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HCT

TEST REPORT

EMI Test for FCC Certification of JLM1-2000 Model

APPLICANT

JastecM Co., Ltd.

REPORT NO.

HCT-EM-2105-FC001

DATE OF ISSUE

May 06, 2021

Tested by

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TEST REPORT

EMI Test for
FCC Certification

REPORT NO.
HCT-EM-2105-FC001

DATE OF ISSUE
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FCC ID.
2ASMR-JLM1-2000

Applicant **JastecM Co., Ltd.**
C-402, Pangyo-ro 242, Boondang-Gu, Seongnam-Si, Gyeonggi-Do, 13487,
Korea

Product Name OBD Tracker
Model Name JLM1-2000

Date of Test April 30, 2021 to May 04, 2021

Test Standard Used FCC CFR 47 PART 15 Subpart B Class B
ANSI C63.4-2014

Test Results Refer to the present document

Manufacturer JastecM Co., Ltd.

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

This test results were applied only to the test methods required by the standard.



REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	May 06, 2021	Initial Release

The above Test Report is not related to the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation), which signed the ILAC-MRA.

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1. GENERAL INFORMATION

1.1 Description of EUT

The EUT is OBD Tracker.

FCC ID	2ASMR-JLM1-2000
Model Name	JLM1-2000
Product Name	OBD Tracker
Input Voltage	DC 12 V ~ 24 V
USB Port	Micro USB 2.0
Frequency Range	LTE Cat.M1 B2, B4, B5, B12, B13, B25 (B2 – Tx: 1 850 MHz ~ 1 910 MHz, Rx: 1 930 MHz ~ 1 990 MHz) (B4 – Tx: 1 710 MHz ~ 1 755 MHz, Rx: 2 110 MHz ~ 2 155 MHz) (B5 – Tx: 824 MHz ~ 849 MHz, Rx: 869 MHz ~ 894 MHz) (B12 – Tx: 699 MHz ~ 716 MHz, Rx: 729 MHz ~ 746 MHz) (B13 – Tx: 777 MHz ~ 787 MHz, Rx: 746 MHz ~ 756 MHz) (B25 – Tx: 1 850 MHz ~ 1 915 MHz, Rx: 1 930 MHz ~ 1 995 MHz) Modem Built-in GPS, (GPS: 1 575.42 MHz)
Manufacturer	JastecM Co., Ltd.

NOTE. This equipment is used for vehicles.

1.2 Tested System Details

All equipment descriptions used in the tested system (including inserted cards) are:

Device Type	Model Name	Serial Number	Manufacturer
EUT	JLM1-2000	-	JastecM
Vehicle Battery	BX80L	-	ATLAS BX
Micro SIM Card	-	-	-
Can Simulator	ECUsim 2000	-	JastecM
Can Simulator Adapter	GQ-3012	GQ23187	LOADUS
Notebook PC	ProBook 6560b	5CB2053MXF	HP
Notebook PC Adapter	Series PPP009L-E	-	LITE-ON TECHNOLOGY (CHANGZHOU)
Serial Mouse	Serial 2 Button mouse	02031069	Radio Shack
Gateway	DIR-806M	-	D-Link
Gateway Adapter	AMS1-0501200FK	-	D-Link

1.3 Cable Description

[OBD+LTE Cat.M1 Receiver Mode]

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
EUT	OBD (DC IN)	N	N/A	(P) 3.0
	OBD (Can Simulator)	N/A	N	(D) 2.0
	5 PIN	N/A	N	(D) 0.1
Can Simulator	DC IN	N	N/A	(P) 1.8

[DATA LINK Mode]

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
EUT	OBD (DC IN)	N	N/A	(P) 3.0
	OBD (Can Simulator)	N/A	N	(D) 2.0
	5 PIN	N/A	N	(D) 0.1
	Micro USB	Y	Y	(P, D) 1.2
Can Simulator	DC IN	N	N/A	(P) 1.8
Notebook PC	RJ45	N/A	N	(D) 1.6
	Serial (Mouse)	N/A	Y	(D) 1.8
	DC IN	N	N/A	(P) 1.8
Gateway	DC IN	N	N/A	(P) 1.8

"(D)" Data Cable, "(P)" Power Cable



1.4 Noise Suppression Parts on Cable (I/O Cable)

[OBD+LTE Cat.M1 Receiver Mode]

Product Name	Port	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
EUT	OBD (Can Simulator)	N	N/A	N	N/A
	5 PIN	N	N/A	N	N/A

[DATA LINK Mode]

Product Name	Port	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
EUT	OBD (Can Simulator)	N	N/A	N	N/A
	5 PIN	N	N/A	N	N/A
	Micro USB	N	N/A	Y	Both End
Notebook PC	RJ45	N	N/A	N	N/A
	Serial (Mouse)	N	N/A	Y	Notebook PC End

1.5 Test Facility

Test site is located at 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Rep. of Korea. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4-2014. The Normalized site attenuations (30 MHz to 1 GHz) and Site validation (1 GHz to 18 GHz) were performed in accordance with the standard in ANSI C63.4-2014. Our laboratories are accredited and designated in accordance with the provisions of Radio Waves ACT and International Standard ISO/IEC 17025:2017. (National Radio Research Agency, Designation No. KR0032)

1.6 Calibration of Measuring Instrument

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturers recommendations for utilizing calibration equipment, which is traceable to recognized national standards. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5:2017

1.7 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Test Item	Test Site (Chamber)	Expanded Uncertainty
Conducted Emission (0.15 MHz to 30 MHz)	EMI Shield Room	1.6 dB
Radiated Emissions (30 MHz to 1 GHz)	3 m Semi Anechoic Chamber #1	4.9 dB
Radiated Emissions (1 GHz to 18 GHz)	3 m Semi Anechoic Chamber #1	4.6 dB

2. DESCRIPTION OF TEST

2.1 Measurement of Conducted Emission

The test procedure was in accordance with ANSI C63.4-2014, Clause 7.3

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN).
If the EUT is connected to the PC through USB, the AC power-line adapter of the PC is directly connected to a line impedance stabilization network (LISN).
Other support units were connected to the power mains through another LISN.
The two LISNs provide $50\ \Omega$ / $50\ \mu\text{H}$ of coupling impedance for the measuring instrument.
- b. Both conducted lines are measured in Quasi-Peak and Average mode, including the worst-case data points for each tested configuration.
- c. The frequency range from 150 kHz to 30 MHz was searched.

Conducted Emission Limits

Frequency (MHz)	Class A		Class B	
	Quasi-Peak (dB μV)	Average (dB μV)	Quasi-Peak (dB μV)	Average (dB μV)
0.15 to 0.5	79	66	66 to 56*	56 to 46*
0.5 to 5	73	60	56	46
5 to 30	73	60	60	50

[*] Decreases with the logarithm of the frequency.

2.2 Measurement of Radiated Emission

The test procedure was in accordance with ANSI C63.4-2014, Clause 8.3

- The EUT was placed on the top of a turn table 0.8 meters above the ground at a semi-anechoic chamber.
The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 m away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from 1 m to 4 m above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 m to 4 m and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Quasi-Peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- The test-receiver system was set to Peak and Average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. (1 GHz to 40 GHz)

Radiated Emission Limits

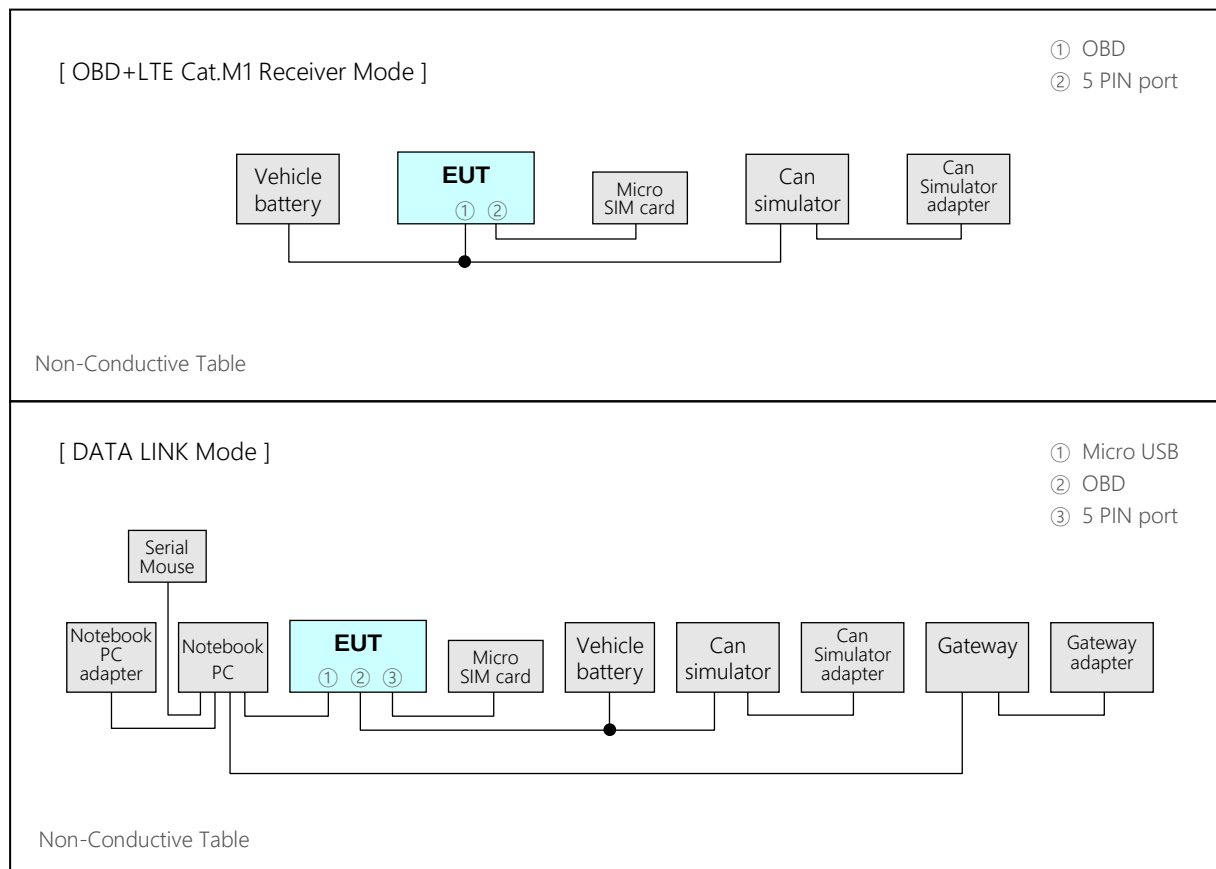
Frequency (MHz)	Class A			Class B		
	Antenna Distance (m)	Field Strength ($\mu\text{V}/\text{m}$)	Quasi-Peak (dB $\mu\text{V}/\text{m}$)	Antenna Distance (m)	Field Strength ($\mu\text{V}/\text{m}$)	Quasi-Peak (dB $\mu\text{V}/\text{m}$)
30 to 88	10	90	39.0	3	100	40.0
88 to 216	10	150	43.5	3	150	43.5
216 to 960	10	210	46.4	3	200	46.0
Above 960	10	300	49.5	3	500	54.0
Frequency (MHz)	Antenna Distance (m)	Class A		Class B		
		Peak (dB $\mu\text{V}/\text{m}$)	Average (dB $\mu\text{V}/\text{m}$)	Peak (dB $\mu\text{V}/\text{m}$)	Average (dB $\mu\text{V}/\text{m}$)	
Above 1 000	3	80	60	74	54	

2.2.1 Frequency Range of Radiated Measurements

An unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a Radiated Emission limit is specified, up to the frequency shown in the following table

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

2.3 Configuration of Tested System



3. PRELIMINARY TEST

3.1 Conducted Emission

It was tested the following operating mode, after connecting all peripheral devices.

Operating Modes:

- OBD+LTE Cat.M1 Band5(High) Receiver Mode
- OBD+LTE Cat.M1 Band5(Middle) Receiver Mode
- OBD+LTE Cat.M1 Band5(Low) Receiver Mode
- OBD+LTE Cat.M1 Band12(High) Receiver Mode
- OBD+LTE Cat.M1 Band12(Middle) Receiver Mode
- OBD+LTE Cat.M1 Band12(Low) Receiver Mode
- OBD+LTE Cat.M1 Band13(High) Receiver Mode
- OBD+LTE Cat.M1 Band13(Middle) Receiver Mode
- OBD+LTE Cat.M1 Band13(Low) Receiver Mode
- DATA LINK Mode

3.2 Radiated Emission

It was tested the following operating mode, after connecting all peripheral devices.

Operating Modes:

- OBD+LTE Cat.M1 Band5(High) Receiver Mode (DC 12 V / DC 24 V)
- OBD+LTE Cat.M1 Band5(Middle) Receiver Mode (DC 12 V / DC 24 V)
- OBD+LTE Cat.M1 Band5(Low) Receiver Mode (DC 12 V / DC 24 V)
- OBD+LTE Cat.M1 Band12(High) Receiver Mode (DC 12 V / DC 24 V)
- OBD+LTE Cat.M1 Band12(Middle) Receiver Mode (DC 12 V / DC 24 V)
- OBD+LTE Cat.M1 Band12(Low) Receiver Mode (DC 12 V / DC 24 V)
- OBD+LTE Cat.M1 Band13(High) Receiver Mode (DC 12 V / DC 24 V)
- OBD+LTE Cat.M1 Band13(Middle) Receiver Mode (DC 12 V / DC 24 V)
- OBD+LTE Cat.M1 Band13(Low) Receiver Mode (DC 12 V / DC 24 V)
- DATA LINK Mode

4. CONDUCTED EMISSION AND RADIATED EMISSION TEST SUMMARY

4.1 Conducted Emission

4.1.1 Measuring instruments

Type	Model Name	Manufacturer	Serial Number	Calibration Cycle	Calibration Date
☒ EMI TEST RECEIVER	ESR7	Rohde & Schwarz	101910	1 year	09.16.2020
☒ LISN	ENV216	Rohde & Schwarz	102245	1 year	09.04.2020
☒ LISN	ENV216	Rohde & Schwarz	100073	1 year	04.07.2021
☒ Radio Communication Analyzer	MT8821C	ANRITSU	6261849028	1 year	03.05.2021
☒ Antenna (for Communication)	USLP9142	Schwarzbeck	USLP9142-200	-	-
☒ Software	EMC32	Rohde & Schwarz	-	-	-

4.1.2 Operating Condition

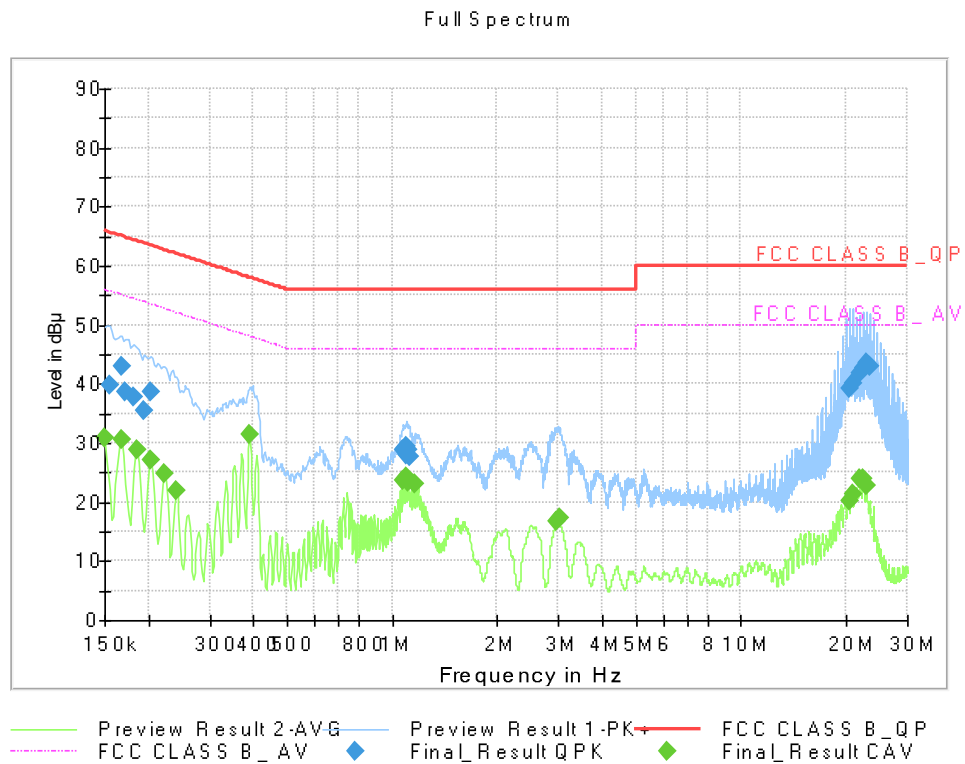
The test results of conducted emission at mains ports provide the following information:

Test Standard Used	FCC CFR 47 PART 15 Subpart B Class B ANSI C63.4-2014
Detector	Quasi-Peak, CISPR-Average
Bandwidth	9 kHz (6 dB)
Test Site	EMI Shield Room
Temperature	26.2 °C
Relative Humidity	49.0 %
Test Date	May 01, 2021

- *Calculation Formula:**
1. Conductor L1 = Hot, Conductor N = Neutral
 2. Corr. = LISN Factor + Cable Loss
 3. QuasiPeak or CAverage= Receiver Reading + Corr.
 4. Margin = Limit – QuasiPeak or CAverage

4.1.3 Measuring Data

Figure 1: Conducted Emission, OBD+LTE Cat.M1 Band5(High) Receiver, Line (L1)





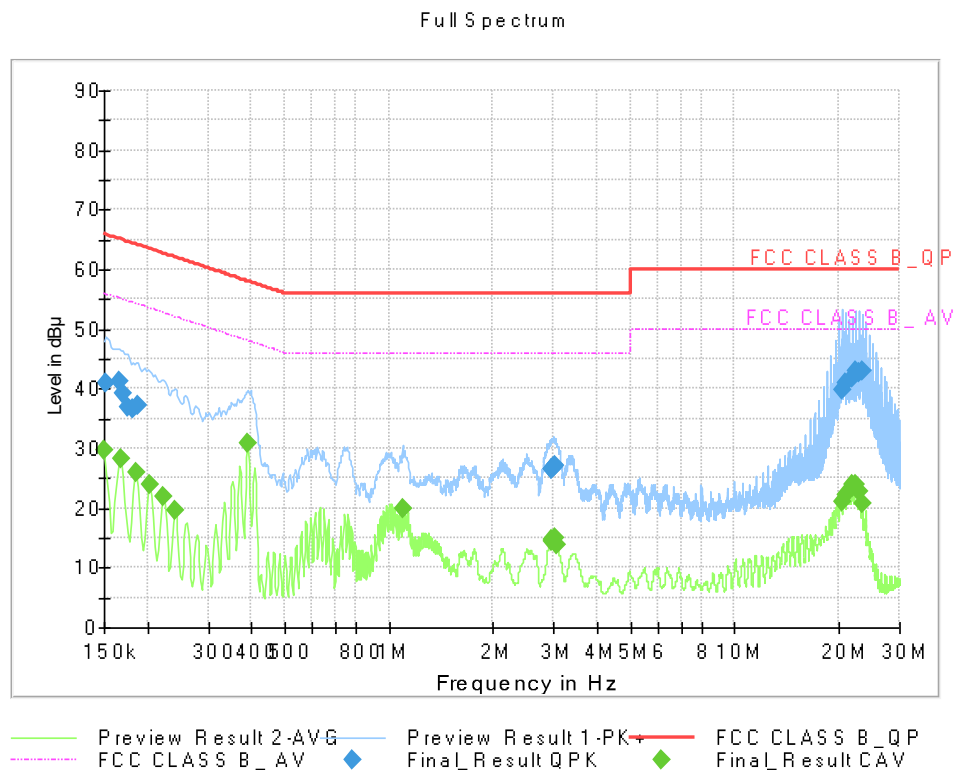
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1545	39.71	65.75	26.05	9.000	L1	9.6
0.1680	42.84	65.06	22.22	9.000	L1	9.6
0.1725	38.68	64.84	26.16	9.000	L1	9.6
0.1815	37.87	64.42	26.54	9.000	L1	9.6
0.1950	35.51	63.82	28.31	9.000	L1	9.6
0.2040	38.69	63.45	24.76	9.000	L1	9.6
1.0760	28.79	56.00	27.21	9.000	L1	9.6
1.0805	28.55	56.00	27.45	9.000	L1	9.6
1.0940	29.55	56.00	26.45	9.000	L1	9.6
1.1030	28.04	56.00	27.96	9.000	L1	9.6
1.1120	28.90	56.00	27.10	9.000	L1	9.6
1.1188	27.68	56.00	28.32	9.000	L1	9.6
20.5003	39.13	60.00	20.87	9.000	L1	9.9
20.9998	40.09	60.00	19.91	9.000	L1	9.9
21.9988	41.84	60.00	18.16	9.000	L1	10.0
22.5005	42.71	60.00	17.29	9.000	L1	10.0
23.0000	43.54	60.00	16.46	9.000	L1	10.0
23.4995	43.09	60.00	16.91	9.000	L1	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	31.01	56.00	24.99	9.000	L1	9.6
0.1680	30.62	55.06	24.44	9.000	L1	9.6
0.1860	28.99	54.21	25.22	9.000	L1	9.6
0.2040	27.22	53.45	26.23	9.000	L1	9.6
0.2220	24.83	52.74	27.91	9.000	L1	9.6
0.2400	21.96	52.10	30.13	9.000	L1	9.6
0.3885	31.37	48.10	16.72	9.000	L1	9.6
1.0760	23.59	46.00	22.41	9.000	L1	9.6
1.0940	24.09	46.00	21.91	9.000	L1	9.6
1.1120	23.46	46.00	22.54	9.000	L1	9.6
1.1683	22.94	46.00	23.06	9.000	L1	9.6
2.9638	16.63	46.00	29.37	9.000	L1	9.7
3.0110	17.18	46.00	28.82	9.000	L1	9.7
20.5003	20.09	50.00	29.91	9.000	L1	9.9
20.9998	21.29	50.00	28.71	9.000	L1	9.9
21.9988	24.08	50.00	25.92	9.000	L1	10.0
22.5005	23.81	50.00	26.19	9.000	L1	10.0
23.0000	22.84	50.00	27.16	9.000	L1	10.0

Figure 2: Conducted Emission, OBD+LTE Cat.M1 Band5(High) Receiver, Line (N)



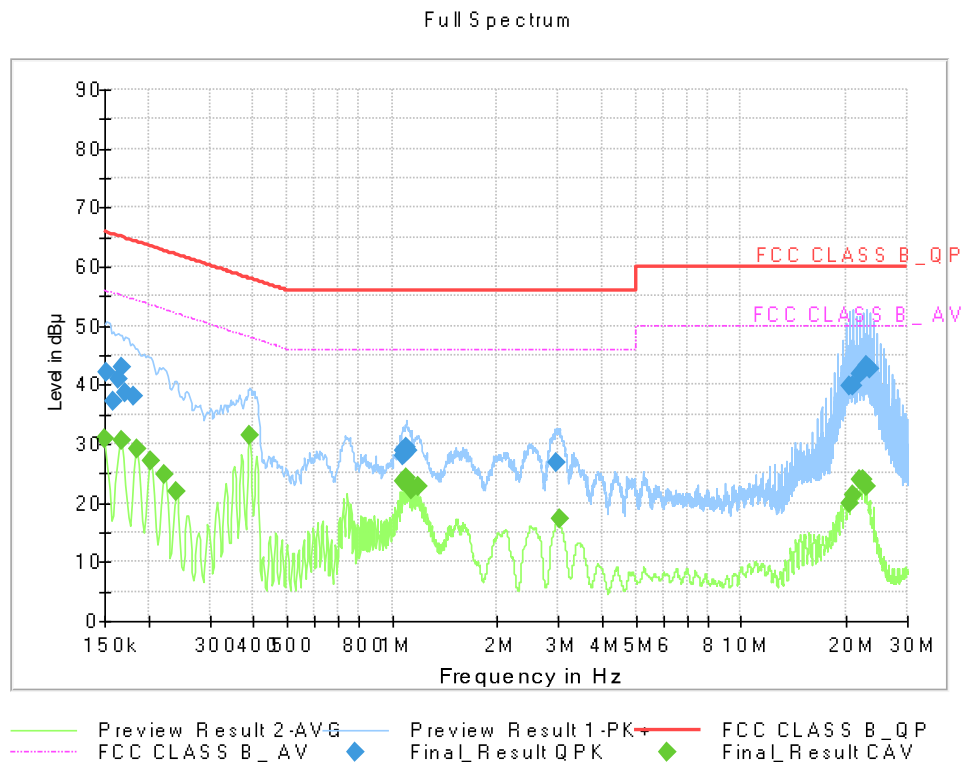
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	41.02	65.88	24.86	9.000	N	9.6
0.1658	41.36	65.17	23.81	9.000	N	9.6
0.1703	39.14	64.95	25.81	9.000	N	9.6
0.1748	37.05	64.73	27.68	9.000	N	9.6
0.1815	36.52	64.42	27.89	9.000	N	9.6
0.1883	37.34	64.11	26.78	9.000	N	9.6
2.9548	26.61	56.00	29.39	9.000	N	9.7
2.9593	26.62	56.00	29.38	9.000	N	9.7
2.9728	26.67	56.00	29.33	9.000	N	9.7
2.9863	26.79	56.00	29.21	9.000	N	9.7
2.9998	26.92	56.00	29.08	9.000	N	9.7
3.0223	27.04	56.00	28.96	9.000	N	9.7
20.5003	39.68	60.00	20.32	9.000	N	9.9
20.9998	40.96	60.00	19.04	9.000	N	9.9
22.0010	41.81	60.00	18.20	9.000	N	9.9
22.5005	43.03	60.00	16.97	9.000	N	10.0
23.0000	42.63	60.00	17.37	9.000	N	10.0
23.4995	43.10	60.00	16.90	9.000	N	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	29.79	56.00	26.21	9.000	N	9.6
0.1680	28.31	55.06	26.75	9.000	N	9.6
0.1860	26.07	54.21	28.15	9.000	N	9.6
0.2040	23.96	53.45	29.48	9.000	N	9.6
0.2220	21.86	52.74	30.89	9.000	N	9.6
0.2400	19.63	52.10	32.47	9.000	N	9.6
0.3885	30.85	48.10	17.24	9.000	N	9.6
1.0940	19.79	46.00	26.21	9.000	N	9.6
2.9548	14.53	46.00	31.47	9.000	N	9.7
2.9683	14.65	46.00	31.35	9.000	N	9.7
3.0223	14.94	46.00	31.06	9.000	N	9.7
3.0560	13.72	46.00	32.28	9.000	N	9.7
20.5003	21.00	50.00	29.00	9.000	N	9.9
20.9998	22.16	50.00	27.84	9.000	N	9.9
21.9988	24.00	50.00	26.00	9.000	N	9.9
22.5005	23.94	50.00	26.06	9.000	N	10.0
23.0000	22.87	50.00	27.13	9.000	N	10.0
23.4995	20.68	50.00	29.32	9.000	N	10.0

Figure 3: Conducted Emission, OBD+LTE Cat.M1 Band5(Low) Receiver, Line (L1)



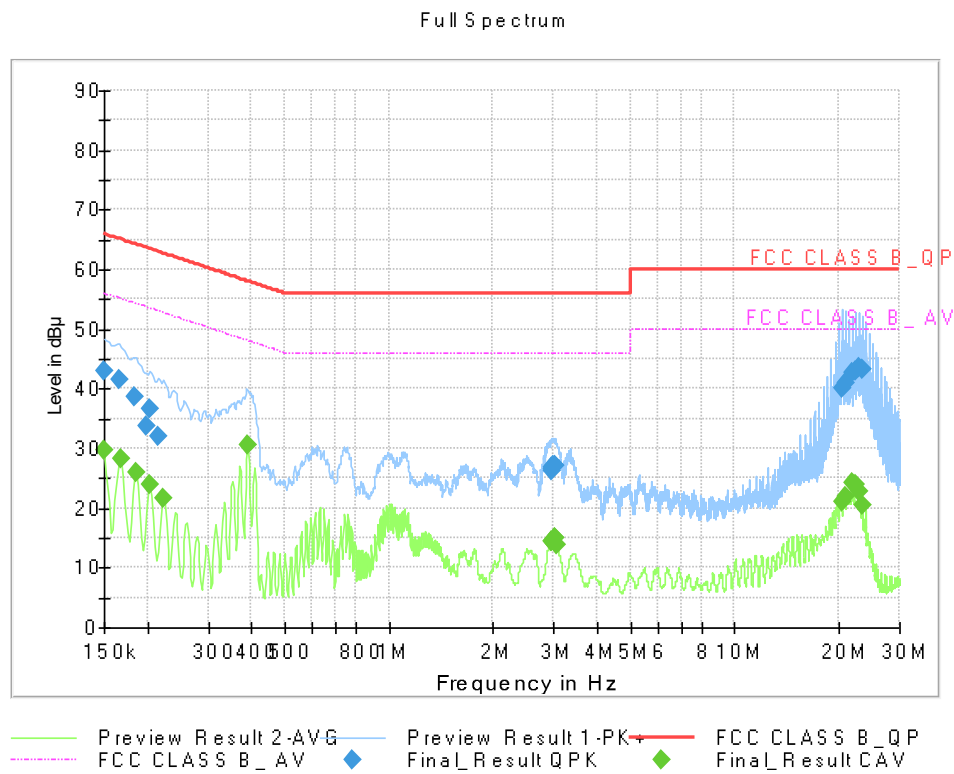
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	42.01	65.88	23.87	9.000	L1	9.6
0.1590	37.10	65.52	28.42	9.000	L1	9.6
0.1635	40.84	65.28	24.44	9.000	L1	9.6
0.1680	42.88	65.06	22.18	9.000	L1	9.6
0.1725	38.76	64.84	26.08	9.000	L1	9.6
0.1815	38.19	64.42	26.23	9.000	L1	9.6
1.0715	27.87	56.00	28.13	9.000	L1	9.6
1.0783	28.80	56.00	27.20	9.000	L1	9.6
1.0873	28.20	56.00	27.80	9.000	L1	9.6
1.0963	29.46	56.00	26.54	9.000	L1	9.6
1.1120	28.91	56.00	27.09	9.000	L1	9.6
2.9480	26.96	56.00	29.04	9.000	L1	9.7
20.5003	39.78	60.00	20.22	9.000	L1	9.9
20.9998	39.88	60.00	20.12	9.000	L1	9.9
21.9988	41.86	60.00	18.14	9.000	L1	10.0
22.5005	42.35	60.00	17.65	9.000	L1	10.0
23.0000	43.31	60.00	16.69	9.000	L1	10.0
23.4995	42.67	60.00	17.33	9.000	L1	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	30.95	56.00	25.05	9.000	L1	9.6
0.1680	30.63	55.06	24.43	9.000	L1	9.6
0.1860	29.08	54.21	25.13	9.000	L1	9.6
0.2040	27.24	53.45	26.20	9.000	L1	9.6
0.2220	24.86	52.74	27.89	9.000	L1	9.6
0.2400	21.89	52.10	30.20	9.000	L1	9.6
0.3885	31.48	48.10	16.62	9.000	L1	9.6
1.0760	23.66	46.00	22.34	9.000	L1	9.6
1.0940	24.12	46.00	21.88	9.000	L1	9.6
1.1120	23.45	46.00	22.55	9.000	L1	9.6
1.1300	22.23	46.00	23.77	9.000	L1	9.6
1.1863	22.65	46.00	23.35	9.000	L1	9.6
3.0088	17.26	46.00	28.74	9.000	L1	9.7
20.5003	19.77	50.00	30.23	9.000	L1	9.9
20.9998	21.40	50.00	28.60	9.000	L1	9.9
21.9988	24.03	50.00	25.97	9.000	L1	10.0
22.5005	23.90	50.00	26.10	9.000	L1	10.0
23.0000	22.68	50.00	27.32	9.000	L1	10.0

Figure 4: Conducted Emission, OBD+LTE Cat.M1 Band5(Low) Receiver, Line (N)





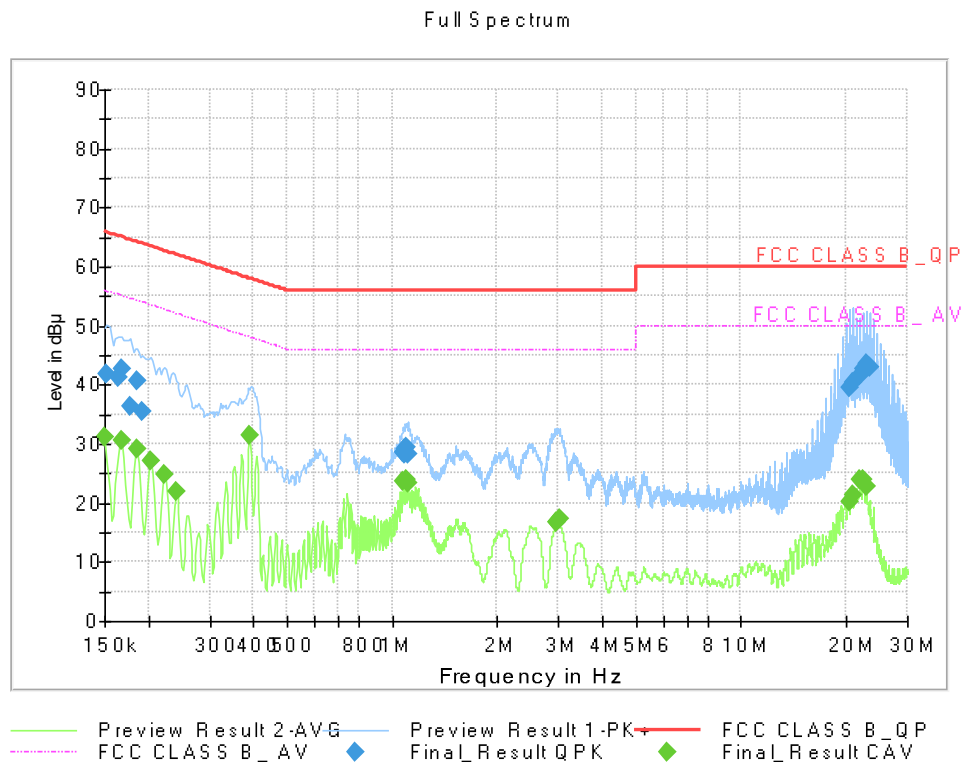
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	42.87	66.00	23.13	9.000	N	9.6
0.1658	41.42	65.17	23.75	9.000	N	9.6
0.1838	38.56	64.31	25.75	9.000	N	9.6
0.1995	33.86	63.63	29.77	9.000	N	9.6
0.2040	36.67	63.45	26.77	9.000	N	9.6
0.2153	31.94	63.00	31.06	9.000	N	9.6
2.9480	26.31	56.00	29.69	9.000	N	9.7
2.9593	26.61	56.00	29.39	9.000	N	9.7
2.9728	26.71	56.00	29.29	9.000	N	9.7
3.0020	27.10	56.00	28.90	9.000	N	9.7
3.0065	27.05	56.00	28.95	9.000	N	9.7
3.0245	27.14	56.00	28.86	9.000	N	9.7
20.5003	40.05	60.00	19.95	9.000	N	9.9
20.9998	40.86	60.00	19.14	9.000	N	9.9
21.9988	42.69	60.00	17.31	9.000	N	9.9
22.5005	43.11	60.00	16.89	9.000	N	10.0
23.0000	43.66	60.00	16.34	9.000	N	10.0
23.4995	43.26	60.00	16.74	9.000	N	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	29.65	56.00	26.35	9.000	N	9.6
0.1680	28.36	55.06	26.70	9.000	N	9.6
0.1860	25.95	54.21	28.26	9.000	N	9.6
0.2040	23.89	53.45	29.55	9.000	N	9.6
0.2220	21.76	52.74	30.98	9.000	N	9.6
0.3885	30.71	48.10	17.38	9.000	N	9.6
2.9548	14.49	46.00	31.51	9.000	N	9.7
2.9683	14.49	46.00	31.51	9.000	N	9.7
2.9728	14.50	46.00	31.50	9.000	N	9.7
3.0133	14.99	46.00	31.01	9.000	N	9.7
3.0223	15.09	46.00	30.91	9.000	N	9.7
3.0583	13.82	46.00	32.18	9.000	N	9.7
20.5003	20.95	50.00	29.05	9.000	N	9.9
20.9998	22.04	50.00	27.96	9.000	N	9.9
21.9988	24.23	50.00	25.77	9.000	N	9.9
22.5005	23.90	50.00	26.10	9.000	N	10.0
23.0000	22.69	50.00	27.31	9.000	N	10.0
23.4995	20.40	50.00	29.60	9.000	N	10.0

Figure 5: Conducted Emission, OBD+LTE Cat.M1 Band5(Middle) Receiver, Line (L1)





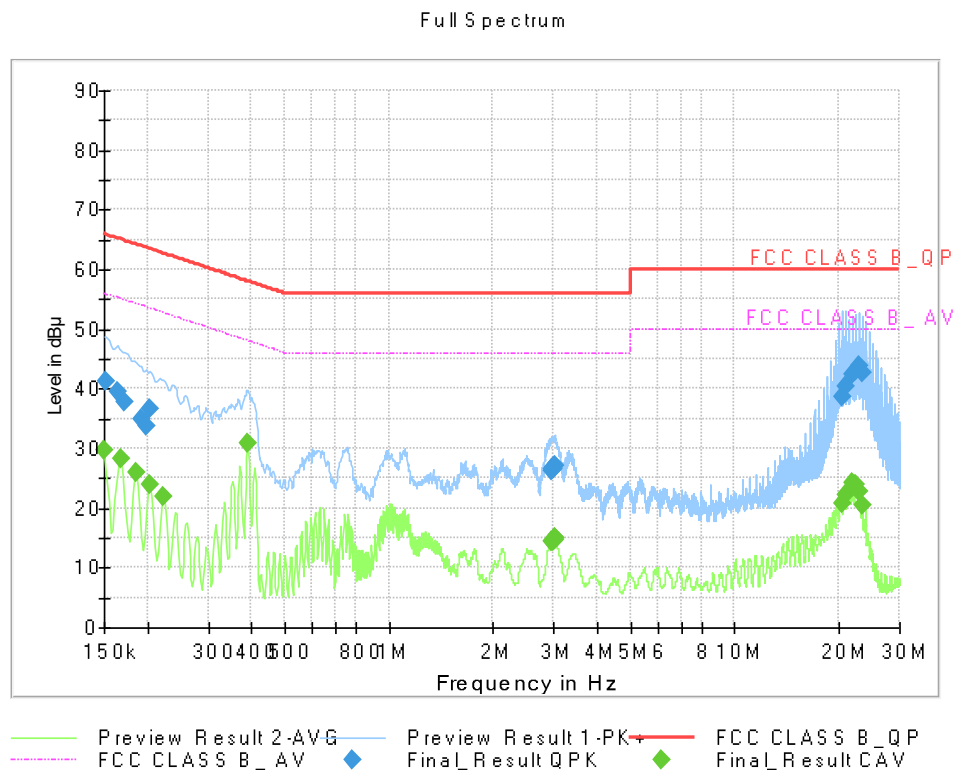
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	41.71	65.88	24.17	9.000	L1	9.6
0.1635	41.16	65.28	24.12	9.000	L1	9.6
0.1680	42.82	65.06	22.24	9.000	L1	9.6
0.1770	36.30	64.63	28.32	9.000	L1	9.6
0.1860	40.81	64.21	23.41	9.000	L1	9.6
0.1928	35.34	63.92	28.58	9.000	L1	9.6
1.0738	28.43	56.00	27.57	9.000	L1	9.6
1.0805	28.48	56.00	27.52	9.000	L1	9.6
1.0873	28.13	56.00	27.87	9.000	L1	9.6
1.0918	29.22	56.00	26.78	9.000	L1	9.6
1.0963	29.43	56.00	26.57	9.000	L1	9.6
1.1075	28.35	56.00	27.65	9.000	L1	9.6
20.5003	39.50	60.00	20.50	9.000	L1	9.9
20.9998	40.50	60.00	19.50	9.000	L1	9.9
21.9988	41.64	60.00	18.36	9.000	L1	10.0
22.5005	42.68	60.00	17.32	9.000	L1	10.0
23.0000	43.44	60.00	16.56	9.000	L1	10.0
23.4995	42.85	60.00	17.15	9.000	L1	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	31.06	56.00	24.94	9.000	L1	9.6
0.1680	30.67	55.06	24.39	9.000	L1	9.6
0.1860	29.05	54.21	25.17	9.000	L1	9.6
0.2040	27.23	53.45	26.22	9.000	L1	9.6
0.2220	24.84	52.74	27.90	9.000	L1	9.6
0.2400	21.85	52.10	30.25	9.000	L1	9.6
0.3885	31.45	48.10	16.65	9.000	L1	9.6
1.0760	23.52	46.00	22.48	9.000	L1	9.6
1.0940	24.07	46.00	21.93	9.000	L1	9.6
1.1120	23.49	46.00	22.51	9.000	L1	9.6
2.9525	16.62	46.00	29.38	9.000	L1	9.7
2.9683	16.67	46.00	29.33	9.000	L1	9.7
3.0065	17.21	46.00	28.79	9.000	L1	9.7
20.5003	20.07	50.00	29.93	9.000	L1	9.9
20.9998	21.48	50.00	28.52	9.000	L1	9.9
21.9988	24.02	50.00	25.98	9.000	L1	10.0
22.5005	23.87	50.00	26.13	9.000	L1	10.0
23.0000	22.68	50.00	27.32	9.000	L1	10.0

Figure 6: Conducted Emission, OBD+LTE Cat.M1 Band5(Middle) Receiver, Line (N)



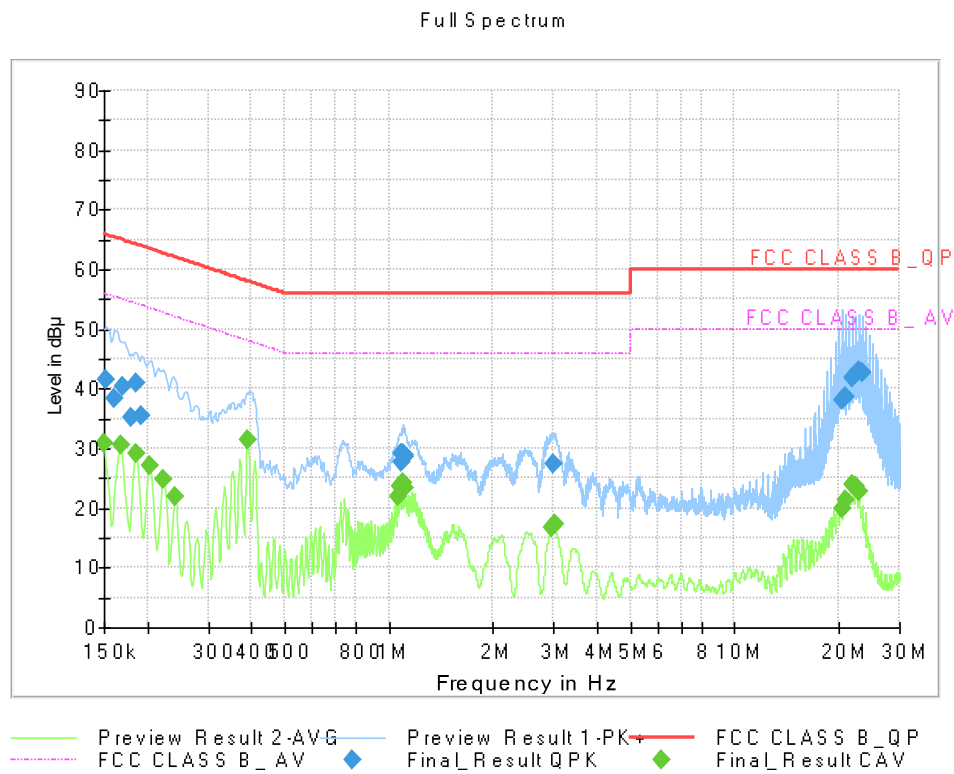
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	41.34	65.88	24.54	9.000	N	9.6
0.1635	39.47	65.28	25.81	9.000	N	9.6
0.1725	37.91	64.84	26.93	9.000	N	9.6
0.1928	34.91	63.92	29.01	9.000	N	9.6
0.1995	33.81	63.63	29.82	9.000	N	9.6
0.2040	36.70	63.45	26.75	9.000	N	9.6
2.9503	26.25	56.00	29.75	9.000	N	9.7
2.9638	26.59	56.00	29.41	9.000	N	9.7
2.9818	26.64	56.00	29.36	9.000	N	9.7
2.9953	26.85	56.00	29.15	9.000	N	9.7
3.0020	26.84	56.00	29.16	9.000	N	9.7
3.0065	27.17	56.00	28.83	9.000	N	9.7
20.5003	38.77	60.00	21.23	9.000	N	9.9
20.9998	40.46	60.00	19.54	9.000	N	9.9
21.9988	42.39	60.00	17.61	9.000	N	9.9
22.5005	42.96	60.00	17.04	9.000	N	10.0
23.0000	43.85	60.00	16.15	9.000	N	10.0
23.4995	42.73	60.00	17.27	9.000	N	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	29.82	56.00	26.18	9.000	N	9.6
0.1680	28.33	55.06	26.73	9.000	N	9.6
0.1860	26.01	54.21	28.20	9.000	N	9.6
0.2040	23.88	53.45	29.56	9.000	N	9.6
0.2220	21.91	52.74	30.84	9.000	N	9.6
0.3885	30.79	48.10	17.31	9.000	N	9.6
2.9593	14.53	46.00	31.47	9.000	N	9.7
2.9683	14.55	46.00	31.45	9.000	N	9.7
2.9750	14.45	46.00	31.55	9.000	N	9.7
3.0155	15.10	46.00	30.90	9.000	N	9.7
3.0223	15.02	46.00	30.98	9.000	N	9.7
3.0290	14.77	46.00	31.23	9.000	N	9.7
20.5003	20.65	50.00	29.35	9.000	N	9.9
20.9998	22.28	50.00	27.72	9.000	N	9.9
21.9988	24.17	50.00	25.83	9.000	N	9.9
22.5005	23.94	50.00	26.06	9.000	N	10.0
23.0000	22.87	50.00	27.13	9.000	N	10.0
23.4995	20.49	50.00	29.51	9.000	N	10.0

Figure 7: Conducted Emission, OBD+LTE Cat.M1 Band12(High) Receiver, Line (L1)



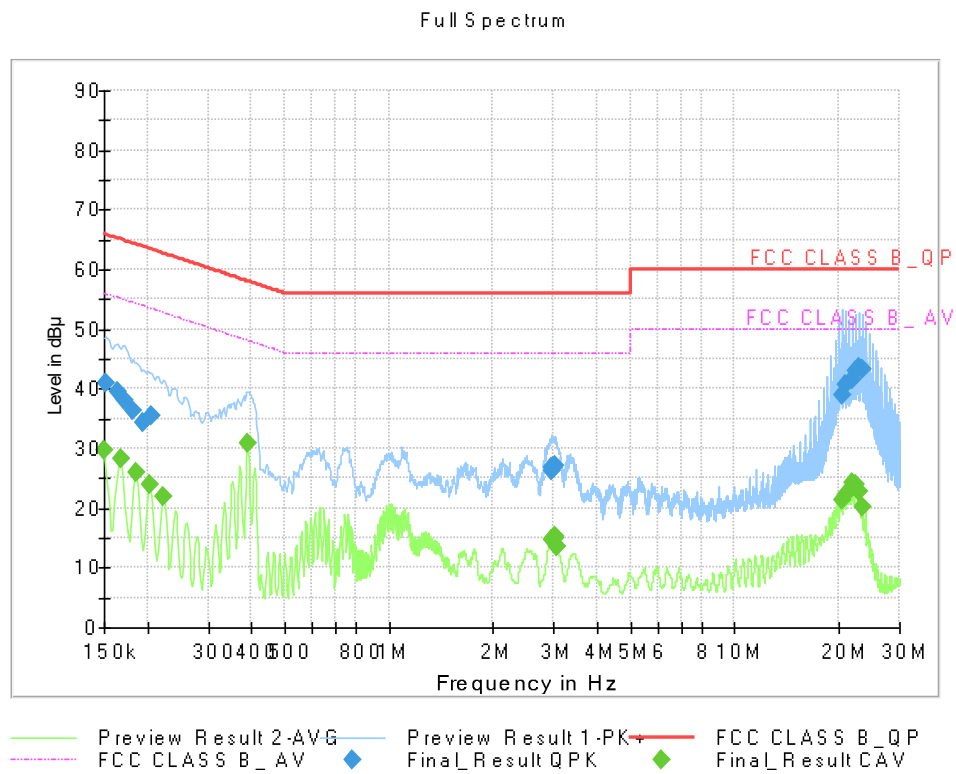
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	41.55	65.88	24.32	9.000	L1	9.6
0.1613	38.23	65.40	27.17	9.000	L1	9.6
0.1703	40.41	64.95	24.54	9.000	L1	9.6
0.1793	35.27	64.52	29.25	9.000	L1	9.6
0.1860	40.82	64.21	23.39	9.000	L1	9.6
0.1928	35.35	63.92	28.57	9.000	L1	9.6
1.0850	27.63	56.00	28.37	9.000	L1	9.6
1.0918	29.27	56.00	26.73	9.000	L1	9.6
1.0985	29.10	56.00	26.90	9.000	L1	9.6
1.1098	28.68	56.00	27.32	9.000	L1	9.6
1.1143	28.78	56.00	27.22	9.000	L1	9.6
2.9908	27.50	56.00	28.50	9.000	L1	9.7
20.5003	38.19	60.00	21.81	9.000	L1	9.9
20.9998	38.55	60.00	21.45	9.000	L1	9.9
21.9988	41.74	60.00	18.26	9.000	L1	10.0
22.5005	42.44	60.00	17.56	9.000	L1	10.0
23.0000	43.06	60.00	16.94	9.000	L1	10.0
23.4995	42.76	60.00	17.24	9.000	L1	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	31.00	56.00	25.00	9.000	L1	9.6
0.1680	30.68	55.06	24.38	9.000	L1	9.6
0.1860	29.12	54.21	25.10	9.000	L1	9.6
0.2040	27.22	53.45	26.23	9.000	L1	9.6
0.2220	24.81	52.74	27.93	9.000	L1	9.6
0.2400	21.91	52.10	30.19	9.000	L1	9.6
0.3885	31.48	48.10	16.62	9.000	L1	9.6
1.0580	22.00	46.00	24.00	9.000	L1	9.6
1.0760	23.63	46.00	22.37	9.000	L1	9.6
1.0940	24.11	46.00	21.89	9.000	L1	9.6
1.1120	23.46	46.00	22.54	9.000	L1	9.6
2.9570	16.59	46.00	29.41	9.000	L1	9.7
3.0110	17.25	46.00	28.75	9.000	L1	9.7
20.5003	19.90	50.00	30.10	9.000	L1	9.9
20.9998	21.38	50.00	28.62	9.000	L1	9.9
21.9988	24.01	50.00	25.99	9.000	L1	10.0
22.5005	23.74	50.00	26.26	9.000	L1	10.0
23.0000	22.73	50.00	27.27	9.000	L1	10.0

Figure 8: Conducted Emission, OBD+LTE Cat.M1 Band12(High) Receiver, Line (N)



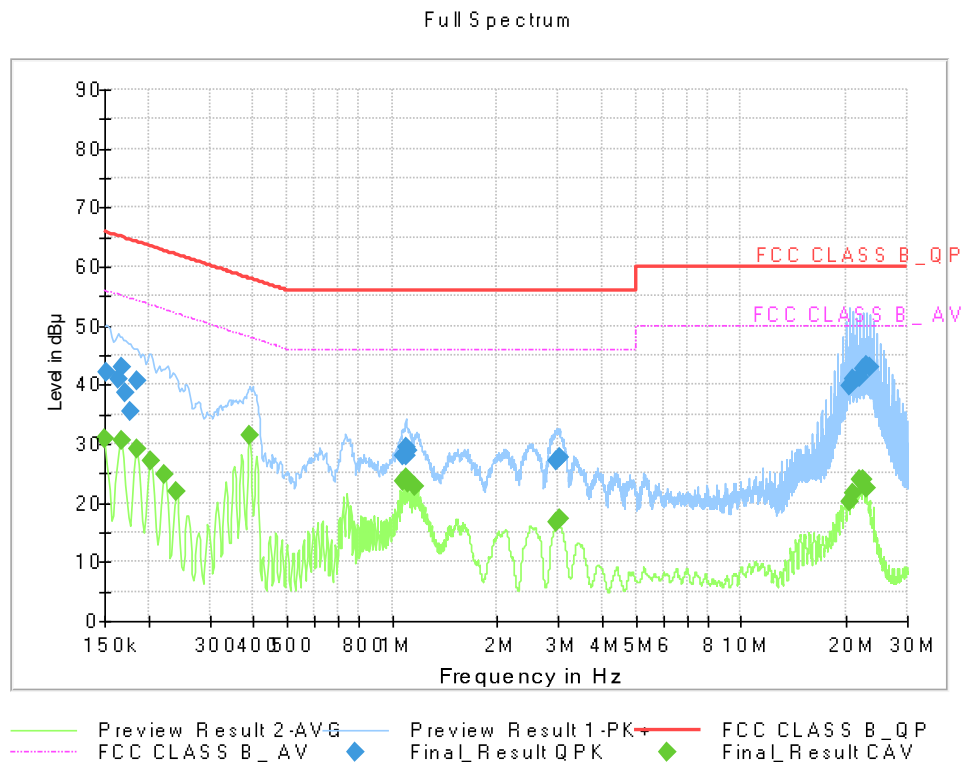
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	40.99	65.88	24.88	9.000	N	9.6
0.1635	39.54	65.28	25.75	9.000	N	9.6
0.1725	37.98	64.84	26.86	9.000	N	9.6
0.1815	36.48	64.42	27.93	9.000	N	9.6
0.1950	34.28	63.82	29.54	9.000	N	9.6
0.2063	35.50	63.36	27.85	9.000	N	9.6
2.9480	26.38	56.00	29.62	9.000	N	9.7
2.9728	26.71	56.00	29.29	9.000	N	9.7
2.9818	26.83	56.00	29.17	9.000	N	9.7
2.9908	26.83	56.00	29.17	9.000	N	9.7
2.9953	26.88	56.00	29.12	9.000	N	9.7
3.0133	27.08	56.00	28.92	9.000	N	9.7
20.5003	38.94	60.00	21.06	9.000	N	9.9
20.9998	40.78	60.00	19.22	9.000	N	9.9
21.9988	41.63	60.00	18.37	9.000	N	9.9
22.5005	42.98	60.00	17.02	9.000	N	10.0
23.0000	43.55	60.00	16.45	9.000	N	10.0
23.4995	43.22	60.00	16.78	9.000	N	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	29.75	56.00	26.25	9.000	N	9.6
0.1680	28.35	55.06	26.71	9.000	N	9.6
0.1860	26.08	54.21	28.13	9.000	N	9.6
0.2040	23.93	53.45	29.51	9.000	N	9.6
0.2220	21.80	52.74	30.94	9.000	N	9.6
0.3885	30.79	48.10	17.30	9.000	N	9.6
2.9615	14.62	46.00	31.38	9.000	N	9.7
3.0133	15.09	46.00	30.91	9.000	N	9.7
3.0178	15.16	46.00	30.84	9.000	N	9.7
3.0268	14.91	46.00	31.09	9.000	N	9.7
3.0650	13.65	46.00	32.35	9.000	N	9.7
3.0695	13.48	46.00	32.52	9.000	N	9.7
20.5003	21.21	50.00	28.79	9.000	N	9.9
20.9998	22.30	50.00	27.70	9.000	N	9.9
21.9988	24.21	50.00	25.79	9.000	N	9.9
22.5005	24.04	50.00	25.96	9.000	N	10.0
23.0000	22.81	50.00	27.19	9.000	N	10.0
23.4995	20.21	50.00	29.79	9.000	N	10.0

Figure 9: Conducted Emission, OBD+LTE Cat.M1 Band12(Low) Receiver, Line (L1)



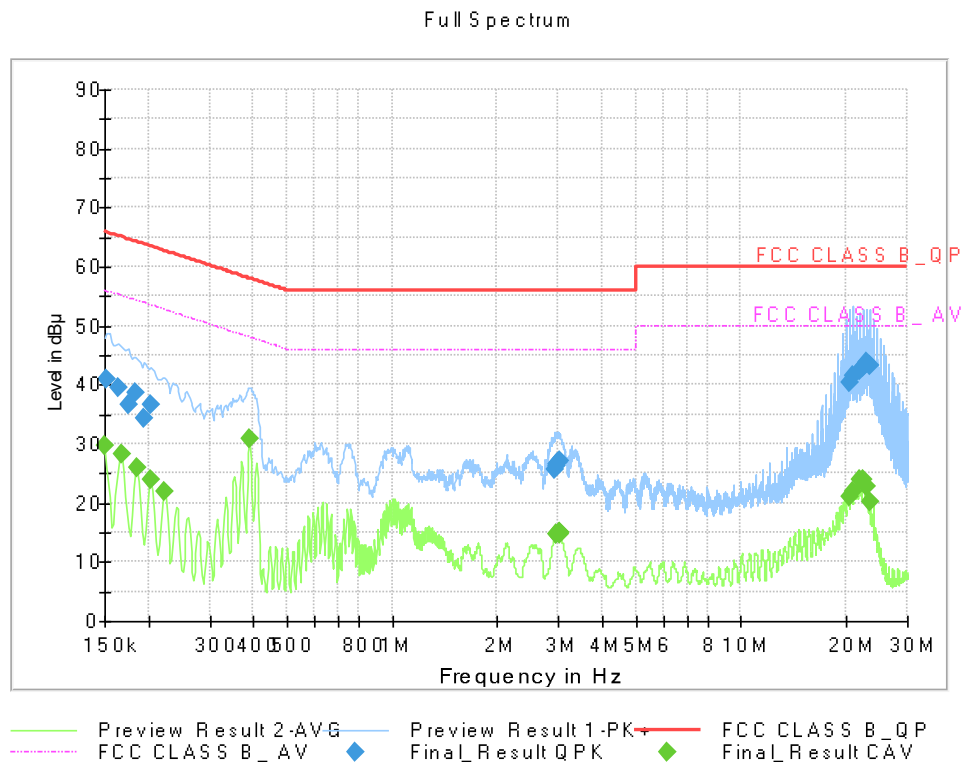
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	42.06	65.88	23.81	9.000	L1	9.6
0.1635	40.88	65.28	24.40	9.000	L1	9.6
0.1680	42.84	65.06	22.22	9.000	L1	9.6
0.1725	38.79	64.84	26.05	9.000	L1	9.6
0.1770	35.58	64.63	29.05	9.000	L1	9.6
0.1860	40.76	64.21	23.45	9.000	L1	9.6
1.0715	27.89	56.00	28.11	9.000	L1	9.6
1.0940	29.45	56.00	26.55	9.000	L1	9.6
1.1030	28.00	56.00	28.00	9.000	L1	9.6
1.1143	28.76	56.00	27.24	9.000	L1	9.6
2.9683	27.17	56.00	28.83	9.000	L1	9.7
3.0065	27.69	56.00	28.31	9.000	L1	9.7
20.5003	39.91	60.00	20.09	9.000	L1	9.9
20.9998	40.87	60.00	19.13	9.000	L1	9.9
21.9988	41.39	60.00	18.61	9.000	L1	10.0
22.5005	42.70	60.00	17.30	9.000	L1	10.0
23.0000	43.33	60.00	16.67	9.000	L1	10.0
23.4995	43.03	60.00	16.97	9.000	L1	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	30.98	56.00	25.02	9.000	L1	9.6
0.1680	30.61	55.06	24.45	9.000	L1	9.6
0.1860	29.09	54.21	25.12	9.000	L1	9.6
0.2040	27.17	53.45	26.27	9.000	L1	9.6
0.2220	24.88	52.74	27.87	9.000	L1	9.6
0.2400	21.88	52.10	30.21	9.000	L1	9.6
0.3885	31.42	48.10	16.67	9.000	L1	9.6
1.0760	23.68	46.00	22.32	9.000	L1	9.6
1.0940	24.12	46.00	21.88	9.000	L1	9.6
1.1120	23.47	46.00	22.53	9.000	L1	9.6
1.1683	22.84	46.00	23.16	9.000	L1	9.6
2.9548	16.61	46.00	29.39	9.000	L1	9.7
3.0065	17.19	46.00	28.81	9.000	L1	9.7
20.5003	20.18	50.00	29.82	9.000	L1	9.9
20.9998	21.51	50.00	28.49	9.000	L1	9.9
21.9988	24.02	50.00	25.98	9.000	L1	10.0
22.5005	23.95	50.00	26.05	9.000	L1	10.0
23.0000	22.63	50.00	27.37	9.000	L1	10.0

Figure 10: Conducted Emission, OBD+LTE Cat.M1 Band12(Low) Receiver, Line (N)



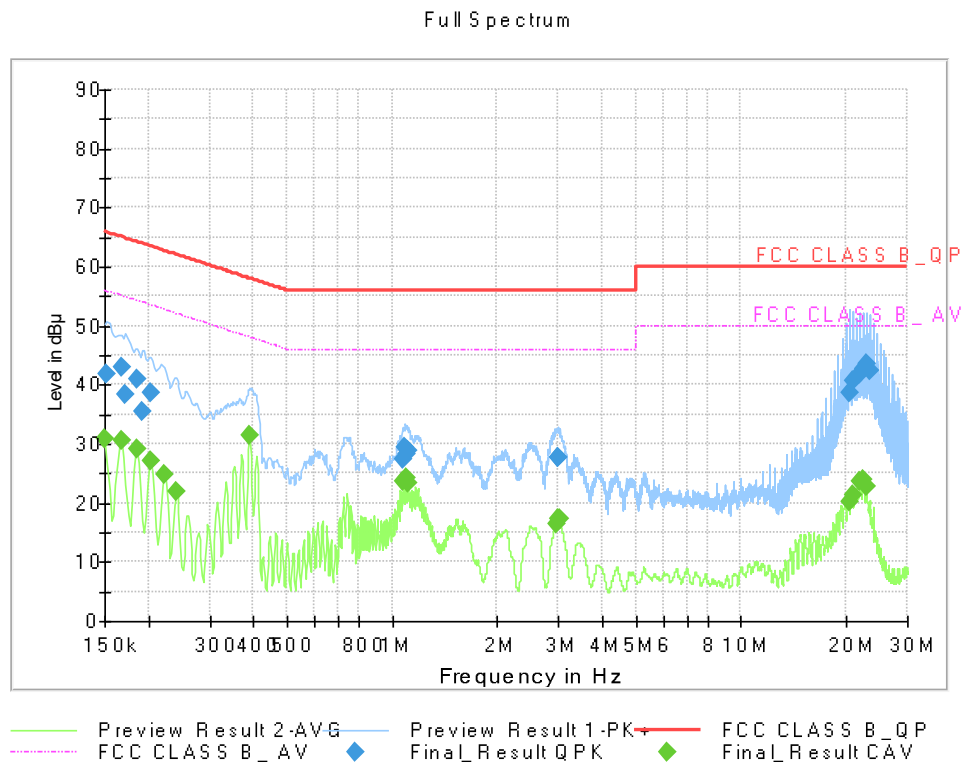
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	40.89	65.88	24.99	9.000	N	9.6
0.1635	39.47	65.28	25.82	9.000	N	9.6
0.1748	36.68	64.73	28.05	9.000	N	9.6
0.1838	38.60	64.31	25.72	9.000	N	9.6
0.1950	34.26	63.82	29.56	9.000	N	9.6
0.2040	36.64	63.45	26.81	9.000	N	9.6
2.9278	25.68	56.00	30.32	9.000	N	9.7
2.9503	26.39	56.00	29.61	9.000	N	9.7
2.9728	26.50	56.00	29.50	9.000	N	9.7
2.9908	26.76	56.00	29.24	9.000	N	9.7
2.9953	26.86	56.00	29.14	9.000	N	9.7
3.0133	27.10	56.00	28.90	9.000	N	9.7
20.5003	40.44	60.00	19.56	9.000	N	9.9
20.9998	41.45	60.00	18.55	9.000	N	9.9
21.9988	42.47	60.00	17.53	9.000	N	9.9
22.5005	42.86	60.00	17.14	9.000	N	10.0
23.0000	43.74	60.00	16.26	9.000	N	10.0
23.4995	43.19	60.00	16.81	9.000	N	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	29.72	56.00	26.28	9.000	N	9.6
0.1680	28.33	55.06	26.73	9.000	N	9.6
0.1860	25.97	54.21	28.24	9.000	N	9.6
0.2040	23.92	53.45	29.53	9.000	N	9.6
0.2220	21.81	52.74	30.93	9.000	N	9.6
0.3885	30.86	48.10	17.23	9.000	N	9.6
2.9548	14.68	46.00	31.32	9.000	N	9.7
2.9728	14.58	46.00	31.42	9.000	N	9.7
3.0133	15.02	46.00	30.98	9.000	N	9.7
3.0178	15.14	46.00	30.86	9.000	N	9.7
3.0223	14.97	46.00	31.03	9.000	N	9.7
3.0268	14.82	46.00	31.18	9.000	N	9.7
20.5003	20.96	50.00	29.04	9.000	N	9.9
20.9998	21.90	50.00	28.10	9.000	N	9.9
21.9988	23.90	50.00	26.10	9.000	N	9.9
22.5005	24.03	50.00	25.97	9.000	N	10.0
23.0000	22.83	50.00	27.17	9.000	N	10.0
23.4995	20.15	50.00	29.85	9.000	N	10.0

Figure 11: Conducted Emission, OBD+LTE Cat.M1 Band12(Middle) Receiver, Line (L1)





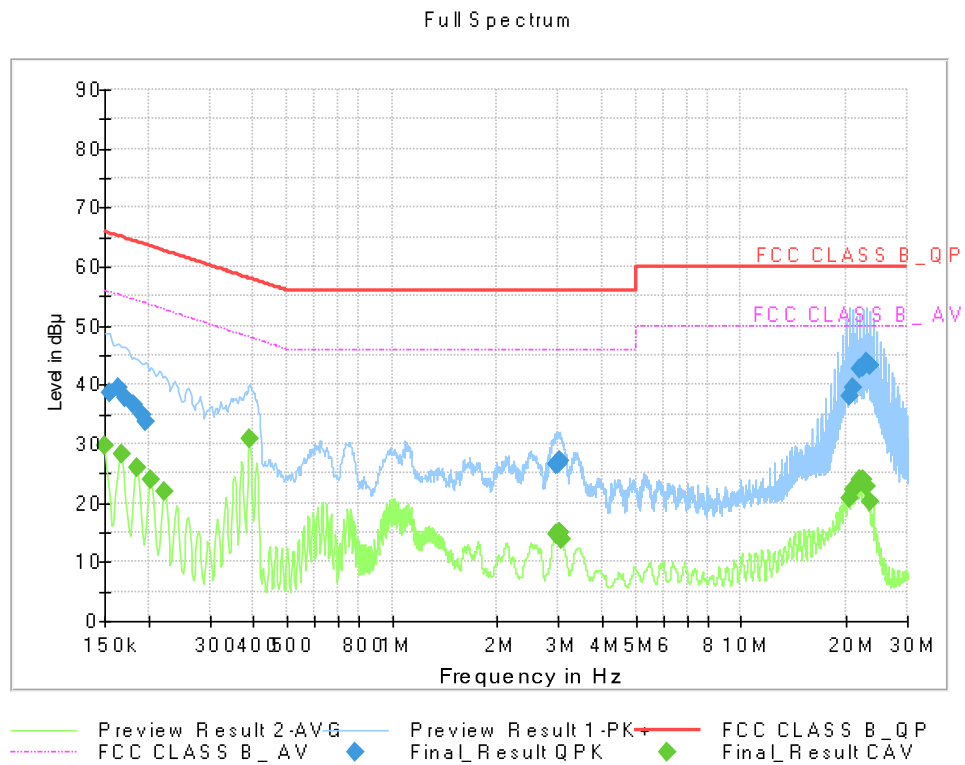
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	41.80	65.88	24.08	9.000	L1	9.6
0.1680	42.90	65.06	22.16	9.000	L1	9.6
0.1725	38.22	64.84	26.62	9.000	L1	9.6
0.1860	40.84	64.21	23.38	9.000	L1	9.6
0.1928	35.57	63.92	28.34	9.000	L1	9.6
0.2040	38.54	63.45	24.91	9.000	L1	9.6
1.0693	27.29	56.00	28.71	9.000	L1	9.6
1.0918	29.35	56.00	26.65	9.000	L1	9.6
1.1008	28.39	56.00	27.61	9.000	L1	9.6
1.1120	28.87	56.00	27.13	9.000	L1	9.6
2.9953	27.67	56.00	28.33	9.000	L1	9.7
2.9998	27.64	56.00	28.36	9.000	L1	9.7
20.5003	38.76	60.00	21.24	9.000	L1	9.9
20.9998	40.65	60.00	19.35	9.000	L1	9.9
21.9988	41.81	60.00	18.19	9.000	L1	10.0
22.5005	42.72	60.00	17.28	9.000	L1	10.0
23.0000	43.62	60.00	16.38	9.000	L1	10.0
23.4995	42.53	60.00	17.47	9.000	L1	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	30.91	56.00	25.09	9.000	L1	9.6
0.1680	30.59	55.06	24.47	9.000	L1	9.6
0.1860	29.07	54.21	25.14	9.000	L1	9.6
0.2040	27.19	53.45	26.26	9.000	L1	9.6
0.2220	24.85	52.74	27.90	9.000	L1	9.6
0.2400	21.88	52.10	30.21	9.000	L1	9.6
0.3885	31.47	48.10	16.63	9.000	L1	9.6
1.0760	23.63	46.00	22.37	9.000	L1	9.6
1.0940	24.22	46.00	21.78	9.000	L1	9.6
1.1120	23.49	46.00	22.51	9.000	L1	9.6
2.9615	16.51	46.00	29.49	9.000	L1	9.7
3.0043	17.32	46.00	28.68	9.000	L1	9.7
3.0088	17.20	46.00	28.80	9.000	L1	9.7
20.5003	20.11	50.00	29.89	9.000	L1	9.9
20.9998	21.34	50.00	28.66	9.000	L1	9.9
21.9988	23.75	50.00	26.25	9.000	L1	10.0
22.5005	23.89	50.00	26.11	9.000	L1	10.0
23.0000	22.76	50.00	27.24	9.000	L1	10.0

Figure 12: Conducted Emission, OBD+LTE Cat.M1 Band12(Middle) Receiver, Line (N)



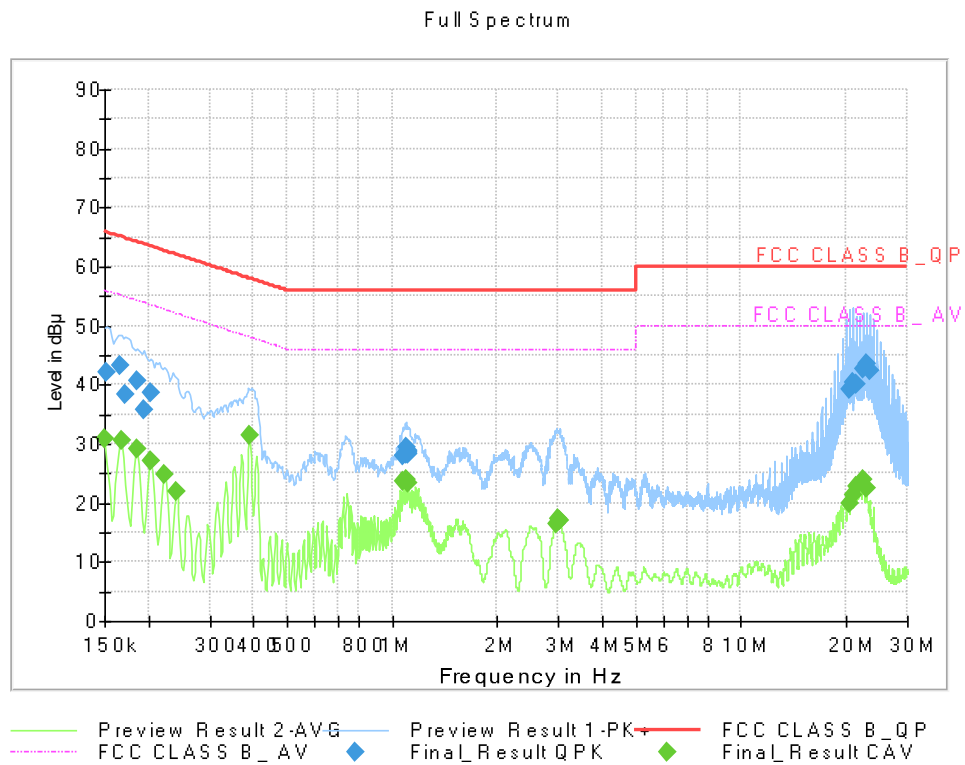
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1545	38.66	65.75	27.09	9.000	N	9.6
0.1635	39.43	65.28	25.86	9.000	N	9.6
0.1725	37.83	64.84	27.00	9.000	N	9.6
0.1815	36.55	64.42	27.86	9.000	N	9.6
0.1928	34.82	63.92	29.09	9.000	N	9.6
0.1973	33.67	63.73	30.06	9.000	N	9.6
2.9570	26.43	56.00	29.57	9.000	N	9.7
2.9660	26.49	56.00	29.51	9.000	N	9.7
2.9818	26.60	56.00	29.40	9.000	N	9.7
3.0043	26.96	56.00	29.04	9.000	N	9.7
3.0133	27.10	56.00	28.90	9.000	N	9.7
3.0245	27.07	56.00	28.93	9.000	N	9.7
20.5003	38.12	60.00	21.88	9.000	N	9.9
20.9998	39.42	60.00	20.58	9.000	N	9.9
21.9988	42.72	60.00	17.28	9.000	N	9.9
22.5005	43.09	60.00	16.91	9.000	N	10.0
23.0000	43.88	60.00	16.12	9.000	N	10.0
23.4995	43.31	60.00	16.69	9.000	N	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	29.65	56.00	26.35	9.000	N	9.6
0.1680	28.28	55.06	26.78	9.000	N	9.6
0.1860	26.02	54.21	28.20	9.000	N	9.6
0.2040	23.92	53.45	29.53	9.000	N	9.6
0.2220	21.81	52.74	30.93	9.000	N	9.6
0.3885	30.87	48.10	17.22	9.000	N	9.6
2.9593	14.69	46.00	31.31	9.000	N	9.7
2.9705	14.59	46.00	31.41	9.000	N	9.7
3.0155	15.14	46.00	30.86	9.000	N	9.7
3.0223	15.00	46.00	31.00	9.000	N	9.7
3.0538	13.90	46.00	32.10	9.000	N	9.7
3.0605	13.75	46.00	32.25	9.000	N	9.7
20.5003	20.84	50.00	29.16	9.000	N	9.9
20.9998	22.10	50.00	27.90	9.000	N	9.9
21.9988	24.06	50.00	25.94	9.000	N	9.9
22.5005	24.05	50.00	25.95	9.000	N	10.0
23.0000	22.77	50.00	27.23	9.000	N	10.0
23.4995	20.25	50.00	29.75	9.000	N	10.0

Figure 13: Conducted Emission, OBD+LTE Cat.M1 Band13(High) Receiver, Line (L1)



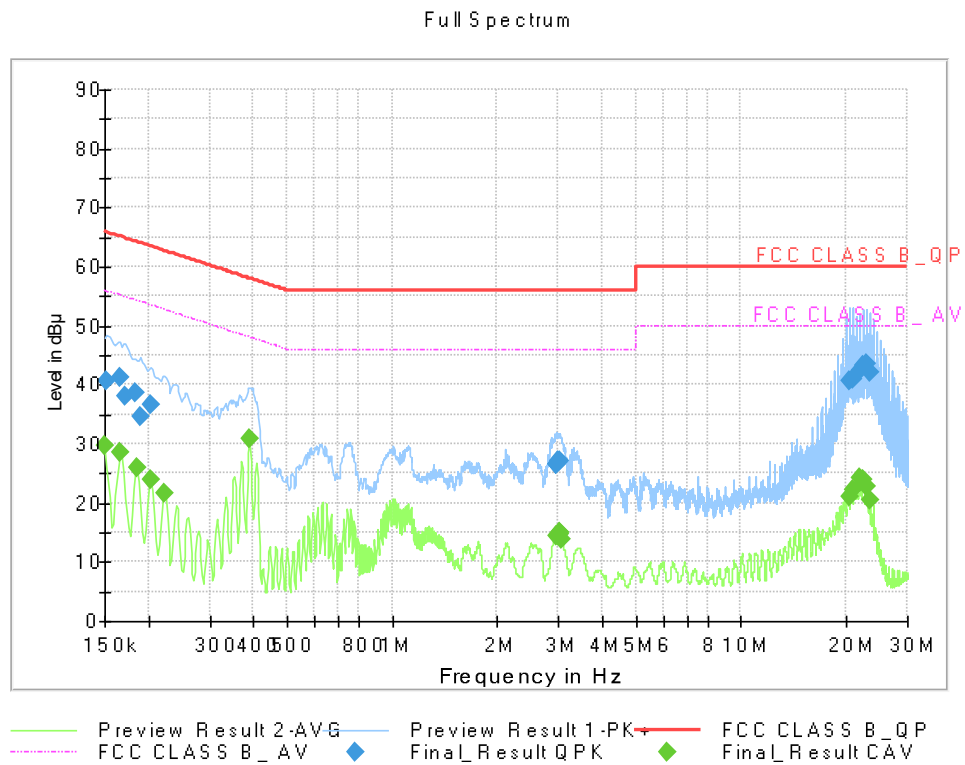
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	41.97	65.88	23.90	9.000	L1	9.6
0.1658	43.15	65.17	22.02	9.000	L1	9.6
0.1725	38.39	64.84	26.45	9.000	L1	9.6
0.1860	40.70	64.21	23.51	9.000	L1	9.6
0.1950	35.85	63.82	27.97	9.000	L1	9.6
0.2040	38.55	63.45	24.90	9.000	L1	9.6
1.0715	27.87	56.00	28.13	9.000	L1	9.6
1.0940	29.49	56.00	26.51	9.000	L1	9.6
1.1008	28.35	56.00	27.65	9.000	L1	9.6
1.1075	28.42	56.00	27.58	9.000	L1	9.6
1.1120	28.83	56.00	27.17	9.000	L1	9.6
1.1165	28.31	56.00	27.69	9.000	L1	9.6
20.5003	39.28	60.00	20.72	9.000	L1	9.9
20.9998	40.44	60.00	19.56	9.000	L1	9.9
21.4993	40.00	60.00	20.00	9.000	L1	9.9
22.5005	42.57	60.00	17.43	9.000	L1	10.0
23.0000	43.49	60.00	16.51	9.000	L1	10.0
23.4995	42.52	60.00	17.48	9.000	L1	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	30.93	56.00	25.07	9.000	L1	9.6
0.1680	30.66	55.06	24.40	9.000	L1	9.6
0.1860	29.02	54.21	25.19	9.000	L1	9.6
0.2040	27.19	53.45	26.26	9.000	L1	9.6
0.2220	24.87	52.74	27.88	9.000	L1	9.6
0.2400	21.88	52.10	30.21	9.000	L1	9.6
0.3885	31.40	48.10	16.70	9.000	L1	9.6
1.0760	23.63	46.00	22.37	9.000	L1	9.6
1.0940	24.07	46.00	21.93	9.000	L1	9.6
1.1120	23.37	46.00	22.63	9.000	L1	9.6
2.9593	16.56	46.00	29.44	9.000	L1	9.7
3.0043	17.26	46.00	28.74	9.000	L1	9.7
3.0133	17.10	46.00	28.90	9.000	L1	9.7
20.5003	19.88	50.00	30.12	9.000	L1	9.9
20.9998	21.38	50.00	28.62	9.000	L1	9.9
21.4993	22.88	50.00	27.12	9.000	L1	9.9
22.5005	23.91	50.00	26.09	9.000	L1	10.0
23.0000	22.54	50.00	27.46	9.000	L1	10.0

Figure 14: Conducted Emission, OBD+LTE Cat.M1 Band13(High) Receiver, Line (N)



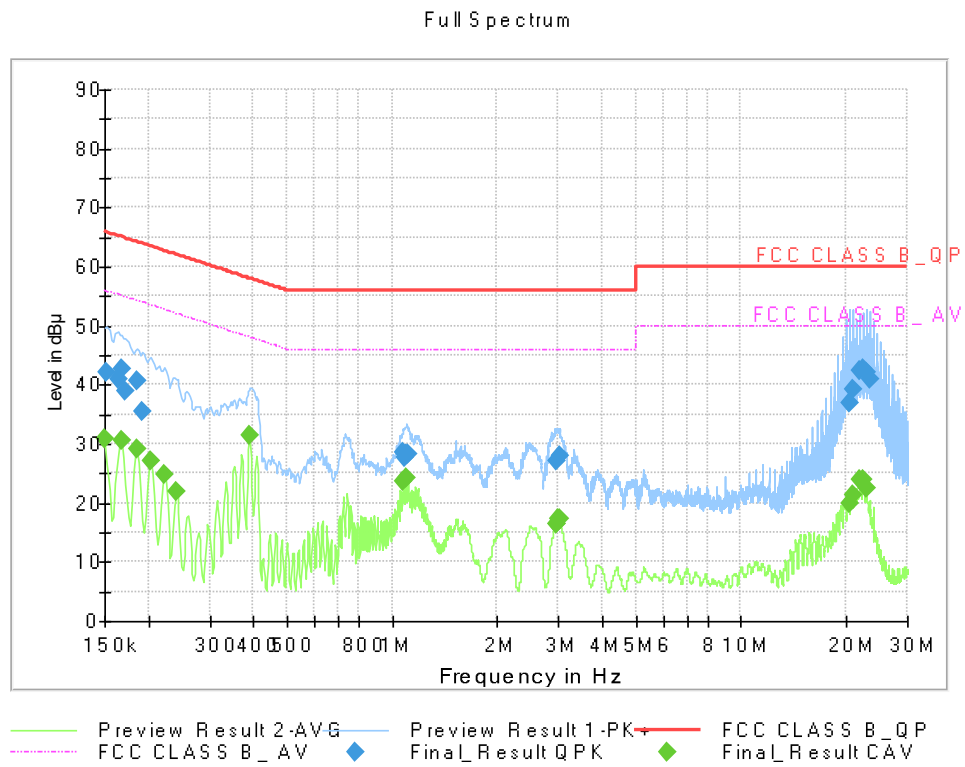
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	40.65	65.88	25.22	9.000	N	9.6
0.1658	41.37	65.17	23.80	9.000	N	9.6
0.1725	38.01	64.84	26.83	9.000	N	9.6
0.1838	38.60	64.31	25.72	9.000	N	9.6
0.1905	34.50	64.02	29.51	9.000	N	9.6
0.2040	36.63	63.45	26.81	9.000	N	9.6
2.9593	26.61	56.00	29.39	9.000	N	9.7
2.9683	26.56	56.00	29.44	9.000	N	9.7
2.9728	26.60	56.00	29.40	9.000	N	9.7
2.9840	26.75	56.00	29.25	9.000	N	9.7
3.0020	27.00	56.00	29.00	9.000	N	9.7
3.0065	27.11	56.00	28.89	9.000	N	9.7
20.5003	40.53	60.00	19.47	9.000	N	9.9
20.9998	41.05	60.00	18.95	9.000	N	9.9
21.9988	42.50	60.00	17.50	9.000	N	9.9
22.5005	43.21	60.00	16.79	9.000	N	10.0
23.0000	43.46	60.00	16.54	9.000	N	10.0
23.4995	42.23	60.00	17.77	9.000	N	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	29.59	56.00	26.41	9.000	N	9.6
0.1658	28.45	55.17	26.72	9.000	N	9.6
0.1860	26.03	54.21	28.18	9.000	N	9.6
0.2040	23.88	53.45	29.56	9.000	N	9.6
0.2220	21.75	52.74	30.99	9.000	N	9.6
0.3885	30.74	48.10	17.36	9.000	N	9.6
2.9705	14.56	46.00	31.44	9.000	N	9.7
2.9750	14.44	46.00	31.56	9.000	N	9.7
3.0133	15.07	46.00	30.93	9.000	N	9.7
3.0178	14.99	46.00	31.01	9.000	N	9.7
3.0223	14.85	46.00	31.15	9.000	N	9.7
3.0605	13.81	46.00	32.19	9.000	N	9.7
20.5003	21.00	50.00	29.01	9.000	N	9.9
20.9998	22.26	50.00	27.74	9.000	N	9.9
21.9988	24.15	50.00	25.85	9.000	N	9.9
22.5005	23.95	50.00	26.05	9.000	N	10.0
23.0000	22.67	50.00	27.33	9.000	N	10.0
23.4995	20.51	50.00	29.49	9.000	N	10.0

Figure 15: Conducted Emission, OBD+LTE Cat.M1 Band13(Low) Receiver, Line (L1)





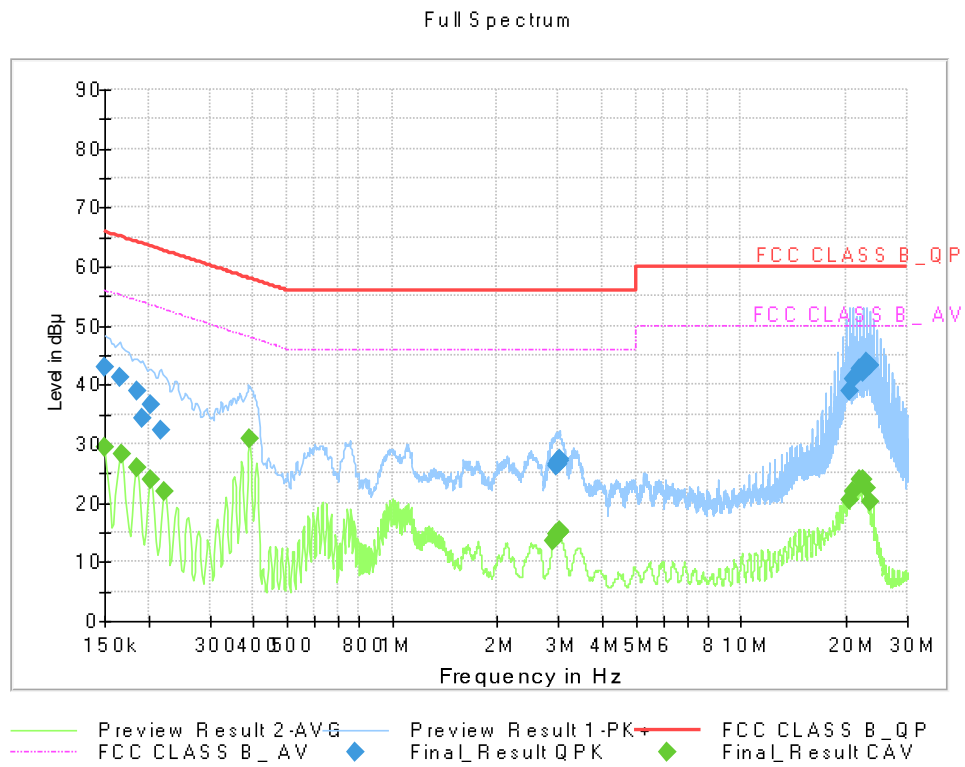
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	42.02	65.88	23.86	9.000	L1	9.6
0.1635	40.85	65.28	24.43	9.000	L1	9.6
0.1680	42.78	65.06	22.28	9.000	L1	9.6
0.1725	38.91	64.84	25.93	9.000	L1	9.6
0.1860	40.79	64.21	23.42	9.000	L1	9.6
0.1928	35.38	63.92	28.53	9.000	L1	9.6
1.0738	28.51	56.00	27.49	9.000	L1	9.6
1.0828	27.66	56.00	28.34	9.000	L1	9.6
1.1030	28.19	56.00	27.81	9.000	L1	9.6
1.1165	28.32	56.00	27.68	9.000	L1	9.6
2.9548	27.14	56.00	28.86	9.000	L1	9.7
3.0065	27.95	56.00	28.05	9.000	L1	9.7
20.5003	36.79	60.00	23.21	9.000	L1	9.9
20.9998	39.18	60.00	20.82	9.000	L1	9.9
21.9988	42.36	60.00	17.64	9.000	L1	10.0
22.5005	42.71	60.00	17.29	9.000	L1	10.0
23.0000	42.23	60.00	17.77	9.000	L1	10.0
23.4995	41.10	60.00	18.90	9.000	L1	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	30.95	56.00	25.05	9.000	L1	9.6
0.1680	30.63	55.06	24.43	9.000	L1	9.6
0.1860	29.06	54.21	25.15	9.000	L1	9.6
0.2040	27.22	53.45	26.23	9.000	L1	9.6
0.2220	24.81	52.74	27.94	9.000	L1	9.6
0.2400	21.83	52.10	30.26	9.000	L1	9.6
0.3885	31.46	48.10	16.64	9.000	L1	9.6
1.0760	23.53	46.00	22.47	9.000	L1	9.6
1.0940	24.09	46.00	21.91	9.000	L1	9.6
2.9503	16.58	46.00	29.42	9.000	L1	9.7
2.9660	16.52	46.00	29.48	9.000	L1	9.7
3.0043	17.26	46.00	28.74	9.000	L1	9.7
3.0088	17.29	46.00	28.71	9.000	L1	9.7
20.5003	19.99	50.00	30.01	9.000	L1	9.9
20.9998	21.43	50.00	28.57	9.000	L1	9.9
21.9988	23.92	50.00	26.08	9.000	L1	10.0
22.5005	23.95	50.00	26.05	9.000	L1	10.0
23.0000	22.64	50.00	27.36	9.000	L1	10.0

Figure 16: Conducted Emission, OBD+LTE Cat.M1 Band13(Low) Receiver, Line (N)



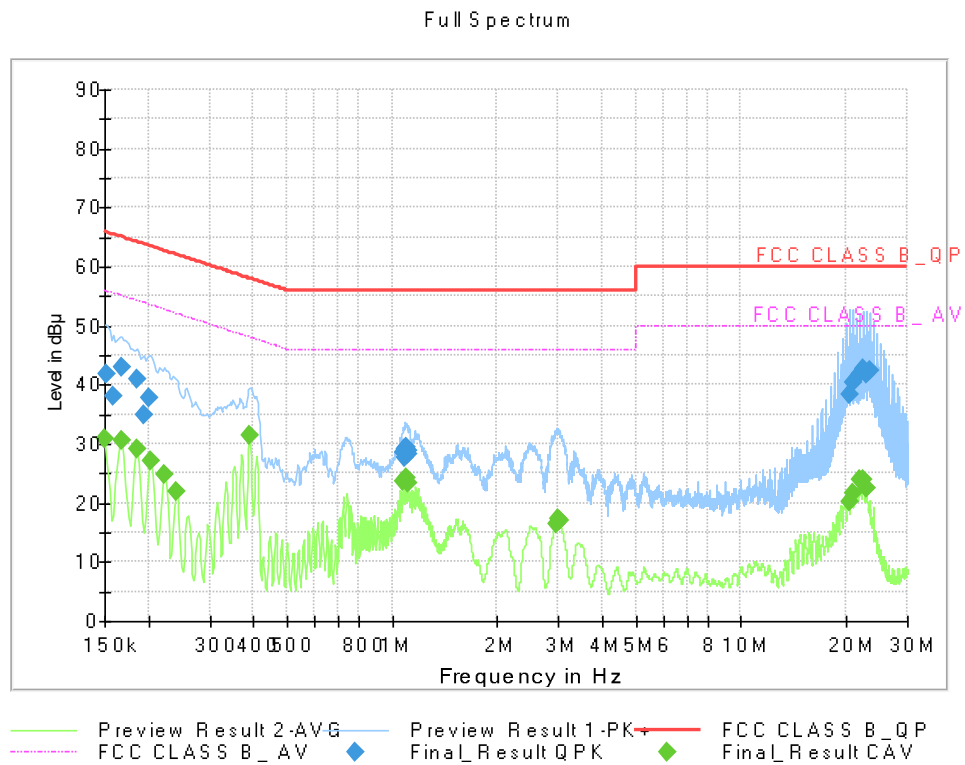
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	42.94	66.00	23.06	9.000	N	9.6
0.1658	41.38	65.17	23.79	9.000	N	9.6
0.1860	38.88	64.21	25.33	9.000	N	9.6
0.1928	34.32	63.92	29.60	9.000	N	9.6
0.2040	36.73	63.45	26.71	9.000	N	9.6
0.2175	32.19	62.91	30.72	9.000	N	9.6
2.9435	26.11	56.00	29.89	9.000	N	9.7
2.9638	26.46	56.00	29.54	9.000	N	9.7
2.9795	26.68	56.00	29.32	9.000	N	9.7
3.0020	27.15	56.00	28.85	9.000	N	9.7
3.0133	27.27	56.00	28.73	9.000	N	9.7
3.0223	27.03	56.00	28.97	9.000	N	9.7
20.5003	38.95	60.00	21.05	9.000	N	9.9
20.9998	40.87	60.00	19.13	9.000	N	9.9
21.9988	42.70	60.00	17.30	9.000	N	9.9
22.5005	42.23	60.00	17.77	9.000	N	10.0
23.0000	43.82	60.00	16.18	9.000	N	10.0
23.4995	43.28	60.00	16.72	9.000	N	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	29.48	56.00	26.52	9.000	N	9.6
0.1680	28.30	55.06	26.76	9.000	N	9.6
0.1860	25.95	54.21	28.26	9.000	N	9.6
0.2040	23.83	53.45	29.62	9.000	N	9.6
0.2220	21.81	52.74	30.93	9.000	N	9.6
0.3885	30.75	48.10	17.35	9.000	N	9.6
2.8985	13.54	46.00	32.46	9.000	N	9.7
2.9525	14.62	46.00	31.38	9.000	N	9.7
2.9705	14.62	46.00	31.38	9.000	N	9.7
3.0088	15.22	46.00	30.78	9.000	N	9.7
3.0178	15.11	46.00	30.89	9.000	N	9.7
3.0223	15.09	46.00	30.91	9.000	N	9.7
20.5003	20.61	50.00	29.39	9.000	N	9.9
20.9998	21.93	50.00	28.07	9.000	N	9.9
21.9988	23.98	50.00	26.02	9.000	N	9.9
22.5005	23.95	50.00	26.05	9.000	N	10.0
23.0000	22.50	50.00	27.50	9.000	N	10.0
23.4995	20.24	50.00	29.76	9.000	N	10.0

Figure 17: Conducted Emission, OBD+LTE Cat.M1 Band13(Middle) Receiver, Line (L1)





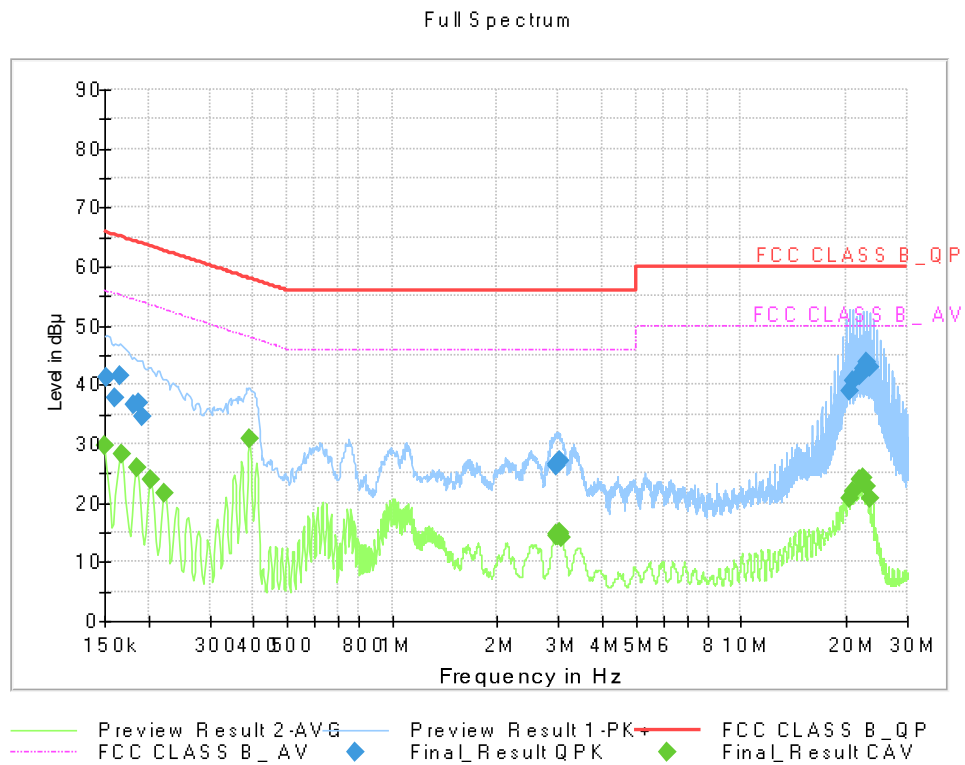
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	41.77	65.88	24.11	9.000	L1	9.6
0.1590	37.99	65.52	27.53	9.000	L1	9.6
0.1680	42.87	65.06	22.19	9.000	L1	9.6
0.1860	40.87	64.21	23.35	9.000	L1	9.6
0.1950	34.86	63.82	28.96	9.000	L1	9.6
0.2018	37.68	63.54	25.86	9.000	L1	9.6
1.0738	28.46	56.00	27.54	9.000	L1	9.6
1.0850	27.57	56.00	28.43	9.000	L1	9.6
1.0918	29.18	56.00	26.82	9.000	L1	9.6
1.0963	29.44	56.00	26.56	9.000	L1	9.6
1.1053	28.13	56.00	27.87	9.000	L1	9.6
1.1120	28.87	56.00	27.13	9.000	L1	9.6
20.5003	38.39	60.00	21.61	9.000	L1	9.9
20.9998	40.25	60.00	19.75	9.000	L1	9.9
22.0010	41.92	60.00	18.08	9.000	L1	10.0
22.5005	42.59	60.00	17.41	9.000	L1	10.0
23.0000	41.73	60.00	18.27	9.000	L1	10.0
23.4995	42.45	60.00	17.55	9.000	L1	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	30.81	56.00	25.19	9.000	L1	9.6
0.1680	30.62	55.06	24.44	9.000	L1	9.6
0.1860	29.11	54.21	25.10	9.000	L1	9.6
0.2040	27.19	53.45	26.25	9.000	L1	9.6
0.2220	24.85	52.74	27.89	9.000	L1	9.6
0.2400	21.79	52.10	30.30	9.000	L1	9.6
0.3885	31.43	48.10	16.67	9.000	L1	9.6
1.0760	23.54	46.00	22.46	9.000	L1	9.6
1.0940	24.16	46.00	21.84	9.000	L1	9.6
1.1120	23.51	46.00	22.49	9.000	L1	9.6
2.9615	16.54	46.00	29.46	9.000	L1	9.7
3.0020	17.28	46.00	28.72	9.000	L1	9.7
3.0065	17.14	46.00	28.86	9.000	L1	9.7
20.5003	20.22	50.00	29.78	9.000	L1	9.9
20.9998	21.60	50.00	28.40	9.000	L1	9.9
21.9988	23.95	50.00	26.05	9.000	L1	10.0
22.5005	23.96	50.00	26.04	9.000	L1	10.0
23.0000	22.60	50.00	27.40	9.000	L1	10.0

Figure 18: Conducted Emission, OBD+LTE Cat.M1 Band13(Middle) Receiver, Line (N)



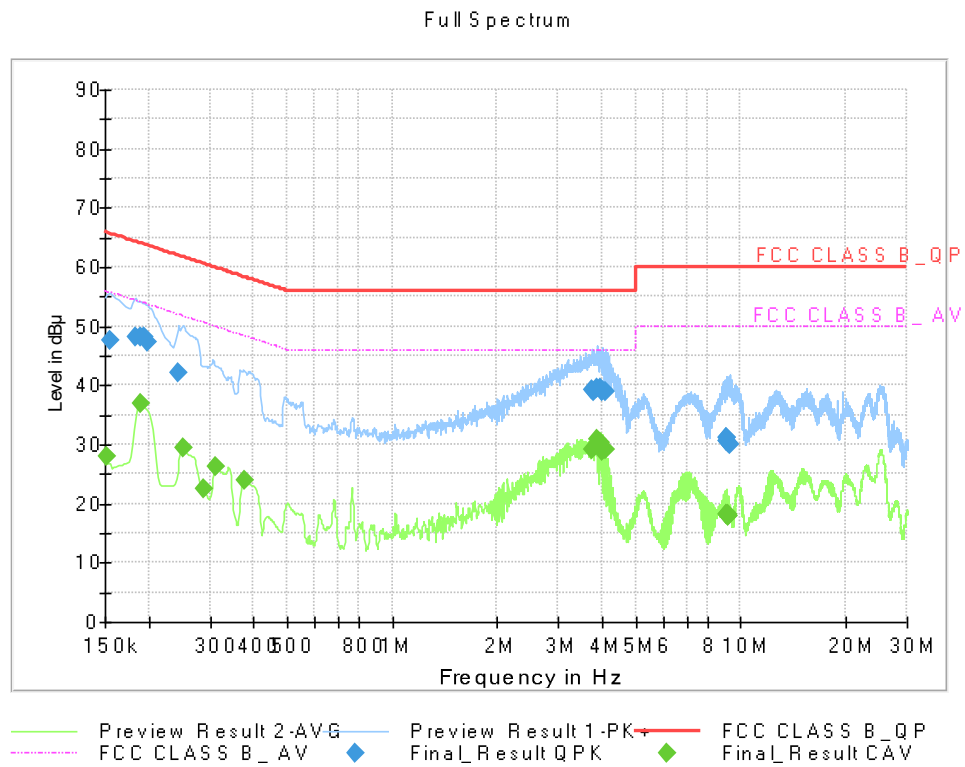
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	41.32	65.88	24.56	9.000	N	9.6
0.1613	37.71	65.40	27.69	9.000	N	9.6
0.1658	41.43	65.17	23.74	9.000	N	9.6
0.1815	36.64	64.42	27.78	9.000	N	9.6
0.1883	37.06	64.11	27.05	9.000	N	9.6
0.1928	34.69	63.92	29.22	9.000	N	9.6
2.9480	26.29	56.00	29.71	9.000	N	9.7
2.9570	26.60	56.00	29.40	9.000	N	9.7
2.9638	26.57	56.00	29.43	9.000	N	9.7
2.9930	26.77	56.00	29.23	9.000	N	9.7
3.0065	27.02	56.00	28.98	9.000	N	9.7
3.0155	27.00	56.00	29.00	9.000	N	9.7
20.5003	39.06	60.00	20.94	9.000	N	9.9
20.9998	40.79	60.00	19.21	9.000	N	9.9
21.9988	41.63	60.00	18.37	9.000	N	9.9
22.5005	42.81	60.00	17.19	9.000	N	10.0
23.0000	43.75	60.00	16.25	9.000	N	10.0
23.4995	42.86	60.00	17.14	9.000	N	10.0

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1500	29.58	56.00	26.42	9.000	N	9.6
0.1680	28.31	55.06	26.75	9.000	N	9.6
0.1860	25.94	54.21	28.28	9.000	N	9.6
0.2040	23.85	53.45	29.60	9.000	N	9.6
0.2220	21.75	52.74	30.99	9.000	N	9.6
0.3885	30.82	48.10	17.28	9.000	N	9.6
2.9548	14.61	46.00	31.39	9.000	N	9.7
2.9593	14.51	46.00	31.49	9.000	N	9.7
2.9795	14.40	46.00	31.60	9.000	N	9.7
3.0155	15.05	46.00	30.95	9.000	N	9.7
3.0245	14.85	46.00	31.15	9.000	N	9.7
3.0425	14.24	46.00	31.76	9.000	N	9.7
20.5003	20.76	50.00	29.24	9.000	N	9.9
20.9998	22.00	50.00	28.00	9.000	N	9.9
21.9988	24.06	50.00	25.94	9.000	N	9.9
22.5005	24.11	50.00	25.89	9.000	N	10.0
23.0000	22.84	50.00	27.16	9.000	N	10.0
23.4995	20.69	50.00	29.31	9.000	N	10.0

Figure 19: Conducted Emission, DATA LINK, Line (L1)



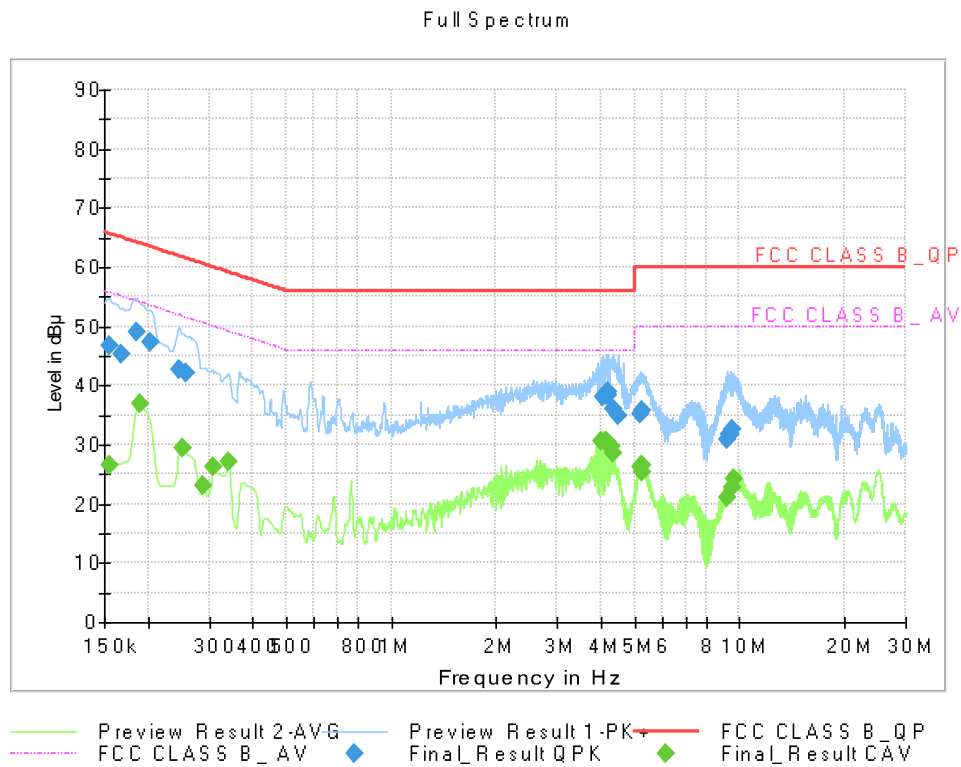
QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1545	47.73	65.75	18.03	9.000	L1	9.6
0.1838	48.26	64.31	16.06	9.000	L1	9.6
0.1905	48.05	64.02	15.96	9.000	L1	9.6
0.1950	48.04	63.82	15.78	9.000	L1	9.6
0.1995	47.33	63.63	16.30	9.000	L1	9.6
0.2445	42.11	61.94	19.84	9.000	L1	9.6
3.7355	39.30	56.00	16.70	9.000	L1	9.7
3.8053	39.01	56.00	16.99	9.000	L1	9.7
3.8750	39.49	56.00	16.51	9.000	L1	9.7
3.9695	39.45	56.00	16.55	9.000	L1	9.7
4.0123	38.99	56.00	17.01	9.000	L1	9.7
4.0775	38.89	56.00	17.11	9.000	L1	9.7
9.0658	31.14	60.00	28.86	9.000	L1	9.8
9.0703	31.24	60.00	28.76	9.000	L1	9.8
9.1333	30.71	60.00	29.29	9.000	L1	9.8
9.1558	30.71	60.00	29.29	9.000	L1	9.8
9.2593	30.32	60.00	29.68	9.000	L1	9.8
9.2638	29.88	60.00	30.12	9.000	L1	9.8

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	28.05	55.88	27.83	9.000	L1	9.6
0.1905	36.81	54.02	17.20	9.000	L1	9.6
0.2513	29.35	51.72	22.37	9.000	L1	9.6
0.2895	22.64	50.54	27.90	9.000	L1	9.6
0.3120	26.31	49.92	23.61	9.000	L1	9.6
0.3773	23.96	48.34	24.38	9.000	L1	9.6
3.7333	29.10	46.00	16.90	9.000	L1	9.7
3.8413	29.76	46.00	16.24	9.000	L1	9.7
3.8818	30.78	46.00	15.22	9.000	L1	9.7
3.9470	30.23	46.00	15.77	9.000	L1	9.7
3.9718	29.56	46.00	16.44	9.000	L1	9.7
4.0123	28.85	46.00	17.15	9.000	L1	9.7
4.0753	29.11	46.00	16.89	9.000	L1	9.7
9.0703	18.21	50.00	31.79	9.000	L1	9.8
9.1355	18.26	50.00	31.74	9.000	L1	9.8
9.2008	18.27	50.00	31.73	9.000	L1	9.8
9.2323	17.99	50.00	32.01	9.000	L1	9.8
9.2593	17.92	50.00	32.08	9.000	L1	9.8

Figure 20: Conducted Emission, DATA LINK, Line (N)



QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1545	46.82	65.75	18.93	9.000	N	9.6
0.1680	45.29	65.06	19.77	9.000	N	9.6
0.1860	49.02	64.21	15.19	9.000	N	9.6
0.2040	47.24	63.45	16.21	9.000	N	9.6
0.2468	42.66	61.87	19.20	9.000	N	9.6
0.2580	42.12	61.50	19.38	9.000	N	9.6
4.0663	38.12	56.00	17.88	9.000	N	9.7
4.1338	38.31	56.00	17.69	9.000	N	9.7
4.1990	38.82	56.00	17.18	9.000	N	9.7
4.2058	38.25	56.00	17.75	9.000	N	9.7
4.3453	36.04	56.00	19.96	9.000	N	9.7
4.4825	34.92	56.00	21.08	9.000	N	9.7
5.2138	35.22	60.00	24.78	9.000	N	9.7
5.2408	35.69	60.00	24.31	9.000	N	9.7
9.2413	30.89	60.00	29.11	9.000	N	9.8
9.3425	31.69	60.00	28.31	9.000	N	9.8
9.3740	31.77	60.00	28.23	9.000	N	9.8
9.5045	32.66	60.00	27.34	9.000	N	9.8

CAverage Final Result

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1545	26.59	55.75	29.16	9.000	N	9.6
0.1905	36.95	54.02	17.07	9.000	N	9.6
0.2513	29.33	51.72	22.39	9.000	N	9.6
0.2895	22.95	50.54	27.59	9.000	N	9.6
0.3098	26.11	49.98	23.87	9.000	N	9.6
0.3413	27.09	49.17	22.09	9.000	N	9.6
3.9965	30.64	46.00	15.36	9.000	N	9.7
4.1270	30.53	46.00	15.47	9.000	N	9.7
4.1923	30.01	46.00	15.99	9.000	N	9.7
4.2058	30.18	46.00	15.82	9.000	N	9.7
4.2688	29.69	46.00	16.31	9.000	N	9.7
4.3318	28.50	46.00	17.50	9.000	N	9.7
5.2138	26.27	50.00	23.73	9.000	N	9.7
5.2408	26.47	50.00	23.53	9.000	N	9.7
5.2655	25.50	50.00	24.50	9.000	N	9.7
9.2413	21.05	50.00	28.95	9.000	N	9.8
9.5720	22.74	50.00	27.26	9.000	N	9.8
9.6260	24.28	50.00	25.72	9.000	N	9.8

4.2 Radiated Emission Below 1 GHz

4.2.1 Measuring instruments

	Type	Model Name	Manufacturer	Serial Number	Calibration Cycle	Calibration Date
☒	EMI Test Receiver	ESU40	Rohde & Schwarz	100524	1 year	05.12.2020
☒	Bi-Log Antenna	VULB9168	Schwarzbeck	255	2 year	03.15.2021
☒	Antenna master	MA4640-XP-ET	INNCO SYSTEM	-	-	-
☒	Antenna master controller	CO3000	INNCO SYSTEM	CO3000/870/ 35990515/L	-	-
☒	Turn Table	1060	INNCO SYSTEM	-	-	-
☒	Turn Table controller	CO2000	INNCO SYSTEM	CO2000/095/ 7590304/L	-	-
☒	Radio Communication Analyzer	MT8821C	ANRITSU	6261849028	1 year	03.05.2021
☒	Antenna (for Communication)	USLP9142	Schwarzbeck	USLP9142-200	-	-
☐	EMI Test Receiver	ESU26	ROHDE&SCHWARZ	100241	1 year	07.01.2020
☐	Bilog Antenna	VULB 9168	SCHWARZBECK	185	2 year	06.21.2019
☐	Antenna master	MA4000-EP	INNCO systems	MA4000/283	-	-
☐	Turn Table	DT3000-3t	INNCO systems	DT3000/69	-	-
☐	Low Noise Amplifier	TK-PA01S	TESTEK	200112-L	1 year	07.14.2020
☒	Software	EMC32	Rohde & Schwarz	-	-	-

4.2.2 Operating Condition

The test results of radiated emission provide the following information:

Used Test Standard	FCC CFR 47 PART 15 Subpart B Class B ANSI C63.4-2014
Detector	Quasi-Peak
Bandwidth	120 kHz (6 dB)
Test Site	3 m Semi Anechoic Chamber #1
Temperature	22.1 / 22.0 / 23.3 °C
Relative Humidity	47.0 / 46.5 / 45.7 %
Test Date	April 30 / May 01 / May 03, 2021

- *Calculation Formula:**
1. POL. H = Horizontal, POL. V = Vertical
 2. QuasiPeak = Reading (Receiver Reading) + Corr.
 3. Corr. (Correction Factor) = Antenna Factor + Cable Loss
 4. Margin = Limit - QuasiPeak

4.2.3 Measuring Data

[DC 12 V] OBD+LTE Cat.M1 Band5(High) Receiver

Frequency (MHz)	Quasi Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
30.3186	26.1	99.8	V	104.0	18.5	13.9	40.0
32.7683	28.7	99.8	V	102.0	18.7	11.3	40.0
36.7182	25.9	99.8	V	272.0	19.1	14.1	40.0
145.5592	28.4	99.8	V	247.0	19.3	15.1	43.5
242.8758	28.6	99.8	V	323.0	18.5	17.4	46.0
339.4036	28.8	99.7	V	285.0	21.4	17.2	46.0

[DC 12 V] OBD+LTE Cat.M1 Band5(Low) Receiver

Frequency (MHz)	Quasi Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
32.125480	24.9	99.7	V	86.0	18.6	15.1	40.0
34.048760	22.2	99.8	V	104.0	18.8	17.8	40.0
37.170280	24.6	174.9	V	276.0	19.1	15.4	40.0
110.157920	25.2	99.8	V	96.0	16.1	18.3	43.5
148.125160	28.6	99.8	V	234.0	19.4	14.9	43.5
194.063040	23.5	99.8	V	70.0	17.2	20.0	43.5

[DC 12 V] OBD+LTE Cat.M1 Band5(Middle) Receiver

Frequency (MHz)	Quasi Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
31.6595	24.0	174.9	V	94.0	18.6	16.0	40.0
52.8446	17.6	174.8	V	231.0	19.9	22.4	40.0
54.0342	20.4	100.0	V	170.0	19.9	19.6	40.0
68.9642	16.1	307.7	H	356.0	18.4	23.9	40.0
145.5554	27.9	100.0	V	176.0	19.3	15.6	43.5
339.4568	30.6	100.0	V	153.0	21.4	15.4	46.0

[DC 12 V] OBD+LTE Cat.M1 Band12(High) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
32.0887	23.1	125.3	V	104.0	18.6	16.9	40.0
34.6740	26.0	100.0	V	104.0	18.9	14.0	40.0
39.2179	22.7	274.8	V	271.0	19.3	17.3	40.0
110.4606	25.5	100.0	V	9.0	16.1	18.0	43.5
136.0774	27.8	100.0	V	272.0	18.8	15.7	43.5
398.9536	23.3	100.0	H	157.0	22.8	22.7	46.0

[DC 12 V] OBD+LTE Cat.M1 Band12(Low) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
30.2944	25.5	100.0	V	30.0	18.5	14.5	40.0
31.7709	26.5	100.0	V	30.0	18.6	13.5	40.0
32.2069	25.5	100.0	V	30.0	18.7	14.5	40.0
54.4176	22.7	100.0	V	329.0	19.8	17.3	40.0
137.1020	27.9	100.0	V	279.0	18.9	15.6	43.5
245.0647	25.9	100.0	V	62.0	18.5	20.1	46.0

[DC 12 V] OBD+LTE Cat.M1 Band12(Middle) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
32.6878	25.9	100.0	V	184.0	18.7	14.1	40.0
33.2398	29.8	100.0	V	136.0	18.7	10.2	40.0
33.6390	26.8	100.0	V	109.0	18.8	13.2	40.0
34.3066	28.0	100.0	V	108.0	18.8	12.0	40.0
128.2112	26.8	100.0	V	251.0	17.9	16.7	43.5
136.3026	27.7	100.0	V	254.0	18.8	15.8	43.5

[DC 12 V] OBD+LTE Cat.M1 Band13(High) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
31.2996	25.4	100.0	V	0.0	18.6	14.6	40.0
33.1228	25.8	100.0	V	99.0	18.7	14.2	40.0
54.8948	25.1	100.0	V	175.0	19.8	14.9	40.0
106.3783	24.3	100.0	V	308.0	15.7	19.2	43.5
135.9377	28.8	100.0	V	256.0	18.8	14.7	43.5
418.0315	25.4	100.0	H	165.0	23.3	20.6	46.0

[DC 12 V] OBD+LTE Cat.M1 Band13(Low) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
33.2220	29.5	100.0	V	97.0	18.7	10.5	40.0
34.2201	28.5	100.0	V	89.0	18.8	11.5	40.0
54.9791	25.3	117.9	V	30.0	19.8	14.7	40.0
107.0975	25.3	100.0	V	324.0	15.8	18.2	43.5
136.7284	28.4	100.0	V	240.0	18.8	15.1	43.5
353.9667	21.3	116.9	H	242.0	21.8	24.7	46.0

[DC 12 V] OBD+LTE Cat.M1 Band13(Middle) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
31.6464	21.4	174.8	V	252.0	18.6	18.6	40.0
34.2395	27.7	100.0	V	36.0	18.8	12.3	40.0
38.6175	20.8	225.3	V	256.0	19.2	19.2	40.0
109.9438	22.3	100.0	V	18.0	16.0	21.2	43.5
135.6140	28.1	100.0	V	278.0	18.7	15.4	43.5
259.0315	18.2	100.0	V	30.0	19.1	27.8	46.0

[DC 24 V] OBD+LTE Cat.M1 Band5(High) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
30.2258	29.0	100.0	V	318.0	18.5	11.0	40.0
35.7622	27.0	100.0	V	0.0	19.0	13.0	40.0
44.1187	27.0	274.8	V	38.0	19.6	13.0	40.0
66.4519	26.0	100.0	V	248.0	18.7	14.0	40.0
67.9868	26.0	100.0	V	74.0	18.5	14.0	40.0
111.1303	23.0	100.0	V	173.0	16.2	20.5	43.5

[DC 24 V] OBD+LTE Cat.M1 Band5(Low) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
32.1108	29.0	100.0000	V	312.0	18.6	11.0	40.0
32.6954	28.0	100.0000	V	69.0	18.7	12.0	40.0
44.3872	27.0	174.8000	V	24.0	19.7	13.0	40.0
66.9263	28.0	100.0000	V	0.0	18.6	12.0	40.0
93.7622	19.9	100.0000	V	261.0	14.5	23.6	43.5
160.9990	21.3	125.1000	V	149.0	19.6	22.2	43.5

[DC 24 V] OBD+LTE Cat.M1 Band5(Middle) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
35.2247	26.8	100.0	V	98.0	18.9	13.2	40.0
54.4176	25.3	100.0	V	0.0	19.8	14.7	40.0
81.0021	21.5	100.0	V	286.0	15.4	18.5	40.0
98.9959	19.1	191.8	V	0.0	15.0	24.4	43.5
136.3317	27.6	100.0	V	251.0	18.8	15.9	43.5
445.0290	24.0	100.0	H	141.0	24.0	22.0	46.0

[DC 24 V] OBD+LTE Cat.M1 Band12(High) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
32.1950	29.0	100.0	V	239.0	18.7	11.0	40.0
33.1741	29.0	100.0	V	174.0	18.7	11.0	40.0
34.1540	29.0	100.0	V	154.0	18.8	11.0	40.0
46.7782	29.0	100.0	V	240.0	19.8	11.0	40.0
63.9645	28.0	100.0	V	257.0	19.0	12.0	40.0
66.5161	29.0	100.0	V	0.0	18.7	11.0	40.0

[DC 24 V] OBD+LTE Cat.M1 Band12(Low) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
30.2117	28.0	100.0	V	233.0	18.5	12.0	40.0
32.1392	29.0	100.0	V	343.0	18.6	11.0	40.0
33.2634	28.2	100.0	V	302.0	18.7	11.8	40.0
45.2376	29.0	274.8	V	56.0	19.7	11.0	40.0
65.9845	27.0	116.8	V	328.0	18.8	13.0	40.0
113.9602	23.4	100.0	V	277.0	16.5	20.1	43.5

[DC 24 V] OBD+LTE Cat.M1 Band12(Middle) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
31.1975	28.0	100.0000	V	320.0	12.0	12.0	40.0
34.2469	29.0	100.0000	V	338.0	18.8	11.0	40.0
45.1880	27.0	174.8000	V	60.0	19.7	13.0	40.0
66.4174	28.0	100.0000	V	266.0	18.7	12.0	40.0
67.4199	29.0	100.0000	V	213.0	18.6	11.0	40.0
87.7664	18.1	100.0000	V	103.0	14.5	21.9	40.0

[DC 24 V] OBD+LTE Cat.M1 Band13(High) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
30.7260	24.4	100.0	V	109.0	18.5	15.6	40.0
35.2117	23.5	100.0	V	46.0	18.9	16.5	40.0
55.0249	25.1	100.0	V	7.0	19.8	14.9	40.0
58.7512	22.3	100.0	V	160.0	19.6	17.7	40.0
101.6572	25.0	100.0	V	309.0	15.2	18.5	43.5
136.2769	25.7	100.0	V	323.0	18.8	17.8	43.5

[DC 24 V] OBD+LTE Cat.M1 Band13(Low) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
30.4691	21.8	125.0	V	173.0	18.5	18.2	40.0
33.7312	26.0	100.0	V	174.0	18.8	14.0	40.0
34.1992	23.5	100.0	V	0.0	18.8	16.5	40.0
53.5146	24.0	100.0	V	63.0	19.9	16.0	40.0
66.4542	20.5	100.0	V	108.0	18.7	19.5	40.0
132.5594	26.9	100.0	V	283.0	18.4	16.6	43.5

[DC 24 V] OBD+LTE Cat.M1 Band13(Middle) Receiver

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
33.2396	27.2	100.0	V	90.0	18.7	12.8	40.0
33.6337	23.3	100.0	V	77.0	18.8	16.7	40.0
54.0041	26.3	100.0	V	263.0	19.9	13.7	40.0
102.3090	25.3	100.0	V	306.0	15.3	18.2	43.5
135.8670	26.3	100.0	V	271.0	18.8	17.2	43.5
330.9441	21.8	100.0	H	87.0	21.2	24.2	46.0



DATA LINK

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
30.748400	28.4	125.3	V	128.0	18.5	11.6	40.0
34.733320	24.2	99.8	V	8.0	18.9	15.8	40.0
55.952560	27.7	99.8	V	92.0	19.8	12.3	40.0
57.498440	30.1	99.8	V	179.0	19.7	9.9	40.0
86.888280	25.7	99.8	V	238.0	14.6	14.3	40.0
132.818720	29.5	99.8	V	79.0	18.4	14.0	43.5

4.3 Radiated Emission Above 1 GHz

4.3.1 Measuring instruments

	Type	Model Name	Manufacturer	Serial Number	Calibration Cycle	Calibration Date
☒	EMI Test Receiver	ESU40	Rohde & Schwarz	100524	1 year	05.12.2020
☒	Antenna master	MA4640-XP-ET	INNCO SYSTEM	-	-	-
☒	Antenna master controller	CO3000	INNCO SYSTEM	CO3000/870/35990515/L	-	-
☒	Turn Table	1060	INNCO SYSTEM	-	-	-
☒	Turn Table controller	CO2000	INNCO SYSTEM	CO2000/095/7590304/L		
☒	Low Noise Amplifier	TK-PA18H	TESTEK	170034-L	1 year	03.02.2021
☐	Low Noise Amplifier	TK-PA1840H	TESTEK	170030-L	1 year	03.09.2021
☒	Horn Antenna	BBHA 9120D	Schwarzbeck	01836	1 year	07.23.2020
☐	Horn Antenna	BBHA 9170	Schwarzbeck	BBHA 9170 #786	1 year	11.18.2020
☒	Radio Communication Analyzer	MT8821C	ANRITSU	6261849028	1 year	03.05.2021
☒	Antenna (for Communication)	USLP9142	Schwarzbeck	USLP9142-200	-	-
☒	Software	EMC32	Rohde & Schwarz	-	-	-



4.3.2 Operating Condition

The test results of radiated emission provide the following information:

Used Test Standard	FCC CFR 47 PART 15 Subpart B Class B ANSI C63.4-2014
Detector	Peak mode: Peak (RBW: 1 MHz, VBW: 3 MHz) CISPR-Average mode: Peak (RBW: 1 MHz, VBW: 10 Hz)
Highest Frequency	2 155 MHz
Tested Frequency Range	1 GHz to 18 GHz
Test Site	3 m Semi Anechoic Chamber #1
Temperature	23.3 / 24.2 °C
Relative Humidity	45.7 / 44.8 %
Test Date	May 03 / May 04, 2021

- *Calculation Formula:**
1. POL. H = Horizontal, POL. V = Vertical
 2. Peak or CAverage = Reading (Receiver Reading) + Corr.
 3. Corr. (Correction Factor) = Antenna Factor+ Cable Loss – Amplifier Gain
 4. Margin = Limit - Peak or CAverage

4.3.3 Measuring Data

[DC 12 V] OBD+LTE Cat.M1 Band5(High) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1406.2900	32.6	125.8	H	138.0	-26.8	41.4	74.0
2119.7800	31.9	150.0	V	327.0	-24.8	42.1	74.0
5553.3850	37.3	150.0	H	260.0	-15.8	36.7	74.0
7397.9250	42.2	150.0	H	67.0	-10.8	31.8	74.0
14745.9400	47.7	100.0	H	0.0	0.0	26.3	74.0
17970.0397	55.4	113.4	V	0.0	9.3	18.6	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1406.2900	19.6	125.8	H	138.0	-26.8	34.4	54.0
2119.7800	19.0	150.0	V	327.0	-24.8	35.0	54.0
5553.3850	24.7	150.0	H	260.0	-15.8	29.3	54.0
7397.9250	29.3	150.0	H	67.0	-10.8	24.7	54.0
14745.9400	35.3	100.0	H	0.0	0.0	18.7	54.0
17970.0397	42.7	113.4	V	0.0	9.3	11.3	54.0

[DC 12 V] OBD+LTE Cat.M1 Band5(Low) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1083.6000	33.9	100.0	V	156.0	-27.9	40.1	74.0
2035.0400	33.0	100.0	V	246.0	-25.2	41.0	74.0
5651.1050	37.6	100.0	V	42.0	-15.6	36.4	74.0
7560.4550	41.7	100.0	H	51.0	-10.5	32.3	74.0
14473.8050	49.0	100.0	H	206.0	0.4	25.0	74.0
17938.7250	54.9	150.0	V	121.0	8.9	19.1	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1083.6000	19.9	100.0	V	156.0	-27.9	34.1	54.0
2035.0400	19.7	100.0	V	246.0	-25.2	34.3	54.0
5651.1050	25.0	100.0	V	42.0	-15.6	29.0	54.0
7560.4550	29.3	100.0	H	51.0	-10.5	24.7	54.0
14473.8050	35.9	100.0	H	206.0	0.4	18.1	54.0
17938.7250	42.5	150.0	V	121.0	8.9	11.5	54.0

[DC 12 V] OBD+LTE Cat.M1 Band5(Middle) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1077.2250	34.5	125.7	V	246.0	-27.9	39.5	74.0
2373.8550	33.2	100.0	H	107.0	-23.6	40.8	74.0
4907.1050	37.7	100.0	V	275.0	-16.8	36.3	74.0
7388.4250	41.7	110.4	V	319.0	-10.9	32.3	74.0
14536.6750	48.7	150.0	V	3.0	0.4	25.3	74.0
17974.5905	55.3	150.0	V	212.0	9.4	18.7	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1077.2250	22.0	125.7	V	246.0	-27.9	32.0	54.0
2373.8550	20.3	100.0	H	107.0	-23.6	33.7	54.0
4907.1050	24.7	100.0	V	275.0	-16.8	29.3	54.0
7388.4250	29.3	110.4	V	319.0	-10.9	24.7	54.0
14536.6750	35.5	150.0	V	3.0	0.4	18.5	54.0
17974.5905	42.7	150.0	V	212.0	9.4	11.3	54.0

[DC 12 V] OBD+LTE Cat.M1 Band12(High) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1322.0000	30.1	100.0	V	206.0	-27.1	43.9	74.0
2725.8200	33.7	100.0	H	249.0	-22.3	40.3	74.0
4953.3650	38.0	113.6	V	108.0	-16.7	36.0	74.0
7460.2750	41.9	140.7	V	46.0	-10.7	32.1	74.0
14178.4950	48.7	150.0	H	195.0	-0.3	25.3	74.0
17949.6550	55.4	125.7	V	0.0	9.0	18.6	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1322.0000	17.1	100.0	V	206.0	-27.1	36.9	54.0
2725.8200	21.0	100.0	H	249.0	-22.3	33.0	54.0
4953.3650	24.7	113.6	V	108.0	-16.7	29.3	54.0
7460.2750	29.3	140.7	V	46.0	-10.7	24.7	54.0
14178.4950	35.3	150.0	H	195.0	-0.3	18.7	54.0
17949.6550	42.6	125.7	V	0.0	9.0	11.4	54.0

[DC 12 V] OBD+LTE Cat.M1 Band12(Low) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1082.8000	35.4	124.7	V	22.0	-27.9	38.6	74.0
2053.9850	32.2	150.0	V	282.0	-25.1	41.8	74.0
5629.9000	37.4	125.8	V	305.0	-15.6	36.6	74.0
7143.5900	41.2	100.0	H	222.0	-11.6	32.8	74.0
14431.5450	49.1	150.0	H	250.0	0.3	24.9	74.0
17932.6300	54.9	138.7	V	1.0	8.8	19.1	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1082.8000	22.6	124.7	V	22.0	-27.9	31.4	54.0
2053.9850	19.7	150.0	V	282.0	-25.1	34.3	54.0
5629.9000	24.9	125.8	V	305.0	-15.6	29.1	54.0
7143.5900	28.2	100.0	H	222.0	-11.6	25.8	54.0
14431.5450	35.8	150.0	H	250.0	0.3	18.2	54.0
17932.6300	42.4	138.7	V	1.0	8.8	11.6	54.0

[DC 12 V] OBD+LTE Cat.M1 Band12(Middle) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1382.6650	33.3	139.6	H	354.0	-26.9	40.7	74.0
2852.3800	33.6	111.5	V	122.0	-21.9	40.4	74.0
5288.9400	38.5	111.6	V	37.0	-16.2	35.5	74.0
7314.0850	41.7	100.0	V	0.0	-11.1	32.3	74.0
14476.5300	48.6	150.1	V	304.0	0.4	25.4	74.0
17992.9337	55.6	100.0	V	118.0	9.7	18.4	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1382.6650	20.3	139.6	H	354.0	-26.9	33.7	54.0
2852.3800	20.9	111.5	V	122.0	-21.9	33.1	54.0
5288.9400	24.6	111.6	V	37.0	-16.2	29.4	54.0
7314.0850	28.7	100.0	V	0.0	-11.1	25.3	54.0
14476.5300	35.9	150.1	V	304.0	0.4	18.1	54.0
17992.9337	42.7	100.0	V	118.0	9.7	11.3	54.0

[DC 12 V] OBD+LTE Cat.M1 Band13(High) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1384.0100	33.5	136.6	V	0.0	-26.9	40.5	74.0
2718.3300	34.1	100.0	V	289.0	-22.4	39.9	74.0
4187.1500	35.8	138.7	V	50.0	-18.5	38.2	74.0
7386.3500	41.9	150.0	H	50.0	-10.9	32.1	74.0
14549.3900	49.1	100.0	V	0.0	0.4	24.9	74.0
17996.5650	55.3	100.0	H	0.0	9.7	18.7	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1384.0100	20.8	136.6	V	0.0	-26.9	33.2	54.0
2718.3300	21.1	100.0	V	289.0	-22.4	32.9	54.0
4187.1500	23.1	138.7	V	50.0	-18.5	30.9	54.0
7386.3500	29.2	150.0	H	50.0	-10.9	24.8	54.0
14549.3900	35.4	100.0	V	0.0	0.4	18.6	54.0
17996.5650	42.7	100.0	H	0.0	9.7	11.3	54.0

[DC 12 V] OBD+LTE Cat.M1 Band13(Low) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1105.5250	33.9	150.0	V	93.0	-27.8	40.1	74.0
2071.0050	32.0	100.0	H	31.0	-25.1	42.0	74.0
5289.8550	37.8	140.7	H	199.0	-16.2	36.2	74.0
7417.7200	42.0	126.6	H	290.0	-10.8	32.0	74.0
14135.6650	48.3	100.0	H	65.0	-0.5	25.7	74.0
17968.1200	55.8	150.0	H	264.0	9.3	18.2	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1105.5250	21.3	150.0	V	93.0	-27.8	32.7	54.0
2071.0050	19.5	100.0	H	31.0	-25.1	34.5	54.0
5289.8550	24.6	140.7	H	199.0	-16.2	29.4	54.0
7417.7200	29.3	126.6	H	290.0	-10.8	24.7	54.0
14135.6650	35.2	100.0	H	65.0	-0.5	18.8	54.0
17968.1200	42.6	150.0	H	264.0	9.3	11.4	54.0

[DC 12 V] OBD+LTE Cat.M1 Band13(Middle) Receiver

Frequency (MHz)	Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
1059.4100	33.0	150.0	V	115.0	-28.0	41.0	74.0
2474.1250	33.5	100.0	H	109.0	-23.2	40.5	74.0
4923.6250	37.6	125.7	H	75.0	-16.8	36.4	74.0
7391.3050	42.4	150.0	V	268.0	-10.9	31.6	74.0
14166.7100	47.7	100.0	V	0.0	-0.4	26.3	74.0
17946.2200	56.3	100.0	H	242.0	9.0	17.7	74.0

Frequency (MHz)	CAverage (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
1059.4100	20.0	150.0	V	115.0	-28.0	34.0	54.0
2474.1250	20.4	100.0	H	109.0	-23.2	33.6	54.0
4923.6250	24.6	125.7	H	75.0	-16.8	29.4	54.0
7391.3050	29.3	150.0	V	268.0	-10.9	24.7	54.0
14166.7100	35.3	100.0	V	0.0	-0.4	18.7	54.0
17946.2200	42.5	100.0	H	242.0	9.0	11.5	54.0

[DC 24 V] OBD+LTE Cat.M1 Band5(High) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1327.9300	33.1	150.1	V	140.0	-27.1	40.9	74.0
2662.6650	33.8	150.0	H	189.0	-22.5	40.2	74.0
5286.5750	37.1	150.0	H	156.0	-16.2	36.9	74.0
7357.8950	41.8	150.0	V	0.0	-11.0	32.2	74.0
14438.1600	48.7	125.7	H	0.0	0.3	25.3	74.0
17996.1150	56.0	100.0	V	0.0	9.7	18.0	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1327.9300	20.1	150.1	V	140.0	-27.1	33.9	54.0
2662.6650	20.8	150.0	H	189.0	-22.5	33.2	54.0
5286.5750	24.6	150.0	H	156.0	-16.2	29.4	54.0
7357.8950	29.1	150.0	V	0.0	-11.0	24.9	54.0
14438.1600	35.8	125.7	H	0.0	0.3	18.2	54.0
17996.1150	42.8	100.0	V	0.0	9.7	11.2	54.0

[DC 24 V] OBD+LTE Cat.M1 Band5(Low)

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1294.0950	30.9	100.0	V	298.0	-27.2	43.1	74.0
2732.6750	34.4	139.5	H	319.0	-22.3	39.6	74.0
4957.6600	36.9	111.6	V	150.0	-16.7	37.1	74.0
7404.5550	41.6	150.0	V	291.0	-10.8	32.4	74.0
14158.8050	48.4	138.7	H	177.0	-0.4	25.6	74.0
17987.1925	55.8	100.0	H	120.0	9.6	18.2	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1294.0950	16.3	100.0	V	298.0	-27.2	37.7	54.0
2732.6750	21.0	139.5	H	319.0	-22.3	33.0	54.0
4957.6600	24.7	111.6	V	150.0	-16.7	29.3	54.0
7404.5550	29.3	150.0	V	291.0	-10.8	24.7	54.0
14158.8050	35.2	138.7	H	177.0	-0.4	18.8	54.0
17987.1925	42.7	100.0	H	120.0	9.6	11.3	54.0

[DC 24 V] OBD+LTE Cat.M1 Band5(Middle) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1344.3900	30.6	111.5	V	136.0	-27.0	43.4	74.0
2653.9800	33.4	150.0	V	73.0	-22.6	40.6	74.0
4936.6750	37.6	150.1	V	178.0	-16.8	36.4	74.0
7325.4650	42.1	150.0	H	102.0	-11.1	31.9	74.0
14457.4500	48.8	149.9	H	255.0	0.4	25.2	74.0
17995.1195	55.7	113.3	H	324.0	9.7	18.3	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1344.3900	18.4	111.5	V	136.0	-27.0	35.6	54.0
2653.9800	20.8	150.0	V	73.0	-22.6	33.2	54.0
4936.6750	24.7	150.1	V	178.0	-16.8	29.3	54.0
7325.4650	28.9	150.0	H	102.0	-11.1	25.1	54.0
14457.4500	36.0	149.9	H	255.0	0.4	18.0	54.0
17995.1195	42.8	113.3	H	324.0	9.7	11.2	54.0

[DC 24 V] OBD+LTE Cat.M1 Band12(High) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1088.5500	33.9	150.0	H	177.0	-27.9	40.1	74.0
2583.5200	32.8	100.0	H	54.0	-22.8	41.2	74.0
4949.6050	37.5	100.0	H	133.0	-16.7	36.5	74.0
7445.1100	42.4	150.1	V	35.0	-10.7	31.6	74.0
14159.0350	48.6	100.0	H	335.0	-0.4	25.4	74.0
17976.1300	55.1	149.9	V	109.0	9.4	18.9	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1088.5500	20.4	150.0	H	177.0	-27.9	33.6	54.0
2583.5200	20.1	100.0	H	54.0	-22.8	33.9	54.0
4949.6050	24.7	100.0	H	133.0	-16.7	29.3	54.0
7445.1100	29.4	150.1	V	35.0	-10.7	24.6	54.0
14159.0350	35.2	100.0	H	335.0	-0.4	18.8	54.0
17976.1300	42.7	149.9	V	109.0	9.4	11.3	54.0

[DC 24 V] OBD+LTE Cat.M1 Band12(Low) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1053.8600	32.6	150.0	V	274.0	-28.0	41.4	74.0
2500.5350	33.4	150.0	H	66.0	-23.1	40.6	74.0
4982.1000	37.5	111.5	V	50.0	-16.7	36.5	74.0
7358.2100	41.6	149.8	H	268.0	-11.0	32.4	74.0
14658.9050	47.4	100.0	H	304.0	0.2	26.6	74.0
17968.3869	56.1	150.0	H	86.0	9.3	17.9	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1053.8600	20.2	150.0	V	274.0	-28.0	33.8	54.0
2500.5350	20.3	150.0	H	66.0	-23.1	33.7	54.0
4982.1000	24.5	111.5	V	50.0	-16.7	29.5	54.0
7358.2100	29.1	149.8	H	268.0	-11.0	24.9	54.0
14658.9050	34.9	100.0	H	304.0	0.2	19.1	54.0
17968.3869	42.7	150.0	H	86.0	9.3	11.3	54.0

[DC 24 V] OBD+LTE Cat.M1 Band12(Middle) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1084.1200	33.5	100.0	V	63.0	-27.9	40.5	74.0
2368.6050	33.3	138.7	V	71.0	-23.7	40.7	74.0
5649.2550	37.9	150.0	V	78.0	-15.6	36.1	74.0
7334.4450	41.7	100.0	H	3.0	-11.0	32.3	74.0
13756.1050	47.0	113.4	H	23.0	-1.4	27.0	74.0
17980.5250	55.4	100.0	H	0.0	9.5	18.6	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1084.1200	20.4	100.0	V	63.0	-27.9	33.6	54.0
2368.6050	20.1	138.7	V	71.0	-23.7	33.9	54.0
5649.2550	25.0	150.0	V	78.0	-15.6	29.0	54.0
7334.4450	29.0	100.0	H	3.0	-11.0	25.0	54.0
13756.1050	33.9	113.4	H	23.0	-1.4	20.1	54.0
17980.5250	42.7	100.0	H	0.0	9.5	11.3	54.0

[DC 24 V] OBD+LTE Cat.M1 Band13(High) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1367.9150	33.4	149.9	V	119.0	-26.9	40.6	74.0
2727.1000	33.6	100.0	V	213.0	-22.3	40.4	74.0
5284.8500	37.3	100.0	V	195.0	-16.2	36.7	74.0
7502.7750	42.2	100.0	V	270.0	-10.5	31.8	74.0
14569.9500	47.8	150.1	H	316.0	0.3	26.2	74.0
17973.8209	55.7	100.0	H	4.0	9.4	18.3	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1367.9150	20.3	149.9	V	119.0	-26.9	33.7	54.0
2727.1000	21.0	100.0	V	213.0	-22.3	33.0	54.0
5284.8500	24.6	100.0	V	195.0	-16.2	29.4	54.0
7502.7750	29.2	100.0	V	270.0	-10.5	24.8	54.0
14569.9500	35.3	150.1	H	316.0	0.3	18.7	54.0
17973.8209	42.7	100.0	H	4.0	9.4	11.3	54.0

[DC 24 V] OBD+LTE Cat.M1 Band13(Low) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1390.2750	32.0	100.0	H	0.0	-26.8	42.0	74.0
2794.1050	35.0	265.4	H	179.0	-22.1	39.0	74.0
5195.1700	37.4	160.5	H	312.0	-16.3	36.6	74.0
7372.8200	41.7	113.3	V	55.0	-10.9	32.3	74.0
14236.0000	47.4	100.0	V	253.0	-0.2	26.6	74.0
17944.0000	55.0	150.0	V	356.0	8.9	19.0	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1390.2750	18.8	100.0	H	0.0	-26.8	35.2	54.0
2794.1050	20.7	265.4	H	179.0	-22.1	33.3	54.0
5195.1700	24.5	160.5	H	312.0	-16.3	29.5	54.0
7372.8200	29.2	113.3	V	55.0	-10.9	24.8	54.0
14236.0000	35.0	100.0	V	253.0	-0.2	19.0	54.0
17944.0000	42.5	150.0	V	356.0	8.9	11.5	54.0

[DC 24 V] OBD+LTE Cat.M1 Band13(Middle) Receiver

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1109.4650	34.8	100.0	H	326.0	-27.8	39.2	74.0
2608.7650	32.8	113.6	V	314.0	-22.7	41.2	74.0
4965.7200	37.6	100.0	H	286.0	-16.7	36.4	74.0
7359.5650	41.7	100.0	V	357.0	-11.0	32.3	74.0
14467.5950	48.6	100.0	V	326.0	0.4	25.4	74.0
17979.1313	55.2	150.0	H	45.0	9.5	18.8	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1109.4650	22.0	100.0	H	326.0	-27.8	32.0	54.0
2608.7650	20.3	113.6	V	314.0	-22.7	33.7	54.0
4965.7200	24.6	100.0	H	286.0	-16.7	29.4	54.0
7359.5650	29.1	100.0	V	357.0	-11.0	24.9	54.0
14467.5950	35.9	100.0	V	326.0	0.4	18.1	54.0
17979.1313	42.7	150.0	H	45.0	9.5	11.3	54.0

DATA LINK

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1328.8550	44.8	175.5	V	119.0	-27.1	29.2	74.0
1997.6450	52.7	100.0	V	54.0	-25.4	21.3	74.0
2588.7700	50.4	249.8	V	64.0	-22.8	23.6	74.0
5986.4350	42.3	124.7	V	118.0	-15.0	31.7	74.0
13250.8300	44.7	149.8	V	233.0	-2.5	29.3	74.0
14147.0700	47.9	204.5	V	4.0	-0.4	26.1	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1328.8550	28.0	175.5	V	119.0	-27.1	26.0	54.0
1997.6450	37.0	100.0	V	54.0	-25.4	17.0	54.0
2588.7700	30.9	249.8	V	64.0	-22.8	23.1	54.0
5986.4350	26.9	124.7	V	118.0	-15.0	27.1	54.0
13250.8300	32.5	149.8	V	233.0	-2.5	21.5	54.0
14147.0700	35.4	204.5	V	4.0	-0.4	18.6	54.0



5. CONCLUSION

The data collected shows that the **Product Name: OBD Tracker, Model Name: JLM1-2000** complies with §15.107 and §15.109 of the FCC rules.



6. APPENDIX. TEST SETUP PHOTO AND EUT PHOTO

Please refer to Appendix A, B and C as follows;

File No.	Date of Issue	Description
HCT-EM-2105-FC001-P	May 06, 2021	Initial Release Appendix. A Test Setup Photo Appendix. B EUT Internal Photo Appendix. C EUT External Photo

End of report