

# LETTER OF REQUEST

PERMISSIVE CHANGE

14 December 2022

We, as a manufacturer of following equipment, hereby submit Class 2 Permissive Change application for the FCC and the ISED to change components in the filings.

MODEL	FCC		ISED	
TLHOBDDNN0B2	FCC ID	BEJTLHOBDDNN0B	Certification Number	2703H-TLHOBDDNN0B
	Original Grant Date	20 August 2021	Original Grant Date	20 August 2021
	Equipment Type	Car Telematic device		

## A. Antenna Information

We have additional external antenna and gain was measured in each band as below. The worst-case scenarios have been chosen based on these values. We also confirm the measured the gains are the highest gain in all directions and all frequencies.

Frequency Range UL (MHz)	Band	Original ANT. [Original Grant]	Cable loss	Additional ANT. [C2PC]	Final additional ANT. [C2PC]	Increased Gain
699 - 716	B12	-2.85 dBi	0.5 dBi	-2.2 dBi	-2.7 dBi	0.15 dB
824 - 849	B5	0.32 dBi	0.5 dBi	0.4 dBi	-0.1 dBi	-0.6 dB
1710 - 1755	B4	2.86 dBi	0.8 dBi	0.4 dBi	-0.4 dBi	-1.2 dB
1850- 1910	B2	2.83 dBi	0.9 dBi	-0.1 dBi	-1.0 dBi	-1.0 dB

## B. WORST CASE SELECTION

Full RSE test have been completed for additional external ANT. which is considered have generally higher gains than the original internal ANT. Additional test were performed at each higher gain on a mode which got worst RSE margin.

Frequency-Range UL (MHz)	Band	Increased Gain	RSE Margin [Original Grant]			Additional RSE
			GSM	WCDMA	LTE	
699 - 716	B12	<u>0.65 dB</u>	-	-	43.39 dB	<u>37.62</u>
824 - 849	B5	<u>0.08 dB</u>	-	47.06 dB	45.87 dB	<u>37.56</u>

### C. E.R.P./ E.I.R.P.

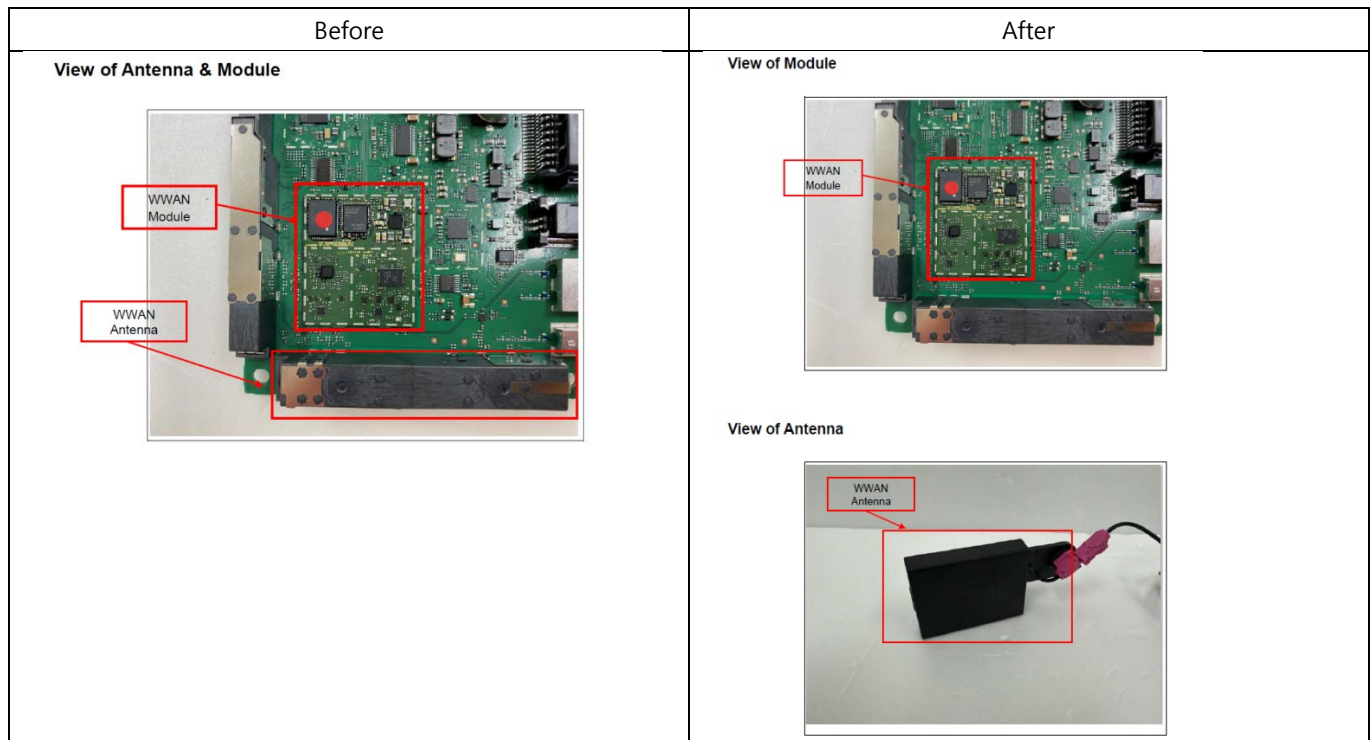
Due to increasing some antenna gain, E.R.P./ E.I.R.P. was recalculated to comply the limits in Parts 22, 24, 27 of FCC rules and RSS standards.

Band	Frequency (MHz)	Target Power (dBm)	Max Tune-up Tolerance (dB)	Maximum Conducted Power (dBm)	Maximum Conducted Power (W)	Antenna Gain (dBi)	Maximum E.I.R.P. (dBm)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dBm)	Maximum E.R.P. (W)	Output Power Limit
WCDMA II	1 850 - 1 910	23.00	1.0	24.00	0.251	-1.0	23.0	0.200			2 W E.I.R.P.
WCDMA V	824 - 849	23.00	1.0	24.00	0.251	-0.1	23.9	0.245	21.75	0.150	7 W E.R.P.
LTE 2	1 850 - 1 910	23.00	1.0	24.00	0.251	-1	23.0	0.200			2 W E.I.R.P.
LTE 4	1 710 - 1 780	23.00	1.0	24.00	0.251	-0.4	23.60	0.229			1 W E.I.R.P.
LTE 5	824 - 849	23.00	1.0	24.00	0.251	-0.1	23.9	0.245	21.75	0.150	7 W E.R.P.
LTE 12	699 - 716	23.00	1.0	24.00	0.251	-2.7	21.3	0.135	19.15	0.082	3 W E.I.R.P.

#### Remark;

1. E.I.R.P. (dB m) = Maximum Conducted Power (dB m) + Antenna Gain (dB i)
2. E.R.P. (dB m) = E.I.R.P. (dB m) - 2.15 (dB); where E.R.P. and E.I.R.P. are expressed in consistent units.

### D. Comparison information



**E. Variant model information**

Model name		Description
Basic model	TLHOBDDNN0B2	D-Class AMP condition
Variant model	TLHOBDDNN0B1	Same RF module and circuit to basic model, except below - Buffer AMP condition - De-populated to BUB (Backup battery) part
	TLHOBENN0D1	Same RF module and circuit to basic model, except below - Operating External ANT.

**F. Declaration**

The model with additional antenna comply ERP/EIRP requirements, power thresholds for exemption from routine evaluation, MPE limits at 20cm and the limits in Parts 22, 24, 27 of FCC rules and RSS standards.

Based on technical analysis mentioned above, we hereby request permissive change for both FCC and ISED certification.



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