

FCC Measurement/Technical Report on

Multimedia Equipment with WLAN and Bluetooth

BCI3L4PTR1(Star 3.5 / Star 3.0)

FCC ID: 2AUXS-BCI3L4PTR1

Test Report Reference: MDE_BOSCH_2411_FCC_06_rev01

Test Laboratory:

7layers GmbH
Borsigstrasse 11
40880 Ratingen
Germany



Deutsche
Akkreditierungsstelle
D-PL-12140-01-00

Note:

The following test results relate only to the devices specified in this document. This report shall not be reproduced in parts without the written approval of the test laboratory.

7layers GmbH

Borsigstraße 11
40880 Ratingen, Germany
T +49 (0) 2102 749 0
F +49 (0) 2102 749 350

Geschäftsführer/
Managing Directors:
Jörg-Timm Kilisch
Bernhard Retka

Registergericht/registered:
Düsseldorf HRB 75554
USt-Id.-Nr./VAT-No. DE203159652
Steuer-Nr./TAX-No. 147/5869/0385

a Bureau Veritas
Group Company

www.7layers.com

Commerzbank AG Account No. 303 016 000 Bank Code 300 400 00 IBAN DE81 3004 0000 0303 0160 00 Swift Code COBADEFF

Table of Contents

1	Applied Standards and Test Summary	3
1.1	Applied Standards	3
1.2	FCC-IC Correlation Table	4
1.3	Measurement Summary	5
2	Revision History / Signatures	7
3	Administrative Data	8
3.1	Testing Laboratory	8
3.2	Project Data	8
3.3	Applicant Data	8
3.4	Manufacturer Data	9
4	Test object Data	10
4.1	General EUT Description	10
4.2	EUT Main components	11
4.3	Ancillary Equipment	11
4.4	Auxiliary Equipment	12
4.5	EUT Setups	12
4.6	Operating Modes / Test Channels	12
4.7	Duty Cycle	13
4.8	Product labelling	13
5	Test Results	14
5.1	Transmitter Spurious Radiated Emissions	14
5.2	Band Edge Compliance Radiated	46
6	Test Equipment	62
6.1	Test Equipment Hardware	62
6.2	Test Equipment Software	65
7	Antenna Factors, Cable Loss and Sample Calculations	66
7.1	Antenna R&S HFH2-Z2 (9 kHz – 30 MHz)	66
7.2	Antenna R&S HL562 (30 MHz – 1 GHz)	67
7.3	Antenna R&S HF907 (1 GHz – 18 GHz)	68
7.4	Antenna EMCO 3160-09 (18 GHz – 26.5 GHz)	69
8	Measurement Uncertainties	70
9	Photo Report	71

1 APPLIED STANDARDS AND TEST SUMMARY

1.1 APPLIED STANDARDS

Type of Authorization

Certification for an Intentional Radiator.

Applicable FCC Rules

Prepared in accordance with the requirements of FCC Rules and Regulations as listed in 47 CFR Ch.1 Parts 2 and 15 (10-1-23 Edition). The following subparts are applicable to the results in this test report.

Part 2, Subpart J - Equipment Authorization Procedures, Certification

Part 15, Subpart C – Intentional Radiators

§ 15.201 Equipment authorization requirement

§ 15.207 Conducted limits (only in case of direct or indirect connection to AC main)

§ 15.209 Radiated emission limits; general requirements

§ 15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz

Note:

The tests were selected and performed with reference to the FCC Public Notice "Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating under Section 15.247 of the FCC Rules, 558074 D01 15.247 Meas Guidance v05r02, 2019-04-02".
ANSI C63.10-2013 is applied.

1.2 FCC-IC CORRELATION TABLE

Correlation of measurement requirements for FHSS (e.g. Bluetooth®) equipment from FCC and IC

FHSS equipment

Measurement	FCC reference	IC reference
Conducted emissions on AC Mains	§ 15.207	RSS-Gen Issue 5 & AMD 1 & AMD 2: 8.8
Occupied bandwidth	§ 15.247 (a) (1)	RSS-247 Issue 3: 5.1 (b)
Peak conducted output power	§ 15.247 (b) (1), (4)	RSS-247 Issue 3: 5.4 (b)
Transmitter spurious RF conducted emissions	§ 15.247 (d)	RSS-Gen Issue 5 & AMD 1 & AMD 2: 6.13/8.9/8.10; RSS-247 Issue 3: 5.5
Transmitter spurious radiated emissions	§ 15.247 (d); § 15.209 (a)	RSS-Gen Issue 5 & AMD 1 & AMD 2: 6.13 / 8.9/8.10; RSS-247 Issue 3: 5.5
Band edge compliance	§ 15.247 (d)	RSS-247 Issue 3: 5.5
Dwell time	§ 15.247 (a) (1) (iii)	RSS-247 Issue 3: 5.1 (d)
Channel separation	§ 15.247 (a) (1)	RSS-247 Issue 3: 5.1 (b)
No. of hopping frequencies	§ 15.247 (a) (1) (iii)	RSS-247 Issue 3: 5.1 (d)
Hybrid systems (only)	§ 15.247 (f); § 15.247 (e)	RSS-247 Issue 3: 5.3
Antenna requirement	§ 15.203 / 15.204	RSS-Gen Issue 5 & AMD 1 & AMD 2: 8.3
Receiver spurious emissions	-	-

1.3 MEASUREMENT SUMMARY

47 CFR CHAPTER I FCC PART 15 Subpart C §15.247

§ 15.247 (d)

Transmitter Spurious Radiated Emissions

The measurement was performed according to ANSI C63.10, chapter 6.4, 6.5, 6.6.5

Final Result

OP-Mode Chip, Radio Technology, Operating Frequency, Measurement range	Setup	Date	FCC	IC
Chip01, Bluetooth EDR 2, high, 1 GHz - 8 GHz	S01_AA01#S3.5	2025-01-04	Passed	Passed
Chip01, Bluetooth EDR 2, low, 1 GHz - 8 GHz	S01_AA01#S3.5	2025-01-04	Passed	Passed
Chip01, Bluetooth EDR 2, mid, 1 GHz - 8 GHz	S01_AA01#S3.5	2025-01-04	Passed	Passed
Chip01, Bluetooth EDR 3, high, 1 GHz - 26 GHz	S01_AA01#S3.5	2025-01-05	Passed	Passed
Chip01, Bluetooth EDR 3, high, 30 MHz - 1 GHz	S01_AA01#S3.5	2025-01-04	Passed	Passed
Chip01, Bluetooth EDR 3, low, 1 GHz - 26 GHz	S01_AA01#S3.5	2025-01-04	Passed	Passed
Chip01, Bluetooth EDR 3, low, 30 MHz - 1 GHz	S01_AA01#S3.5	2024-12-15	Passed	Passed
Chip01, Bluetooth EDR 3, mid, 1 GHz - 26 GHz	S01_AA01#S3.5	2025-01-05	Passed	Passed
Chip01, Bluetooth EDR 3, mid, 30 MHz - 1 GHz	S01_AA01#S3.5	2024-12-15	Passed	Passed
Chip01, Bluetooth EDR 3, mid, 9 kHz - 30 MHz	S01_AA01#S3.5	2024-12-15	Passed	Passed
Chip02, Bluetooth EDR 2, high, 1 GHz - 8 GHz	S01_AA01#S3.5	2025-01-05	Passed	Passed
Chip02, Bluetooth EDR 2, low, 1 GHz - 8 GHz	S01_AA01#S3.5	2025-01-05	Passed	Passed
Chip02, Bluetooth EDR 2, mid, 1 GHz - 8 GHz	S01_AA01#S3.5	2025-01-05	Passed	Passed
Chip02, Bluetooth EDR 3, high, 1 GHz - 26 GHz	S01_AA01#S3.5	2025-01-11	Passed	Passed
Chip02, Bluetooth EDR 3, high, 30 MHz - 1 GHz	S01_AA01#S3.5	2024-12-15	Passed	Passed
Chip02, Bluetooth EDR 3, low, 1 GHz - 26 GHz	S01_AA01#S3.5	2025-01-10	Passed	Passed
Chip02, Bluetooth EDR 3, low, 30 MHz - 1 GHz	S01_AA01#S3.5	2024-12-15	Passed	Passed
Chip02, Bluetooth EDR 3, mid, 1 GHz - 26 GHz	S01_AA01#S3.5	2025-01-11	Passed	Passed
Chip02, Bluetooth EDR 3, mid, 30 MHz - 1 GHz	S01_AA01#S3.5	2024-12-15	Passed	Passed
Chip02, Bluetooth EDR 3, mid, 9 kHz - 30 MHz	S01_AA01#S3.5	2024-12-15	Passed	Passed
Chip01, Bluetooth EDR 3, high, 1 GHz - 26 GHz (Harmonic only)	S01_AB01#S3.0	2025-01-27	Passed	Passed
Chip02, Bluetooth EDR 3, low, 1 GHz - 26 GHz (Harmonic only)	S01_AB01#S3.0	2025-01-27	Passed	Passed
Chip02, Bluetooth EDR 3, low, 30 MHz - 1 GHz	S01_AA01#S3.0	2025-01-30	Passed	Passed
Chip02, Bluetooth EDR 3, mid, 9 kHz - 30 MHz	S01_AA01#S3.0	2025-01-30	Passed	Passed

47 CFR CHAPTER I FCC PART 15
§ 15.247 (d)
Subpart C §15.247

Band Edge Compliance Radiated

The measurement was performed according to ANSI C63.10, chapter 6.6.5

Final Result
OP-Mode

 Chip, Radio Technology, Operating Frequency,
 Band Edge

Setup
Date
FCC
IC

Chip01, Bluetooth EDR 3, low, low	S01_AA01#S3.5	2025-07-14	Passed	Passed
Chip01, Bluetooth BDR, high, high	S01_AA01#S3.5	2025-07-04	Passed	Passed
Chip01, Bluetooth EDR 2, high, high	S01_AA01#S3.5	2025-07-04	Passed	Passed
Chip01, Bluetooth EDR 3, high, high	S01_AA01#S3.5	2025-01-05	Passed	Passed
Chip01, Bluetooth EDR 3, low, low	S01_AA01#S3.5	2025-07-14	Passed	Passed
Chip02, Bluetooth BDR, high, high	S01_AA01#S3.5	2025-01-05	Passed	Passed
Chip02, Bluetooth EDR 2, high, high	S01_AA01#S3.5	2025-01-05	Passed	Passed
Chip02, Bluetooth EDR 3, high, high	S01_AA01#S3.5	2025-01-11	Passed	Passed
Chip01, Bluetooth BDR, high, high	S01_AB01#S3.0	2025-01-30	Passed	Passed
Chip01, Bluetooth EDR 3, high, high	S01_AB01#S3.0	2025-01-27	Passed	Passed
Chip02, Bluetooth BDR, high, high	S01_AB01#S3.0	2025-01-27	Passed	Passed
Chip02, Bluetooth EDR 3, high, high	S01_AB01#S3.0	2025-01-27	Passed	Passed

N/A: Not applicable

N/P: Not performed

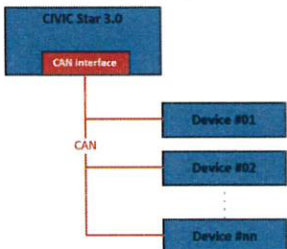
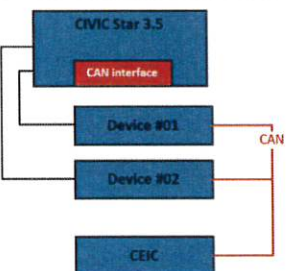
2 REVISION HISTORY / SIGNATURES

Report version control			
Version	Release date	Change Description	Version validity
initial	2025-04-15	--	invalid
Rev01	2025-07-22	- changed the AV values in test case radiated Band-Edge. - Low Band-Edge radiated measurements have been added.	valid

COMMENT:

The models BCI3L4PTR1 and BCI3L4PTN1 have identical RF parts, and the differences between them are declared in the "FCC_Declaration_of_Identity_BCI3L4PTN1_BCI3L4PTR1_V2_s" document. The results for the conducted measurements are listed in report: "MDE_BOSCH_2411_FCC_05"

The EUT (Multimedia Equipment with WLAN and Bluetooth) supports two different software variants. The differences between these variants are explained in the following table:

Parameter	LS4T	LS4+T
SW-SKU	ABBC	AABC
GPU frequency	635 MHz	731 MHz
Software variant	Star 3.0	Star 3.5
Blockdiagram Star Architectures	The following block diagram shows the fundamental Star 3.0 architecture that uses the CAN interface. 	The following block diagram shows the fundamental Star 3.5 architecture that does not use the CAN interface, but it is assembled on the CIVIC device. 

The CAN interface is always built on both Star architectures, but only Star 3.0 uses the CAN interface.

Based on the previous table and the applicant's suggested test plan, the measurements were conducted as follows:

- Variant "Star 3.5": only tested for spurious emissions (Full testing)
- Variant "Star 3.0": only tested for spurious emissions (Spot checks only)



7 layers GmbH, Borsigstr. 11
40880 Ratingen Germany
Phone +49 (0)2102 749 0



(responsible for accreditation scope)
Dipl.-Ing. Robert Machulec



(responsible for testing and report)
BSc. Mhd Mouaz Saad

3 ADMINISTRATIVE DATA

3.1 TESTING LABORATORY

Company Name: 7layers GmbH
Address: Borsigstr. 11
40880 Ratingen
Germany

The test facility is accredited by the following accreditation organisation:

Laboratory accreditation no: DAKKS D-PL-12140-01-00
FCC Designation Number: DE0015
FCC Test Firm Registration: 929146
ISED CAB Identifier DE0007; ISED#: 3699A

Responsible for accreditation scope: Dipl.-Ing. Robert Machulec
Report Template Version: 2025-02-28

3.2 PROJECT DATA

Responsible for testing and report: BSc. Mhd Mouaz Saad
Employees who performed the tests: documented internally at 7Layers
Date of Report: 2025-07-22
Testing Period: 2024-12-15 to 2025-07-14

3.3 APPLICANT DATA

Company Name: Robert Bosch GmbH
Address: Robert-Bosch-Platz 1, 70839 Gerlingen
Germany
Contact Person: Karin Silberhorn

3.4 MANUFACTURER DATA

Manufacturer 1

Company Name: Bosch Car Multimedia Portugal

Address: S.A. Rua Max Grundig
35-Lomar,
4705-820 Braga

Manufacturer 2

Company Name: Bosch Automotive Products (Suzhou) Co., Ltd.

Address: Changzhou Branch
No. 17, Long Men Road,
Wujin Hi-tech Industrial Zone
Changzhou, Jiangsu, P.R. China

4 TEST OBJECT DATA

4.1 GENERAL EUT DESCRIPTION

Kind of Device product description	Central In-Vehicle Infotainment Computer	
Product name	Multimedia Device with WLAN and Bluetooth	
Model name	BCI3L4PTR1(Star 3.5 / Star 3.0)	
Declared EUT data by the supplier		
Voltage Type	DC	
Voltage Level	12 VDC	
Antenna / Gain	External	
	Antenna 3 (Chip01, BT)	Antenna 2 (Chip02, BT)
	0.1 dB	0.1 dB
Tested Modulation Type and Tested datarates	GFSK Modulation, 1-DHx packets, 1 Mbit n/4 DQPSK Modulation, 2-DHx packets, 2 Mbit 8-DPSK Modulation, 3-DHx packets, 3 Mbit	
General product description	Central In-Vehicle Infotainment Computer Gen20x.i3 infotainment system is the main unit in the vehicle, which combines the instrument cluster and infotainment functionality. It supports Bluetooth classic (BT), Bluetooth Low Energy(BTLE) and Wi-Fi (2.4GHz and 5GHz).	
Specific product description for the EUT	The EUT has the following modules for Bluetooth and WLAN:	
	ATC6QPL002(Chip02): Only BT and BTLE	ATC6QPL004(Chip01): BT, BTLE, Wi-Fi (2.4GHz and 5GHz).
EUT ports (connected cables during testing):	Main Connector A (incl. DC Power) (unshielded, 1m)	GNSS antenna (shielded, 1.5m)
	Main Connector B (unshielded, 1m)	BT/WLAN Antenna (shielded, 1.5m)
	Ethernet (shielded, 1.5m)	HD-BaseT (shielded, 1.5m)
	FM/AM/SDARS/Ref.-Antennas	USB 2.0 – TGS (shielded, 1.5m)
	Video-Out Displays (shielded, 1.5m)	USB 2.0 - MM-Box (shielded, 1.5m)
	CamsControl(shielded, 1.5m)	Video-in Cameras (shielded, 1.5m)
	USB 3.0 High Speed Flashing/CAM Logging (shielded, 1.5m)	
Special software used for testing	ADB shell.exe	
Connection to AC main is supported	No (no direct or indirect connection)	

4.2 EUT MAIN COMPONENTS

Sample Name	Sample Code	Description
EUT A	DE1050027aa01	Radiated Sample
Sample Parameter	Value	
Serial No.	0018100	
HW Version	D5	
SW Version	E064.4	
Comment	BCI3L4PTR1 - Star 3.5	

Sample Name	Sample Code	Description
EUT B	DE1050028ab01	Radiated Sample
Sample Parameter	Value	
Serial No.	0017851	
HW Version	D5	
SW Version	E064.4	
Comment	BCI3L4PTR1 - Star 3.0	

Sample Name	Sample Code	Description
EUT C	DE1050028aa01	Radiated Sample
Sample Parameter	Value	
Serial No.	0017856	
HW Version	D5	
SW Version	E064.4	
Comment	BCI3L4PTR1 - Star 3.0	

NOTE: The short description is used to simplify the identification of the EUT in this test report.

4.3 ANCILLARY EQUIPMENT

For the purposes of this test report, ancillary equipment is defined as equipment which is used in conjunction with the EUT to provide operational and control features to the EUT. It is necessary to configure the system in a typical fashion, as a customer would normally use it. But nevertheless Ancillary Equipment can influence the test results.

Device	Details(Manufacturer, Type Model, OUT Code)	Description
ANC 1	Continental, RKE223E1GNS, DE1050025/026AUX01	GNSS Antenna + Antenna Cable (1.5m)
ANC 2	Mercedes-Benz, A1779052902, DE1050025/026AUX45	4x WIFI/BT Antenna + 4x Antenna Cable (1.5m)

4.4 AUXILIARY EQUIPMENT

For the purposes of this test report, auxiliary equipment is defined as equipment which is used temporarily to enable operational and control features especially used for the tests of the EUT which is not used during normal operation or equipment that is used during the tests in combination with the EUT but is not subject of this test report. It is necessary to configure the system in a typical fashion, as a customer would normally use it. But nevertheless Auxiliary Equipment can influence the test results.

Device	Details (Manufacturer, Type Model, HW, SW, S/N)	Description
AUX A	Bosch, -, -, -, -	2x Cable Harness

4.5 EUT SETUPS

This chapter describes the combination of EUTs and equipment used for testing. The rationale for selecting the EUTs, ancillary and auxiliary equipment and interconnecting cables, is to test a representative configuration meeting the requirements of the referenced standards.

Setup	Combination of EUTs	Description and Rationale
S01_AA01#S3.5	EUT A, ANC 1, ANC 2, AUX A	Radiated Setup
S01_AB01#S3.0	EUT B, ANC 1, ANC 2, AUX A	Radiated Setup
S01_AA01#S3.0	EUT C, ANC 1, ANC 2, AUX A	Radiated Setup

4.6 OPERATING MODES / TEST CHANNELS

This chapter describes the operating modes of the EUTs used for testing.

BT Test Channels:
Channel:
Frequency [MHz]

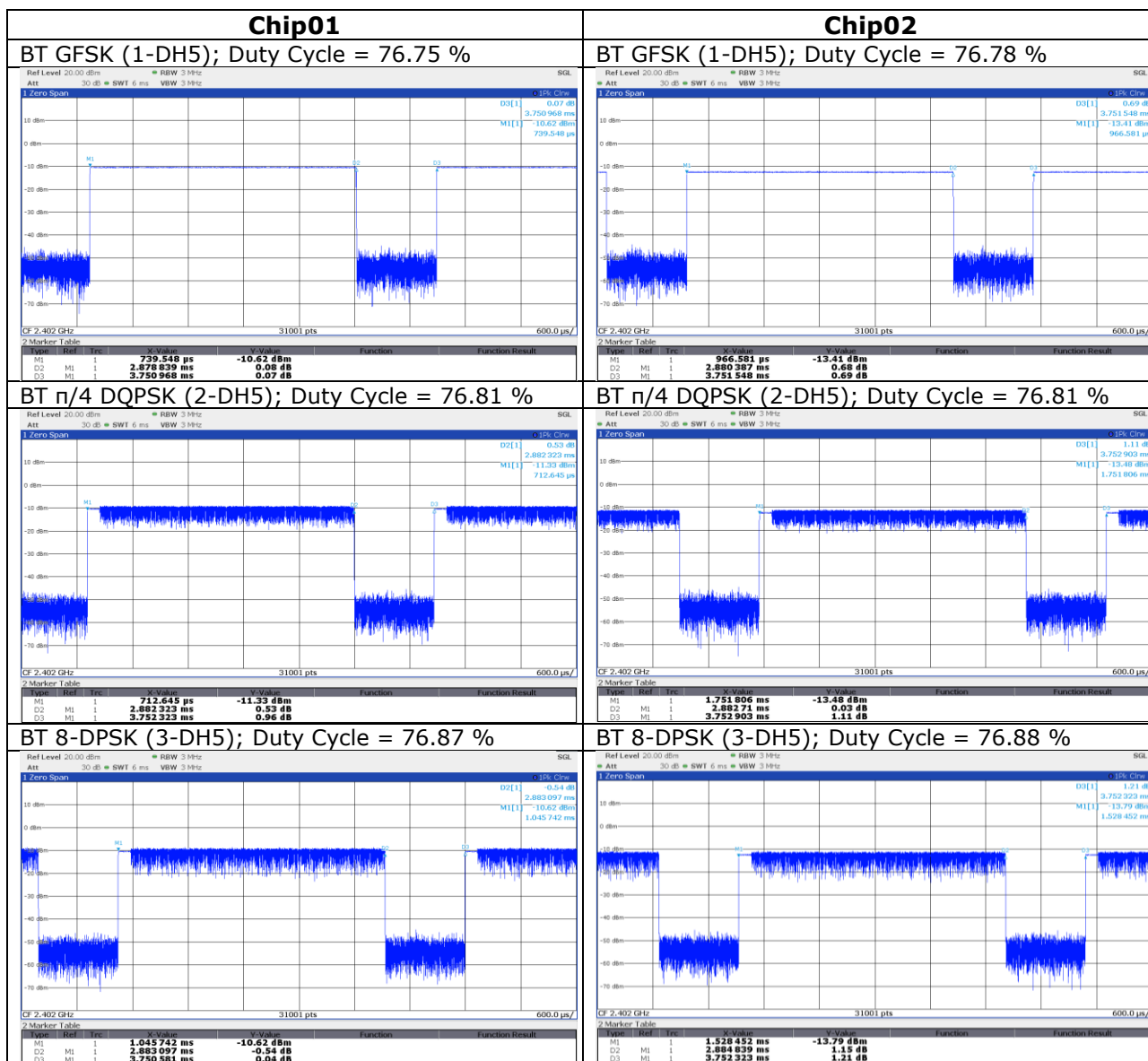
2.4 GHz ISM 2400 – 2483.5 MHz		
low	mid	high
0	39	78
2402	2441	2480

Operating Modes:

- Bluetooth BR: GFSK Modulation, 1-DHx packets, 1 Mbit
- Bluetooth EDR 2: $\pi/4$ DQPSK Modulation, 2-DHx packets, 2 Mbit
- Bluetooth EDR 3: 8-DPSK Modulation, 3-DHx packets, 3 Mbit

4.7 DUTY CYCLE

The test was performed according to:
ANSI C63.10, chapter 7.5



4.8 PRODUCT LABELLING

4.8.1 FCC ID LABEL

Please refer to the documentation of the applicant.

4.8.2 LOCATION OF THE LABEL ON THE EUT

Please refer to the documentation of the applicant.

5 TEST RESULTS

5.1 TRANSMITTER SPURIOUS RADIATED EMISSIONS

Standard **FCC Part 15 Subpart C**

The test was performed according to:

ANSI C63.10, chapter 6.4, 6.5, 6.6.5

5.1.1 TEST DESCRIPTION

The test set-up was made in accordance to the general provisions of ANSI C63.10 in a typical installation configuration. The measurements were performed according the following sub-chapters of ANSI C63.10:

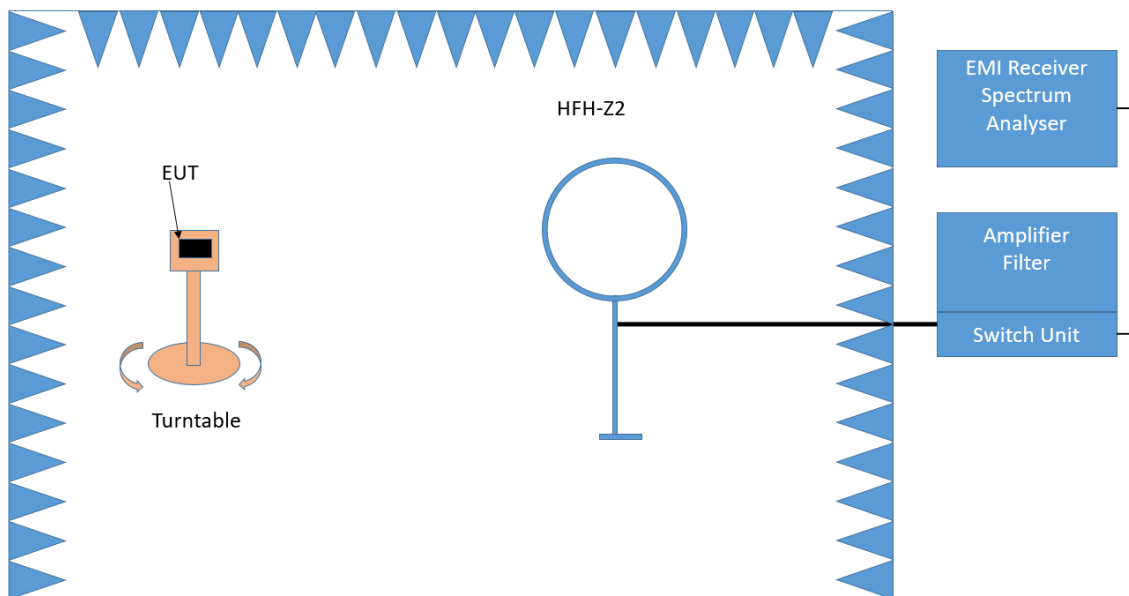
- < 30 MHz: Chapter 6.4
- 30 MHz – 1 GHz: Chapter 6.5
- > 1 GHz: Chapter 6.6 (procedure according 6.6.5 used)

The measurement procedure is implemented into the EMI test software EMC32 from R&S. Exploratory tests are performed at 3 orthogonal axes to determine the worst-case orientation of a body-worn or handheld EUT. The final test on all kind of EUTs is also performed at 3 axes. A pre-check is performed while the EUT is powered.

Below 1 GHz:

The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The influence of the EUT support table that is used between 30–1000 MHz was evaluated.

1. Measurement up to 30 MHz



Test Setup; Spurious Emission Radiated (SAC), 9 kHz – 30 MHz

The Loop antenna HFH2-Z2 is used.

Step 1: pre measurement

- Anechoic chamber
- Antenna distance: 3 m
- Antenna height: 1 m
- Detector: Peak-Maxhold
- Frequency range: 0.009 - 0.15 MHz and 0.15 - 30 MHz
- Frequency steps: 0.05 kHz and 2.25 kHz
- IF-Bandwidth: 0.2 kHz and 9 kHz
- Measuring time / Frequency step: 100 ms (FFT-based)

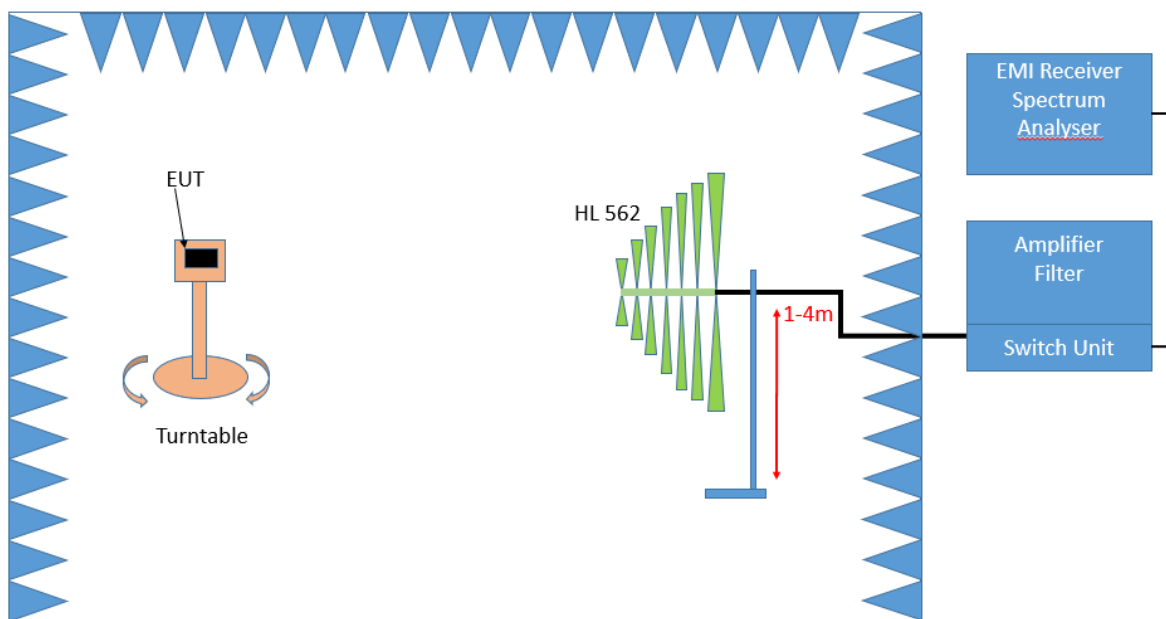
Intention of this step is, to determine the radiated EMI-profile of the EUT. Afterwards the relevant emissions for the final measurement are identified.

Step 2: final measurement

For the relevant emissions determined in step 1, an additional measurement with the following settings will be performed. Intention of this step is to find the maximum emission level.

- Detector: Quasi-Peak (9 kHz - 150 kHz, Peak / Average 150 kHz- 30 MHz)
- Frequency range: 0.009 - 30 MHz
- Frequency steps: measurement at frequencies detected in step 1
- IF-Bandwidth: 0.2 - 10 kHz
- Measuring time / Frequency step: 1 s

2. Measurement above 30 MHz and up to 1 GHz



Test Setup; Spurious Emission Radiated (SAC), 30 MHz- 1GHz

Step 1: Preliminary scan

This is a preliminary test to identify the highest amplitudes relative to the limit.

Settings for step 1:

- Antenna distance: 3 m
- Detector: Peak-Maxhold / Quasipeak (FFT-based)
- Frequency range: 30 – 1000 MHz
- Frequency steps: 30 kHz
- IF-Bandwidth: 120 kHz
- Measuring time / Frequency step: 100 ms
- Turntable angle range: -180° to 90°
- Turntable step size: 90°
- Height variation range: 1 – 4 m
- Height variation step size: 1.5 m
- Polarisation: Horizontal + Vertical

Intention of this step is, to determine the radiated EMI-profile of the EUT. Afterwards the relevant emissions for the final measurement are identified.

Step 2: Adjustment measurement

In this step the accuracy of the turntable azimuth and antenna height will be improved. This is necessary to find out the maximum value of every frequency.

For each frequency, which was determined the turntable azimuth and antenna height will be adjusted. The turntable azimuth will slowly vary by 360° . During this action, the value of emission is continuously measured. The turntable azimuth at the highest emission will be recorded and adjusted. In this position, the antenna height will also slowly vary between 1 – 4 meter. During this action, the value of emission is also continuously measured. The antenna height of the highest emission will also be recorded and adjusted.

- Detector: Peak – Maxhold
- Measured frequencies: in step 1 determined frequencies
- IF – Bandwidth: 120 kHz
- Measuring time: 100 ms
- Turntable angle range: 360°
- Height variation range: 1 – 4 m
- Antenna Polarisation: max. value determined in step 1

Step 3: Final measurement with QP detector

With the settings determined in step 2, the final measurement will be performed:

EMI receiver settings for step 3:

- Detector: Quasi-Peak (< 1 GHz)
- Measured frequencies: in step 1 determined frequencies
- IF – Bandwidth: 120 kHz
- Measuring time: 1 s

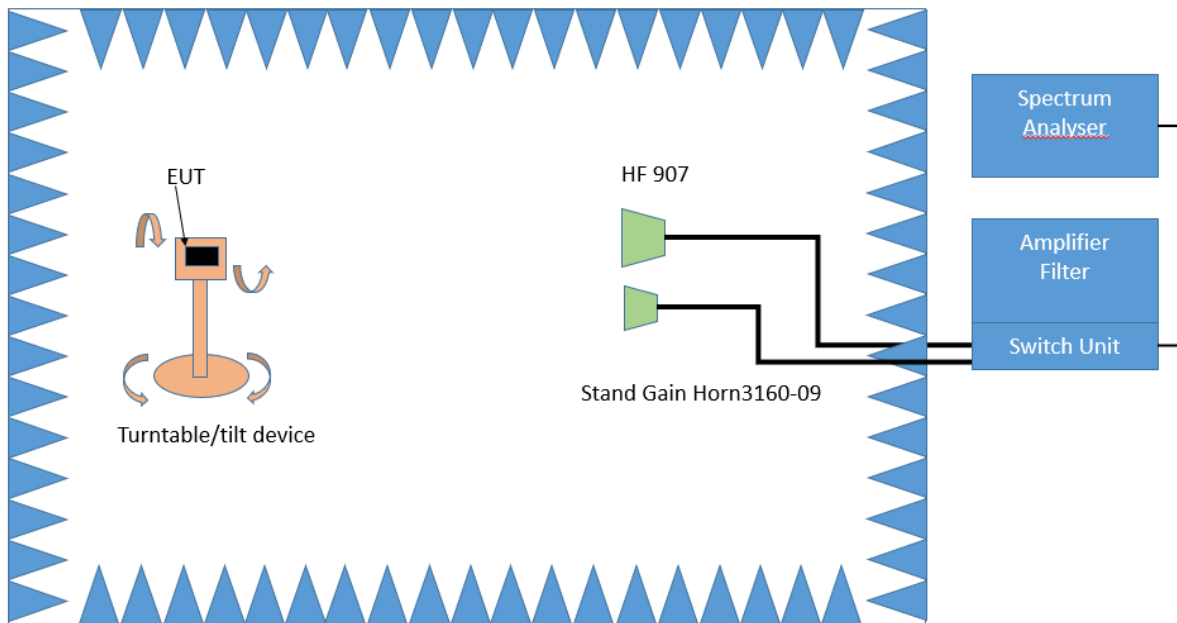
After the measurement a plot will be generated which contains a diagram with the results of the preliminary scan and a chart with the frequencies and values of the results of the final measurement.

Above 1 GHz:

The Equipment Under Test (EUT) was set up on a non-conductive support (tilt device) at 1.5 m height in the fully-anechoic chamber.

All steps were performed with one height (1.5 m) of the receiving antenna only.

3. Measurement above 1 GHz



Test Setup; Spurious Emission Radiated (FAC), 1 GHz-26.5 GHz

Step 1:

The EUT is turned during the preliminary measurement across the elevation axis, with a step size of 90 °.

The turn table step size (azimuth angle) for the preliminary measurement is 45 °.

Spectrum analyser settings:

- Detector: Peak, Average
- RBW = 1 MHz
- VBW = 3 MHz

Step 2:

The turn table azimuth will slowly vary by $\pm 22.5^\circ$.

The elevation angle will slowly vary by $\pm 45^\circ$

Spectrum analyser settings:

- Detector: Peak

Step 3:

Spectrum analyser settings for step 3:

- Detector: Peak / CISPR Average
- Measured frequencies: in step 1 determined frequencies
- RBW = 1 MHz
- VBW = 3 MHz
- Measuring time: 1 s

5.1.2 TEST REQUIREMENTS / LIMITS

FCC Part 15, Subpart C, §15.247 (d)

... In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

FCC Part 15, Subpart C, §15.209, Radiated Emission Limits

Frequency in MHz	Limit (μV/m)	Measurement distance (m)	Limits (dBμV/m)
0.009 – 0.49	2400/F(kHz)@300m	3	(48.5 – 13.8)@300m
0.49 – 1.705	24000/F(kHz)@30m	3	(33.8 – 23.0)@30m
1.705 – 30	30@30m	3	29.5@30m

The measured values are corrected with an inverse linear distance extrapolation factor (40 dB/decade) according FCC 15.31 (2).

Frequency in MHz	Limit (μV/m)	Measurement distance (m)	Limits (dBμV/m)
30 – 88	100@3m	3	40.0@3m
88 – 216	150@3m	3	43.5@3m
216 – 960	200@3m	3	46.0@3m
960 – 26000	500@3m	3	54.0@3m
26000 – 40000	500@3m	1	54.0@3m

The measured values above 26 GHz are corrected with an inverse linear distance extrapolation factor (20 dB/decade).

§15.35(b) ..., there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit....

Used conversion factor: $\text{Limit (dB}\mu\text{V/m)} = 20 \log (\text{Limit } (\mu\text{V/m})/1\mu\text{V/m})$

5.1.3 TEST PROTOCOL

Ambient temperature: 19 – 22 °C
 Air Pressure: 999 – 1003 hPa
 Humidity: 33 – 41 %

Chip01(S01_AA01#S3.5)

BT n/4 DQPSK (2-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]	Limit Type
0	2402*	---	---	---	---	---	---	RB
39	2441	2361.8	53.3	PEAK	1000	74.0	20.7	RB
39	2441	2690.0	51.6	PEAK	1000	74.0	22.4	RB
39	2441	5074.4	48.1	PEAK	1000	74.0	25.9	RB
78	2480	2369.5	51.7	PEAK	1000	74.0	22.3	RB
78	2480	2713.1	52.2	PEAK	1000	74.0	21.8	RB
78	2480	5016.9	47.8	PEAK	1000	74.0	26.2	RB

Chip01(S01_AA01#S3.5)

BT 8-DPSK (3-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]	Limit Type
0	2402	270.4	39.2	QP	120	46.0	6.8	RB
0	2402	276.2	31.0	QP	120	46.0	15.0	RB
0	2402	2479.6	51.2	PEAK	1000	74.0	22.8	RB
0	2402	2850.9	52.1	PEAK	1000	74.0	21.9	RB
0	2402	5026.3	47.4	PEAK	1000	74.0	26.6	RB
39	2441	120.0	25.9	QP	120	43.5	17.6	RB
39	2441	172.7	28.0	QP	120	43.5	15.5	RB
39	2441	270.4	41.1	QP	120	46.0	4.9	RB
39	2441	400.1	22.6	QP	120	46.0	23.4	RB
78	2480	120.0	23.6	QP	120	43.5	19.9	RB
78	2480	172.7	22.1	QP	120	43.5	21.4	RB
78	2480	270.4	41.2	QP	120	46.0	4.8	RB
78	2480	281.5	30.0	QP	120	46.0	16.0	RB
78	2480	324.2	22.9	QP	120	46.0	23.1	RB
78	2480	402.9	18.7	QP	120	46.0	27.3	RB
78	2480	2365.4	54.3	PEAK	1000	74.0	19.7	RB
78	2480	2365.4	42.8	AV	1000	54.0	11.2	RB
78	2480	4997.6	48.7	PEAK	1000	74.0	25.3	RB
78	2480	5108.1	48.0	PEAK	1000	74.0	26.0	RB

Chip02(S01_AA01#S3.5)

BT π/4 DQPSK (2-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]	Limit Type
0	2402	2369.8	54.4	PEAK	1000	74.0	19.6	RB
0	2402	2369.8	41.0	AV	1000	54.0	13.0	RB
0	2402	2479.9	51.5	PEAK	1000	74.0	22.5	RB
0	2402	5083.9	47.4	PEAK	1000	74.0	26.6	RB
39	2441	2363.9	53.2	PEAK	1000	74.0	20.8	RB
39	2441	2492.6	52.3	PEAK	1000	74.0	21.7	RB
39	2441	4786.2	50.0	PEAK	1000	74.0	24.0	RB
78	2480	2364.2	54.3	PEAK	1000	74.0	19.7	RB
78	2480	2364.2	41.0	AV	1000	54.0	13.0	RB
78	2480	4839.1	48.5	PEAK	1000	74.0	25.5	RB

Chip02(S01_AA01#S3.5)

BT 8-DPSK (3-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]	Limit Type
0	2402	165.2	19.9	QP	120	43.5	23.6	RB
0	2402	172.7	32.1	QP	120	43.5	11.4	RB
0	2402	270.1	28.7	QP	120	46.0	17.3	RB
0	2402	280.6	36.8	QP	120	46.0	9.2	RB
0	2402	324.5	29.1	QP	120	46.0	17.0	RB
0	2402	400.7	25.1	QP	120	46.0	20.9	RB
0	2402	2369.4	52.6	PEAK	1000	74.0	21.4	RB
0	2402	2741.0	51.8	PEAK	1000	74.0	22.2	RB
0	2402	4791.0	50.5	PEAK	1000	74.0	23.5	RB
0	2402	5037.4	48.8	PEAK	1000	74.0	25.2	RB
39	2441	172.7	29.0	QP	120	43.5	14.5	RB
39	2441	265.8	28.2	QP	120	46.0	17.8	RB
39	2441	276.2	39.8	QP	120	46.0	6.2	RB
39	2441	324.5	29.2	QP	120	46.0	16.8	RB
39	2441	400.7	19.0	QP	120	46.0	27.1	RB
39	2441	2369.3	57.0	PEAK	1000	74.0	17.0	RB
39	2441	2369.3	43.4	AV	1000	54.0	10.6	RB
39	2441	4925.4	49.3	PEAK	1000	74.0	24.7	RB
39	2441	15630.8	52.0	PEAK	1000	74.0	22.0	RB
78	2480	172.7	28.8	QP	120	43.5	14.7	RB
78	2480	270.1	35.9	QP	120	46.0	10.1	RB
78	2480	276.2	40.7	QP	120	46.0	5.3	RB
78	2480	325.0	20.5	QP	120	46.0	25.5	RB
78	2480	2369.4	54.2	PEAK	1000	74.0	19.8	RB
78	2480	2369.4	41.0	AV	1000	54.0	13.0	RB
78	2480	2836.8	52.5	PEAK	1000	74.0	21.5	RB

=====

Chip01(S01_AB01#S3.0)

BT 8-DPSK (3-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]	Limit Type
78	2480*	- - -	- - -	- - -	- - -	- - -	- - -	RB

Chip02(S01_AA01#S3.0 / S01_AB01#S3.0)

BT 8-DPSK (3-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]	Limit Type
0	2402	120.0	34.4	QP	120	43.5	9.1	RB
0	2402	162.3	30.4	QP	120	43.5	13.1	RB
0	2402	165.1	27.3	QP	120	43.5	16.2	RB
0	2402	265.6	13.0	QP	120	46.0	33.0	RB
0	2402	335.0	24.4	QP	120	46.0	21.6	RB
0	2402	403.0	27.8	QP	120	46.0	18.2	RB
39	2441*	- - -	- - -	- - -	- - -	- - -	- - -	RB
78	2480*	- - -	- - -	- - -	- - -	- - -	- - -	RB

Remark: - Please see next sub-clause for the measurement plot.

- The measurements have been performed only on worst-case modes" BT 8-DPSK (3-DH5) and BT n/4 DQPSK (2-DH5)", which they have the widest bandwidth and highest output power.

***) no peaks have been found for these operating channels /operating modes**

5.1.4 MEASUREMENT PLOT (EXAMPLE PLOT, SHOWING WORST CASE, IF APPLICABLE)

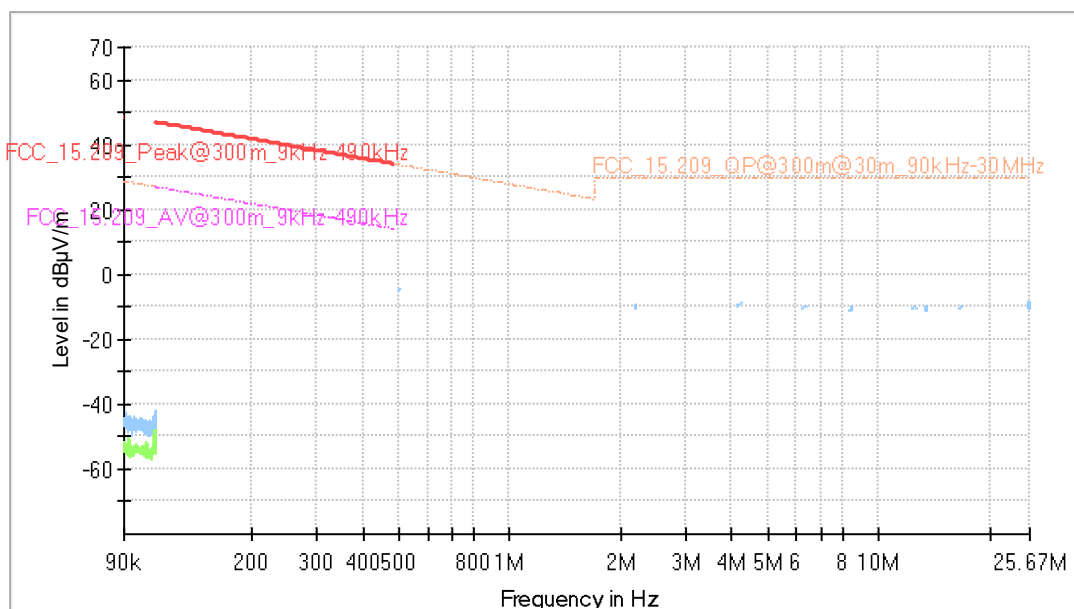
Trace:

blue = Peak (9 kHz - 40 GHz)
green = AV (9 kHz - 30 MHz and 1 - 26 GHz), QP (30 MHz - 1 GHz)

Marker:

Star = critical frequency, Rhombus = final Results

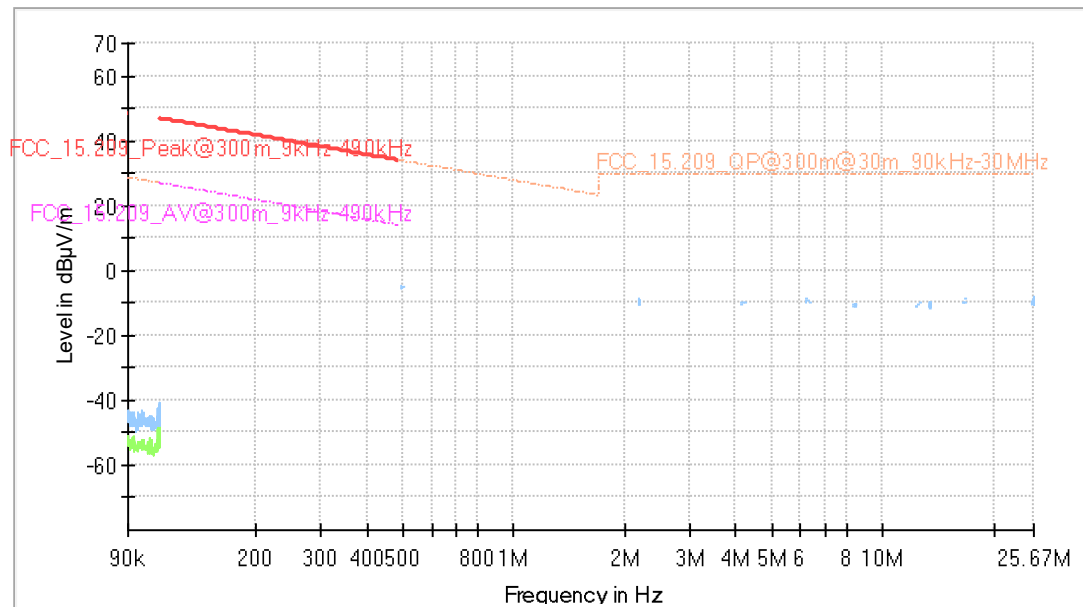
Chip01, Modulation= Bluetooth EDR 3, Operating Channel = 39
Measurements range = 9 kHz - 30 MHz
(S01_AA01#S3.5)



Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---	---	---	---	---	---

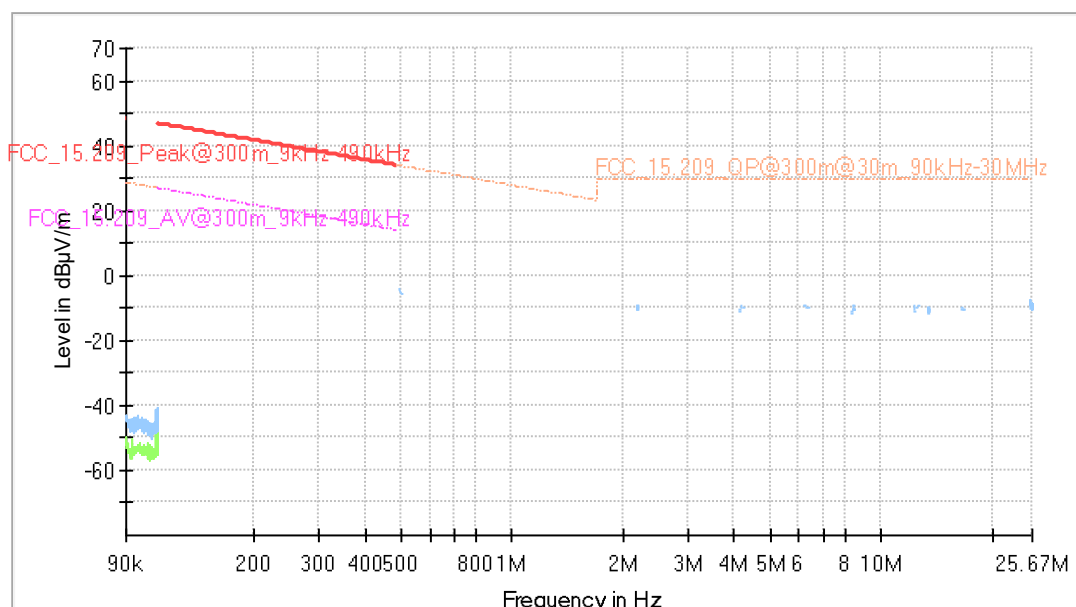
Chip02, Modulation= Bluetooth EDR 3, Operating Channel = 39
Measurements range = 9 kHz – 30 MHz
(S01_AA01#S3.5)



Final Result

Frequency (MHz)	MaxPeak (dB μ V/m)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---	---	---	---	---	---

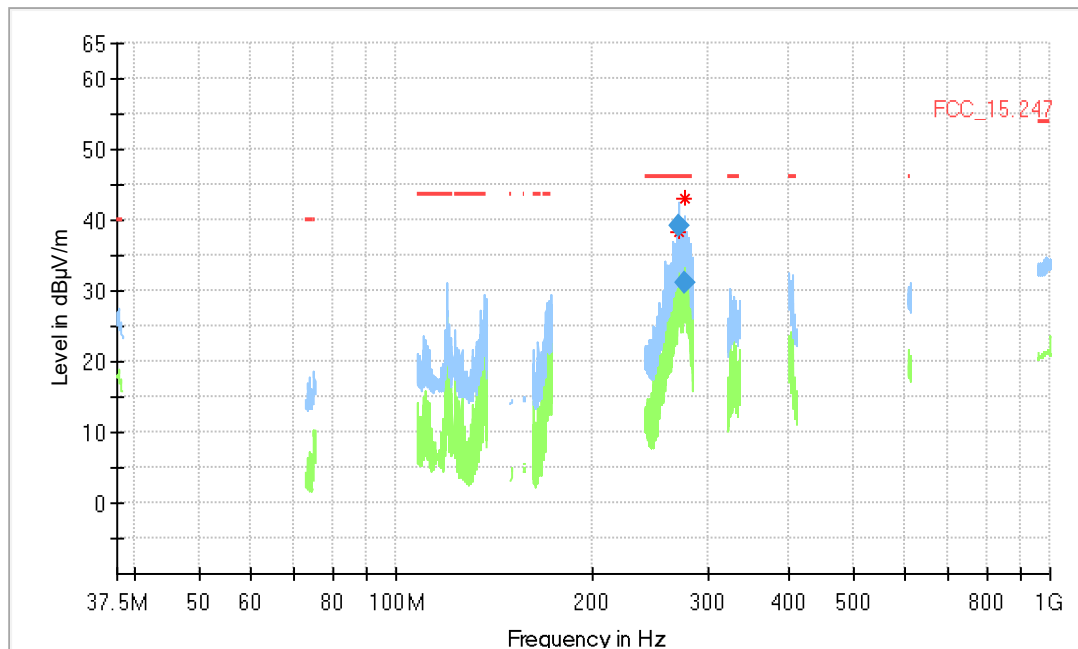
Chip02, Modulation= Bluetooth EDR 3, Operating Channel = 39
 Measurements range = 9 kHz - 30 MHz
 (S01_AA01#S3.0)



Final_Result

Frequency (MHz)	MaxPeak (dB μ V/m)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---	---	---	---	---	---

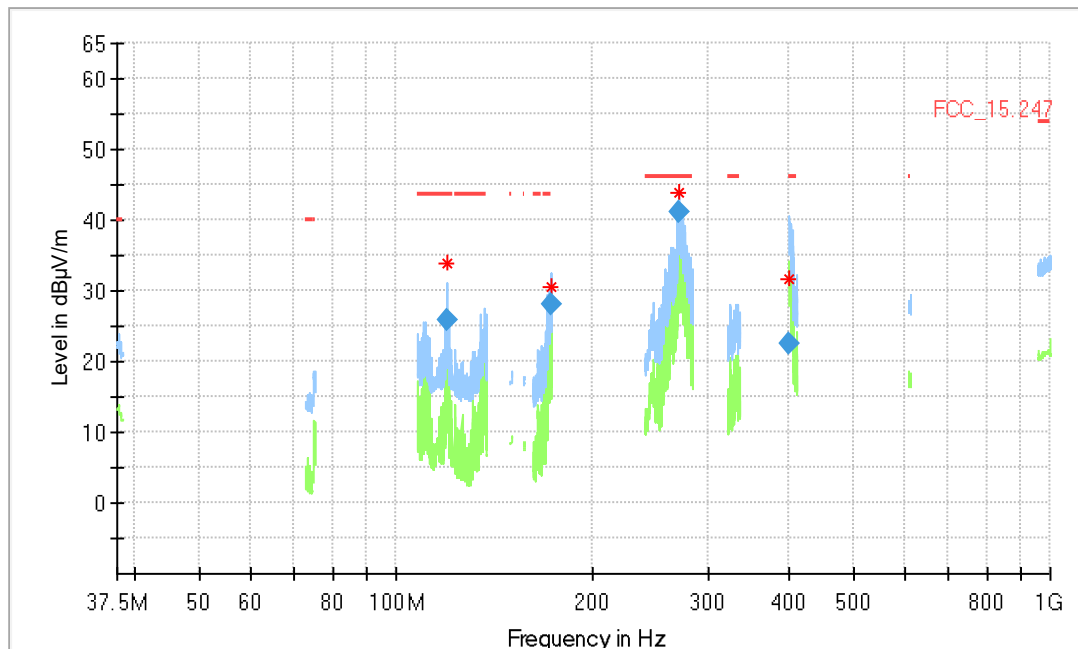
Chip01, Modulation= Bluetooth EDR 3, Operating Channel = 0
 Measurements range = 30 MHz – 1 GHz
 (S01_AA01#S3.5)



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
270.420000	39.17	46.00	6.83	1000.0	120.000	133.0	H	1.0	13.5
276.210000	30.98	46.00	15.02	1000.0	120.000	100.0	H	334.0	13.7

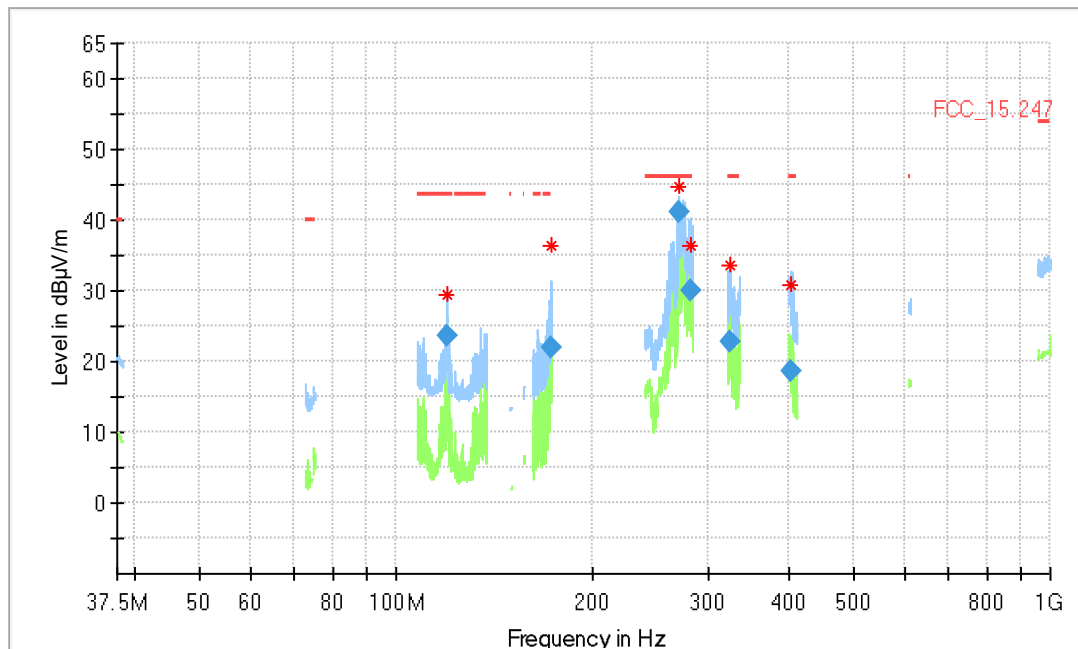
Chip01, Modulation= Bluetooth EDR 3, Operating Channel = 39
Measurements range = 30 MHz – 1 GHz
(S01_AA01#S3.5)



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
120.030000	25.88	43.50	17.62	1000.0	120.000	104.0	V	102.0	12.0
172.730000	27.99	43.50	15.51	1000.0	120.000	104.0	V	206.0	10.6
270.420000	41.06	46.00	4.94	1000.0	120.000	116.0	H	302.0	13.5
400.110000	22.59	46.00	23.41	1000.0	120.000	107.0	H	291.0	18.1

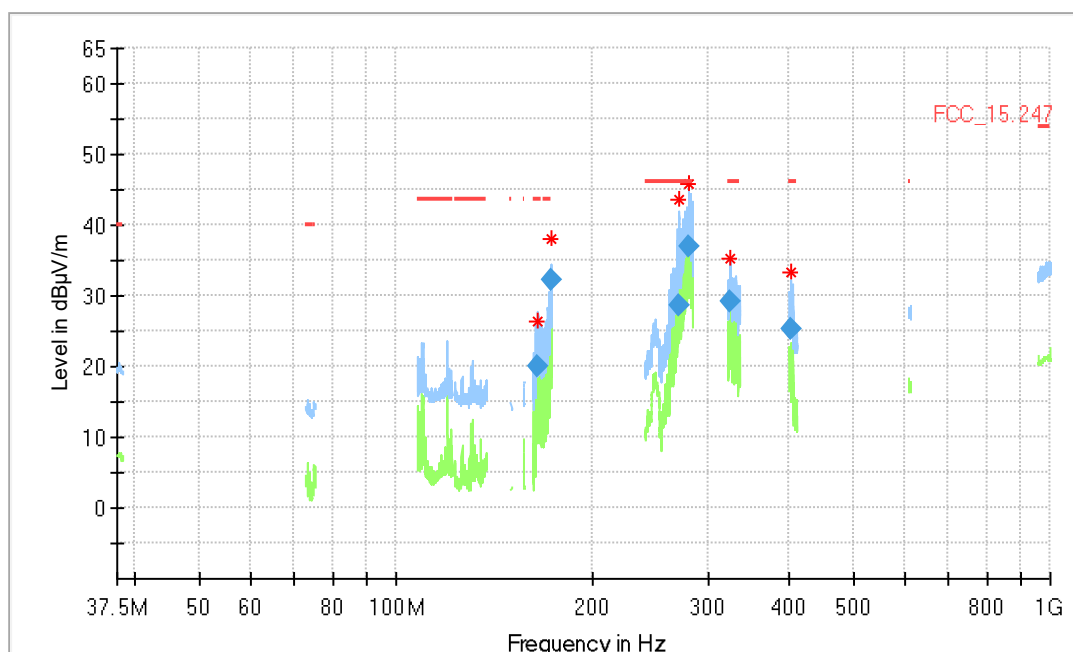
Chip01, Modulation= Bluetooth EDR 3, Operating Channel = 78
Measurements range = 30 MHz – 1 GHz
(S01_AA01#S3.5)



Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
120.030000	23.61	43.50	19.89	1000.0	120.000	106.0	V	118.0	12.0
172.730000	22.06	43.50	21.44	1000.0	120.000	104.0	V	96.0	10.6
270.420000	41.22	46.00	4.78	1000.0	120.000	119.0	H	334.0	13.5
281.460000	29.96	46.00	16.04	1000.0	120.000	115.0	H	1.0	13.9
324.220000	22.87	46.00	23.13	1000.0	120.000	117.0	H	328.0	15.5
402.930000	18.72	46.00	27.28	1000.0	120.000	105.0	H	214.0	18.2

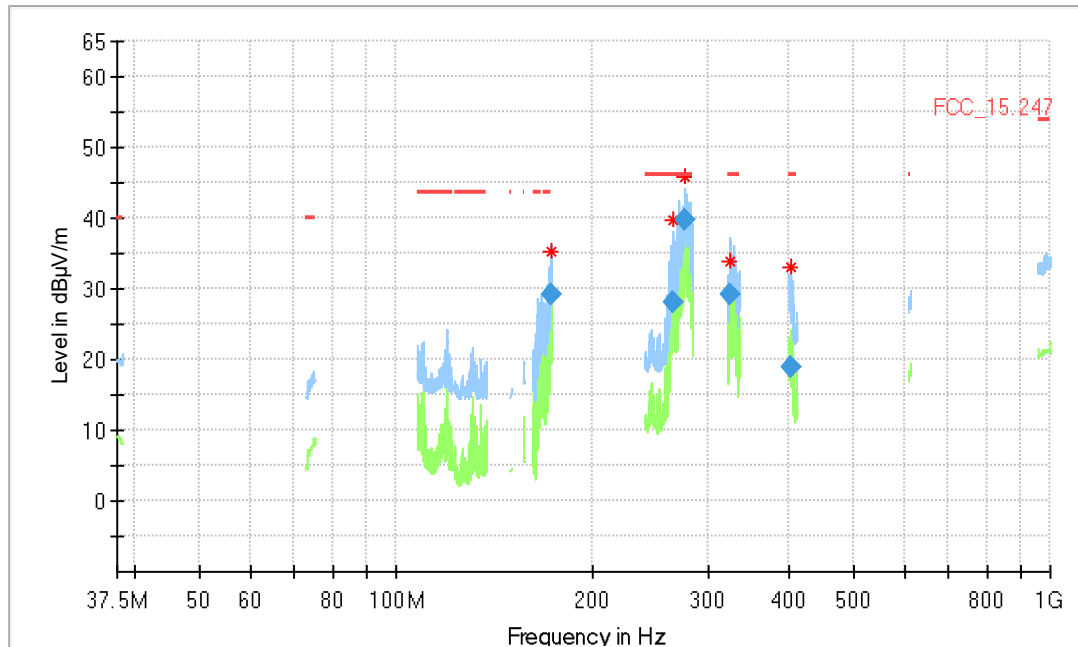
Chip02, Modulation= Bluetooth EDR 3, Operating Channel = 0
Measurements range = 30 MHz – 1 GHz
(S01_AA01#S3.5)



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
165.162500	19.94	43.50	23.56	1000.0	120.000	133.0	V	188.0	10.0
172.730000	32.12	43.50	11.38	1000.0	120.000	105.0	V	40.0	10.6
270.120000	28.72	46.00	17.28	1000.0	120.000	164.0	H	255.0	13.5
280.590000	36.82	46.00	9.18	1000.0	120.000	124.0	H	320.0	13.9
324.460000	29.05	46.00	16.95	1000.0	120.000	109.0	H	331.0	15.5
400.680000	25.14	46.00	20.86	1000.0	120.000	100.0	H	357.0	18.1

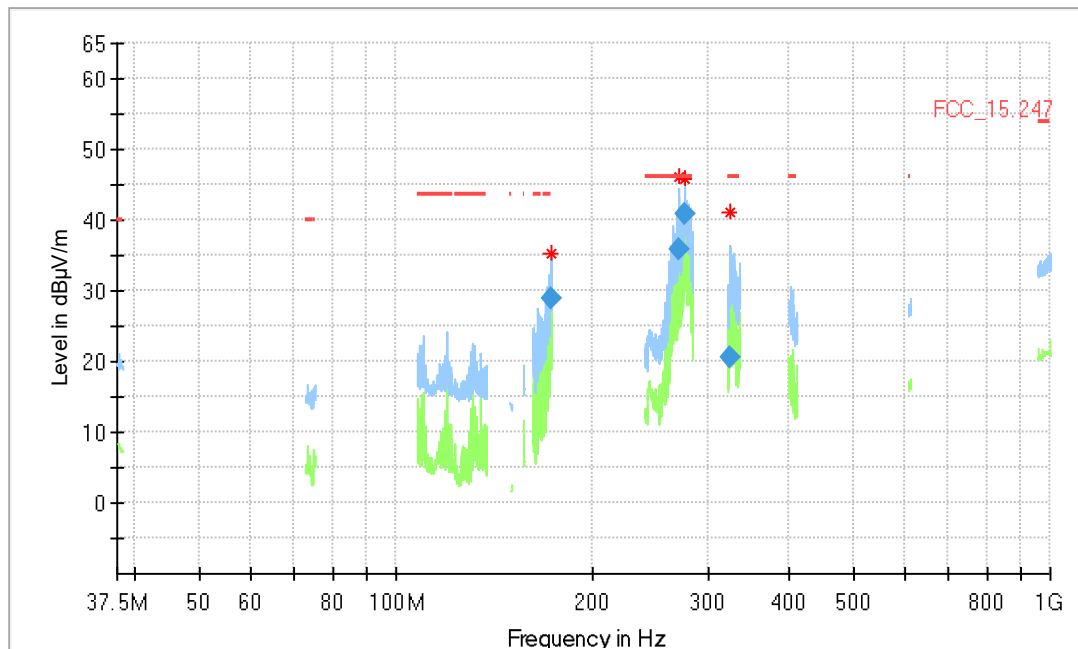
Chip02, Modulation= Bluetooth EDR 3, Operating Channel = 39
Measurements range = 30 MHz – 1 GHz
(S01_AA01#S3.5)



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
172.700000	29.03	43.50	14.47	1000.0	120.000	100.0	V	29.0	10.6
265.770000	28.19	46.00	17.81	1000.0	120.000	134.0	H	335.0	13.4
276.210000	39.84	46.00	6.16	1000.0	120.000	113.0	H	337.0	13.7
324.490000	29.24	46.00	16.76	1000.0	120.000	113.0	H	96.0	15.5
400.650000	18.95	46.00	27.05	1000.0	120.000	106.0	H	209.0	18.1

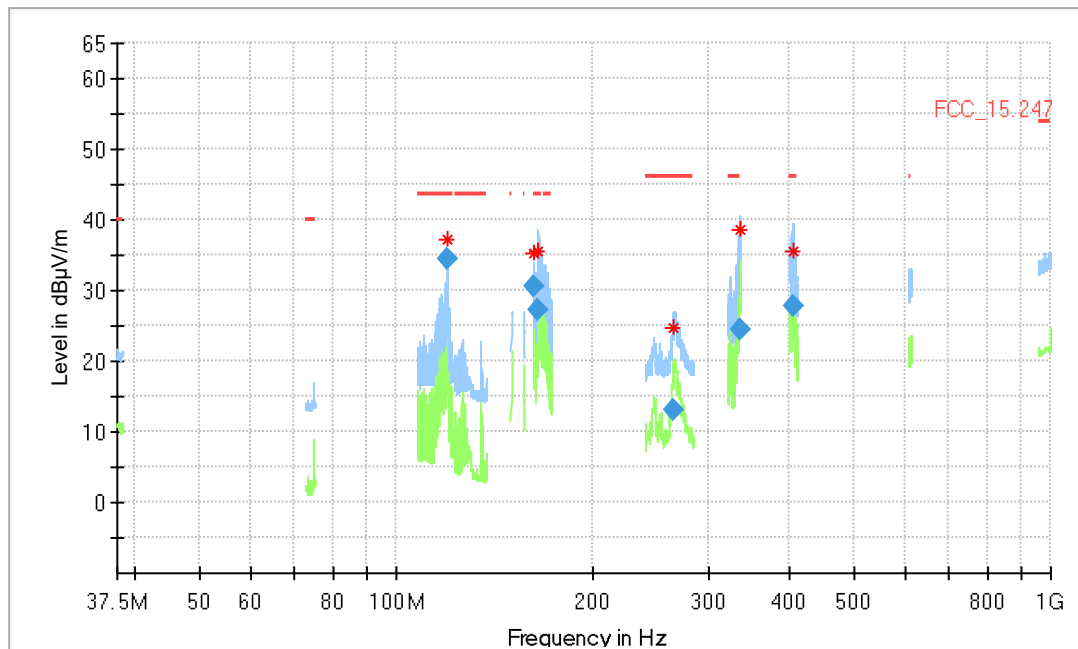
Chip02, Modulation= Bluetooth EDR 3, Operating Channel = 78
 Measurements range = 30 MHz – 1 GHz
 (S01_AA01#S3.5)



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
172.700000	28.80	43.50	14.70	1000.0	120.000	104.0	V	17.0	10.6
270.120000	35.87	46.00	10.13	1000.0	120.000	121.0	H	316.0	13.5
276.240000	40.72	46.00	5.28	1000.0	120.000	115.0	H	342.0	13.7
325.030000	20.50	46.00	25.50	1000.0	120.000	118.0	H	51.0	15.6

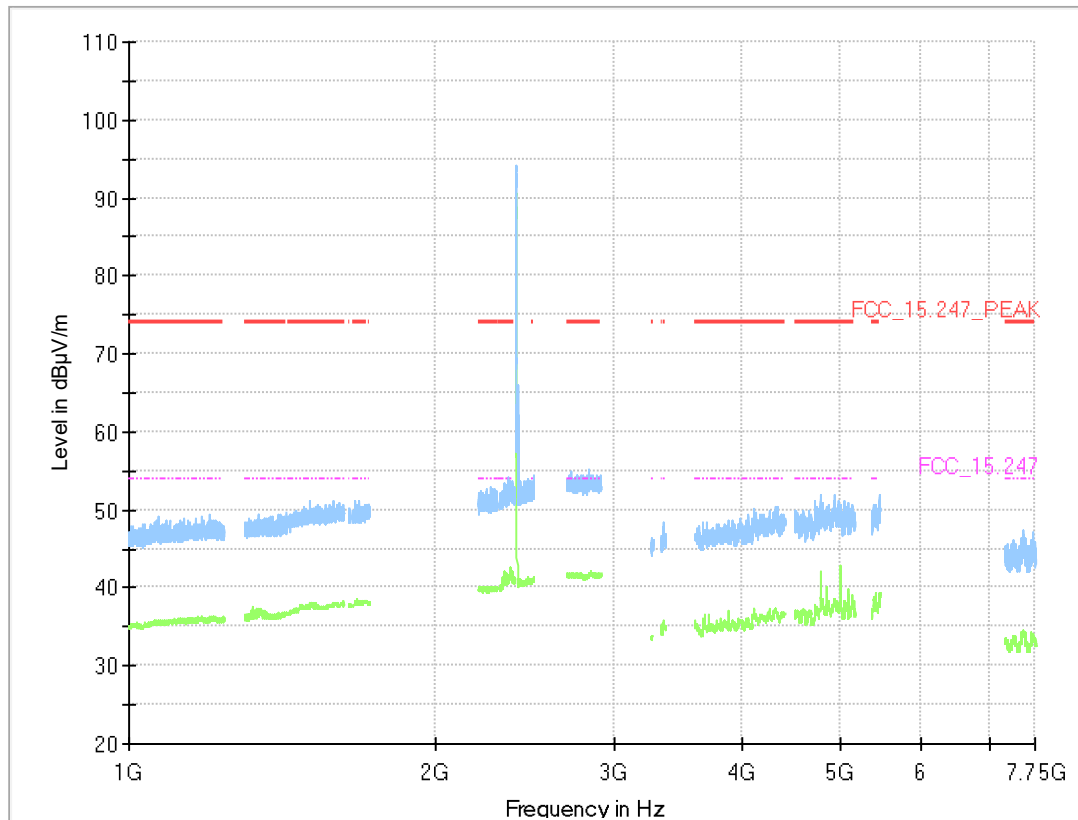
Chip02, Modulation= Bluetooth EDR 3, Operating Channel = 0
 Measurements range = 30 MHz – 1 GHz
 (S01_AA01#S3.0)



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
119.970000	34.39	43.50	9.11	1000.0	120.000	240.0	H	290.0	12.0
162.252500	30.44	43.50	13.06	1000.0	120.000	110.0	V	4.0	9.9
165.132500	27.30	43.50	16.20	1000.0	120.000	152.0	H	251.0	10.0
265.620000	13.01	46.00	32.99	1000.0	120.000	122.0	H	0.0	13.4
334.960000	24.38	46.00	21.62	1000.0	120.000	106.0	H	184.0	15.9
402.990000	27.81	46.00	18.19	1000.0	120.000	130.0	H	90.0	18.2

Chip01, Modulation= Bluetooth EDR 2, Operating Channel = 0
 Measurements range = 1 GHz – 8 GHz
 (S01_AA01#S3.5)

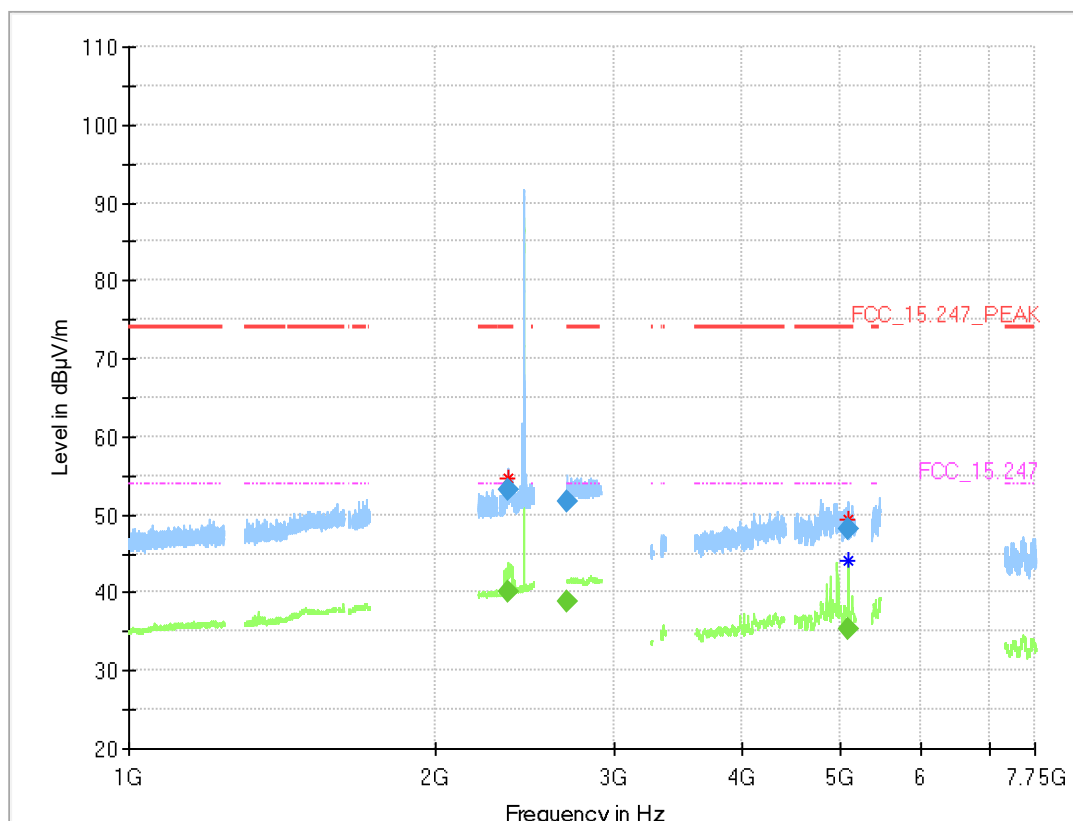


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
---	---	---	---	---	---	---	---	---	---	---	---

(Note: the peak at 2402 MHz is the wanted signal)

Chip01, Modulation= Bluetooth EDR 2, Operating Channel = 39
Measurements range = 1 GHz – 8 GHz
(S01_AA01#S3.5)

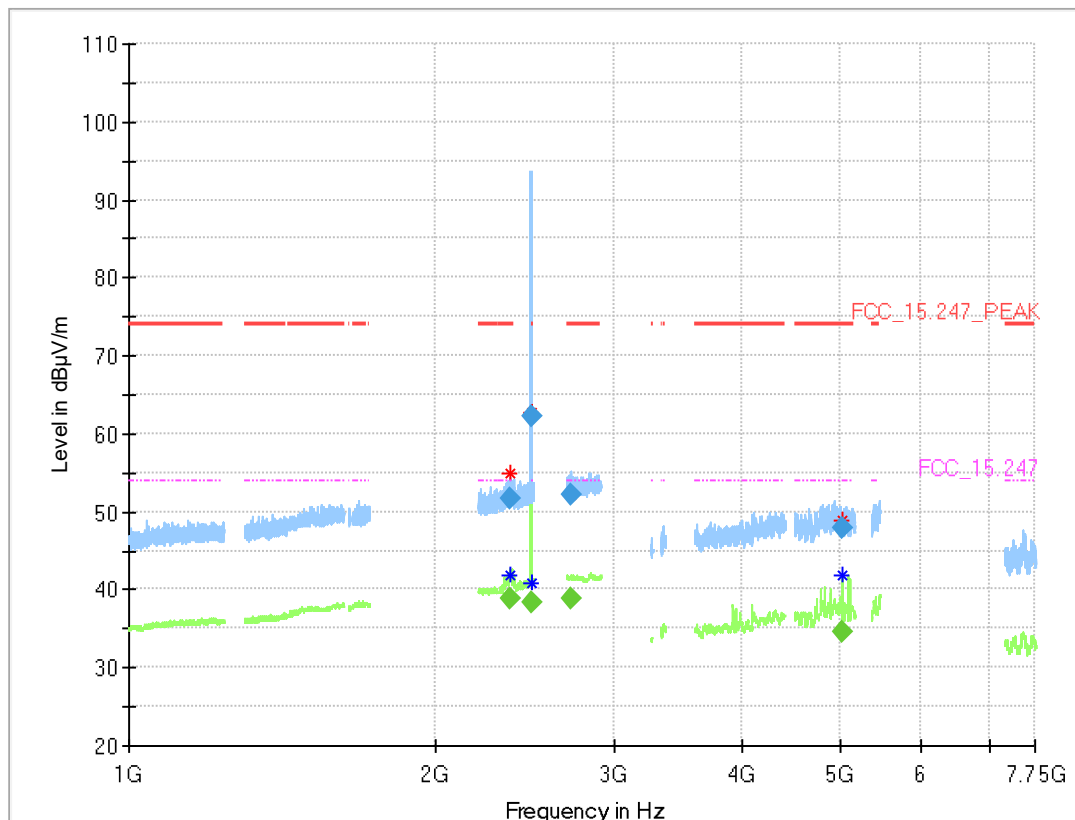


Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2361.760	---	40.0	54.00	13.96	1000.0	1000.000	150.0	H	120.0	1.0	7.6
2361.760	53.3	---	74.00	20.71	1000.0	1000.000	150.0	H	120.0	1.0	7.6
2690.000	---	38.9	54.00	15.10	1000.0	1000.000	150.0	V	153.0	61.0	9.0
2690.000	51.6	---	74.00	22.45	1000.0	1000.000	150.0	V	153.0	61.0	9.0
5074.438	---	35.3	54.00	18.68	1000.0	1000.000	150.0	H	-60.0	-15.0	6.1
5074.438	48.1	---	74.00	25.90	1000.0	1000.000	150.0	H	-60.0	-15.0	6.1

(Note: the peak at 2440 MHz is the wanted signal)

Chip01, Modulation= Bluetooth EDR 2, Operating Channel = 78
Measurements range = 1 GHz – 8 GHz
(S01_AA01#S3.5)

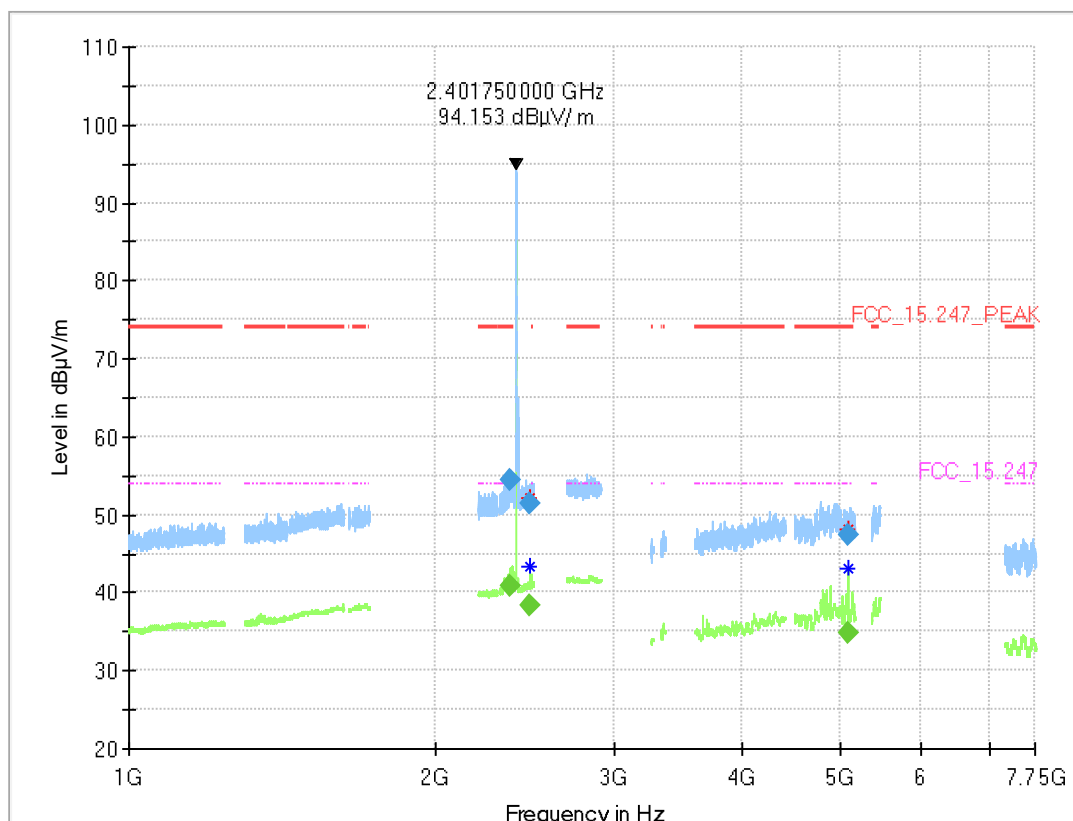


Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2369.520	---	38.9	54.00	15.11	1000.0	1000.000	150.0	H	-25.0	81.0	7.7
2369.520	51.7	---	74.00	22.27	1000.0	1000.000	150.0	H	-25.0	81.0	7.7
2483.938	---	38.3	54.00	15.73	1000.0	1000.000	150.0	H	-81.0	76.0	8.0
2483.938	62.3	---	74.00	11.72	1000.0	1000.000	150.0	H	-81.0	76.0	8.0
2713.100	---	38.8	54.00	15.22	1000.0	1000.000	150.0	H	-64.0	6.0	9.0
2713.100	52.2	---	74.00	21.84	1000.0	1000.000	150.0	H	-64.0	6.0	9.0
5016.913	---	34.6	54.00	19.36	1000.0	1000.000	150.0	H	-122.0	78.0	5.7
5016.913	47.8	---	74.00	26.19	1000.0	1000.000	150.0	H	-122.0	78.0	5.7

(Note: the peak at 2480 MHz is the wanted signal)

Chip02, Modulation= Bluetooth EDR 2, Operating Channel = 0
Measurements range = 1 GHz – 8 GHz
(S01_AA01#S3.5)

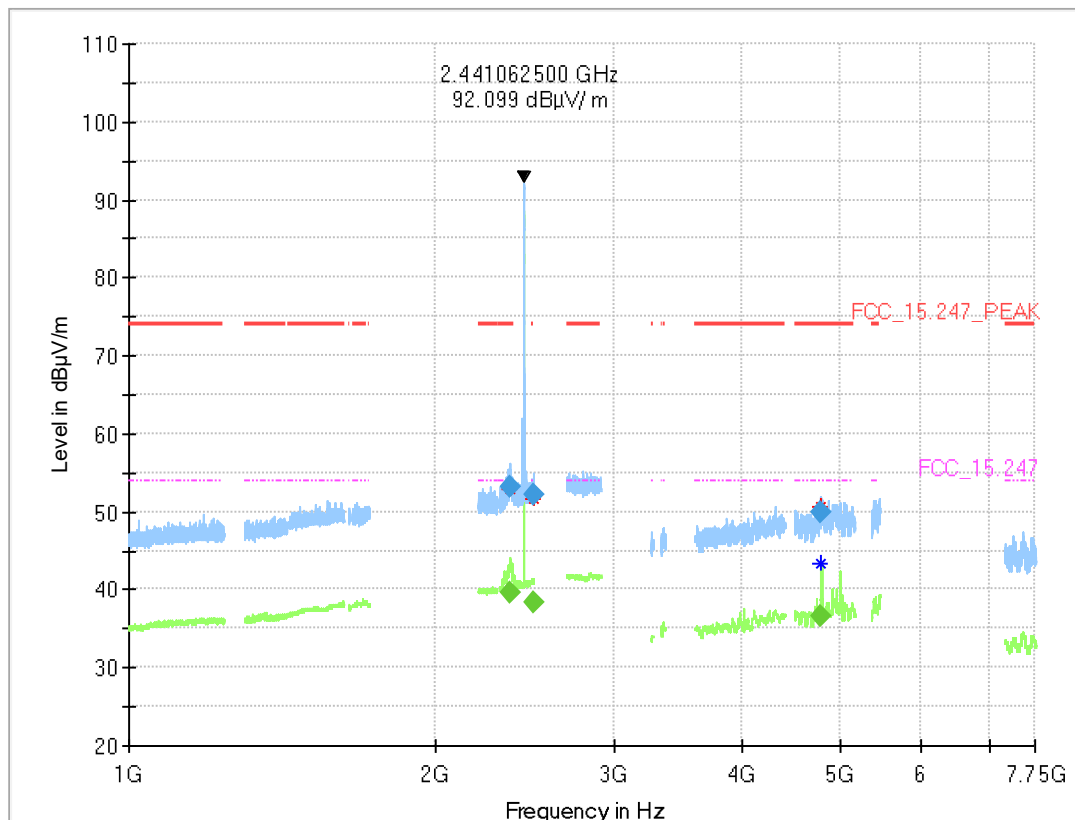


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2369.760	---	41.0	54.00	13.02	1000.0	1000.000	150.0	H	-42.0	22.0	7.7
2369.760	54.4	---	74.00	19.58	1000.0	1000.000	150.0	H	-42.0	22.0	7.7
2479.875	---	38.2	---	---	1000.0	1000.000	150.0	H	126.0	22.0	8.0
2479.875	51.5	---	---	---	1000.0	1000.000	150.0	H	126.0	22.0	8.0
5083.863	---	34.7	54.00	19.28	1000.0	1000.000	150.0	V	116.0	7.0	5.6
5083.863	47.4	---	74.00	26.56	1000.0	1000.000	150.0	V	116.0	7.0	5.6

(Note: the peak at 2402 MHz is the wanted signal)

Chip02, Modulation= Bluetooth EDR 2, Operating Channel = 39
Measurements range = 1 GHz – 8 GHz
(S01_AA01#S3.5)

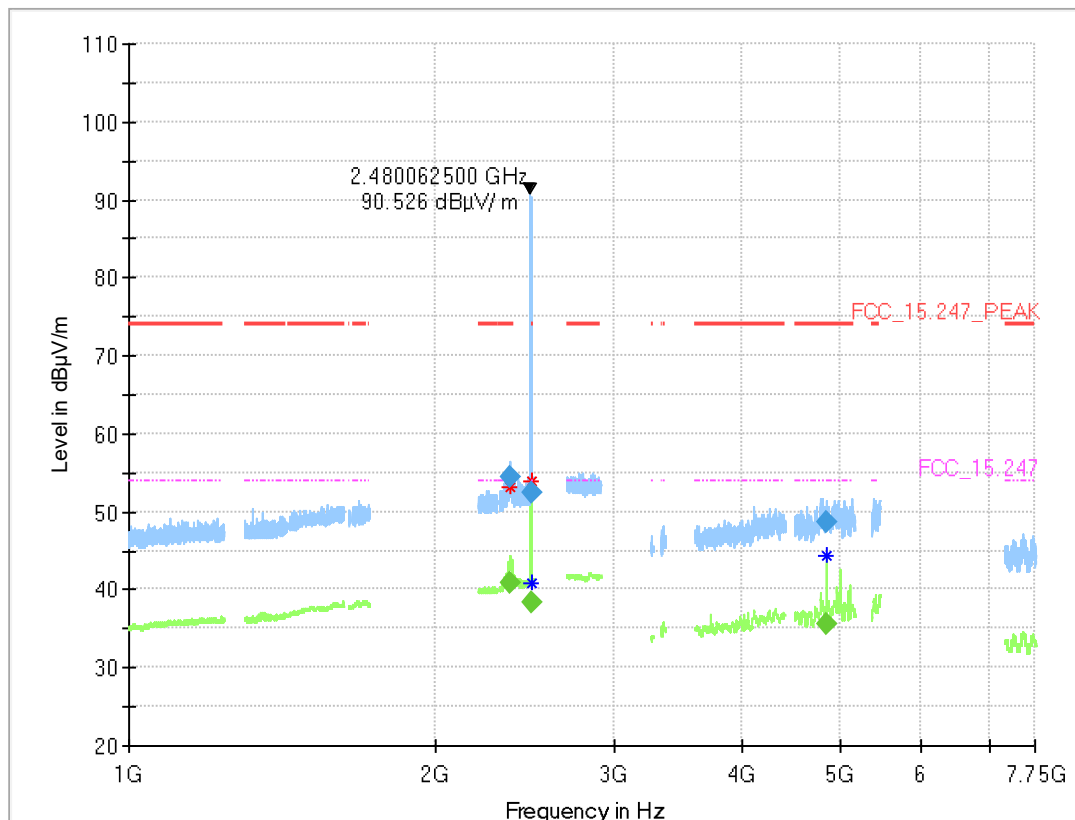


Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2363.920	---	39.7	54.00	14.31	1000.0	1000.000	150.0	H	-44.0	1.0	7.6
2363.920	53.2	---	74.00	20.77	1000.0	1000.000	150.0	H	-44.0	1.0	7.6
2492.563	---	38.3	54.00	15.67	1000.0	1000.000	150.0	V	143.0	45.0	8.2
2492.563	52.3	---	74.00	21.71	1000.0	1000.000	150.0	V	143.0	45.0	8.2
4786.163	---	36.6	54.00	17.39	1000.0	1000.000	150.0	H	-61.0	-45.0	6.5
4786.163	50.0	---	74.00	24.04	1000.0	1000.000	150.0	H	-61.0	-45.0	6.5

(Note: the peak at 2440 MHz is the wanted signal)

Chip02, Modulation= Bluetooth EDR 2, Operating Channel = 78
Measurements range = 1 GHz – 8 GHz
(S01_AA01#S3.5)

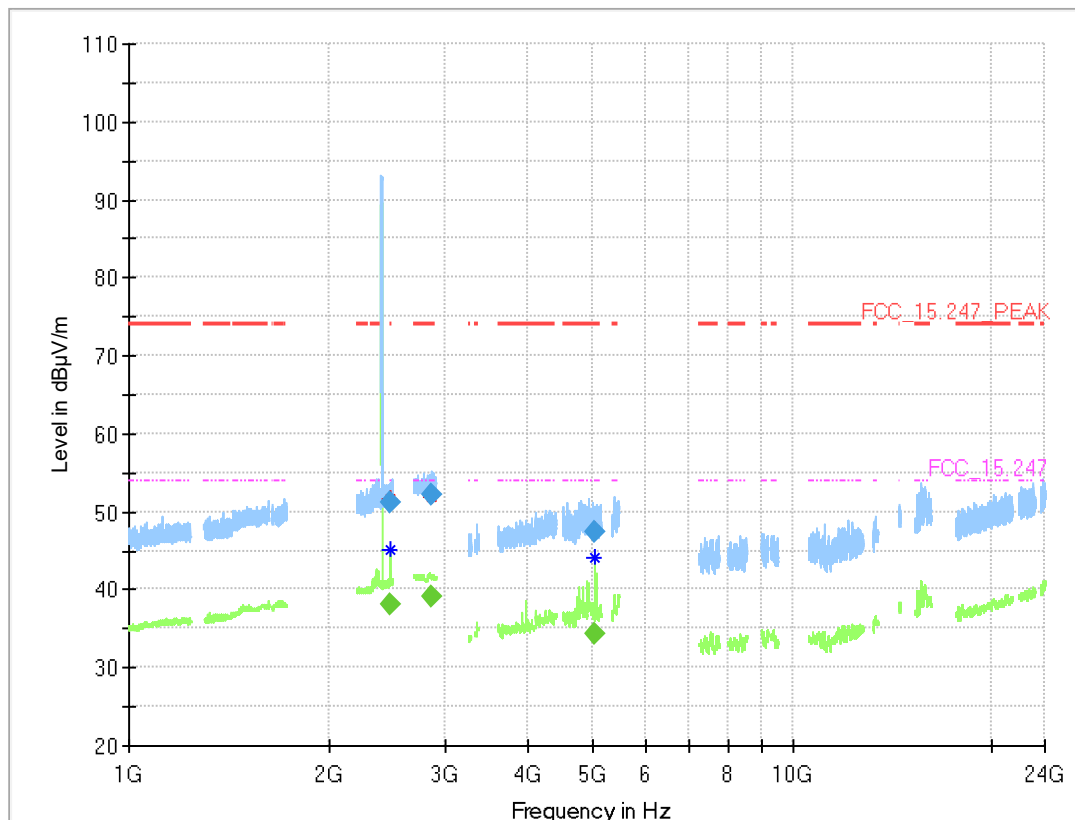


Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2364.160	---	41.0	54.00	13.03	1000.0	1000.000	150.0	H	-72.0	95.0	7.6
2364.160	54.3	---	74.00	19.66	1000.0	1000.000	150.0	H	-72.0	95.0	7.6
2483.500	---	38.2	54.00	15.75	1000.0	1000.000	150.0	V	75.0	-18.0	8.0
2483.500	52.5	---	74.00	21.53	1000.0	1000.000	150.0	V	75.0	-18.0	8.0
4839.138	---	35.6	54.00	18.42	1000.0	1000.000	150.0	V	-98.0	0.0	5.5
4839.138	48.5	---	74.00	25.46	1000.0	1000.000	150.0	V	-98.0	0.0	5.5

(Note: the peak at 2480 MHz is the wanted signal)

Chip01, Modulation= Bluetooth EDR 3, Operating Channel = 0
Measurements range = 1 GHz - 24 GHz
(S01_AA01#S3.5)

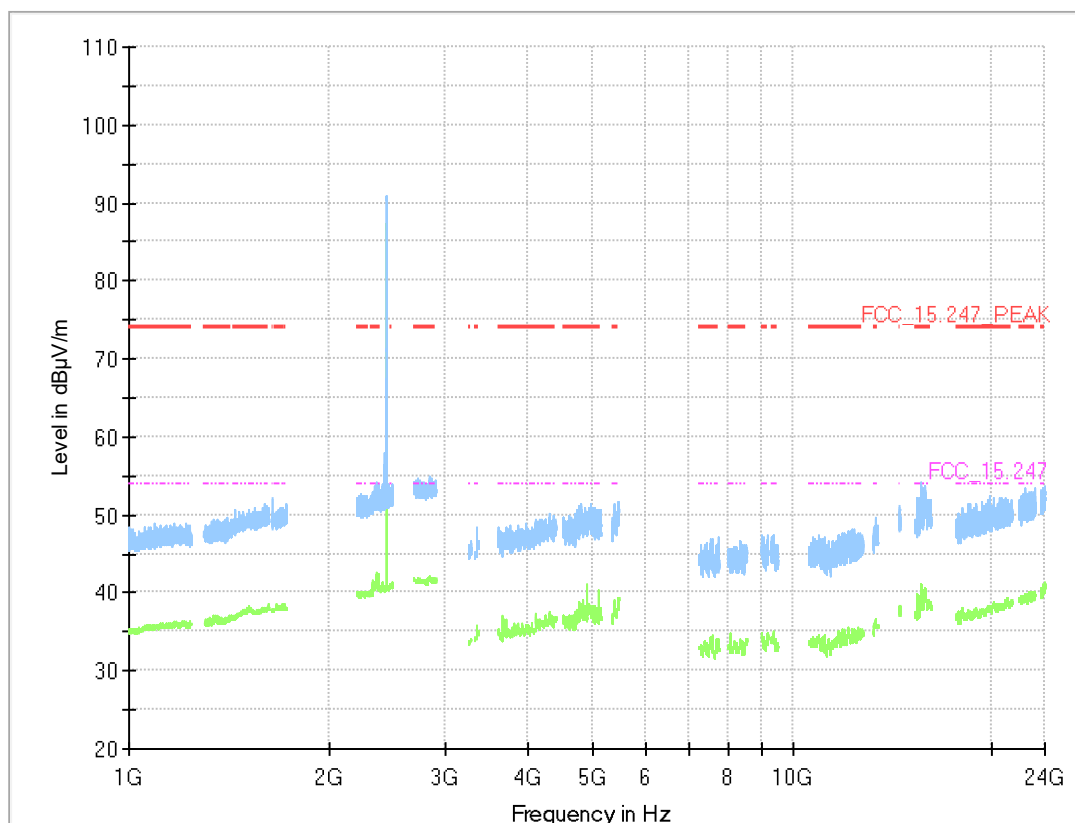


Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2479.625	---	38.2	---	---	1000.0	1000.000	150.0	V	-174.0	-9.0	8.0
2479.625	51.2	---	---	---	1000.0	1000.000	150.0	V	-174.0	-9.0	8.0
2850.860	---	39.0	54.00	15.01	1000.0	1000.000	150.0	V	54.0	93.0	9.0
2850.860	52.1	---	74.00	21.93	1000.0	1000.000	150.0	V	54.0	93.0	9.0
5026.338	---	34.2	54.00	19.76	1000.0	1000.000	150.0	V	-92.0	6.0	5.3
5026.338	47.4	---	74.00	26.56	1000.0	1000.000	150.0	V	-92.0	6.0	5.3

(Note: the peak at 2402 MHz is the wanted signal)

Chip01, Modulation= Bluetooth EDR 3, Operating Channel = 39
 Measurements range = 1 GHz - 24 GHz
 (S01_AA01#S3.5)

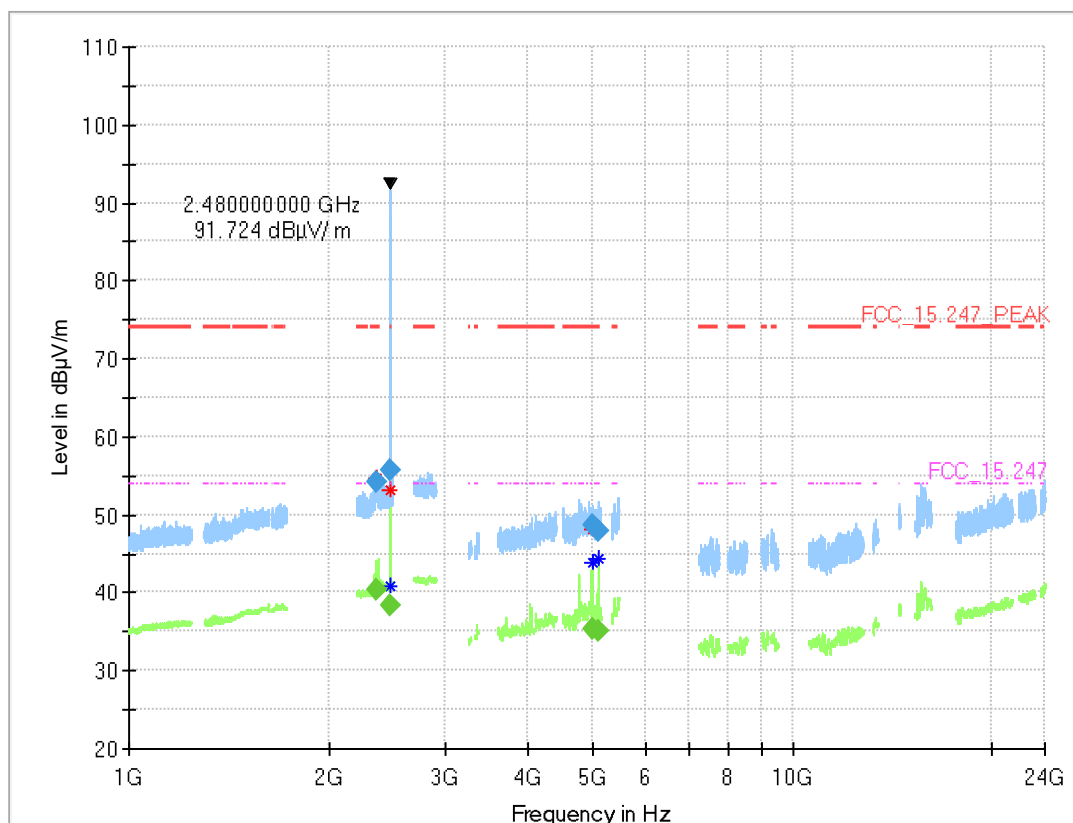


Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
---	---	---	---	---	---	---	---	---	---	---	---

(Note: the peak at 2440 MHz is the wanted signal)

Chip01, Modulation= Bluetooth EDR 3, Operating Channel = 78
Measurements range = 1 GHz - 24 GHz
(S01_AA01#S3.5)

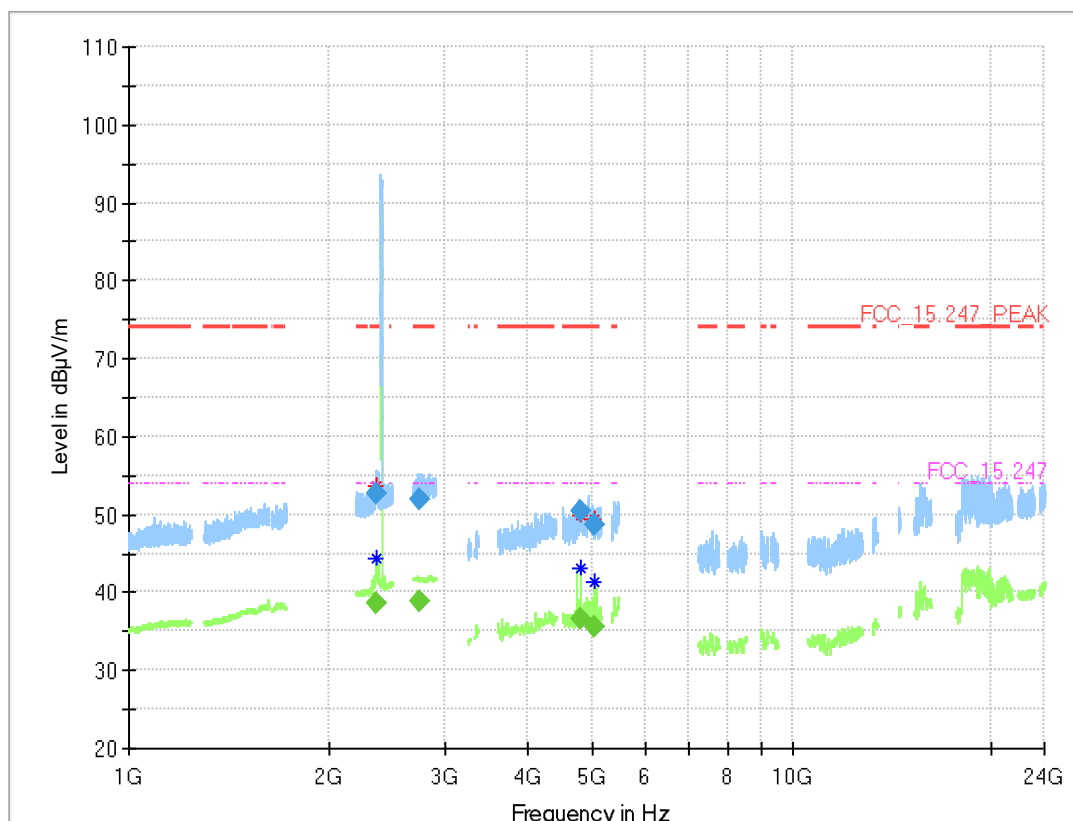


Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2365.440	---	40.5	54.00	13.52	1000.0	1000.000	150.0	H	31.0	94.0	7.6
2365.440	54.3	---	74.00	19.73	1000.0	1000.000	150.0	H	31.0	94.0	7.6
2483.500	---	38.3	54.00	15.70	1000.0	1000.000	150.0	V	-150.0	75.0	8.0
2483.500	55.7	---	74.00	18.26	1000.0	1000.000	150.0	V	-150.0	75.0	8.0
4997.575	---	35.4	54.00	18.63	1000.0	1000.000	150.0	V	-90.0	15.0	6.2
4997.575	48.7	---	74.00	25.33	1000.0	1000.000	150.0	V	-90.0	15.0	6.2
5108.075	---	35.2	54.00	18.83	1000.0	1000.000	150.0	H	-69.0	15.0	5.2
5108.075	48.0	---	74.00	25.99	1000.0	1000.000	150.0	H	-69.0	15.0	5.2

(Note: the peak at 2480 MHz is the wanted signal)

Chip02, Modulation= Bluetooth EDR 3, Operating Channel = 0
Measurements range = 1 GHz - 24 GHz
(S01_AA01#S3.5)

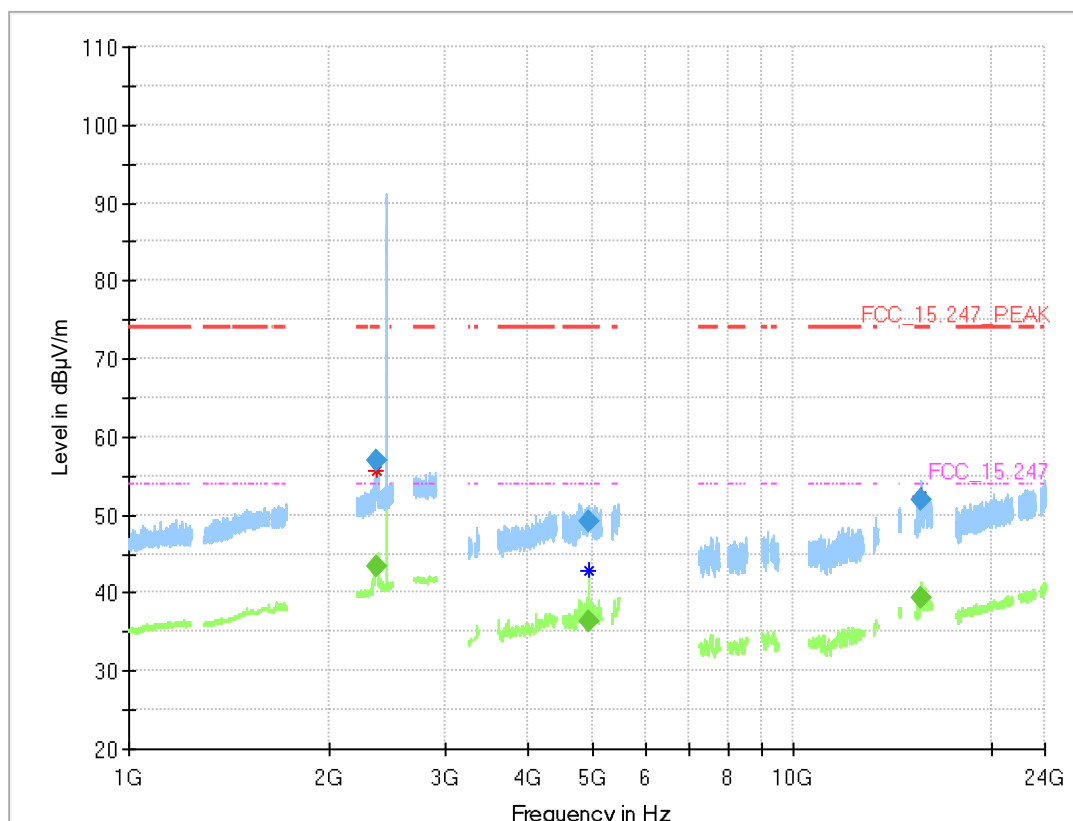


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2369.440	---	38.7	54.00	15.29	1000.0	1000.000	150.0	H	152.0	88.0	7.7
2369.440	52.6	---	74.00	21.43	1000.0	1000.000	150.0	H	152.0	88.0	7.7
2741.030	---	38.9	54.00	15.10	1000.0	1000.000	150.0	V	-49.0	89.0	8.7
2741.030	51.8	---	74.00	22.18	1000.0	1000.000	150.0	V	-49.0	89.0	8.7
4791.038	---	36.6	54.00	17.42	1000.0	1000.000	150.0	H	-125.0	1.0	6.5
4791.038	50.5	---	74.00	23.48	1000.0	1000.000	150.0	H	-125.0	1.0	6.5
5037.388	---	35.5	54.00	18.46	1000.0	1000.000	150.0	H	-146.0	105.0	5.7
5037.388	48.8	---	74.00	25.25	1000.0	1000.000	150.0	H	-146.0	105.0	5.7

(Note: the peak at 2402 MHz is the wanted signal)

Chip02, Modulation= Bluetooth EDR 3, Operating Channel = 39
Measurements range = 1 GHz - 24 GHz
(S01_AA01#S3.5)

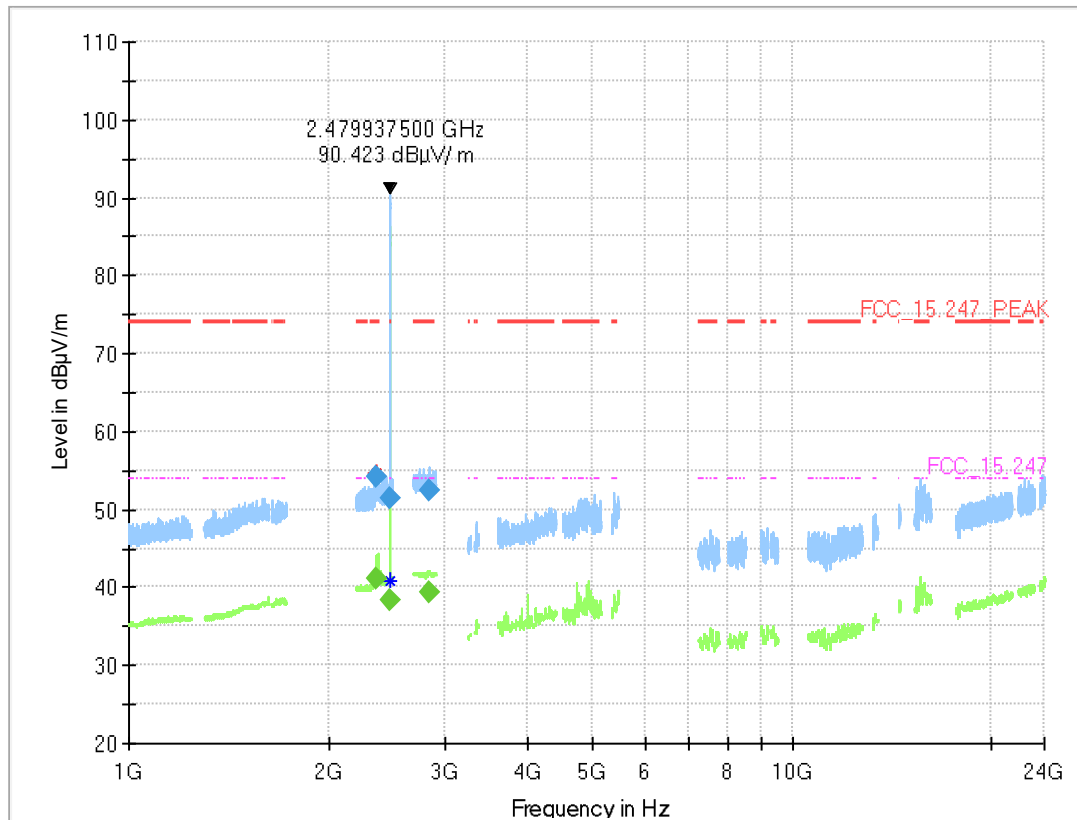


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2369.280	---	43.4	54.00	10.63	1000.0	1000.000	150.0	H	-4.0	-15.0	7.7
2369.280	57.0	---	74.00	16.99	1000.0	1000.000	150.0	H	-4.0	-15.0	7.7
4925.425	---	36.4	54.00	17.58	1000.0	1000.000	150.0	V	122.0	89.0	6.4
4925.425	49.3	---	74.00	24.72	1000.0	1000.000	150.0	V	122.0	89.0	6.4
15630.783	---	39.2	54.00	14.75	1000.0	1000.000	150.0	V	89.0	11.0	11.6
15630.783	52.0	---	74.00	21.99	1000.0	1000.000	150.0	V	89.0	11.0	11.6

(Note: the peak at 2440 MHz is the wanted signal)

Chip02, Modulation= Bluetooth EDR 3, Operating Channel = 78
Measurements range = 1 GHz - 24 GHz
(S01_AA01#S3.5)

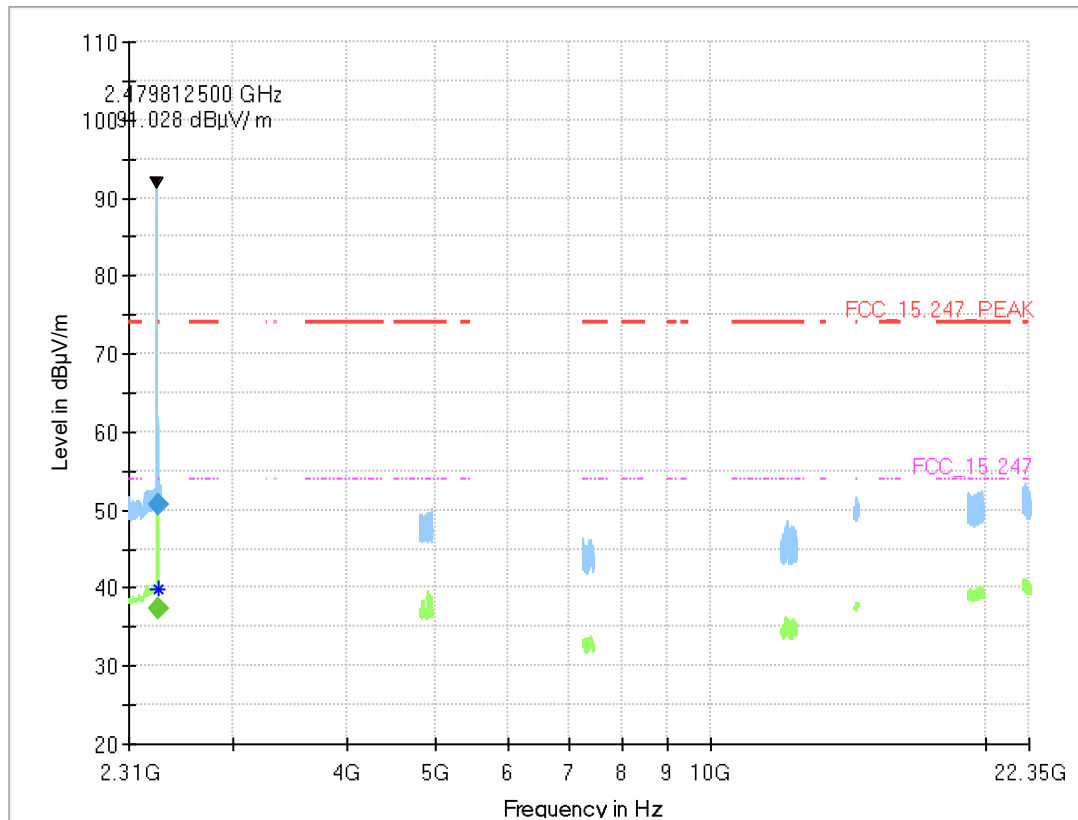


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2369.440	---	41.0	54.00	12.98	1000.0	1000.000	150.0	H	-6.0	2.0	7.7
2369.440	54.2	---	74.00	19.76	1000.0	1000.000	150.0	H	-6.0	2.0	7.7
2484.000	---	38.4	54.00	15.61	1000.0	1000.000	150.0	H	0.0	1.0	8.0
2484.000	51.4	---	74.00	22.59	1000.0	1000.000	150.0	H	0.0	1.0	8.0
2836.790	---	39.3	54.00	14.74	1000.0	1000.000	150.0	V	-84.0	75.0	9.1
2836.790	52.5	---	74.00	21.46	1000.0	1000.000	150.0	V	-84.0	75.0	9.1

(Note: the peak at 2480 MHz is the wanted signal)

Chip01, Modulation= Bluetooth EDR 3, Operating Channel = 78
Measurements range = 2.31 GHz – 22.35 GHz (only Harmonics)
(S01_AB01#S3.0)

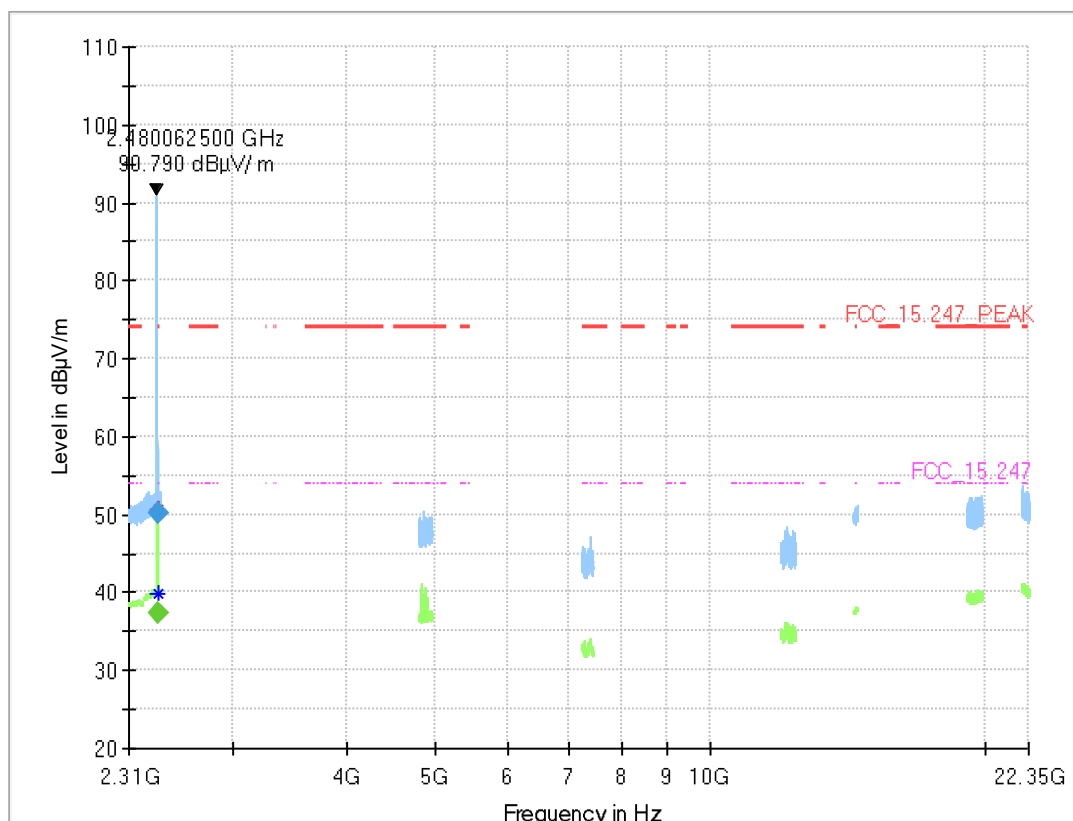


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2483.688	---	37.4	54.00	16.65	1000.0	1000.000	150.0	V	-128.0	75.0	8.0
2483.688	50.7	---	74.00	23.28	1000.0	1000.000	150.0	V	-128.0	75.0	8.0

(Note: the peak at 2480 MHz is the wanted signal)

Chip02, Modulation= Bluetooth EDR 3, Operating Channel = 78
Measurements range = 2.31 GHz – 22.35 GHz (only Harmonics)
(S01_AB01#S3.0)



Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2483.500	---	37.4	54.00	16.63	1000.0	1000.000	150.0	V	-114.0	105.0	8.0
2483.500	50.3	---	74.00	23.74	1000.0	1000.000	150.0	V	-114.0	105.0	8.0

(Note: the peak at 2480 MHz is the wanted signal)

5.1.5 TEST EQUIPMENT USED

- Radiated Emissions FAR 2.4 GHz FCC
- Radiated Emissions SAC H-Field
- Radiated Emissions SAC up to 1 GHz

5.2 BAND EDGE COMPLIANCE RADIATED

Standard **FCC Part 15 Subpart C**

The test was performed according to:

ANSI C63.10, chapter 6.6.5

5.2.1 TEST DESCRIPTION

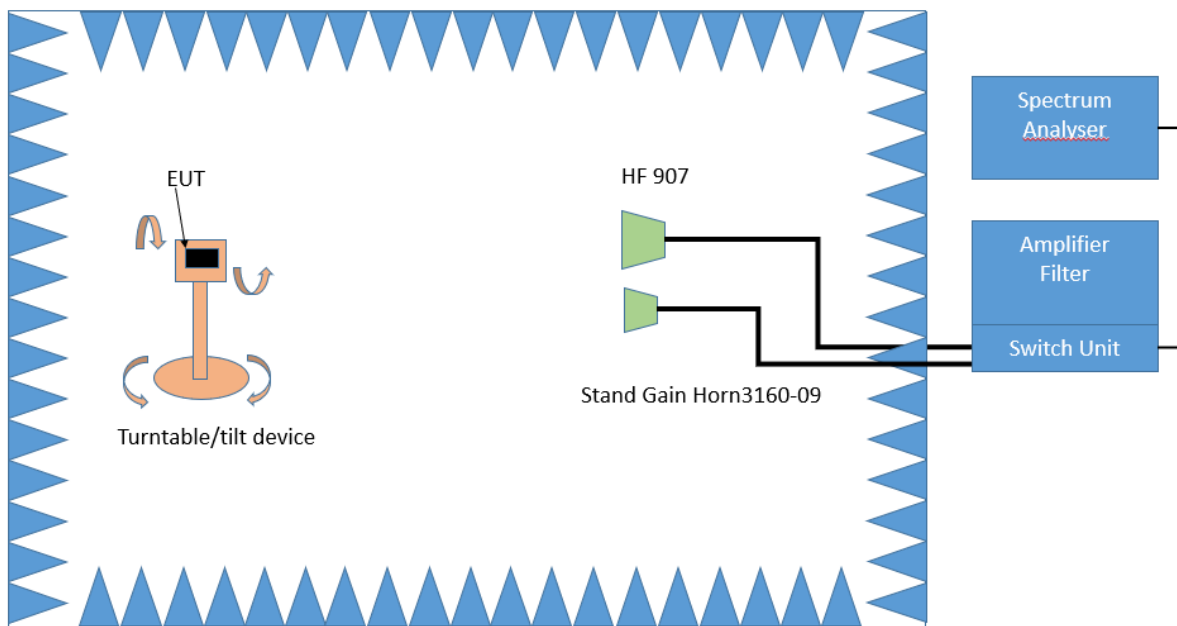
The test set-up was made in accordance to the general provisions of ANSI C63.10 in a typical installation configuration. The measurements were performed according the following sub-chapter of ANSI C63.10:

- Chapter 6.10.5

The Equipment Under Test (EUT) was set up on a non-conductive support (tilt device) at 1.5 m height in the fully-anechoic chamber.

All steps were performed with one height (1.5 m) of the receiving antenna only (procedure according ANSI C63.10, chapter 6.6.5).

3. Measurement above 1 GHz



Test Setup; Spurious Emission Radiated (FAC), 1 GHz-26.5 GHz

Step 1:

The EUT is turned during the preliminary measurement across the elevation axis, with a step size of 90 °.

The turn table step size (azimuth angle) for the preliminary measurement is 45 °.

Spectrum analyser settings:

- Detector: Peak, Average
- RBW = 1 MHz
- VBW = 3 MHz

Step 2:

The turn table azimuth will slowly vary by $\pm 22.5^\circ$.

The elevation angle will slowly vary by $\pm 45^\circ$

Spectrum analyser settings:

- Detector: Peak

Step 3:

Spectrum analyser settings for step 3:

- Detector: Peak / CISPR Average
- Measured frequencies: in step 1 determined frequencies
- RBW = 1 MHz
- VBW = 3 MHz
- Measuring time: 1 s

5.2.2 TEST REQUIREMENTS / LIMITS

For band edges connected to a restricted band, the limits are specified in Section 15.209(a)

FCC Part 15, Subpart C, §15.209, Radiated Emission Limits

Frequency in MHz	Limit ($\mu\text{V}/\text{m}$)	Measurement distance (m)	Limits ($\text{dB}\mu\text{V}/\text{m}$)
0.009 – 0.49	2400/F(kHz)@300m	3	(48.5 – 13.8)@300m
0.49 – 1.705	24000/F(kHz)@30m	3	(33.8 – 23.0)@30m
1.705 – 30	30@30m	3	29.5@30m

The measured values are corrected with an inverse linear distance extrapolation factor (40 dB/decade) according FCC 15.31 (2).

Frequency in MHz	Limit ($\mu\text{V}/\text{m}$)	Measurement distance (m)	Limits ($\text{dB}\mu\text{V}/\text{m}$)
30 – 88	100@3m	3	40.0@3m
88 – 216	150@3m	3	43.5@3m
216 – 960	200@3m	3	46.0@3m
960 – 26000	500@3m	3	54.0@3m
26000 – 40000	500@3m	1	54.0@3m

The measured values above 26 GHz are corrected with an inverse linear distance extrapolation factor (20 dB/decade).

§15.35(b) ..., there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit....

Used conversion factor: $\text{Limit (dB}\mu\text{V}/\text{m)} = 20 \log (\text{Limit } (\mu\text{V}/\text{m})/1\mu\text{V}/\text{m})$

The average values have been calculated from the Peak measurements based on “duty cycles correction” method in ANSI C63.10, chapter 7.5.

The Duty Cycle Measurements are listed in Chapter 4.7 of this Report.

5.2.3 TEST PROTOCOL

Ambient temperature: 19–22 °C
 Air Pressure: 999–1003 hPa
 Humidity: 33–41 %

Chip01(S01_AA01#S3.5)

BT GFSK (1-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]
78	2480	2483.5	51.7	PEAK	1000	74.0	22.3
78	2480	2483.5	49.4	AV	1000	54.0	4.6

BT π/4 DQPSK (2-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]
78	2480	2483.5	52.3	PEAK	1000	74.0	21.7
78	2480	2483.5	50.0	AV	1000	54.0	4.0

BT 8-DPSK (3-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]
0	2402	2390.0	49.5	PEAK	1000	74.0	24.5
0	2402	2390.0	47.2	AV	1000	54.0	6.8
78	2480	2483.5	55.7	PEAK	1000	74.0	18.3
78	2480	2483.5	53.4	AV	1000	54.0	0.6

Chip02(S01_AA01#S3.5)

BT GFSK (1-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]
78	2480	2483.5	52.9	PEAK	1000	74.0	21.1
78	2480	2483.5	50.6	AV	1000	54.0	3.4

BT π/4 DQPSK (2-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]
78	2480	2483.5	52.5	PEAK	1000	74.0	21.5
78	2480	2483.5	50.2	AV	1000	54.0	3.8

BT 8-DPSK (3-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]
0	2402	2390.0	49.7	PEAK	1000	74.0	24.3
0	2402	2390.0	47.4	AV	1000	54.0	6.6
78	2480	2483.5	51.4	PEAK	1000	74.0	22.6
78	2480	2483.5	49.1	AV	1000	54.0	4.9

=====

Ambient temperature: 19–22 °C
 Air Pressure: 999–1003 hPa
 Humidity: 33–41 %

Chip01(S01_AB01#S3.0)

BT GFSK (1-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]
78	2480	2483.5	52.7	PEAK	1000	74.0	21.3
78	2480	2483.5	50.4	AV	1000	54.0	3.6

BT 8-DPSK (3-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]
78	2480	2483.5	50.7	PEAK	1000	74.0	23.3
78	2480	2483.5	48.4	AV	1000	54.0	5.6

Chip02(S01_AB01#S3.0)

BT GFSK (1-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]
78	2480	2483.5	52.7	PEAK	1000	74.0	21.3
78	2480	2483.5	50.4	AV	1000	54.0	3.6

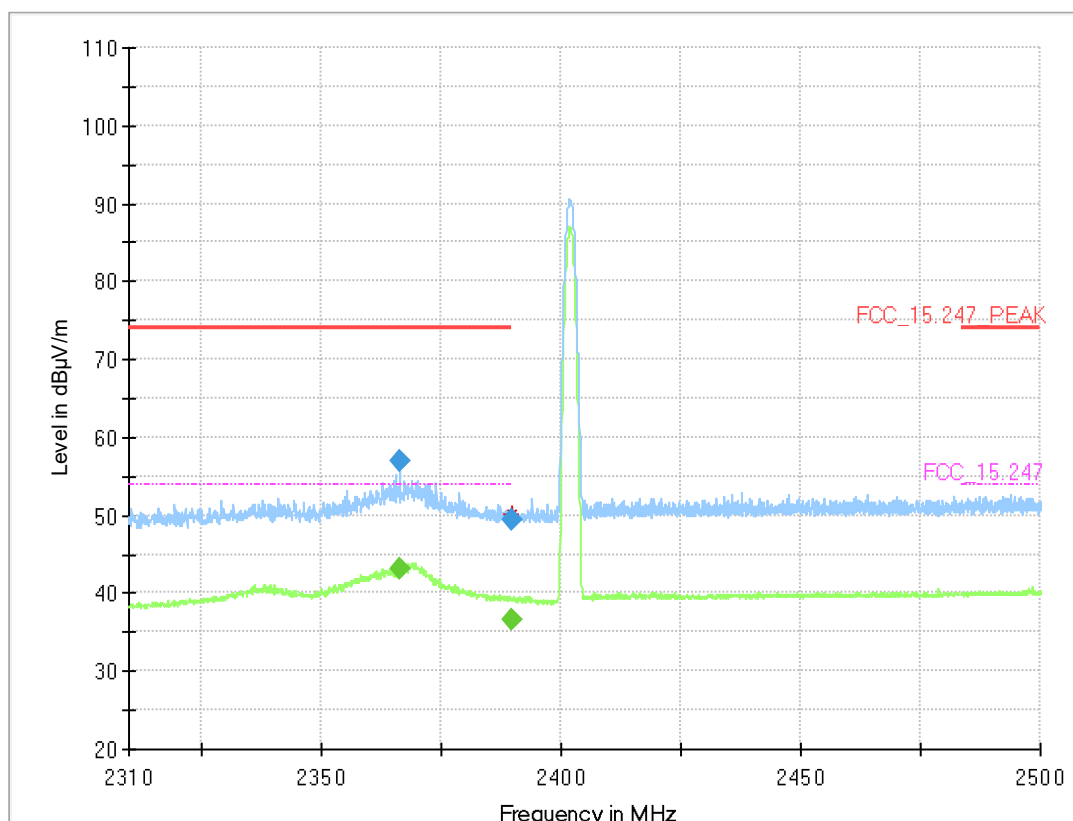
BT 8-DPSK (3-DH5)

Ch. No.	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin to Limit [dB]
78	2480	2483.5	50.3	PEAK	1000	74.0	23.7
78	2480	2483.5	48.0	AV	1000	54.0	6.0

Remark: Please see next sub-clause for the measurement plot.

5.2.4 MEASUREMENT PLOT (EXAMPLE PLOT, SHOWING WORST CASE, IF APPLICABLE)

Chip01, Modulation= Bluetooth EDR 3, Operating Channel = 0, Band Edge = low
(S01_AA01#S3.5)

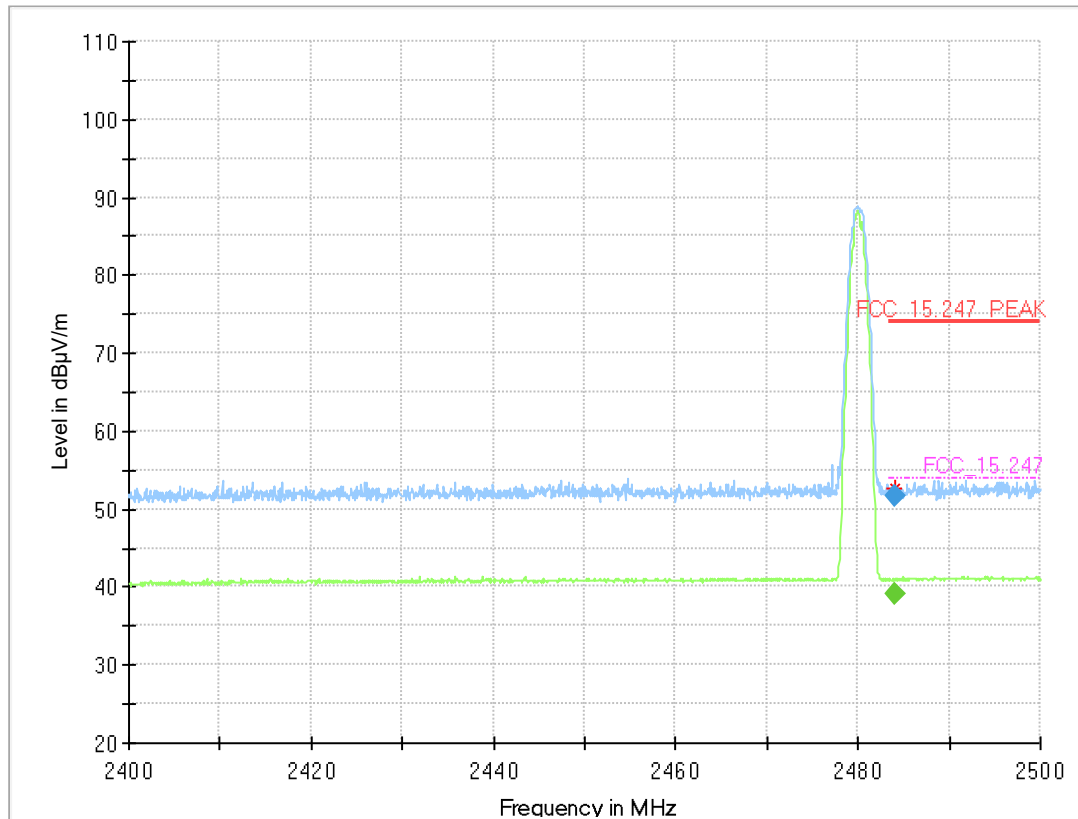


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2366.430	---	43.0	54.00	10.95	1000.0	1000.000	150.0	H	-41.0	86.0	7.2
2366.430	57.0	---	74.00	17.03	1000.0	1000.000	150.0	H	-41.0	86.0	7.2
2389.920	---	36.7	54.00	17.34	1000.0	1000.000	150.0	V	-57.0	15.0	7.0
2389.920	49.5	---	74.00	24.52	1000.0	1000.000	150.0	V	-57.0	15.0	7.0

(Note: The peak at 2366 MHz is not related to the fundamental transmitter)

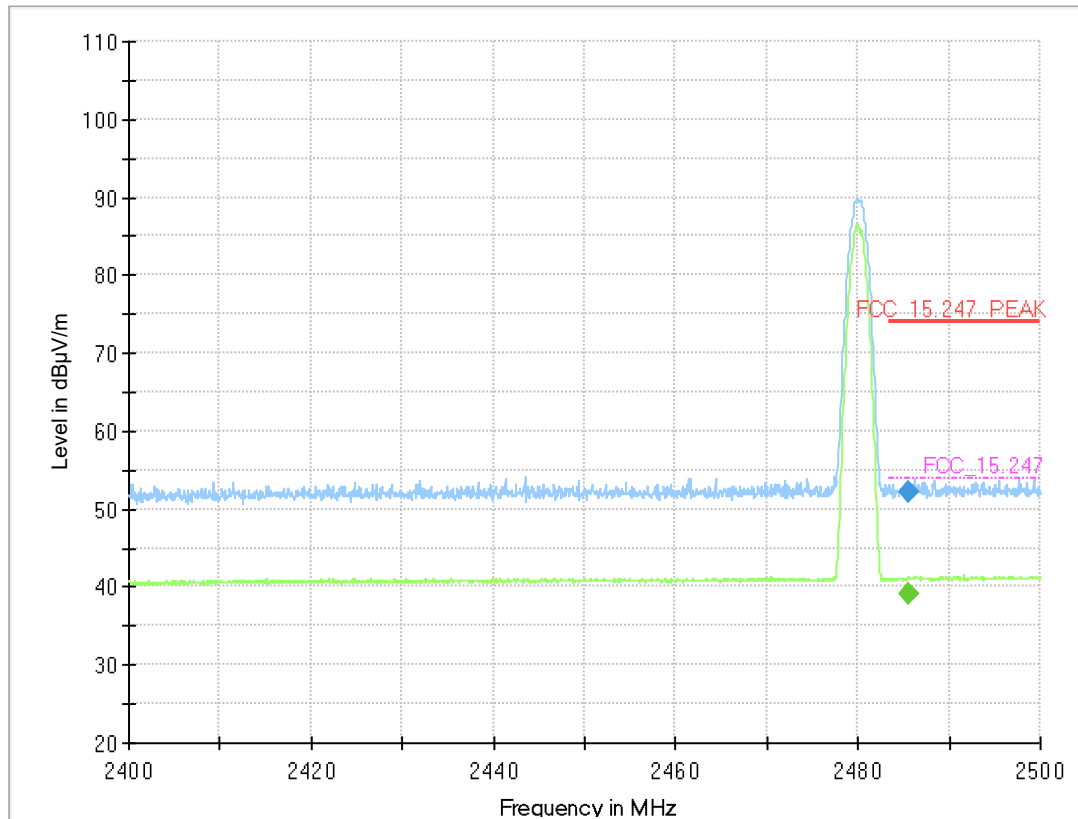
Chip01, Modulation= Bluetooth BDR, Operating Channel = 78, Band Edge = high
(S01_AA01#S3.5)



Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2484.000	---	39.0	54.00	14.97	1000.0	1000.000	150.0	H	150.0	8.0	7.7
2484.000	51.7	---	74.00	22.34	1000.0	1000.000	150.0	H	150.0	8.0	7.7

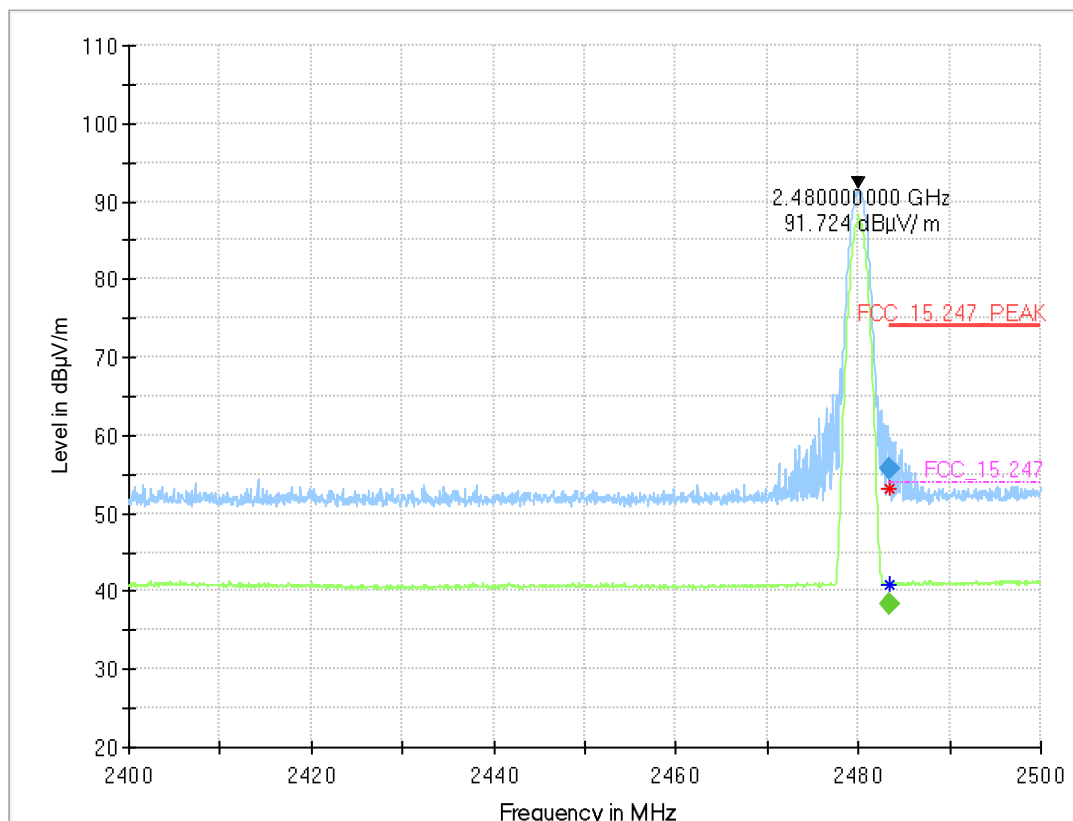
Chip01, Modulation= Bluetooth EDR 2, Operating Channel = 78, Band Edge = high
 (S01_AA01#S3.5)



Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2485.500	---	39.1	54.00	14.87	1000.0	1000.000	150.0	H	158.0	-9.0	7.7
2485.500	52.3	---	74.00	21.72	1000.0	1000.000	150.0	H	158.0	-9.0	7.7

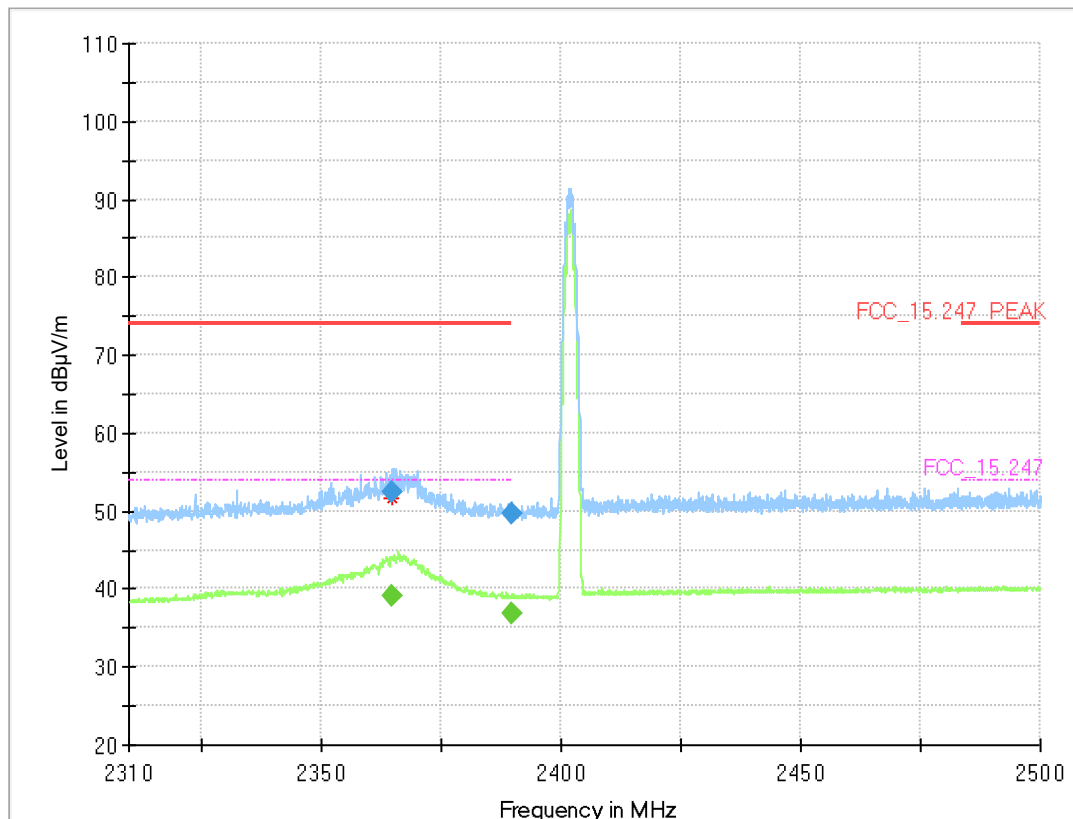
Chip01, Modulation= Bluetooth EDR 3, Operating Channel = 78, Band Edge = high
(S01_AA01#S3.5)



Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2483.500	---	38.3	54.00	15.70	1000.0	1000.000	150.0	V	-150.0	75.0	8.0
2483.500	55.7	---	74.00	18.26	1000.0	1000.000	150.0	V	-150.0	75.0	8.0

Chip02, Modulation= Bluetooth EDR 3, Operating Channel = 0, Band Edge = low
(S01_AA01#S3.5)

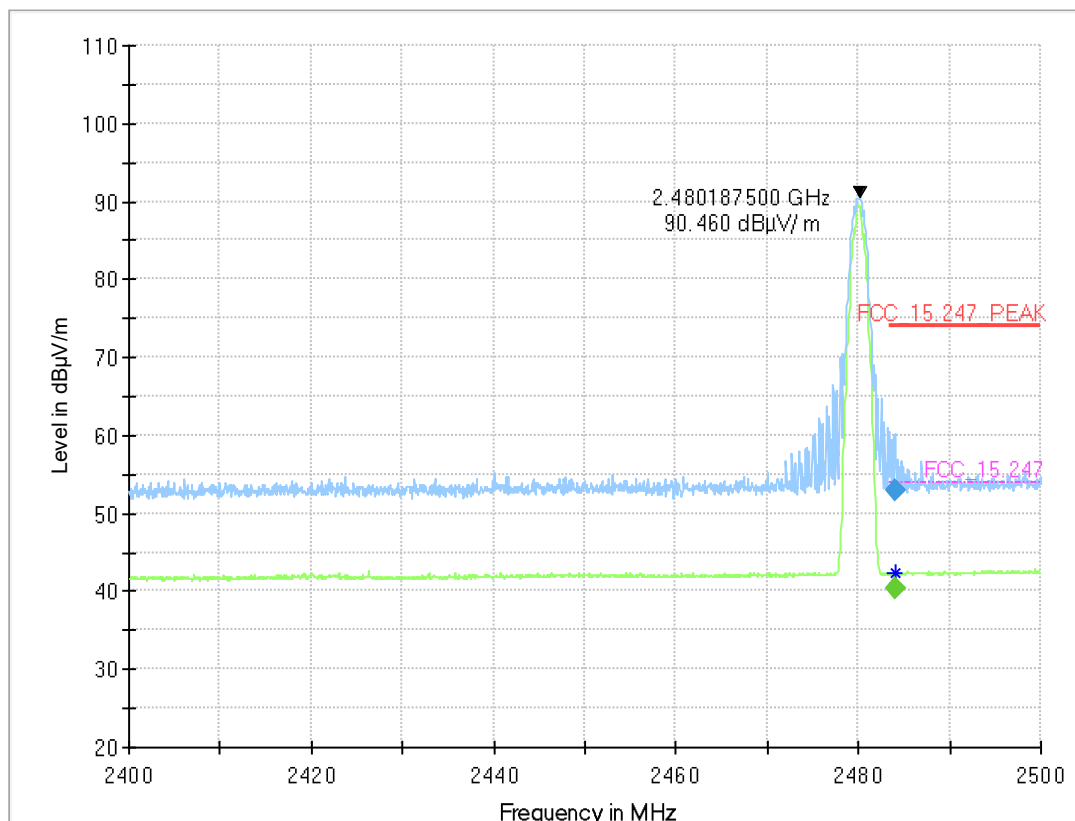


Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2364.990	---	39.0	54.00	15.01	1000.0	1000.000	150.0	V	-19.0	-6.0	7.1
2364.990	52.5	---	74.00	21.54	1000.0	1000.000	150.0	V	-19.0	-6.0	7.1
2389.920	---	36.7	54.00	17.28	1000.0	1000.000	150.0	V	-40.0	105.0	7.0
2389.920	49.7	---	74.00	24.32	1000.0	1000.000	150.0	V	-40.0	105.0	7.0

(Note: The peak at 2364 MHz is not related to the fundamental transmitter)

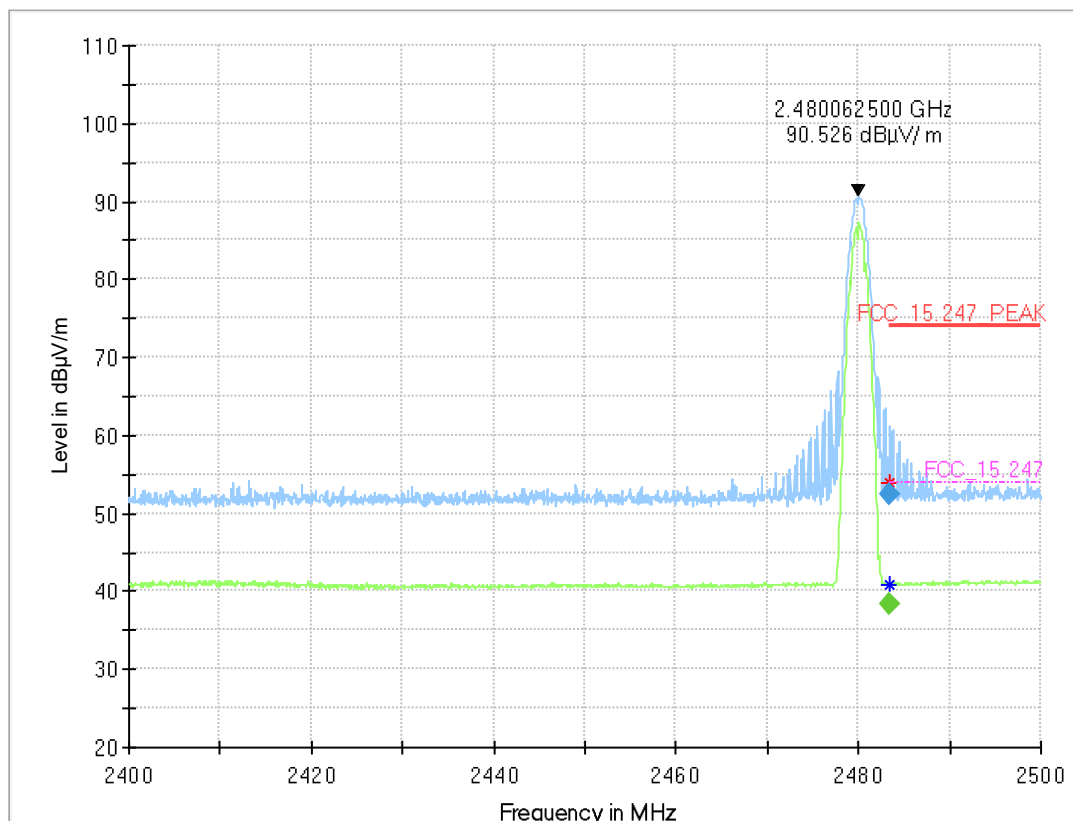
Chip02, Modulation= Bluetooth BDR, Operating Channel = 78, Band Edge = high
 (S01_AA01#S3.5)



Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2484.000	52.9	---	74.00	21.11	1000.0	1000.000	150.0	V	34.0	105.0	8.0
2484.000	---	40.3	54.00	13.67	1000.0	1000.000	150.0	V	34.0	105.0	8.0

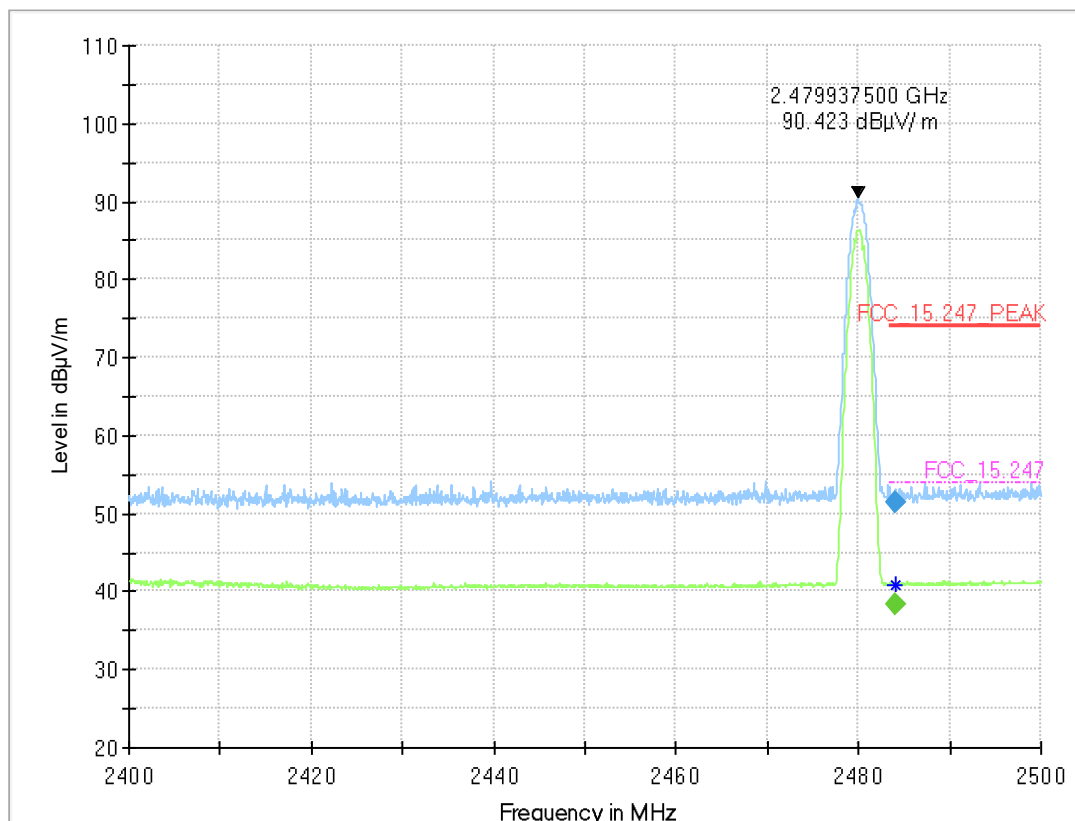
Chip02, Modulation= Bluetooth EDR 2, Operating Channel = 78, Band Edge = high
 (S01_AA01#S3.5)



Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2483.500	---	38.2	54.00	15.75	1000.0	1000.000	150.0	V	75.0	-18.0	8.0
2483.500	52.5	---	74.00	21.53	1000.0	1000.000	150.0	V	75.0	-18.0	8.0

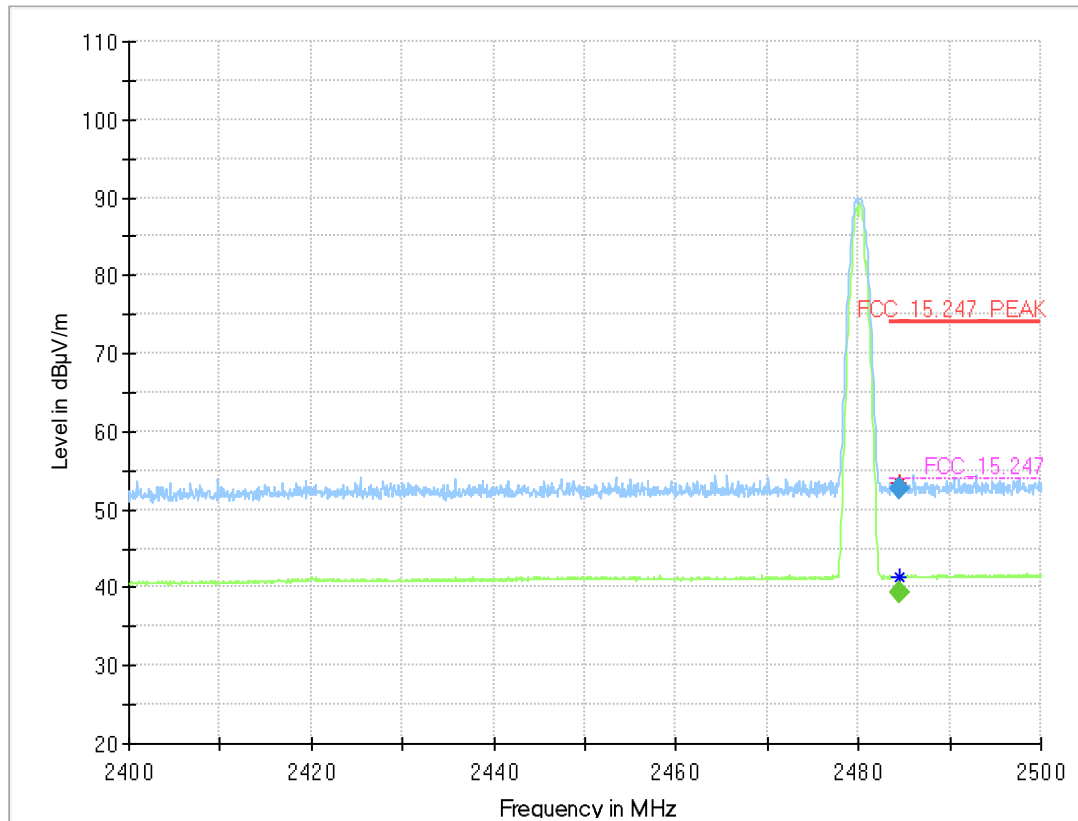
Chip02, Modulation= Bluetooth EDR 3, Operating Channel = 78, Band Edge = high
(S01_AA01#S3.5)



Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2484.000	---	38.4	54.00	15.61	1000.0	1000.000	150.0	H	0.0	1.0	8.0
2484.000	51.4	---	74.00	22.59	1000.0	1000.000	150.0	H	0.0	1.0	8.0

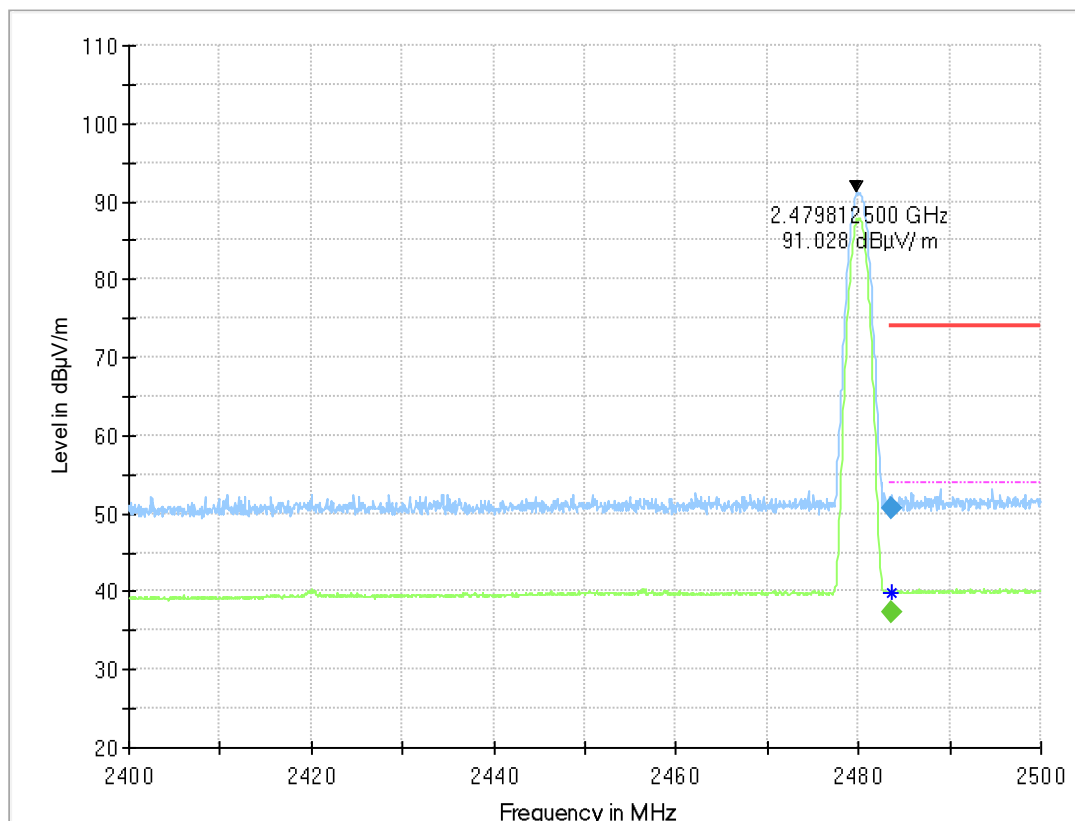
Chip01, Modulation= Bluetooth BDR, Operating Channel = 78, Band Edge = high
(S01_AB01#S3.0)



Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2484.375	---	39.4	54.00	14.61	1000.0	1000.000	150.0	V	41.0	-7.0	8.0
2484.375	52.7	---	74.00	21.29	1000.0	1000.000	150.0	V	41.0	-7.0	8.0

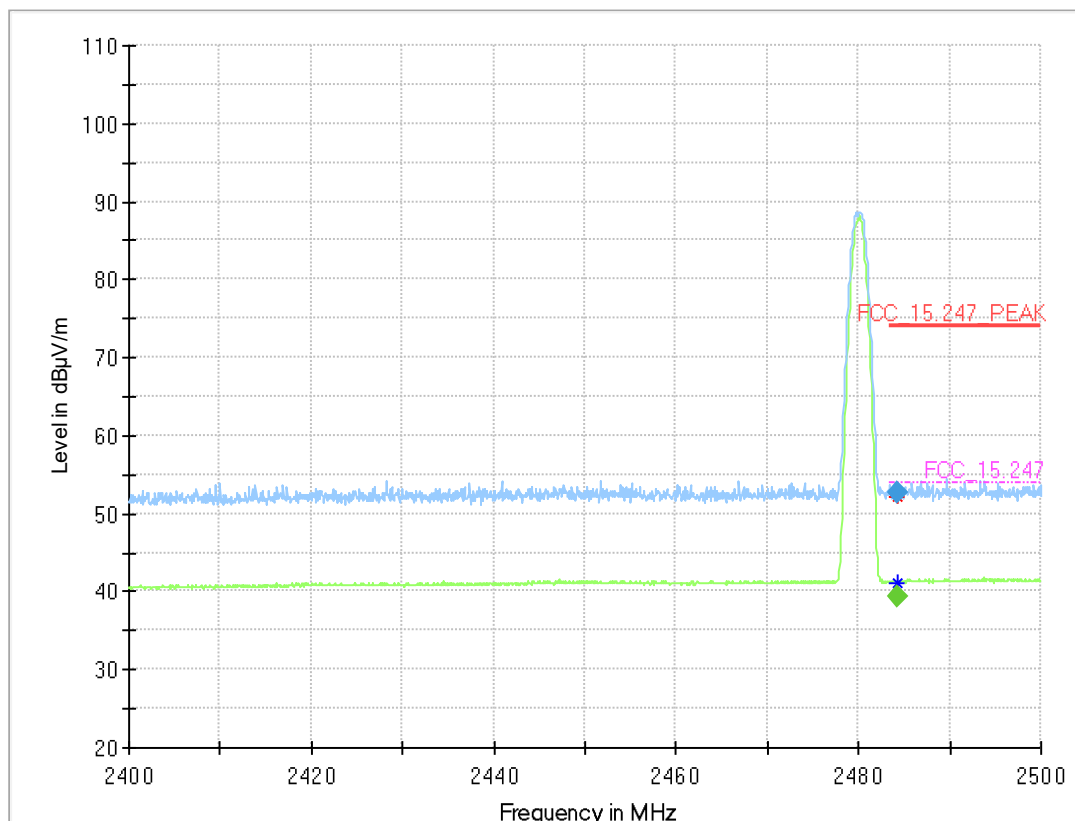
Chip01, Modulation= Bluetooth EDR 3, Operating Channel = 78, Band Edge = high
(S01_AB01#S3.0)



Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2483.688	---	37.4	54.00	16.65	1000.0	1000.000	150.0	V	-128.0	75.0	8.0
2483.688	50.7	---	74.00	23.28	1000.0	1000.000	150.0	V	-128.0	75.0	8.0

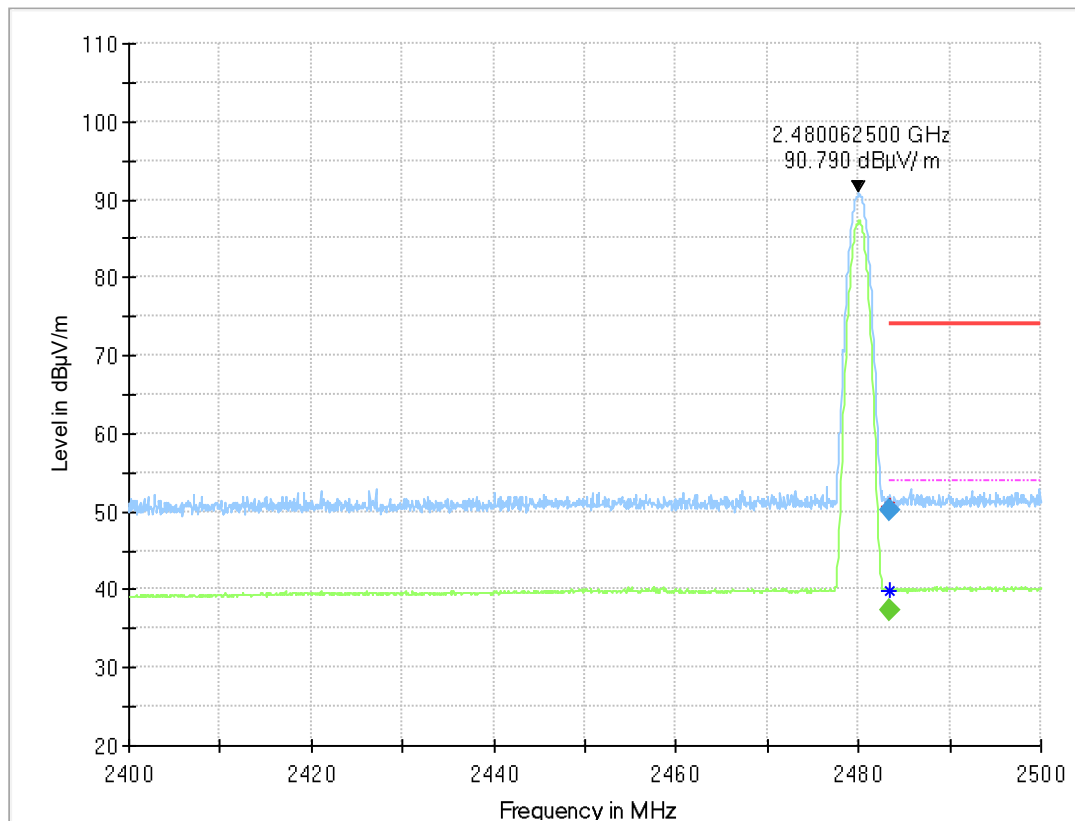
Chip02, Modulation= Bluetooth BDR, Operating Channel = 78, Band Edge = high
 (S01_AB01#S3.0)



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2484.250	---	39.4	54.00	14.61	1000.0	1000.000	150.0	V	149.0	1.0	8.0
2484.250	52.7	---	74.00	21.30	1000.0	1000.000	150.0	V	149.0	1.0	8.0

Chip02, Modulation= Bluetooth EDR 3, Operating Channel = 78, Band Edge = high
(S01_AB01#S3.0)



Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
2483.500	---	37.4	54.00	16.63	1000.0	1000.000	150.0	V	-114.0	105.0	8.0
2483.500	50.3	---	74.00	23.74	1000.0	1000.000	150.0	V	-114.0	105.0	8.0

5.2.5 TEST EQUIPMENT USED

- Radiated Emissions FAR 2.4 GHz FCC

6 TEST EQUIPMENT

6.1 TEST EQUIPMENT HARDWARE

- 1 Radiated Emissions FAR 2.4 GHz FCC
Radiated emission tests for 2.4 GHz ISM devices in a fully anechoic room

Ref.No.	Device Name	Description	Manufacturer	Serial Number	Last Calibration	Calibration Due
1.1	Opus10 TPR (8253.00)	T/P Logger 13	Lufft Mess- und Regeltechnik GmbH	13936	2023-12	2025-12
1.2	Innco Systems CO3000	Controller for bore sight mast FAC	innco systems GmbH	CO3000/1460/54740522/P	N/A	N/A
1.3	AMF-7D00101800-30-10P-R	Broadband Amplifier 100 MHz - 18 GHz	Miteq		N/A	N/A
1.4	Anechoic Chamber 03	FAR, 8.80m x 4.60m x 4.05m (l x w x h)	Albatross Projects	P26971-647-001-PRB	N/A	N/A
1.5	Fluke 177	Digital Multimeter 03 (Multimeter)	Fluke Europe B.V.	86670383	2023-08	2025-08
1.6	HF 906	Double-ridged horn	Rohde & Schwarz	357357/002	2022-07	2025-07
1.7	JS4-18002600-32-5P	Broadband Amplifier 18 GHz - 26 GHz	Miteq	849785	N/A	N/A
1.8	FSW43	Spectrum Analyzer	Rohde & Schwarz GmbH & Co. KG	103779	2024-12	2026-12
1.9	EP 1200/B, NA/B1	AC Source, Amplifier with integrated variable Oscillator	Spitzenberger & Spies GmbH & Co. KG	B6278	N/A	N/A
1.10	3160-09	Standard Gain / Pyramidal Horn Antenna 26.5 GHz	EMCO Elektronik GmbH	00083069	N/A	N/A
1.11	WHKX 7.0/18G-8SS	High Pass Filter	Wainwright Instruments GmbH	09	N/A	N/A
1.12	MA3000/0800-XP-ET-compact	Bore Sight Antenna Mast	innco systems GmbH	9210522	N/A	N/A
1.13	TT 1.5 WI	Turn Table	Maturo GmbH	-	N/A	N/A
1.14	5HC3500/18000-1.2-KK	High Pass Filter	Trilithic	200035008	N/A	N/A
1.15	Opus 20 THI (8120.00)	ThermoHygro Datalogger	Lufft Mess- und Regeltechnik GmbH	115.0318.0802.033	2023-08	2025-08
1.16	TD1.5-10kg	EUT Tilt Device (Rohacell)	Maturo GmbH	TD1.5-10kg/024/3790709	N/A	N/A
1.17	AFS42-00101800-25-S-42	Broadband Amplifier 25 MHz - 18 GHz	Miteq	2035324	N/A	N/A
1.18	HF 907	Double-ridged horn	Rohde & Schwarz	102444	2024-10	2027-10

2 Radiated Emissions SAC H-Field
Radiated emission tests in the H-Field in a semi anechoic room

Ref.No.	Device Name	Description	Manufacturer	Serial Number	Last Calibration	Calibration Due
2.1	N5000/NP	Filter for EUT, 2 Lines, 250 V, 16 A	ETS-LINDGREN	241515	N/A	N/A
2.2	Opus10 TPR (8253.00)	T/P Logger 13	Lufft Mess- und Regeltechnik GmbH	13936	2023-12	2025-12
2.3	ESW44	EMI Receiver / Spectrum Analyzer	Rohde & Schwarz GmbH & Co. KG	101603	2024-03	2026-03
2.4	Anechoic Chamber 01	SAC/FAR, 10.58 m x 6.38 m x 6.00 m	Frankonia Germany EMC Solution GmbH	none	N/A	N/A
2.5	Fluke 177	Digital Multimeter 03 (Multimeter)	Fluke Europe B.V.	86670383	2023-08	2025-08
2.6	Opus10 THI (8152.00)	T/H Logger 10	Lufft Mess- und Regeltechnik GmbH	12488	2023-12	2025-12
2.7	EP 1200/B, NA/B1	AC Source, Amplifier with integrated variable Oscillator	Spitzenberger & Spies GmbH & Co. KG	B6278	N/A	N/A
2.8	DS 420S	Turn Table 2 m diameter	HD GmbH	420/573/99	N/A	N/A
2.9	HFH2-Z2	Loop Antenna + 3 Axis Tripod	Rohde & Schwarz GmbH & Co. KG	829324/006	2024-04	2027-04
2.10	CS-RUB6	Rubidium Frequency Standard	Rohde & Schwarz GmbH & Co. KG	100321	2023-10	2025-10
2.11	CBT	Bluetooth Tester	Rohde & Schwarz	100302	2024-09	2027-09

3 Radiated Emissions SAC up to 1 GHz
 Radiated emission tests up to 1 GHz in a semi anechoic room

Ref.No.	Device Name	Description	Manufacturer	Serial Number	Last Calibration	Calibration Due
3.1	N5000/NP	Filter for EUT, 2 Lines, 250 V, 16 A	ETS-LINDGREN	241515	N/A	N/A
3.2	Opus10 TPR (8253.00)	T/P Logger 13	Lufft Mess- und Regeltechnik GmbH	13936	2023-12	2025-12
3.3	ESW44	EMI Receiver / Spectrum Analyzer	Rohde & Schwarz GmbH & Co. KG	101603	2024-03	2026-03
3.4	Anechoic Chamber 01	SAC/FAR, 10.58 m x 6.38 m x 6.00 m	Frankonia Germany EMC Solution GmbH	none	N/A	N/A
3.5	HL 562 ULTRALOG	Biconical-log-per antenna (30 MHz - 3 GHz) with HL 562E biconicals	Rohde & Schwarz GmbH & Co. KG	830547/003		
3.6	Fluke 177	Digital Multimeter 03 (Multimeter)	Fluke Europe B.V.	86670383	2023-08	2025-08
3.7	Opus10 THI (8152.00)	T/H Logger 10	Lufft Mess- und Regeltechnik GmbH	12488	2023-12	2025-12
3.8	EP 1200/B, NA/B1	AC Source, Amplifier with integrated variable Oscillator	Spitzenberger & Spies GmbH & Co. KG	B6278	N/A	N/A
3.9	DS 420S	Turn Table 2 m diameter	HD GmbH	420/573/99	N/A	N/A
3.10	HL562E ULTRALOG	Biconical-log-per Antenna (30 MHz - 6 GHz)	Rohde & Schwarz GmbH & Co. KG	102299	2024-07	2027-07
3.11	Chase CBL6111C + INMET 64671 18N-6dB	Hybrid Antenna with 6dB Attenuator		2624 Kartei-Nr E-003226/K1026	2023-03	2026-03
3.12	CS-RUB6	Rubidium Frequency Standard	Rohde & Schwarz GmbH & Co. KG	100321	2023-10	2025-10
3.13	AM 4.0	Antenna Mast 4 m	Maturo GmbH	AM4.0/180/1192 0513	N/A	N/A
3.14	CBT	Bluetooth Tester	Rohde & Schwarz	100302	2024-09	2027-09

The calibration interval is the time interval between "Last Calibration" and "Calibration Due"

6.2 TEST EQUIPMENT SOFTWARE

Semi-Anechoic Chamber:	
Software	Version
EMC32 Measurement Software	10.60.10
INNCO Mast Controller	1.02.62
INNCO Mast Height	34.10
INNCO Mast Elevation	36.11
MATURO Controller	1.24
MATURO Mast	12.19
MATURO Turn-Table	30.10
Fully-Anechoic Chamber:	
Software	Version
EMC32 Measurement Software	10.60.10
MATURO Controller	1.30
MATURO Turn-Unit	11.10
MATURO Mast	12.10
MATURO Turntable	12.11
INNCO Controller	1.03.02
INNCO Mast Height	34.10
INNCO Mast Elevation	36.11
TS 8997	
WMS32 Measurement Software	11.60.00 (till 2024-03-19), 11.70.00 + Hotfix 01
Conducted AC Emissions:	
Software	Version
EMC32 Measurement Software	10.60.20

7 ANTENNA FACTORS, CABLE LOSS AND SAMPLE CALCULATIONS

This chapter contains the antenna factors with their corresponding path loss of the used measurement path for all antennas as well as the insertion loss of the LISN.

7.1 ANTENNA R&S HFH2-Z2 (9 KHZ – 30 MHZ)

Frequency MHz	AF HFH- Z2) dB (1/m)	Corr. dB	cable loss 1 (inside chamber) dB	cable loss 2 (outside chamber) dB	cable loss 3 (switch unit) dB	cable loss 4 (to receiver) dB	distance corr. (-40 dB/ decade) dB	d _{Limit} (meas. distance (limit) m	d _{used} (meas. distance (used) m
0.009	20.50	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.01	20.45	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.015	20.37	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.02	20.36	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.025	20.38	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.03	20.32	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.05	20.35	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.08	20.30	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.1	20.20	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.2	20.17	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.3	20.14	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.49	20.12	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.490001	20.12	-39.6	0.1	0.1	0.1	0.1	-40	30	3
0.5	20.11	-39.6	0.1	0.1	0.1	0.1	-40	30	3
0.8	20.10	-39.6	0.1	0.1	0.1	0.1	-40	30	3
1	20.09	-39.6	0.1	0.1	0.1	0.1	-40	30	3
2	20.08	-39.6	0.1	0.1	0.1	0.1	-40	30	3
3	20.06	-39.6	0.1	0.1	0.1	0.1	-40	30	3
4	20.05	-39.5	0.2	0.1	0.1	0.1	-40	30	3
5	20.05	-39.5	0.2	0.1	0.1	0.1	-40	30	3
6	20.02	-39.5	0.2	0.1	0.1	0.1	-40	30	3
8	19.95	-39.5	0.2	0.1	0.1	0.1	-40	30	3
10	19.83	-39.4	0.2	0.1	0.2	0.1	-40	30	3
12	19.71	-39.4	0.2	0.1	0.2	0.1	-40	30	3
14	19.54	-39.4	0.2	0.1	0.2	0.1	-40	30	3
16	19.53	-39.3	0.3	0.1	0.2	0.1	-40	30	3
18	19.50	-39.3	0.3	0.1	0.2	0.1	-40	30	3
20	19.57	-39.3	0.3	0.1	0.2	0.1	-40	30	3
22	19.61	-39.3	0.3	0.1	0.2	0.1	-40	30	3
24	19.61	-39.3	0.3	0.1	0.2	0.1	-40	30	3
26	19.54	-39.3	0.3	0.1	0.2	0.1	-40	30	3
28	19.46	-39.2	0.3	0.1	0.3	0.1	-40	30	3
30	19.73	-39.1	0.4	0.1	0.3	0.1	-40	30	3

Sample calculation

$$E \text{ (dB } \mu\text{V/m)} = U \text{ (dB } \mu\text{V)} + AF \text{ (dB 1/m)} + Corr. \text{ (dB)}$$

U = Receiver reading

AF = Antenna factor

Corr. = sum of single correction factors of used cables, switch unit, distance correction, amplifier (if applicable)

distance correction = $-40 * \text{LOG} (d_{\text{Limit}} / d_{\text{used}})$

Linear interpolation will be used for frequencies in between the values in the table.

Table shows an extract of values

7.2 ANTENNA R&S HL562 (30 MHz – 1 GHz)

($d_{\text{Limit}} = 3 \text{ m}$)

Frequency	AF R&S HL562	Corr.
MHz	dB (1/m)	dB
30	18.6	0.6
50	6.0	0.9
100	9.7	1.2
150	7.9	1.6
200	7.6	1.9
250	9.5	2.1
300	11.0	2.3
350	12.4	2.6
400	13.6	2.9
450	14.7	3.1
500	15.6	3.2
550	16.3	3.5
600	17.2	3.5
650	18.1	3.6
700	18.5	3.6
750	19.1	4.1
800	19.6	4.1
850	20.1	4.4
900	20.8	4.7
950	21.1	4.8
1000	21.6	4.9

cable loss 1 (inside chamber)	cable loss 2 (outside chamber)	cable loss 3 (switch unit)	cable loss 4 (to receiver)	distance corr. (-20 dB/ decade)	d_{Limit} (meas. distance (limit))	d_{used} (meas. distance (used))
dB	dB	dB	dB	dB	m	m
0.29	0.04	0.23	0.02	0.0	3	3
0.39	0.09	0.32	0.08	0.0	3	3
0.56	0.14	0.47	0.08	0.0	3	3
0.73	0.20	0.59	0.12	0.0	3	3
0.84	0.21	0.70	0.11	0.0	3	3
0.98	0.24	0.80	0.13	0.0	3	3
1.04	0.26	0.89	0.15	0.0	3	3
1.18	0.31	0.96	0.13	0.0	3	3
1.28	0.35	1.03	0.19	0.0	3	3
1.39	0.38	1.11	0.22	0.0	3	3
1.44	0.39	1.20	0.19	0.0	3	3
1.55	0.46	1.24	0.23	0.0	3	3
1.59	0.43	1.29	0.23	0.0	3	3
1.67	0.34	1.35	0.22	0.0	3	3
1.67	0.42	1.41	0.15	0.0	3	3
1.87	0.54	1.46	0.25	0.0	3	3
1.90	0.46	1.51	0.25	0.0	3	3
1.99	0.60	1.56	0.27	0.0	3	3
2.14	0.60	1.63	0.29	0.0	3	3
2.22	0.60	1.66	0.33	0.0	3	3
2.23	0.61	1.71	0.30	0.0	3	3

($d_{\text{Limit}} = 10 \text{ m}$)

30	18.6	-9.9
50	6.0	-9.6
100	9.7	-9.2
150	7.9	-8.8
200	7.6	-8.6
250	9.5	-8.3
300	11.0	-8.1
350	12.4	-7.9
400	13.6	-7.6
450	14.7	-7.4
500	15.6	-7.2
550	16.3	-7.0
600	17.2	-6.9
650	18.1	-6.9
700	18.5	-6.8
750	19.1	-6.3
800	19.6	-6.3
850	20.1	-6.0
900	20.8	-5.8
950	21.1	-5.6
1000	21.6	-5.6

0.29	0.04	0.23	0.02	-10.5	10	3
0.39	0.09	0.32	0.08	-10.5	10	3
0.56	0.14	0.47	0.08	-10.5	10	3
0.73	0.20	0.59	0.12	-10.5	10	3
0.84	0.21	0.70	0.11	-10.5	10	3
0.98	0.24	0.80	0.13	-10.5	10	3
1.04	0.26	0.89	0.15	-10.5	10	3
1.18	0.31	0.96	0.13	-10.5	10	3
1.28	0.35	1.03	0.19	-10.5	10	3
1.39	0.38	1.11	0.22	-10.5	10	3
1.44	0.39	1.20	0.19	-10.5	10	3
1.55	0.46	1.24	0.23	-10.5	10	3
1.59	0.43	1.29	0.23	-10.5	10	3
1.67	0.34	1.35	0.22	-10.5	10	3
1.67	0.42	1.41	0.15	-10.5	10	3
1.87	0.54	1.46	0.25	-10.5	10	3
1.90	0.46	1.51	0.25	-10.5	10	3
1.99	0.60	1.56	0.27	-10.5	10	3
2.14	0.60	1.63	0.29	-10.5	10	3
2.22	0.60	1.66	0.33	-10.5	10	3
2.23	0.61	1.71	0.30	-10.5	10	3

Sample calculation

$E \text{ (dB } \mu\text{V/m)} = U \text{ (dB } \mu\text{V)} + \text{AF (dB 1/m)} + \text{Corr. (dB)}$
 U = Receiver reading
 AF = Antenna factor
 Corr. = sum of single correction factors of used cables, switch unit, distance correction, amplifier (if applicable)
 distance correction = $-20 * \text{LOG} (d_{\text{Limit}} / d_{\text{used}})$
 Linear interpolation will be used for frequencies in between the values in the table.
 Tables show an extract of values.

7.3 ANTENNA R&S HF907 (1 GHZ – 18 GHZ)

Frequency	AF R&S HF907	Corr.
MHz	dB (1/m)	dB
1000	24.4	-19.4
2000	28.5	-17.4
3000	31.0	-16.1
4000	33.1	-14.7
5000	34.4	-13.7
6000	34.7	-12.7
7000	35.6	-11.0

cable loss 1 (relay + cable inside chamber)	cable loss 2 (outside chamber)	cable loss 3 (switch unit, atten- uator & pre-amp)	cable loss 4 (to receiver)		
dB	dB	dB	dB		
0.99	0.31	-21.51	0.79		
1.44	0.44	-20.63	1.38		
1.87	0.53	-19.85	1.33		
2.41	0.67	-19.13	1.31		
2.78	0.86	-18.71	1.40		
2.74	0.90	-17.83	1.47		
2.82	0.86	-16.19	1.46		

Frequency	AF R&S HF907	Corr.
MHz	dB (1/m)	dB
3000	31.0	-23.4
4000	33.1	-23.3
5000	34.4	-21.7
6000	34.7	-21.2
7000	35.6	-19.8

cable loss 1 (relay inside chamber)	cable loss 2 (inside chamber)	cable loss 3 (outside chamber)	cable loss 4 (switch unit, atten- uator & pre-amp)	cable loss 5 (to receiver)	used for FCC 15.247
dB	dB	dB	dB	dB	
0.47	1.87	0.53	-27.58	1.33	
0.56	2.41	0.67	-28.23	1.31	
0.61	2.78	0.86	-27.35	1.40	
0.58	2.74	0.90	-26.89	1.47	
0.66	2.82	0.86	-25.58	1.46	

Frequency	AF R&S HF907	Corr.
MHz	dB (1/m)	dB
7000	35.6	-57.3
8000	36.3	-56.3
9000	37.1	-55.3
10000	37.5	-56.2
11000	37.5	-55.3
12000	37.6	-53.7
13000	38.2	-53.5
14000	39.9	-56.3
15000	40.9	-54.1
16000	41.3	-54.1
17000	42.8	-54.4
18000	44.2	-54.7

cable loss 1 (relay inside chamber)	cable loss 2 (High Pass)	cable loss 3 (pre- amp)	cable loss 4 (inside chamber)	cable loss 5 (outside chamber)	cable loss 6 (to receiver)
dB	dB	dB	dB	dB	dB
0.56	1.28	-62.72	2.66	0.94	1.46
0.69	0.71	-61.49	2.84	1.00	1.53
0.68	0.65	-60.80	3.06	1.09	1.60
0.70	0.54	-61.91	3.28	1.20	1.67
0.80	0.61	-61.40	3.43	1.27	1.70
0.84	0.42	-59.70	3.53	1.26	1.73
0.83	0.44	-59.81	3.75	1.32	1.83
0.91	0.53	-63.03	3.91	1.40	1.77
0.98	0.54	-61.05	4.02	1.44	1.83
1.23	0.49	-61.51	4.17	1.51	1.85
1.36	0.76	-62.36	4.34	1.53	2.00
1.70	0.53	-62.88	4.41	1.55	1.91

Sample calculation

$E \text{ (dB } \mu\text{V/m)} = U \text{ (dB } \mu\text{V)} + AF \text{ (dB 1/m)} + Corr. \text{ (dB)}$

U = Receiver reading

AF = Antenna factor

Corr. = sum of single correction factors of used cables, switch unit, distance correction, amplifier (if applicable)

Linear interpolation will be used for frequencies in between the values in the table.

Tables show an extract of values.

7.4 ANTENNA EMCO 3160-09 (18 GHZ – 26.5 GHZ)

Frequency	AF EMCO 3160-09	Corr.	cable loss 1 (inside chamber)	cable loss 2 (pre- amp)	cable loss 3 (inside chamber)	cable loss 4 (switch unit)	cable loss 5 (to receiver)
MHz	dB (1/m)	dB	dB	dB	dB	dB	dB
18000	40.2	-23.5	0.72	-35.85	6.20	2.81	2.65
18500	40.2	-23.2	0.69	-35.71	6.46	2.76	2.59
19000	40.2	-22.0	0.76	-35.44	6.69	3.15	2.79
19500	40.3	-21.3	0.74	-35.07	7.04	3.11	2.91
20000	40.3	-20.3	0.72	-34.49	7.30	3.07	3.05
20500	40.3	-19.9	0.78	-34.46	7.48	3.12	3.15
21000	40.3	-19.1	0.87	-34.07	7.61	3.20	3.33
21500	40.3	-19.1	0.90	-33.96	7.47	3.28	3.19
22000	40.3	-18.7	0.89	-33.57	7.34	3.35	3.28
22500	40.4	-19.0	0.87	-33.66	7.06	3.75	2.94
23000	40.4	-19.5	0.88	-33.75	6.92	3.77	2.70
23500	40.4	-19.3	0.90	-33.35	6.99	3.52	2.66
24000	40.4	-19.8	0.88	-33.99	6.88	3.88	2.58
24500	40.4	-19.5	0.91	-33.89	7.01	3.93	2.51
25000	40.4	-19.3	0.88	-33.00	6.72	3.96	2.14
25500	40.5	-20.4	0.89	-34.07	6.90	3.66	2.22
26000	40.5	-21.3	0.86	-35.11	7.02	3.69	2.28
26500	40.5	-21.1	0.90	-35.20	7.15	3.91	2.36

Sample calculation

$E \text{ (dB } \mu\text{V/m)} = U \text{ (dB } \mu\text{V)} + AF \text{ (dB 1/m)} + Corr. \text{ (dB)}$

U = Receiver reading

AF = Antenna factor

Corr. = sum of single correction factors of used cables, switch unit, distance correction, amplifier (if applicable)

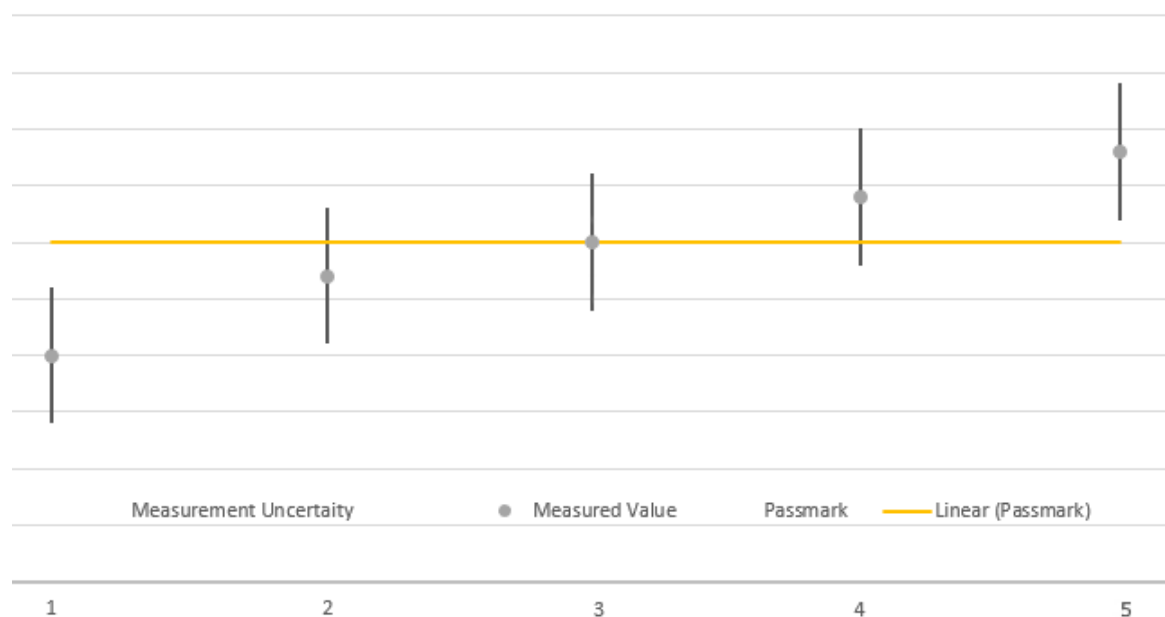
Linear interpolation will be used for frequencies in between the values in the table.

Table shows an extract of values.

8 MEASUREMENT UNCERTAINTIES

Test Case	Parameter	Uncertainty
AC Power Line	Power	± 3.4 dB
Field Strength of spurious radiation	Power	± 5.5 dB
6 dB / 26 dB / 99% Bandwidth	Power Frequency	± 2.9 dB ± 11.2 kHz
Conducted Output Power	Power	± 2.2 dB
Band Edge Compliance	Power Frequency	± 2.2 dB ± 11.2 kHz
Frequency Stability	Frequency	± 25 Hz
Power Spectral Density	Power	± 2.2 dB

The measurement uncertainties for all parameters are calculated with an expansion factor (coverage factor) $k = 1.96$. This means, that the true value is in the corresponding interval with a probability of 95 %.



The verdicts in this test report are given according the above diagram:

Case	Measured Value	Uncertainty Range	Verdict
1	below pass mark	below pass mark	Passed
2	below pass mark	within pass mark	Passed
3	on pass mark	within pass mark	Passed
4	above pass mark	within pass mark	Failed
5	above pass mark	above pass mark	Failed

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.

9 PHOTO REPORT

Please see separate photo report.

*****END OF TEST REPORT*****