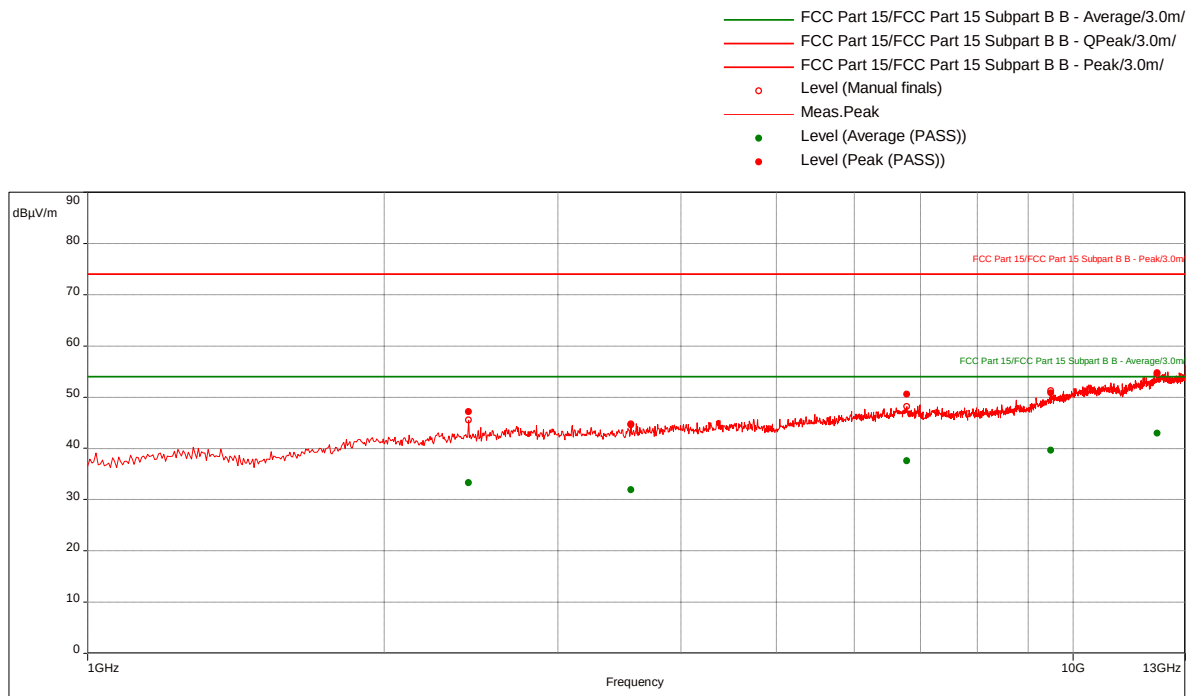
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
30.09473684	17.52	30.00	-12.48	240.00	1.99	Vertical	120000.00	-21.89
32.71578947	15.18	30.00	-14.82	344.00	3.37	Horizontal	120000.00	-23.79
35.71578947	13.18	30.00	-16.82	25.00	2.99	Vertical	120000.00	-26.12
37.90526316	13.62	30.00	-16.38	33.00	1.59	Vertical	120000.00	-27.76
777.5894737	18.06	36.00	-17.94	312.00	3.65	Vertical	120000.00	-17.64
787.0210526	18.36	36.00	-17.64	77.00	3.28	Vertical	120000.00	-17.42

Receive Mode, Battery Powered, 1-13 GHz

Test Information:

Date and Time	10/3/2018 8:41:10 PM
Client and Project Number	Simbex
Engineer	Vathana Ven
Temperature	19C
Humidity	53%
Atmospheric Pressure	1006mbar
Comments	1 to 13 GHz, Rx mode, battery mode

Graph:



Results:

Peak (PASS) (5)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
2434.736842	47.16	74.00	-26.84	226.00	2.32	Vertical	1000000.00	4.65
3561.842105	44.55	74.00	-29.45	246.00	1.49	Horizontal	1000000.00	5.84
6780.263158	50.61	74.00	-23.39	173.00	2.68	Horizontal	1000000.00	10.81
9496.578947	50.80	74.00	-23.20	33.00	1.77	Horizontal	1000000.00	13.56
12176.84211	54.57	74.00	-19.43	188.00	3.18	Horizontal	1000000.00	19.20

Average (PASS) (5)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
2434.736842	33.27	54.00	-20.73	226.00	2.32	Vertical	1000000.00	4.65
3561.842105	31.93	54.00	-22.07	246.00	1.49	Horizontal	1000000.00	5.84
6780.263158	37.59	54.00	-16.41	173.00	2.68	Horizontal	1000000.00	10.81
9496.578947	39.65	54.00	-14.35	33.00	1.77	Horizontal	1000000.00	13.56
12176.84211	42.91	54.00	-11.09	188.00	3.18	Horizontal	1000000.00	19.20

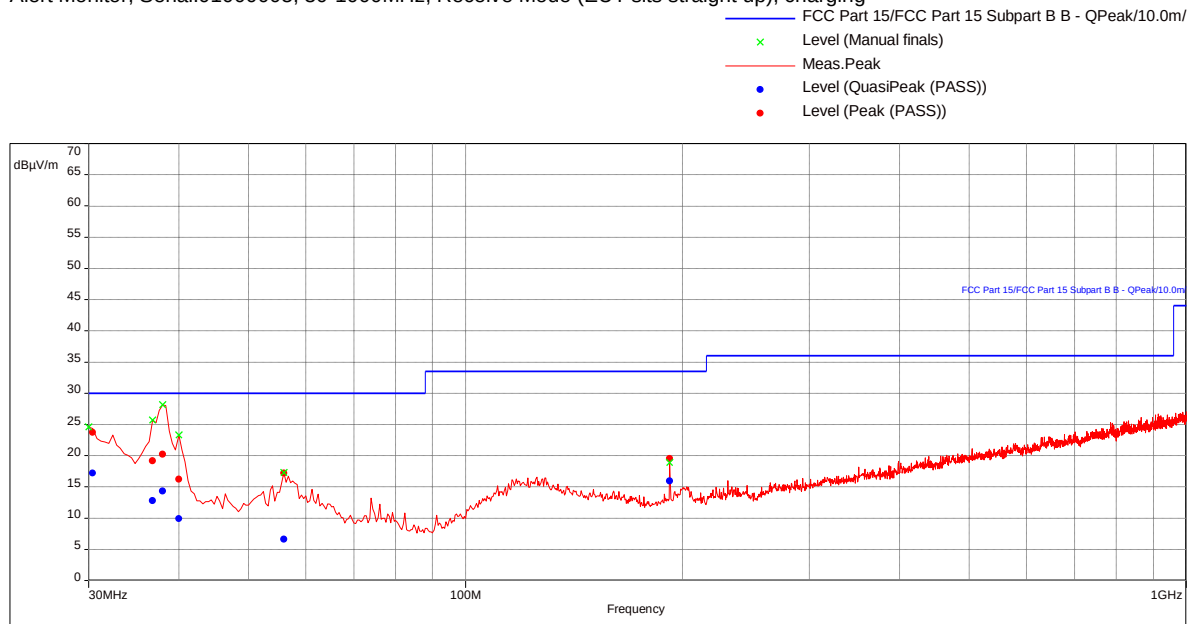
Receive Mode, Charging, 30-1000 MHz

Test Information:

Date and Time	10/3/2018 11:58:26 AM
Client and Project Number	Simbex
Engineer	Kouma Sinn
Temperature	19C
Humidity	53%
Atmospheric Pressure	1006mbar
Comments	Alert Monitor, Serial:01000005, 30-1000MHz, Receive Mode (EUT sits straight up), charging

Graph:

Alert Monitor, Serial:01000005, 30-1000MHz, Receive Mode (EUT sits straight up), charging



Results:

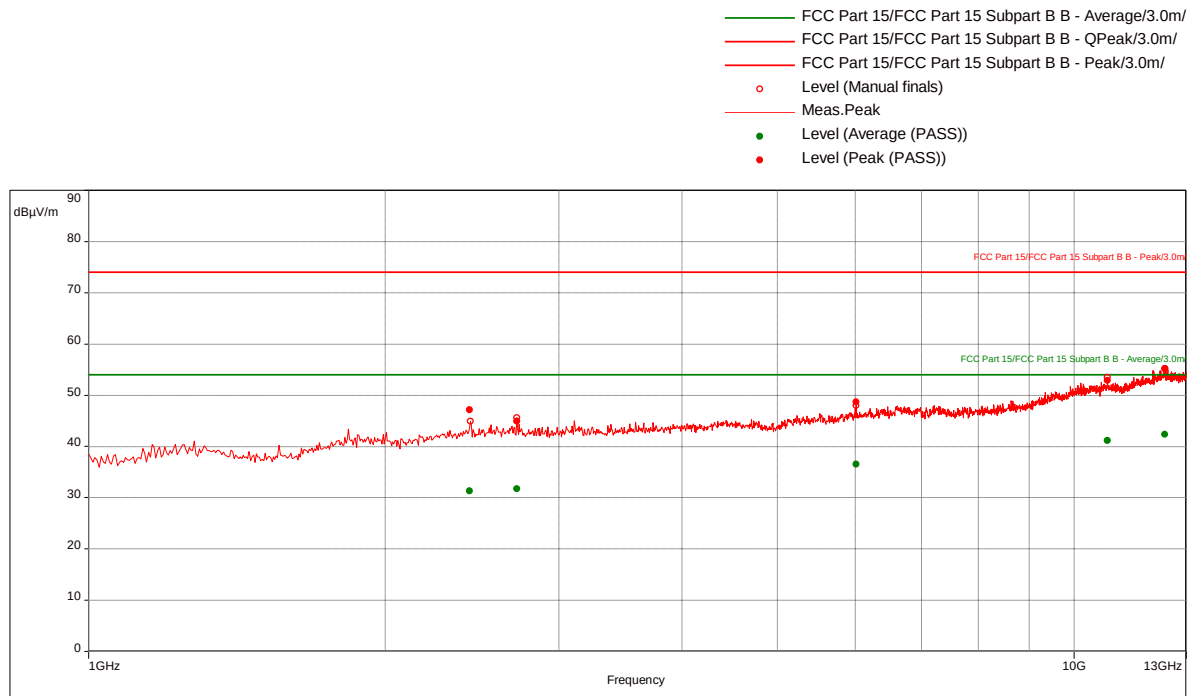
QuasiPeak (PASS) (6)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
30.48947368	17.18	30.00	-12.82	143.00	1.89	Vertical	120000.00	-22.16
36.76842105	12.78	30.00	-17.22	33.00	2.92	Vertical	120000.00	-26.95
37.96842105	14.31	30.00	-15.69	25.00	2.99	Vertical	120000.00	-27.81
40	9.92	30.00	-20.08	47.00	3.14	Vertical	120000.00	-29.31
56.12631579	6.59	30.00	-23.41	217.00	3.99	Vertical	120000.00	-36.01
192	15.97	33.50	-17.53	270.00	1.75	Vertical	120000.00	-30.57

Receive Mode, Charging, 1-13 GHz

Test Information:

Date and Time	10/3/2018 8:12:13 PM
Client and Project Number	Simbex
Engineer	Vathana Ven
Temperature	19C
Humidity	53%
Atmospheric Pressure	1006mbar
Comments	1 to 13 GHz, Rx mode, Charging

Graph:**Results:**

Peak (PASS) (5)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
2436.052632	47.17	74.00	-26.83	33.00	1.23	Vertical	1000000.00	4.66
2718.421053	44.90	74.00	-29.10	209.00	1.64	Horizontal	1000000.00	5.10
6009.736842	48.67	74.00	-25.33	343.00	2.95	Vertical	1000000.00	10.36
10814.21053	52.85	74.00	-21.15	69.00	1.52	Vertical	1000000.00	16.66
12371.84211	55.16	74.00	-18.84	76.00	1.57	Horizontal	1000000.00	19.24

Average (PASS) (5)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
2436.052632	31.31	54.00	-22.69	33.00	1.23	Vertical	1000000.00	4.66
2718.421053	31.75	54.00	-22.25	209.00	1.64	Horizontal	1000000.00	5.10
6009.736842	36.52	54.00	-17.48	343.00	2.95	Vertical	1000000.00	10.36
10814.21053	41.18	54.00	-12.82	69.00	1.52	Vertical	1000000.00	16.66
12371.84211	42.37	54.00	-11.63	76.00	1.57	Horizontal	1000000.00	19.24

Test Personnel:	Kouma Sinn <i>KPS</i>	Test Date:	10/03/2018 (1 st shift)
	Vathana F. Ven <i>VSV</i>		10/03/2018 (2 nd shift)
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 15 Subpart B,	Limit Applied:	See report section 10.3
Input Voltage:	ICES-003		
Pretest Verification w/ Ambient Signals or BB Source:	Internal Battery	Ambient Temperature:	19 °C
	BB Source	Relative Humidity:	53 %
		Atmospheric Pressure:	1006 mbars

Deviations, Additions, or Exclusions: None

12 AC Mains Conducted Emissions

12.1 Method

Tests are performed in accordance with FCC Part 15 Subpart B, ICES 003, and ANSI C 63.4

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	U _{CISPR}
AC Line Conducted Emissions	150 kHz - 30 MHz	2.8dB	3.4dB
Telco Port Emissions	150 kHz - 30 MHz	3.2dB	5.0dB

As shown in the table above our conducted emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculations

The following is how net line-conducted readings were determined:

$$NF = RF + LF + CF + AF$$

Where NF = Net Reading in dB μ V

RF = Reading from receiver in dB μ V

LF = LISN or ISN Correction Factor in dB

CF = Cable Correction Factor in dB

AF = Attenuator Loss Factor in dB

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

NF = Net Reading in dB μ V

Example:

$$NF = RF + LF + CF + AF = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 \text{ dB}\mu\text{V}$$

$$UF = 10^{(49.1 \text{ dB}\mu\text{V} / 20)} = 285.1 \mu\text{V/m}$$

Alternately, when C5 Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". "TF" is the Transducer Factor; in this case LISN or ISN loss.

12.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV001'	Digital 4 Line Barometer	Mannix	0ABA116	BAR2	05/20/2007	Verified
LISN32'	LISN - CISPR16 Compliant 9kHz-30MHz	Com-Power	LI-215A	191955	05/03/2018	05/03/2019
ROS002'	9kHz to 3GHz EMI Test Receiver	Rohde & Schwartz	ESCI 1166.5950K03	100067	08/08/2018	08/08/2019
CBLBNC2012-2'	50 Ohm Coaxial Cable	Pomona	RG-58 C/U	CBLBNC2012-2	01/05/2018	01/05/2019
DS27'	Attenuator, 20dB	Mini Circuits	20dB, 50 ohm	DS27	10/17/2017	10/17/2018

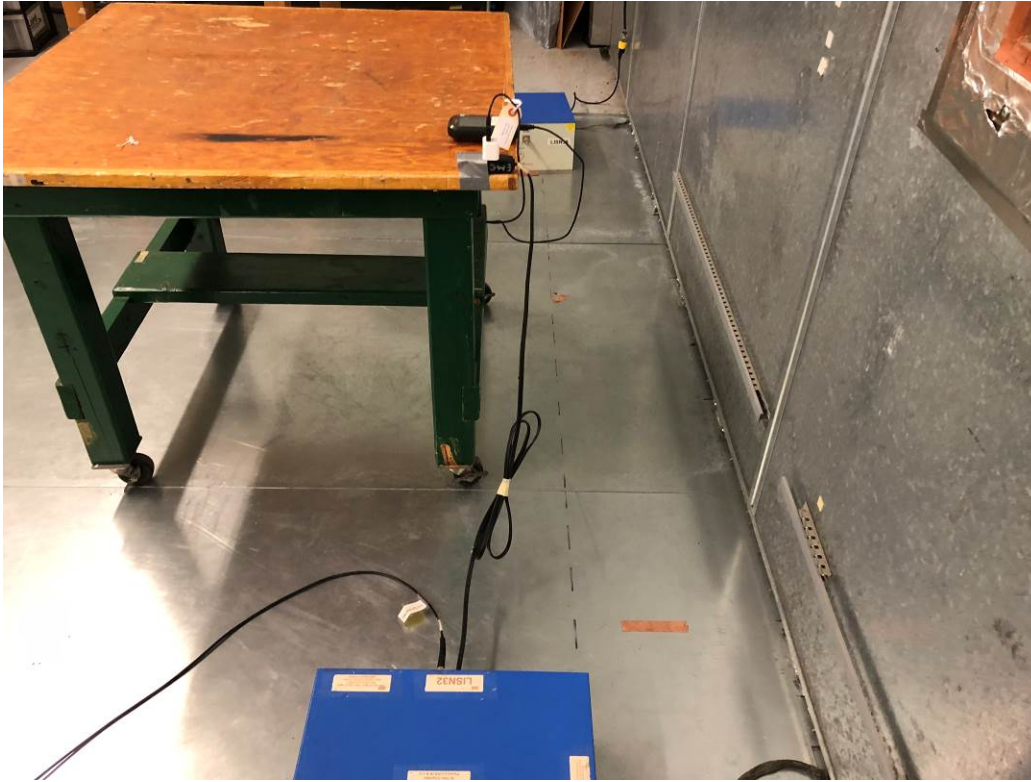
Software Utilized:

Name	Manufacturer	Version
Compliance 5	Teseq	5.26.46.46

12.3 Results:

The sample tested was found to Comply.

12.4 Setup Photographs:



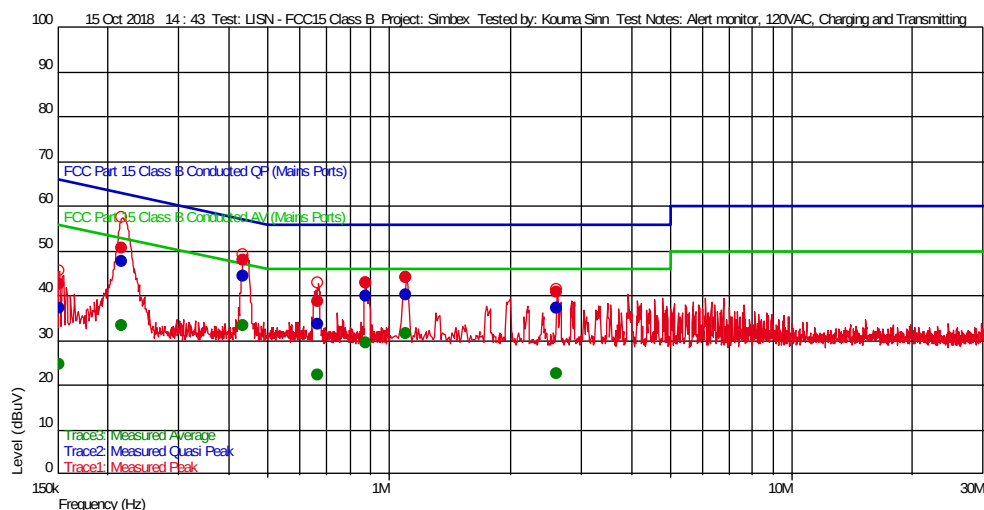
12.5 Plots/Data:

120VAC, Charging and Transmitting

Test Information

Test Details	User Entry	Additional Information
Test:	LISN - FCC15 Class B	
Project:	Simbex	
Test Notes:	Alert monitor, 120VAC, Charging and Transmitting	
Temperature:	21 C	
Humidity:	47 %, 1003 mbaar	
Tested by:	Kouma Sinn	
Test Started:	15 Oct 2018 14 : 43	

Prescan Emission Graph



●	Measured Peak Value	—	Swept Peak Data
●	Measured Quasi Peak Value	—	Swept Quasi Peak Data
●	Measured Average Value	—	Swept Average Data
●	Maximum Value of Mast and Turntable		

Emissions Test Data

Trace2: Measured Quasi Peak

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
151.7 k	37.15	1.653	20.074	65.906	-28.76	9 k		N
666.8 k	33.64	0.413	20.105	56.000	-22.36	9 k		N
2.62 M	37.15	0.360	20.157	56.000	-18.85	9 k		L1
875.05 k	39.71	0.392	20.109	56.000	-16.29	9 k		L1
1.108 M	40.29	0.379	20.122	56.000	-15.71	9 k		L1
217.15 k	47.56	1.087	20.078	62.927	-15.37	9 k		N
436.45 k	44.28	0.540	20.091	57.129	-12.85	9 k		L1

Trace3: Measured Average

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
151.7 k	24.66	1.653	20.074	55.906	-31.24	9 k		N
666.8 k	22.09	0.413	20.105	46.000	-23.91	9 k		N
2.62 M	22.43	0.360	20.157	46.000	-23.57	9 k		L1
217.15 k	33.19	1.087	20.078	52.927	-19.74	9 k		N
875.05 k	29.28	0.392	20.109	46.000	-16.72	9 k		L1
1.108 M	31.52	0.379	20.122	46.000	-14.48	9 k		L1
436.45 k	33.36	0.540	20.091	47.129	-13.77	9 k		L1

120VAC, Charging and Receiving

Test Information

Test Details

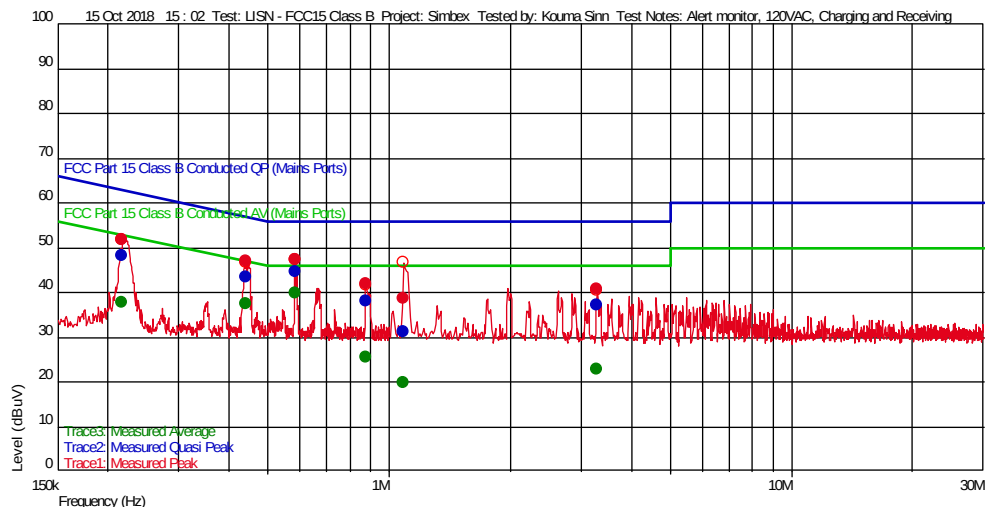
Test: LISN - FCC15 Class B
 Project: Simbex
 Test Notes: Alert monitor, 120VAC, Charging and Receiving
 Temperature: 21 C
 Humidity: 47 %, 1003 mbaar
 Tested by: Kouma Sinn
 Test Started: 15 Oct 2018 15 : 02

User Entry

LISN - FCC15 Class B
 Simbex
 Alert monitor, 120VAC, Charging and Receiving
 21 C
 47 %, 1003 mbaar
 Kouma Sinn
 15 Oct 2018 15 : 02

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable

- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace2: Measured Quasi Peak

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
1.09 M	31.07	0.379	20.122	56.000	-24.93	9 k		L1
3.295 M	37.10	0.348	20.172	56.000	-18.90	9 k		L1
875.05 k	38.09	0.392	20.109	56.000	-17.91	9 k		L1
218.0 k	48.20	1.083	20.078	62.895	-14.70	9 k		L1
442.4 k	43.52	0.536	20.091	57.017	-13.50	9 k		L1
586.05 k	44.66	0.430	20.100	56.000	-11.34	9 k		L1

Trace3: Measured Average

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
1.09 M	19.89	0.379	20.122	46.000	-26.11	9 k		L1
3.295 M	22.86	0.348	20.172	46.000	-23.14	9 k		L1
875.05 k	25.56	0.392	20.109	46.000	-20.44	9 k		L1
218.0 k	37.74	1.083	20.078	52.895	-15.15	9 k		L1
442.4 k	37.36	0.536	20.091	47.017	-9.66	9 k		L1
586.05 k	39.86	0.430	20.100	46.000	-6.14	9 k		L1

Test Personnel: Kouma Sinn *KPS*
Supervising/Reviewing Engineer:
(Where Applicable) N/A
Product Standard: FCC Part 15 Subpart B,
ICES-003
Input Voltage: 120VAC 60Hz
Pretest Verification w/
Ambient Signals or
BB Source: Signal Generator

Test Date: 10/15/2018
Limit Applied: All Class B
Ambient Temperature: 21 °C
Relative Humidity: 47 %
Atmospheric Pressure: 1003 mbars

Deviations, Additions, or Exclusions: None

13 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	11/05/2018	103638047BOX-009	KPS <i>KPS</i>	VFV <i>VFV</i>	Original Issue
1	04/02/2018	103638047BOX-009	KPS <i>KPS</i>	VFV <i>VFV</i>	1) Removed human RF exposure calculation 2) Removed antenna gain from conducted output power 3) Corrected the frequency band from 2402-2480 MHz to 2410-2480 MHz